studies from the
continuous
morbidity
registration
sentinel stations
the netherlands

The Dutch Sentinel Practice Network; relevance for public health policy

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In 1970 Continuous morbidity registration Sentinel Stations has been made possible by the co-operation of a number of organisations:
- the Netherlands Institute for General Practice
- the Ministry of Social Affairs and Public Health
- the Chief Medical Office of Health
- the "Praeventiefonds" ("Prevention Fund")

In 1985 the CMR Sentinel Stations is incorperated in the Netherlands Institute of Primary Health Care. It is funded by the Ministry of Welfare, Public Health and Culture.

FOREWORD

One of the first sentences in the summary of the first annual report on the Netherlands sentinel stations project reads: "The purpose of this network is to gain a better insight into the epidemiology of a number of illnesses and conditions as they present themselves to the general practitioner".

Eighteen annual reports containing the results of the recording of diseases and conditions of a varied nature have appeared since then. Results have also been published in article form or data have been incorporated in chapters of dissertations.

A unique form of cooperation between general practitioners, who record data on their daily work, and researchers who organize, process and interpret these data, is the basis of the project.

In the mid-eighties the need grew to subject the project to a critical study. This was a responsibility, but at the same time an opportunity to determine the place of the Continuous Morbidity Registration Sentinel stations in the midst of existing and nascent information systems. A critical study too that would be a basis for the future of the project.

These ideas return in the lay-out of the book: first a part on the project itself, on its origins, on the practices and the GPs and on the recording of data, and a second part on the results of the registration of a variety of topics. In the final chapter the lessons from the past are drawn and a glance is cast into the future.

A subsidy from the Ministry of Welfare, Public Health and Culture made this publication possible. The work has been done by so many people that mentioning a few names would not be fair to many others. All are entitled to appreciation of their efforts.

The editors.

In this publication the Dutch-language references of the authors have been maintained. On request and if available English-language summaries of the Dutch-language references may be obtained from NIVEL.

CONTENTS

PART I

1. THE DUTCH SENTINEL PRACTICES: ORIGIN, OBJECTIVES AND ORGANIZATION

A.I.M. Bartelds and J. van der Zee

1.1. Origin

The roots of the sentinel surveillance system can be traced back to the sixties, the decade of the emerging professionalization of the Dutch general practitioner.
After the foundation of the Dutch College of General Practitioners (Nederlands Huisartsen Genootschap-NHG, 1956) and the creation of the first scientific journal for and about general medical practice (1957, Huisarts en Wetenschap - General Practitioner and Science), new milestones of professional achievement characterized the sixties.
The first chair in general medicine (Utrecht 1967) and a permanent government grant for the Netherlands Institute for General Practice (1965) encouraged a group of pioneers to start a set of cooperative studies that formed the basis for the scientific development of the new academic profession.
The best-known example (still quoted twenty years later) of these pioneer studies is Paul Oliemans' dissertation: "Morbidity Survey in General Practice" (Morbiditeit in de huisartspraktijk, 1969) which gave an elaborate description of morbidity as excountered by the first-contact medical professional: the general practitioner.
One of the other pioneers, Geert Bremer, showed in his dissertation (about Referrals, 1964) a diagram (borrowed from John Fry) indicating that in a standard practice of 2500 patients 7500 spells of illness occur, of which 5000 are submitted to the general practitioner.
Of these 5000 episodes, 750 require further specialistic judgment and investigation.
From Oliemans' thesis and Bremer's diagram one could derive firstly that the general practitioner is an essential element in the production of epidemiological surveys.

The GPs' judgment usually is the first **professional** judgment of medical problems in the general population, surveying, a great deal of this population morbidity.
Other sources of epidemiological information are:

- mortality statistics
- hospital statistics
- population surveys - health interview surveys
  - health examination surveys.

In a country like the Netherlands, where access to both out-patient and in-patient specialistic medical care is by GP referral only, and each general practice consists of a relatively well-defined group of people (a "fixed list"), the advantages of using morbidity statistics in general practice as a compromise between mortality statistics on the one hand and population surveys on the other are obvious.
Health interview surveys provide subjective, i.e. not professionally judged, health information only; health examination surveys require costly provisions, while mortality statistics and hospital-based morbidity surveys are both biased sources of information with regard to morbidity in the general population.
Not all morbidity in the population is known to the general practitioners, but the threshold for his services is much lower and less selective than for all other points of entry to the health care system.

The first wave of professionalism of the Dutch general practitioner fuelled the idea that morbidity data from general practice were in fact worth looking into, both to differentiate the hospital-based clinical morbidity pattern and as a valid source of information, not easily obtainable elsewhere.

Forerunners

There were some sentinel stations ahead of their time in the sixties, recording spells of infectious diseases (the non-notifiable type like influenza and measles) in Rotterdam, The Hague and Amsterdam, and a national network for the Chief Medical Office of Health since 1962.
The latter network had not been constructed to provide a nationwide representative survey and did not contain information about size and

differentiation of the practice population. The limitation of recorded information to infectious diseases was also felt to be a problem.
When the group of 50 general practitioners that provided the first (and, for decades, the only) Dutch National Morbidity Survey in general practice was looking for an opportunity to continue its activities on a regular basis, the interests of the Dutch College of General Practitioners, the Chief Medical Office of Health and the Ministry of Public Health (then part of the Ministry of Health and Social Security, later transferred to the Ministry of Public Health and Environmental Protection and nowadays part of the Ministry of Welfare, Public Health and Culture) coincided.
The scientific bureau of the Dutch College of General Practitioners: the Netherlands Institute for General Practice (the predecessor of NIVEL, the Netherlands Institute of Primary Health Care), was requested to formulate and implement a plan to create a network of general practitioners recording selected elements of morbidity in general practice.

1.2. Objectives

In the original agreement of cooperation between the State of the Netherlands and the Foundation for the Promotion of General Practice (the parent foundation of the Netherlands Institute for General Practice) it was taken into account that the parties deemed it desirable to create a national network of sentinel stations for the purpose of gaining insight into the morbidity pattern of the Dutch population, insofar as that could be determined as part of the care to be given by general practitioners, and that the parties would endeavour to ensure that by not later than 1 April 1970 a network of sentinel stations of sufficient national distribution and adequately representative of the Dutch population would be functioning.

In the first annual report we may read how these arrangements acquired substance.

A network was built up with a distribution as representative as possible of the Dutch population. It was realized when recruiting the spotter physicians that there could be no question of a random sample of Dutch

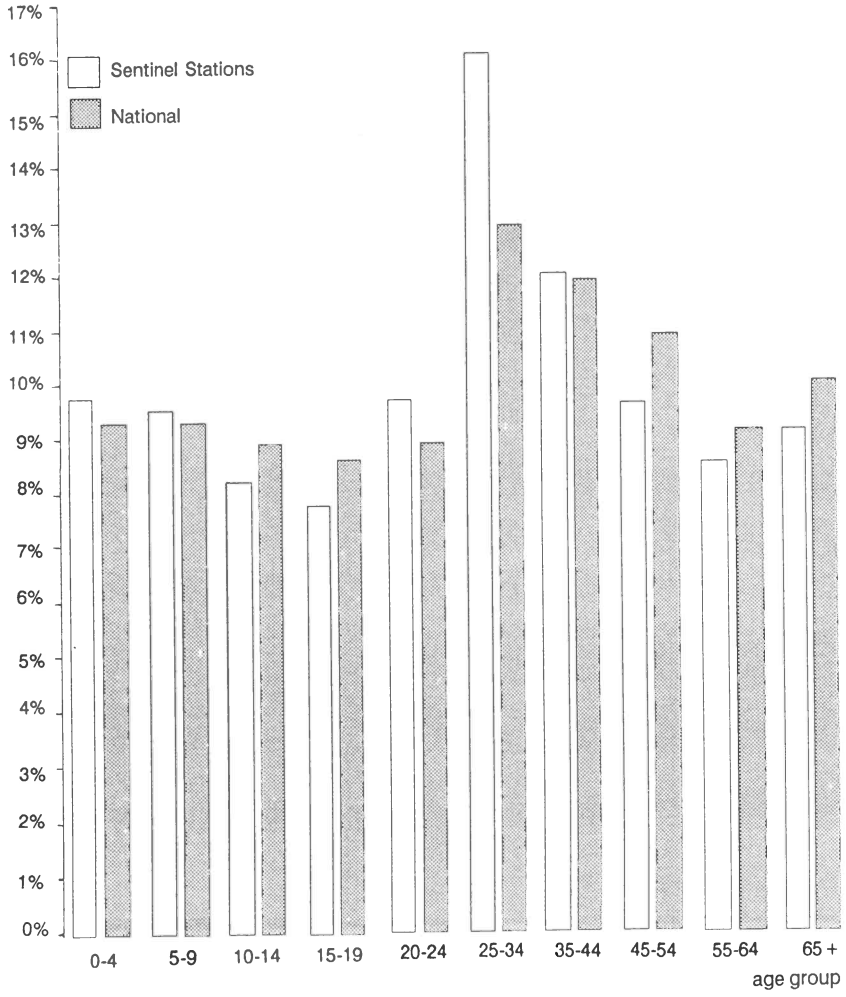
general practitioners: an expressly positive attitude of the participating physicians was called for. More value was attached to the distribution of the physicians over the country and by degree of urbanization and the presence of 1% of the population in the four province groups and the three urbanization groups in the practices of the spotter physicians. At the same time attention was devoted to the age and sex distribution of the persons registered in the sentinel station practices.

For that purpose a census of the persons belonging to the practice population of a spotter physician was performed. The results of this are shown for 1970 (Fig. 1.1.).

Continuous reporting per weekly return of varying subjects and not solely of infectious diseases was decided upon. Thus in 1970 the reports included new cases of attempted suicide (successful or unsuccessful), consultations for family planning (among others the prescribing of ovulation inhibitors and the I.U.D.) and requests for abortus provocatus. In 1971 the questions were partly changed and new topics appeared on the weekly return. It proved possible to achieve the objective of collecting information on a variety of subjects only by annually considering the subjects and if necessary changing them, with a more or less constant load on the physicians. Care is taken not to ask too much of the registering physicians; the point of departure is that the registration can be performed without too much trouble during daily practice.

And finally it was agreed that in addition to regular weekly reporting of cases of illness attention would also be paid to longitudinal research among patients with specific disorders. The report on a patient with such a disorder was followed by periodical surveys for a number of years. Longitudinal research has been performed into myocardial infarction, anginose disorders, cerebro-vascular accident and the epileptiform syndrome. After evaluation of this type of research in a sentinel stations project it was decided to regard this objective further as of subordinate importance within the project.

Fig. 1.1.: Age distribution in percentages of the total population and the practice population of the sentinel stations in the Netherlands 1970



In 1976 an objective was added to the project: the performance of what were called incidental investigations. These are investigations into relatively uncommon diseases or events, data on which are asked for only once a year. If possible it is, however, announced at the beginning of a registration year which subjects in that year qualify for an incidental investigation. At the end of this chapter a survey is given of the subjects that have appeared in any one year on the weekly return. A survey is also given of the subjects into wich an incidental investigation has been performed.

Today the objectives of the project are in principle still the same as described above: the gauging of diseases and disorders that are submitted to their general practitioner by approximately 1% of the Dutch population, and also the gauging of medical techniques performed by a non-random group of Dutch general practitioners comprising about 1% of the total of Dutch GPs. The objective is only rarely a purely scientific one; rather, it relates to the collecting in the most reliable way possible of data of importance to the plotting, implementation and supervision of policy in the field of public health.

1.3. Organization

In the above sections the genesis of the Continuous Morbidity Registration Sentinel Stations has been described. The broad objectives with which the project started and the changes that have occurred in the objectives have been discussed, and it has been established that the objectives have not been essentially changed up to the present time.

This section describes the organization and the working methods of the project.

The project consists of a network of 45 sentinel stations, in which 61 GPs are employed, spread over the country. The distribution over the country

covers four regions (A to D) and three degrees of urbanization (1 to 3; Fig. 1.2.).

Every week these sentinel stations send the registration form of the previous week to the central project bureau, which is a part of the Netherlands Institute of Primary Health Care (NIVEL, formerly the Netherlands Institute for General Practice). This project bureau has a staff of three: two secretaries and the project manager. The latter functions under the responsibility of the head of scientific research at the above institute. The director of the NIVEL is chairman of the Programme Committee of the project. The latter committee, which meets several times a year, consists of representatives of the Ministry of Welfare, Public Health and Culture, the Chief Medical Office of Health, the Netherlands Institute of Primary Health Care, the participating physicians and the university world.

The task of the Programme Committee is to assist with the implementation of the registration system. In composing the committee the aim has been equal contributions by the various bodies involved and desired expertise.

Once a year, shortly after the start of a new registration year, a meeting is organized for the spotter physicians and their practice assistants. One objective of this meeting is to discuss with the participating physicians the course of events in the project and the subjects for registration, and to report on registrations going on or recently terminated.

The daily work is performed at a variety of locations: in the practices, at the national bureau and at institutes that have requested registration of a specific subject.

Fig. 1.2.: Sentinel stations continuous morbidity registration 1987

The physicians and their assistants keep a tally on the weekly return of the numbers of those topics for which registration has been requested. At the end of the chapter the weekly return for 1988 has been printed as an exemple. Every year the weekly return contains a number of topics on which further data are requested by means of a supplementary questionnaire. The weekly return and supplementary questionnaires are sent in to NIVEL. At the NIVEL project bureau the weekly returns and supplementary forms are received, checked and administered. Records are kept on each sentinel station as to whether the weekly returns have been received and the supplementary questionnaires attached. After the supplementary questionnaires have been found to be correct they are sent on per month or per quarter to the "topic keeper" who has requested that a subject be placed on the weekly return. Topic keepers are persons or institutes of varying nature: from the Chief Medical Office of Health and university institutes for general practice to individuals. The subjects discussed in Part II give an impression of the diversity of the topic keepers. The latter are bound by written agreement to process these data and report on them. They are regularly consulted on how the registration of a subject is proceeding.

The weekly returns are processed by the staff of the NIVEL project bureau, i.e. input into the computer. After checks on the input data they are then available for the production of surveys. On the basis of these surveys an annual report is made on the results of the Continuous Morbidity Registration Sentinel Stations. This annual report is published in two languages, Dutch and English. It is widely distributed.

It has been stated above that the objective of the project is to gauge in practices in which approximately 1% of the population of the Netherlands are registered. This 1% objective is monitored by means of practice censuses once every two years. Persons approached by NIVEL visit the sentinel stations for that purpose to count the number of registered patients on year of birth and sex in the records of the practices.

On the basis of these data it is checked whether the 1% objective continues to be applicable for the province and urbanization group. On some occasions it has proved necessary to recruit new physicians for the work of the sentinel stations.

The results of the 1987 census are shown in Fig. 1.3.

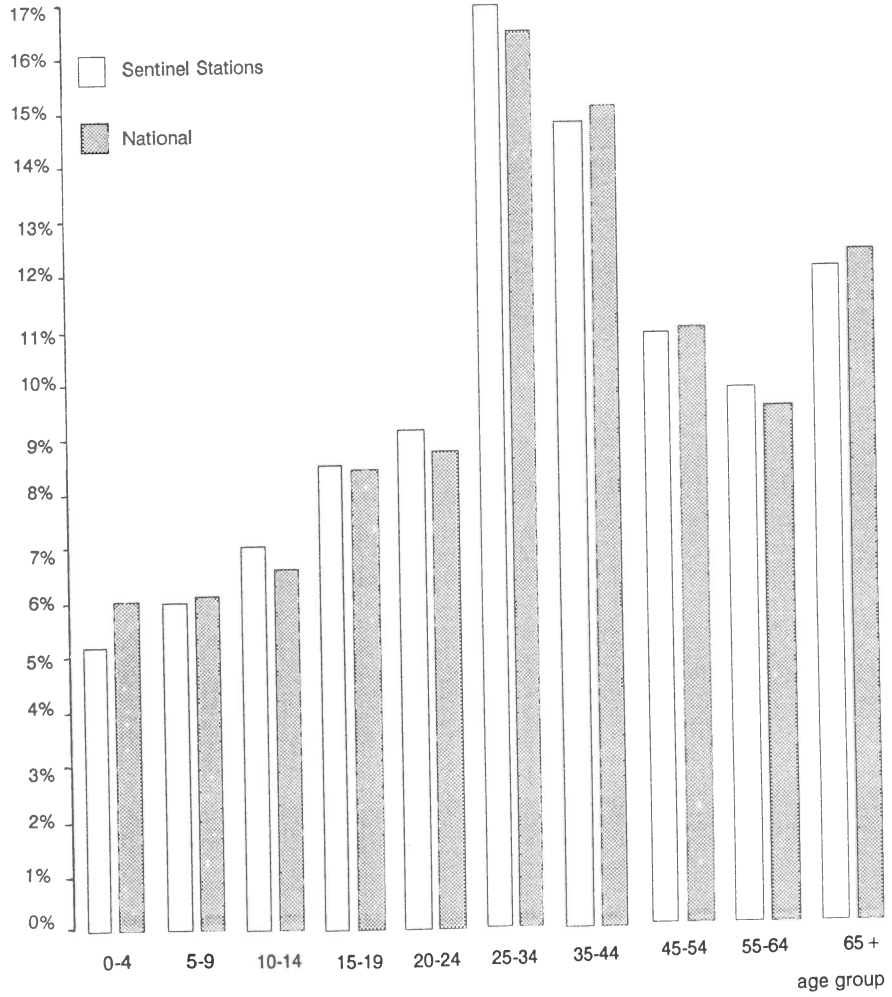
It can be said today that with an organization and working methods of relative simplicity the original objectives of the project have been met.

The developments in epidemiological thinking, the insights acquired since 1970 into the processes that determine why people visit their GP and the understanding gained into the functioning of GPs make it necessary to reflect on the objectives.

The technological developments, in particular the tremendous increase in the possibilities of quickly processing large amounts of data, summon up questions about the organization maintained to date and the working method followed.

At the end of the book we shall revert to this and develop ideas for the future.

Fig. 1.3.: Age distribution in percentages of the total population and the practice population of the sentinel stations in the Netherlands 1987



Subjects on the weekly return 1970-1988 (in alphabetical order)

abortion (spontaneous)	1982-1983
abortus provocatus	1971-1979
abortion (request)	1970-1975
accidents	1971
accidents in the private sector	1981-1983
acute unusual headache	1988
admission of psychiatric patient	1988
Aids	1988
alcoholism	1975
anti-hypertensivum and/or diuretic (prescription)	1976
battered child syndrome (suspicion of)	1973-1974
bites by pets	1986-1987
burns	1988
cerebro-vascular accident	1986-1987
cervical smear	1976-1988
dementia	1987-1988
depression	1983-1985
diabetes mellitus	1980-1983
diarrhoea e causa ignota	1970
discharged psychiatric patient	1986-1988
drug-use (consultation)	1972-1973 and 1979-1981
dwelling (certificate for another)	1975
echography (request)	1988
exanthema e causa ignota	1970
family planning (consultations)	1970-1976
hay fever	1978-1982
influenza (-like illness)	1970-1988
malignancies	1984-1985
measles	1975-1979
mononucleosis infectiosa	1977-1979
morning-after pill (prescription)	1972-1988
musculo-skeletal system (trauma of)	1984

myocardial infarction (suspicion of)	1978 and 1983-1985
otitis media acuta	1971 and 1986
Parkinson's disease	1980-1985
partus immaturus	1982-1983
partus (at gravidity exceeding 28 weeks)	1982-1983
penicillin (prescriptions and side effects)	1982-1983
(poly)clinical mammography	1988
pregnancy (despite contraception)	1987-1988
prescription of Rohypnol (R)	1987-1988
psoriasis	1976-1977
referrals	1984
referrals for physiotherapy	1985
referrals for psycho-social problems	1986-1987
rubella (-like illness)	1971
skull traumas in traffic	1975-1977
smoking (consultation with regard to addiction)	1974
sport traumas	1979-1983
sterilization of the man performed	1972-1988
sterilization of the woman performed	1974-1988
suicide (attempted)	1970-1972 and 1979-1988
tonsillectomy or adenotomy	1971
tranquillizer (prescription)	1972-1974
ulcus pepticum (first time/recurrent)	1985-1986
ulcus ventriculi/duodeni	1975
urinary tract infection (prescription of medicine)	1977

Incidental investigations and other extra investigations, 1977-1988 (in alphabetical order)

alternative forms of treatment (registration practicable?)	1980
anorexia nervosa and bulimia	1985-1988
euthanasia (request for application)	1977-1988
incest	1988
malignancies	1982-1983
mastitis puerperalis	1982
multiple sclerosis	1977-1982
serum collection	1980 and 1985
sterilization regretted	1980-1984

Weekstaat t.b.v. centrale registratie

CONTINUE MORBIDITEITSREGISTRATIE, PEILSTATIONS, 1988

Proj. no.	Regel no.	Verslagjaar	Week no.	Code peilstat.	Rapport dagen
4 0 0		8 8		6 0 2 *	
1-3	4-5	6-7	8-9	10-13	14

Regel no.	Leeftijdsgroep	Influenza (achtig ziektebeeld[2])	Cervixuitstrijkje: Na 1-1-1986 voor eerste maal afgenomen op grond van[3]: Klachten/symptomen	Cervixuitstrijkje: Na 1-1-1986 voor eerste maal afgenomen op grond van[3]: Louter preventieve overwegingen: Initiatief huisarts[4]	Cervixuitstrijkje: Na 1-1-1986 voor eerste maal afgenomen op grond van[3]: Louter preventieve overwegingen: Verzoek v.d. vrouw	Cervixuitstrijkje: Herhalingsonderzoek: Klachten/symptomen[5]	Cervixuitstrijkje: Herhalingsonderzoek: Louter preventieve overwegingen: Initiatief huisarts[4]	Cervixuitstrijkje: Herhalingsonderzoek: Louter preventieve overwegingen: Verzoek v.d. vrouw	Opname psychiatrische patiënt[6]	Ontslag psychiatrische patiënt[6]	Sterilisatie verricht[7]		Morning-after pil voorgeschreven[8]	Brandwonden[9]		Suicide(poging)[10]	Acute ongewone hoofdpijn[11]		Echografie aangevraagd[12]		Dementie		Voorschrijven rohypnol		Zwangerschap (ondanks a.c.)[13]	(Poli)klinische Mammografie: Na 1-1-1987 voor 1e maal: Klachten/symptomen	(Poli)klinische Mammografie: Na 1-1-1987 voor 1e maal: Louter preventief	(Poli)klinische Mammografie: Herhalingsonderzoek: Klachten/symptomen	(Poli)klinische Mammografie: Herhalingsonderzoek: Louter preventief	C.A.I.D.S.[14]	Leeftijdsgroep	Regel no.	
		M+V	V	V	V	V	V	V	M+V	M+V	M	V	V	M	V	M+V	M	V	M	V	M	V	M	V	V	V	V	V	V	M+V			
01	< 1																														< 1	01	
02	1-4																														1-4	02	
03	5-9																														5-9	03	
04	10-14																														10-14	04	
05	15-19																														15-19	05	
06	20-24																														20-24	06	
07	25-29																														25-29	07	
08	30-34																														30-34	08	
09	35-39																														35-39	09	
10	40-44																														40-44	10	
11	45-49																														45-49	11	
12	50-54																														50-54	12	
13	55-59																														55-59	13	
14	60-64																														60-64	14	
15	65-69																														65-69	15	
16	70-74																														70-74	16	
17	75-79																														75-79	17	
18	80-84																														80-84	18	
19	⩾ 85																														⩾ 85	19	
4-5		15-17	18-20	21-23	24-26	27-29	30-32	33-35	36-38	39-41	42-44	45-47	48-50	51-53	54-56	57-59	60-62	63-65	66-68	69-71	72-74	75-77	78-80	81-83	84-86	87-89	90-92	93-95	96-98	99-101			102-104

Weeknummer : .....

Opgemaakt d.d.: .....

Aantal dagen gerapporteerd (zie voetnoot 1) 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Zie ommezijde voor voetnoten

2. A PROFILE OF SENTINEL PRACTICES AND PHYSICIANS

J. van der Zee and A.B.M. Gloerich

2.1. Introduction

The degree of selectivity of the practices participating in the sentinel network has often been the topic of discussion, since participation is a matter of voluntary recruitment and not of a random selection process.
In some respects (division of the practice population according to region and urbanization) the practicepopulations have been selected to form a 1% sample of the general population.
For the rest no explicit selection took place; in this chapter we shall try to point out on what aspects the practices and physicians selected differ from their non-participating colleagues.
Usually one has only general background characteristics of doctors and practices for comparative purposes (age, sex, type of practice etc.).
The sentinel practices, however, form an exception to the rule, because they have participated in studies that also contain (random) samples of Dutch general practitioners. Therefore, one can compare the sentinel practices and physicians on a broad (but rather haphazard) range of subjects in order to judge whether the spotter physicians differ from their colleagues.
The following topics of comparison were available:

a. general background characteristics
b. some attitudinal information about the inclination to avoid risks
c. information on referral rates
d. information (attitudinal-factual) on the general practitioner/ physiotherapist relation
e. information on cooperation with other professionals in primary (health) care.

The results will be presented per topic.

2.2. Method

As regards method two things should be clarified.
The first is the method of comparison; the second is about the subjects compared.
Regarding the method of comparison, the most common method is a comparison of samples, for instance a (random) sample of Dutch general practitioners and the spotter physicians. Sometimes information on the population of Dutch general practitioners as a whole is known (for instance for the background characteristics).
In that case a sample (spotter physicians)/population comparison is made. The subjects compared are in most cases physicians, general practitioners, but sometimes information is available only per practice. This requires some adaptation of the comparable information.
The source of the background information is found in the NIVEL register of general practitioners; for the other comparisons several specific NIVEL studies were available.

2.3. Results

2.3.1. Background characteristics

Some background characteristics have deliberately been stratified in the composition of the sentinel practice group, such as the regional distribution of the practices and the degree of urbanization.
The following general background information will be shown in a number of tables:

- age and sex
- years of experience as general practitioner
- type of practice
- list size
- dispensing/non-dispensing general practitioners
- membership of the Dutch College of General Practitioners.

According to the sex of the general practitioners there are no differences between the spotter physicians and the population of Dutch GPs as a whole (6.5 and 7%).

The age distribution is shown in Table 2.1.

No differences are found in the sex of general practitioners: both groups contain approx. 7% of female GPs. The same goes for the proportion of dispensing doctors, approximately one out of six GPs both in the sentinel group and all Dutch GPs dispense drugs and pharmaceuticals. Dispensing doctors operate in rural areas only; this may be due to the prior stratification with regard to urbanization.
Striking differences are found regarding the degree of membership of the Dutch College of General Practitioners, almost two/third of the spotter physicians versus 41% of the population as a whole.
A similar difference is found in the type of practice. One out of four spotter physicians can be found either in a group practice or in a multidisciplinary health centre: twice the national average. The proportion of single-handed GPs is accordingly lower. With regard to the age distribution one can conclude that especially in the youngest age group (under 35 years of age) the GPs are underrepresented, while there is an overrepresentation in the next age group (35-44 years).

Table 2.1.: Differences in background characteristics between spotter physicians (62) and the total population of Dutch GPs (5752) (1984)

Variable	spotter physicians (%)	all Dutch GPs (%)	significance of difference
Sex			
% of female GPs	6.5	7	-
Age			
% GPs			
< 35 years	9.8	24.9	$p < .05$
35-44 years	52.4	40.2	$p < .05$
45-54 years	16.4	16.8	-
> 55 years	21.3	18.1	-
average	44 years	43 years	-
Year of setting up practice			
before 1970	31.1	31.0	-
1970 - 1975	23.0	16.3	-
1975 - 1980	36.1	26.2	$p < .05$
after 1980	9.8	26.5	$p < .05$
Type of practice			
single-handed	45.9	60.7	$p < .05$
partnership (2 doctors)	29.5	26.9	-
group practice or health centre	24.6	12.4	$p < .05$
Proportion of **Dispensing GPs**	14.8	16.7	-
List size per principal	2623	2500	$p < .05$
Proportion of members of Dutch College of GP's	66	41	$p < .05$

Conclusion

For most of the background characteristics for which no stratification took place, the sentinel practice group differs significantly from the population of Dutch GPs as a whole. The exceptions are: the proportion of female doctors and dispensing doctors (no difference). For the other aspects, spotter physicians are somewhat overrepresented in the age group between 35 and 44 years, and underrepresented under 35 years and are, not unexpectedly, more experienced. The list size of the spotter physicians is higher (approximately 5%); the proportion of single-handed practices is lower, and of group practices and health centres significantly higher, while, finally, the membership of the sentinel practices in the Dutch College of General Practitioners is much higher than average.

The latter parameter in particular points to a certain interest in the scientific background of general medicine. The group of spotter physicians can certainly not be considered representative in this respect.

To what extent this bias influences the recording habits of the participants we do not know. It is not unusual to state that 'results have to be regarded with caution', but the vagueness of such a statement leaves more questions than answers.

This concludes the background characteristics. This is not the only type of information available on spotter physicians. In several studies they figures as part of a national sample of GPs and the attitudes measured can also be compared.

2.3.2. Attitudes

In several studies the attitudes of the spotter physicians have been used as explanatory variables, for instance with regard to referrals.

Usually these attitudes were derived from other studies that contained (random) samples of Dutch general practitioners.

The first attitude is the 'inclination to avoid risks'.

This attitude scale was developed by Grol (1983) and was used by Verhaak (1986) as a variable in the explanation of the detection and treatment of psycho-social problems in general practice.

Verhaak took a sample of 415 general practitioners, of whom 60% responded to his questionnaire.
The distribution of the spotter physicians over the 6 items of the 'risk-taking' scale is shown in Table 2.2. The 6 items are as follows:

1. Refer, if in doubt.
2. Most complaints do not pass over with time.
3. A doctor must do anything to clear up the somatic cause of a complaint.
4. A doctor must prefer the certain to the uncertain.
5. A doctor must bear in mind that any complaint can be the start of a serious illness.
6. A doctor cannot take any risk with respect to somatic complaints.

The items were rated on a 5-point scale (1-low inclination to take risks, 5-high inclination to take risks).

Table 2.2.: Differences in the inclination to take risks between spotter physicians and a random sample of Dutch general practitioners (averages)

	sentinel practices average (S.D.)	random sample of Dutch GPs average (S.D.)	T statistic
item:1.	2.7 (.59)	2.8 (.82)	-1.0
2.	4.0 (.94)	3.9 (1.01)	.71
3.	3.2 (.75)	2.9 (1.09)	2.31 $p<.05$
4.	2.9 (.88)	3.0 (1.02)	-.77
5.	3.1 (1.26)	2.4 (1.05)	4.38 $p<.001$
6.	2.3 (.87)	2.6 (1.26)	-2.0 $p<.05$
Total 1-6:	3.0 (.58)	2.9 (.52)	.55

With regard to the attitude scale as a whole, there is no difference between the spotter physicians and a sample from all Dutch GPs. There are differences, however, for single items. The spotter physicians attach a somewhat lower risk to the probability that any complaint can be the onset of a serious illness; the same goes for the statement that a doctor should do anything to clear up the somatic cause of a complaint, and they are finally less inclined to say that a doctor cannot take risks with respect to somatic complaints. They are somewhat less inclined to take risks in the exclusion of somatic problems than their 'average' counterparts.

The second attitude scale, also originating from Grol, measures the inclination to 'cooperate' with the patient; a factor considered to be important as a predictor of the detection and treatment of psycho-emotional problems in general practice. In Table 2.3 the average per item (9 items) and the overall average of this 5-point scale are presented. The 9 items of the co-operation scale are:

1. Patients do not have to be fully informed about their health situation, on request.
2. A successful medical treatment depends more on trust in the doctor's expertise than on being informed about the disease.
3. In the case of prescription it is not necessary that the doctor informs the patients extensively about the working mechanisms.
4. Patients should think the world of their doctor.
5. It is not always necessary, as a doctor, to be frank with a cancerpatient with respect to his situation.
6. A doctor should not always be consulted about non-medical problems.
7. It is not always necessary to inform patients about the referral note.
8. Some patients you cannot take seriously.
9. Doctors do not have to inform all patients about medicines and diseases, because some would not understand.

1 = yes (not cooperative)
5 = no (cooperative)

Table 2.3.: Attitudinal differences between spotter physicians and a random sample of Dutch general practitioners in the inclination to 'cooperate' with patients

	sentinel practices (average S.D.)	random sample average S.D.	T statistic
item:1.	4.0 (.99)	3.6 (1.06)	2.86
2.	3.6 (.69)	2.4 (.90)	10.91
3.	3.4 (.77)	3.2 (.86)	1.67
4.	3.0 (.85)	2.8 (.90)	1.67
5.	3.3 (.90)	3.0 (.89)	2.13
6.	3.8 (.92)	2.3 (1.02)	10.71
7.	3.6 (.96)	3.4 (1.04)	1.43
8.	3.0 (1.09)	2.8 (1.11)	1.25
9.	3.3 (1.03)	3.0 (1.03)	2.0
Total 1-9:	3.4 (.34)	2.9 (.42)	2.72

With regard to this attitude, spotter physicians are more inclined to make room for patients than a sample of their colleagues. This might be due to an overrepresentation of spotter physicians working in group practices and health centres, since Verhaak (1984) found a correlation between this attitude and the type of practice of a Dutch general practitioner.

2.3.4. Referrals

In a study of the referral habits of spotter physicians (Gloerich, Schrijnemakers & Van der Zee, Chapter 12.1 of this book) information about the official public health insurance referral rate was collected together with some factors that influence referral rates in various ways.
In this chapter, the only relevant element is the difference or similarity between sentinel practices (for referral rates information is available per practice and not per doctor) and the group of Dutch GPs as a whole.

The referral rate for sentinel practices is 422 referred patients per 1000 publicly insured patients per year; the rate for all Dutch practices together is 458. Sentinel practices have lower rates than the population as a whole. This might be due to the fact that there are more health centres in the sentinel GP group (multidisciplinary health centres have on the average a 10% lower referral rate than single-handed practices - Wijkel, 1986).
When another important determinant: the average distance from the practice to the nearest hospital, is taken into account, differences diminish, but are still present. The average number of patients per surgery per day is 29 for the sentinel practices; this number does not deviate from the population of GPs as a whole. The number of patients over 65 years of age is 12% in the sentinel group and also 12% on average in a Dutch general practice.

2.3.5. Physiotherapy

In a study by Kerssens, Curfs and Groenewegen (see Chapter 12.2 of this book) referrals to physiotherapists from the sentinel practices have been compared with a random sample of the Dutch general practitioner. The doctors and practices participating in the sentinel project did not differ from their randomly selected peers in any aspect regarding the relation with physiotherapists. There were no differences in the number of patients referred to physiotherapists and no difference in the number of initiatives to contact physiotherapists. Doctors participating in the sentinel project referred to the same number of physiotherapists as their non-participating colleagues; the same goes for counselling by physiotherapists.
With regard to the subject physiotherapy it is clear that the sentinel practices do not differentiate from a random sample of Dutch GPs. Knowledge about physiotherapy was no different in the sentinel practices compared to the random sample of GPs. The only slight difference that could be found was the inclination to refer patients for specific complaints and illness. Here the sentinel practices had a slightly lower inclination to refer for eight specific complaints. In general, however the differences were negligible.
In the study of general practices and physiotherapy, the importance of cooperation with district nurses, social workers, pharmacists and home-helpers has also been measured between the sentinel practices and their

3. RECORDING HABITS OF SENTINEL PRACTICES

J. van der Zee, P. van Leeuwen and A.I.M. Bartelds

3.1. Introduction

It is a well-known phenomenon that whatever is being measured in general practices shows inexplicable variability (Crombie, 1984b; Verhaak, 1986; Lamberts, 1984). Inexplicable, that is to say not to be explained by characteristics of the practice population like age, sex, social class and other direct or indirect indications of the uneven distribution of morbidity and not (or hardly) by characteristics of the doctor and the practice.
The variability in reported morbidity and interventions is such that Crombie concludes for the English National Morbidity Surveys that caution should be shown in dividing the national data into too small regional subdivisions; accidental deviations might influence the average of a small group of practices considerably.
Three striking elements can be derived from the discussion:
The first is that no clear-cut explanation of this variability can be found (efforts to tie variance by more or less simple characteristics of doctors and practices yield inconclusive results).
The second is that interpractice variability is as important as interdoctor variability; single-handed practices and partnerships display a comparable range of values.
The third is that most measurements are rather consistent over time (Crombie showed this in an analysis of reported morbidity per ICD chapter with the, understandable, exception of communicable diseases) (Crombie, 1984).
The Dutch sentinel practices form no exception to this rule. The Dutch national figure derived from all the practices is composed of considerable underlying variability, that is, as in the British example, only partially understood.

This chapter is an attempt to describe the value of the data collected by the approximately 45 practices participating in the Dutch sentinel practice project.

Firstly we shall try to achieve optimum comparability in order to reduce the possibility that differences between practices are due to differences in the composition of the practice population, recording inaccuracies or other irrelevant factors.

Secondly, the corrected data set having been created, we have applied some statistical analysis to establish the degree of consistency of the data over time on the one hand, while, on the other hand, the consistency over the items reported was another question we tried to answer. Is there, for instance, a general difference between 'low' and 'high' reporters or an item-specific difference, and, if the latter is the case, can anything be said about possible patterns of recording?

Consistency over time requires a time series. Consistency over items recorded requires a broad range of items.

The 'time-series criterion' limits the number of items considerably; if we accept a minimum period of three years and take (mainly for technical reasons such as direct availability) data for 1981-1985, the following subjects are available for analysis:

	Period of recording
1. Influenza and influenza-like illnesses	1981-1985
2. Parkinson's disease	1981-1985
3. Morning-after pill (prescription of..)	1981-1985
4. Sterilization (males)	1981-1985
5. Sterilization (females)	1981-1985
6. Cervical smears	1981-1985
7. Diabetes mellitus	1981-1983
8. Accidents in and around the home	1981-1983
9. Sport injuries	1981-1983
10. Depressions	1983-1985
11. (Suspicion of) myocardial infarction	1983-1985
12. Suicide (attempted)	1983-1985

On these twelve topics information for at least three years was available, while definitions and criteria remained unaltered.
Three practices were excluded from analysis because of major changes during the period observed, such as a change of doctor or a rapid increase or decrease in the practice population. Hence 42 practices were included in the analysis. For the construction of a comparable data set two types of correction were needed:

a. The creation of a relevant and comparable denominator;
b. Correction of missing periods in the recorded information.

Re a. Differences between practices in age/sex composition of the practice population may influence the actual rates, certainly if the distribution of the events among specific age/sex groups is uneven. By excluding age/sex groups in which the events hardly occurred, if at all, we have improved the comparability of the rates studied.

Re b. For several reasons there may be 'gaps' in the recording of events. Because of holidays, illness or postgraduate courses, doctors may be away from their practices. Simple administrative corrections may not completely account for these absences. As most missing periods are found in the summer holidays, the summer period is

compared with periods in spring and autumn. By comparing 11 practices (mostly partnerships) that have no missing elements in their recording with the other (31) practices, indications of a proper way of correction could be obtained.

In the next section of this chapter these two methods of correction will be further elaborated. With a comparable data set statistical analysis will take place.
The second step in the analysis is the introduction of orders of rank of the rates themselves. Ranking is a good remedy against extreme values (outliers), since the latter have too much influence on (for instance) the mean and variance used in some statistical procedures.
Both for the time-series analysis and for the analysis of consistency or differences between practices Friedman's test has been used.
Spearman ranking correlations form the basis for further statistical analysis in order to obtain insight into 'patterns of recording' (Section 4).

3.2. The preparation of a comparable set of practice indicators

As has been stated in Section 1, correction occurs along the following lines:

a. relevant denominators, by inspection of the distribution of the event by age/sex category;
b. correction for missing data.

For the latter correction one element is crucial: the question whether events that occur during the period of non-recording can be delayed until the doctor has returned. We call this the degree of urgency of the event.
If delay is probable, correction should be omitted to avoid overestimating the number of events. We shall have to classify the twelve events in 'urgent' and 'non-urgent' events before we can start our analysis. This classification is shown in the following list.

Item recorded	Degree of urgency
Influenza	urgent
Morning-after pill	urgent
Sterilization (M/F)	non-urgent
Cervical smears (all)	non-urgent
- a. because of complaints	may be urgent
- b. first smears for preventive reasons doctor-initiated	non-urgent
- c. first smears for preventive reasons patient-initiated	non-urgent
- d. repeated smears	non-urgent
Diabetes mellitus	hard to say
Accidents	urgent
Parkinson's disease	non-urgent
Attempted suicide	urgent
Sport injuries	urgent
Depressions	may be urgent but in some cases delay is possible
(Suspicion of) myocardial infarction	urgent

Most items can be easily classified as urgent or non-urgent. For diabetes, depression or cervical smears, because of the patient's complaints, classification is somewhat ambiguous; new cases of diabetes are usually found by routine checks of elderly patients; depressions vary in intensity, as do the types of complaints that urge women to consult a doctor who decides to make a cervical smear.

For non-urgent events correction should be omitted. For (possibly) urgent complaints the type of correction depends on two other characteristics of the event.

The first of these is the distribution among the seasons.

If an event is more or less evenly distributed over the year (a dip in the summer period excepted, when some of the population are at their holiday destination) a simple arithmetic correction for the missing weeks will suffice. If, however, there are strong seasonal fluctuations (infectious

diseases), a more specific correction is needed, with attention to the detailed pattern of the illness in general and of the practice in the same region.
The second element is the total number of events.
If an event occurs rarely, seasonal correction is irrelevant; information about one whole year might even be misleading. In this case rates for the whole registration period should be calculated.
In Table 3.1. the elements previously discussed are presented, followed by the method of correction finally chosen.

The items recorded vary with regard to urgency, and even distribution over the years. This influences the necessity of correcting missing weeks in the recording period. Influenza, which, as a typical infectious disease, has a very peaked performance, has to be corrected specificially. If a recording doctor is not present in a period with influenza incidence, his or her rates can be influenced considerably.
Most of the other more or less acute phenomena should be corrected in a simple, rather arithmetic way. This applies to accidents (home environment), sport injuries, depressions, myocardial infarction, prescription of morning-after pills, suicide attempts, and diabetes mellitus (new cases).
Cervical smears and requests for sterilization can be delayed until the doctor is back on duty.

For most diseases and acts of surgery recorded some age/sex categories are more relevant than others. Parkinson's disease does not occurr befor the 55th year in our administration, while requests for sterilization do not happen beyond this age limit.
In inspection of the age/sex distribution we omitted the non-relevant age/sex categories for each item recorded.
With correction (when needed) and a more precise specification of the relevant denominator, we constructed a series of comparable indicators to establish the consistency of the data over time and variability over the practices.

Table 3.1.: Some characteristics of the events recorded by Dutch sentinel practices, 1981-1985

Item	Degree of urgency	Relevant denominator	Sc	N	Method of correction
Influenza	urgent	all age gr.(M+F)	++	++	specific correction per year
Morning-after pill	urgent	10-54 years (F)	+	--	arithmetic corr., whole period
Accidents in and arround the house	urgent	0-9 years (M/F) 35-54 years (M/F) 55 y. & older (M/F)	-	+	arithmetic corr., per year,
Sport injuries	urgent	5-24 years (M+F) 25-54 years (M/F)	+	+	specific corr., per year
(Suspicion of) myocardial infarction	urgent	35 y .& older(M/F)	-	-	arithmetic corr.,whole period
Suicide (attempted)	urgent	10-34 years(M/F) 35 y .& older(M/F)	-	--	arithmetic corr., whole period
Diabetes Mellitus	may be urgent	35 y. & older(M+F)	-	--	arithmetic corr.,whole period
Depressions	may be urgent	15-24 years(M/F) 35 y. & older (M/F)	+	+	arithmetic corr.,per year
Sterilization (M/F)	non-urgent	25-54 years(M/F)	-	-	no correction
Cervical smears	non-urgent	20-34 years (F) 35-54 years (F) 55 y. & older (F)	-	++	no correction
Parkinson's disease	non-urgent	55 y. & older (M+F)	-	--	no correction

Sc Seasonal variability N Total number

3.3. Consistency and variability

Two tests are important in the analysis of consistency and variability. The first question is whether doctors and practices have consistent recording patterns over the registration period, taking into account general fluctuations over time of the phenomenon recorded. Here we test the interpractice variability.

The second question deals with the consistency among practices of the differences between the years. If we see that the phenomenon increases or decreases, is there a general pattern of increase between the practices, or are the differences between the years a result of a random decrease or increase in the subsequent practices?

We may only conclude that the phenomenon decreases or increases if, generally speaking, a significant number of the practices decrease or increase. This is an important prerequisite for the interpretation of the results.

We shall proceed per indicator by presenting both the median value per relevant age/sex group per year and the lowest and the highest values, to give an impression of the variability. The results of the statistical testing are reported per indicator (Friedman's test).

Influenza

The relevant denominator is the population as a whole, no age groups excluded. Rates per 10 000.

	1981	1982	1983	1984	1985
Median	351	375	297	425	417
Lowest value (0/000)	16	32	0	55	69
Highest value (0/000)	2343	2648	2169	2991	3024

Tests:Interpractice differences $X^2 = 164.89$ df = 39 $p < .001$
Differences over the years $X^2 = 33.46$ df = 4 $p < .001$

The result of the first test shows that there is a consistent interpratice variability, while the significance of the second test shows that the difference between the years are the results of differences in the same direction for most of the practices. The range of the phenomenon is extraordinary: from zero to almost 3000 per 10 000 (30% of the population).

Morning-after pill

The relevant denominator is the number of women of 10-54 years.
Rates per 10 000.

	1981	1982	1983	1984	1985
Median	53	54	45	51	51
Lowest value	0	0	0	0	0
Highest value	152	211	171	147	114

Tests:Interpractice differences $X^2 = 80.15$ $df = 39$ $p < .001$
Differences between years $X^2 = 7.19$ $df = 4$ $p = .23$ (n.s.)

There are no clear differences between the years; considering the test, the differences are inconsistent between the practices (some up, some down). The differences between the practices over the years are clearly consistent; in the prescription of morning-after pills there is a clearly visible interpractice variability, ranking from zero per 10 000 females to 211 (2% of the population of 10-54 years).

Accidents (home environment)

Here there are more relevant denominators: for males and females respectively 0-10 years, 10-34 years, 35-54 years and 55 years and older. Presentation of the result per relevant age/sex group would be too detailed; for each age/sex group there are highly significant differences between practices (no exceptions), while for most of the indicators the differences between the years are not consistent over the practices,

although there is a general decrease in the number of home accidents (1981: 267, 1982: 236, 1983: 200: medians).
This decrease, however, cannot be found in all practices consistently. An exception is the number of accidents of males of 10-34 years and 35-54 years; here the decrease in the period 1981-1983 is found in a significant number of cases.

Sport injuries

There are two relevant age categories; 5-24 years and 25-54 years (males + females). Rates per 10 000.

		1981	1982	1983
5-24 years:	Median	215	365	327
	Lowest value	20	9	0
	Highest value	520	794	1037

Tests:
5-24 y. Interpractice differences $X^2=97.88$ df=41 $p<.001$
5-24 y. Differences between years $X^2=26.14$ df= 2 $p<.001$

25-54 years:	Median	117	198	198
	Lowest value	0	8	0
	Highest value	411	430	742

Tests:
25-54 y. Interpractice differences $X^2=95.76$ df=41 p .001
25-54 y. Differences between years $X^2=21.39$ df= 2 p .001

The first year displays the lowest incidences; the second year is the highest (for the 5-24 age group). These differences are found between all practices, while the differences among the practices are also consistent.

Myocardial infarction (suspicion of)

The relevant age category is 35 years and older for males and females separately. Rates per 10 000.

		1983	1984	1985
Males:	Median	85	77	78
	Lowest value	0	0	0
	Highest value	242	228	277
Females:	Median	35	33	27
	Lowest value	0	0	0
	Highest value	234	164	205

Tests:

Interpractice differences males $X^2=56.32$ df=38 p= .028

females $X^2=69.22$ df=38 p= .002

Differences between years males $X^2= 0.48$ df= 2 p= .48

females $X^2= 3.29$ df= 2 p= .19

There are no striking differences between the years (the first year somewhat higher, perhaps some prevalence in the incidence rates) but the differences between the years are not consistent among the practices. The differences between the practices are consistent, as usual. The differences between the practices are again striking; from zero to 2 percent of the population.

Depressions

Here the frequencies allow detailed analysis per year for different denominators. Relevant age groups are 15-34 years and over 35 years for males and females separately. Rates per 10 000.

		1983	1984	1985
Males:				
15-34 y.:	Median	34	16	26
	Lowest value	0	0	0
	Highest value	316	296	223
>35 y.:	Median	80	55	43
	Lowest value	0	0	0
	Highest value	584	363	279
Females:				
15-34 y.:	Median	58	61	56
	Lowest value	0	0	0
	Highest value	1106	855	627
>35 y.:	Median	104	97	71
	Lowest value	0	0	0
	Highest value	1166	586	299

Tests:

Interpractice differences:	M 15-34 y.	$X^2=78.79$	df=38	p<.001
	>35 y.	$X^2=70.80$	df=38	p=.002
	F 15-34 y.	$X^2=84.52$	df=38	p<.001
	>35 y.	$X^2=95.39$	df=38	p<.001
Differences between years:	M 15-34 y.	$X^2=8.25$	df=2	p=.02
	>35 y.	$X^2=8.26$	df=2	p=.02
	F 15-34 y.	$X^2=1.60$	df=2	p=.45
	>35 y.	$X^2=10.03$	df=2	p=.007

With the exception of depression rates for women of 15-34 years, for whom practically no differences between the years exist, the differences

found between the years are being found consistently among the practices.
The interpractice variation is considerable (lowest rates zero, whereas the highest rates indicate that over 10% of the relevant practice population may be judged as being depressive).

Sterilization

The relevant population is 25-54 years, males and females separately, recording period 1981-1985. Rates per 10 000.

	1981	1982	1983	1984	1985
Males:					
25-54 y.:					
Median	120	91	80	89	74
Lowest value	0	0	0	0	0
Highest value	337	309	304	230	335
Females:					
25-54 y.:					
Median	103	89	91	88	51
Lowest value	0	0	0	0	0
Highest value	388	320	202	222	180

Tests:		
Interpractice differences:	M X^2=123.03	df=39 p<.001
	F X^2= 94.36	df=39 p<.001
Differences between years:	M X^2= 7.84	df= 4 p=.10
	F X^2= 26.18	df= 4 p=.001

The differences between the years for males are less consistent (p=.10) than for females (p=.001). Sterilization with females seems to decline over the years. This decreasing tendency is consistent among all the practices. The differences between the practices for both indicators are consistent over the years.

Cervical smears

The relevant denominator is 20-34 years and 35-54 years. The item was recorded from 1981 to 1985. Rates per 10 000.

	1981	1982	1983	1984	1985
20-34 years:					
Median	108	144	119	113	127
Lowest value	17	0	0	0	0
Highest value	1206	863	716	828	769
35-54 years:					
Median	259	280	325	280	258
Lowest value	0	0	0	0	0
Highest value	387	1467	2393	1160	1499

Tests:

Interpractice differences:	20-34 y.: X^2 =	168.78	df=39	p .001
	35-54 y.: X^2 =	158.04	df=39	p .001
Differences between years:	20-34 y.: X^2 =	3.42	df= 4	p=.49
	35-54 y.: X^2 =	11.26	df= 4	p=.02

According to the test results, the fluctuations over the years for some cervical smears in the 20-34 age group cannot be traced back to individual practices, whereas for the 35-54 age group a significant difference is found. Here the differences between the years can for a part be followed in individual practices. Again the extreme rates are surprising; from no smears at all to over 20% of the relevant population in one year. No wonder that the test of interpractice differences is highly significant.

Finally, there are some indicators that have values so low that it is useless to test the differences between the years and the practices. In order to obtain rates that have some stability, the information has to summed over the whole recording period.

Suicide (attempted)

The low number of suicide attempts makes it necessary to use the whole recording period 1981-1985 instead of separate years. Testing of interpractice variability over the years is not applicable. The relevant age groups are 10-34 years and 35 years and older (M+F). Rates per 10 000 oer year.

	Median	Lowest	Highest
10-34 years (M+F)	34	0	254
35 years and older (M+F)	40	0	116

The differences between the practices are strong, from zero to 1 or 2.5% of the relevant age groups.

Diabetes mellitus

For this item the relevant age/sex group is over 35 years of age (M+F). Because of the low numbers we use the whole recording period (1981-1983). Testing is not applicable. Rates per 10 000 per year.

	Median	Lowest	Highest
35 years and older (M+F)	27	0	88

Parkinson's disease

Again a rarely occurring condition (like the two previous items). The rates over the years have been accumulated (1981-1985). The relevant denominator is (M+F) 55 years and older. Rates per 10 000 per year.

	Median	Lowest	Highest
55 years and older	4	0	59

The highest ranking practice seems to have discovered 59 cases per 10 000 in 5 years' time, the lowest ranking none. This observation is misleading, however, because the denominator used could be 20 times

larger than the actual population, for instance in a standard single-handed practice of 2500 people. The actual differences in that case would be between zero cases and three, i.e. 0.6%

Conclusions

The extreme differences between the practices form the most striking elements in this section; for some items the numbers of events ranks from zero to over 20% of the relevant sub-population in one years' time. Interpractice variability is, as we would expect, the predominant feature of the items presented.

Our method of testing also gave some insight into the composition of the national aggregated values of the events recorded. For some events the differences between the years could be traced back to similar tendencies in a significant number of the recording practices, while for other items the national differences apparently were the results of various fluctuating patterns in the individual practices.

For some items the differences between the years were not very marked (morning-after pill), but for other items recorded it is quite important to be able to state whether a phenomenon is increasing or decreasing or has remained stable (sterilization for instance).

A condition is that events do have to occur with a certain minimum frequency in order to be able to state that there are differences between the years. For three items (suicide attempts, new cases of diabetes, new cases of Parkinson's disease) the number of cases was insufficient for the analysis of differences between practices and over time.

3.4. Patterns of recording

In the previous section we have seen that for each item there is a substantial range in the numbers recorded. In this section we deal with the question whether there is some pattern or there are some patterns in recording habits of the practices.

The simplest situation would exist if practices displayed a tendency to report either high or low rates. In that case the correlations between the

items over the practices would be high, using ranking correlations to avoid statistical trouble with extreme values.
In Table 3.2. the Spearman rank correlation coefficients between the items are presented for 1983. To avoid too many indicators we have averaged the indicators per sub-population if some extra distinction between age categories had been made.

It is certainly not true that there are consistently high and low recorders; we see only high correlations between the rates for males and females of the same item and only a few others. Accidents (males) correlate with sport injuries (.58) and depressions (.59(f), .45(m)) with similar coefficients for females. Sport injuries correlate with depressions (.65(f), .59(m)) and myocardial infarctions (.48(m)), while depressions (males) and myocardial infarctions are also interrelated (.50).

Table 3.2.: Spearman rank correlation coefficients of items recorded by Dutch sentinel practices in 1983

	INFL	CERV	STm	STf	MAP	DEPm	DEPf	INFm	INFf	SPIN	ACCm	ACCf
INF1	1	-.12	.19	.08	.15	.40	.34	.15	.27	-.40	.29	-.28
CERV		1	.18	.08	-.02	.09	.23	.38	.02	.28	.25	-.25
STm			1	.45	.12	.17	.19	.16	-.21	.33	.13	.14
STf				1	.17	.25	.31	.14	.02	.22	.29	.33
MAP					1	.24	.14	.06	.27	.17	.32	.18
DEPm						1	.84	.50	.50	.59	.45	.30
DEPf							1	.36	.34	.65	.59	.46
INFm								1	.54	.48	.29	.19
INFf									1	.30	.40	.26
SPIN										1	.58	.41
ACCm											1	.89
ACCf												1

INFL = influena, CERV = cervical smears, STm = sterilization males, STf = sterilization females, MAP = morning-after pill, DEPm = depression males, DEPf = depression females, INFm = infarction males, INFf = infarction females, SPIN = sport injuries, ACCm = accidents males, ACCf = accidents females

If there is no general tendency to report either low or high frequencies, there may be some selective pattern. In an ad hoc tentative analysis we have explored this possibility. We make a distinction between possible and crude determinants of the incidence of the events and an indicator of the doctor's possibly selective interest in the events.
For the first part in this reasoning we used the following elements:
- the degree of urbanization of the practice setting;
- the region of the practice.
The second part (the doctor's interest) is indicated by the degree of involvement in the Sentinel Practice project measured by the fact whether the doctor was a regular, irregular or non-attender at the annual meeting where the items to be recorded in the year to come are discussed.
Perhaps this analysis will be too crude and perhaps a more sophisticated analysis should be performed with specific factors that possibly influence the recording rates, but that would take us too far away from our reliability and consistency analysis.
In Tables 3.3.-3.5. the average ranking is presented for the separate urbanization and regional groups and for the regular versus irregular and non-attender groups. The data are again for 1983 (the year in which the largest number of items was recorded). When there were several sub-populations, we have averaged the rank numbers.

According to the Kruskal-Wallis test there are no significant differences between the regions; perhaps and possibly with the exception of morning-after pills (low in north and west, high in south and east) and male sterilizations (same pattern).

Table 3.3.: Average rank number per region per item recorded (data for 1983)

	Regions 1.	2.	3.	4.	x2*	P
number of practices	5	9	19	9		
Influenza	19.8	22.8	19.3	25.9	1.98	0.58
Cervical smears	22.2	27.2	20.8	16.9	3.31	0.35
Sterilization (males)	16.9	24.0	18.3	28.2	5.04	0.17
Sterilization (females)	18.4	20.5	21.8	23.7	0.67	0.88
Morning-after pill	12.0	26.1	19.4	26.7	6.44	0.09
Depression (males)	28.4	20.2	18.0	26.3	4.57	0.21
Depression (females)	25.4	18.1	19.7	26.4	3.04	0.39
Myocardial infarctions(M)	24.4	28.0	20.0	16.5	4.58	0.21
Myocardial infarctions(F)	26.6	22.7	20.5	19.6	1.30	0.73
Sport injuries	30.0	24.6	18.2	20.8	4.40	0.22
Accidents (males)	19.5	22.7	19.1	26.4	2.39	0.50
Accidents (females)	19.8	18.8	20.3	27.7	2.99	0.39

* Testing of differences between regions by means of the Kruskal-Wallis test.

1. North = Provinces of Groningen, Friesland, Drenthe
2. East = Provinces of Overijssel, Gelderland, Southern IJsselmeer polders
3. West = Provinces of North Holland, South Holland, Utrecht
4. South = Provinces of Zeeland, North Brabant, Limburg

Table 3.4.: Average rank number per urbanization group per item (data for 1983)

Urbanization groups	1.	2.	3.	x2(2)*	P
number of practices	8	21	12		
Influenza	15.4	19.8	26.8	4.82	0.09
Cervical smears	30.5	16.6	22.3	7.99	0.02
Sterilization (males)	27.3	20.1	18.3	2.94	0.23
Sterilization (females)	21.6	17.8	25.5	3.39	0.18
Morning-after pill	18.8	20.7	23.0	0.63	0.73
Depression (males)	23.3	18.8	23.4	1.47	0.48
Depression (females)	21.1	19.6	23.3	0.74	0.69
Myocardial infarctions(M)	25.0	18.4	22.9	2.17	0.34
Myocardial infarctions(F)	14.8	21.6	24.1	3.05	0.22
Sport injuries	25.3	19.1	21.4	1.53	0.47
Accidents (males)	17.3	19.6	26.0	3.17	0.21
Accidents (females)	15.0	20.0	26.8	5.02	0.08

* Testing of differences between regions by means of the Kruskal-Wallis test.

1. Rural areas;
2. Urbanized areas and towns;
3. Cities over 100000 inhabitants

A differentiation into degrees of urbanization does not yield many conclusions. For cervical smears the incidence in rural areas is significantly higher than in more urbanized areas, while the rates for influenza are possibly higher in the cities. A similar (tentative) pattern is found for accidents in the home evironment.
In Table 3.5. finally the influence of the "interest" is tentatively measured.

Table 3.5.: Average rank number for recorders with much/little or no interest per item in the project (data for 1983)

	Interest/attention			
	Much	Little	T*	P**
number of practices	21	21		
Influenza	19.1	23.9	-1.27	0.20
Cervical smears	21.1	21.9	-0.19	0.85
Sterilization (males)	19.6	23.4	-1.02	0.31
Sterilization (females)	21.8	21.1	0.18	0.86
Morning-after pill	20.1	22.9	-0.72	0.47
Depression (males)	20.3	22.7	-0.64	0.52
Depression (females)	19.0	24.0	-1.35	0.18
Myocardial infarctions(M)	23.0	20.0	0.81	0.42
Myocardial infarctions(F)	23.0	20.0	0.81	0.42
Sport injuries	19.9	23.1	-0.84	0.40
Accidents (males)	18.3	24.7	-1.70	0.09
Accidents (females)	18.4	24.6	-1.62	0.10

* The difference between the two groups was tested by means of Wilcoxon's test
** The P-values are two-sided

With the exception of myocardial infarctions, the average rank order in the irregular and non-attender groups is higher. This means that regular attenders of the annual meeting tend to report fewer cases. The differences per item recorded, however, can hardly sustain rigorous testing. The only possible difference can be found for the home accidents. It is not true that regular participation in the annual meeting does increase the number of reported events; the opposite might be the case.
We must conclude that we cannot find a clear pattern of selective recording; we can only state that the recording is selective, because the same practices appear sometimes as high and sometimes as low recorders.

3.5. Conclusions and recommendations

The first conclusion is that national 'average' number should be handled with care. The interpractice variability is such that a national average may change considerably if accidentally some high or low extremes are removed from the distribution. This applies even more strongly to the habit of presenting results for regional sub-groups of practices. As these regional groups contain only a handful of practices, the number of practices participating in the Dutch Sentinel Practice project (approximately 45) does not allow further subdivisions.

A second warning concerns the fluctuations of data over time; although the figures presented show a certain stability over time, fluctuations between practices have to be considered before statements about 'trends' can be published.
One should make certain that a tendency over time is reflected in the data per practice (and not the result of a more or less random process in which practices decline and others increase their values) before a trend can be established.

Before any conclusion can be drawn the collected data should be corrected for missing periods of recording, except when the event recorded can be delayed until the doctor is back in practice.
For events with an urgent character, the specific way of correction depends on the fluctuations over the year. If the event fluctuates strongly (like influenza), then the missing data should be corrected precisely; for less peaked events a simple arithmetic correction will suffice.
Events that occur rarely are not very suitable for recording either. One needs long recording periods (3-5 years) for topics like Parkinson's disease or suicide attempts. It is also impossible to establish the consistency of interpractice differences over the years.
In order to be able to establish recording reliability, it is to be recommended for each of the topics recorded that events are recorded for at least several years (three for instance).

Recommendations

Recommendations can be divided into several categories:
Recommendations about:
- the number and distribution of practices;
- the items recorded (content and period);
- the relevant denominator;
- the presentation of results.

Number and distribution of practices.

Drawing of conclusions is hampered by the usually low number of practices, because of the considerable variation between practices for each item recorded. Practical possibilities, however, do not allow a substantial increase of the number of practices; a desirable number would be double the present number; 90 to 100 practices.

For each subdivision that should be studied the minimum level is 25-30 practices. For the Dutch situation this would mean 25 practices per regional group, implying different proportions of the population for each regional group. For each urbanization category, the same group size is desirable. With 25 cases per group a non-parametric test like the sign test (two-sided testing) is significant at 5% level when 17 out of 25 observations have the same sign and 8 have a different sign. With 15 practices this relation is 12 versus 3, while with the actual average of 10 practices the number of similar signs should be 9 versus 1. It is clear that this will rarely be the case, given the considerable variability between practices.

Items recorded (content and period)

The criteria for inclusion of an item in the recording routine of the practice that were valid until now should certainly not be changed:
- relevant topic (policy, scientific);
- clear-cut criteria for inclusion or exclusion of cases;
- the recording should fit into the general practitioner's daily practice.

New and additional criteria are:
- the incidence and prevalence should not be too low; in a standard (single-handed) practice at least 4-5 case per year should be

discovered, otherwise aggregated statistics are too unreliable. In the case of low incidence the recording period should be extended for several years.
- in order to establish reliability, the recording period should be at least two and preferably three years. The first year of recording the incidence of some defined event contains prevalent cases.

Even applying these criteria, one will be confronted with a considerable variation for each item recorded. This cannot be avoided; the only possible recommendation here is that the inclusion of each new item should be accompanied by a limited set of research questions that aims at explaining the differences between the practices for this item. Examples are: for the incidence of 'cervical smears' it is important to know whether there is a population screening project in operation in the area. For the incidence of 'accidents' the distance from the nearest first-aid clinic will be important, and so on. The least one can do is to ask the doctors why they report so few cases and ask the others why their colleagues report fewer or more cases than they do themselves.
It will not always be so self-evident as to what might explain the differences between practices, but one should try anyway.

Relevant denominator
For reasons of comparison between the items recorded, the common practice of producing rates for the whole population is certainly useful. For analytical purposes it is preferable to delete irrelevant age (and sex) categories in the denominator. Comparison between practices is corrected in that way for differences in the age/sex compositions of the practice population.
One only has to bear in mind that actual denominators (per 10 000 of the relevant population) should not differ too much from the real size of the relevant age group, for instance in a standard single-handed practice of 1000-3000 patients.

The presentation of results

It goes without saying that one should devote substantial energy to checking the existing and completing the missing information before one produces annual results.

For each item recorded it should be established whether a delay in presenting the problem is probable or possible in order to apply the right type of correction. The obvious variation of the results should result in presentation of median values instead of averages, accompanied by extreme values and some measure of variability.

Results for sub-groups should be presented only if the number of practices is not too low (20-25 practices).

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PART II

INTRODUCTION

Like the development of a small village that in a few decades has grown into a town of reasonable size, the environment in which the general practitioner used to work has changed in the course of time. The GP worked chiefly on his own, and his principal professional partners were the hospital with a few wards, the midwife and the health resort. After the Second World War a network of aid agencies gradually developed that nowadays are almost too much to take in. Paramedics, clinics, ambulance services, counseling for drug addicts, crisis centres, regional institutes for ambulatory mental health care, sport medicine, alternative medicine, insurance medicine etc., have all settled in the vicinity of the GP. The hospital, the modest parish hall of olden days, has become a real city hall with numerous counters and services.

Despite all social and technological progress the general practitioners still occupy an important position within that network, and their work has remained wide-ranging and non-specialistic. In part the GPs activities have changed: in addition to the medical/curative help given, the counselling of patients in the maze of social services and the cooperation with other aid workers occupies an ever-larger place. Thanks to the organization of Dutch health care, for which the general practitioner functions as the point of entry, GPs still have a very good view of the situation regarding morbidity in the Netherlands. In addition, and likewise thanks to their unique position within health care, Dutch general practitioners can also give excellent signals about the disquiet and fears felt in society with regard to health and disease. Recent examples of these are Aids and environmental problems.

In the past twenty years Continuous Morbidity Registration has witnessed these developments. Over sixty subjects of varying nature have appeared on the weekly return of the sentinel stations during this period, some of which as incidental investigations. This may not seem many, but it must be borne in mind that the length of registration of the individual topics has also varied, depending on the aim pursued. Only a minority of the

subjects were registered for just one year. Most subjects reappeared for several successive years on the weekly return, sometimes also with a break of a few years. Four subjects, viz cervical smear, prescription of the morning-after pill, sterilization and influenza, were even registered for longer than ten years, the last one continuously.

Not only the subjects differed, but also the manner of registering and analysing. The activities of the spotter physicians were not always confined simply to keeping a tally of a disorder or action (spontaneous abortion and partus immaturus, accidents in the private sector, influenza and hay fever). The activities also consisted of supplying supplementary data (suicide, cerebro-vascular accident) or assistance with further research (Parkinson's disease, depression, myocardial infarction). Of the data from the sentinel station registration, not only the frequencies - published in the annual reports - were calculated. The data also served as a supplement to or for comparison with data from other registration systems (malignancies, rubella, discharged psychiatric patients), for surveillance of a certain disease (influenza), for evaluation of health care policy (measles) and preventive activities performed by the GP (cervical smear), and to establish trends (ulcus pepticum, myocardial infarction). However, the sentinel station registration also presented the possibility of analysing actions by GPs (prescription of medicines, referrals) so as to be able to reply quickly and with simple means to questions of topical interest (mononucleosis infectiosa, persons regretting sterilization, mastitis puerperalis), to quantify new health care problems (drug-use, battered child syndrome, euthanasia, anorexia nervosa and bulimia, incest) and to perform a case-control study (Parkinson's disease).

Various bodies asked for inclusion of a certain topic in sentinel station registration. In particular the authorities (Ministry of Welfare, Public Health and Culture, Chief Medical Office of Health) and university institutes made frequent use of this. But also non-university institutes (NIVEL, Netherlands Heart Foundation, Consumer and Safety Foundation, Association for Sport Medicine) and patient groupings (diabetes, psoriasis) called on sentinel station registration. Indirectly there was also international interest: on the

part of the WHO (influenza) and the International Primary Care Network founded in 1985 (international otitis media study).

It is not easy to divide all the registered subjects into clear groups. Both disorders and general practitioner actions were registered. Within these two main groups fall areas that have appeared more than once on the weekly return. For the disorders these are infectious diseases, mental health problems and accidents. Within general practitioner actions prescriptions and referrals came up more frequently. However, many subjects relate both to the question about morbidity and the activities of the GP. This particularly applies to the frequently occurring registration topics with reference to family planning.

In the following chapters the results of over twenty registration topics from sentinel station history are further described. The choice is more or less arbitrary. "More" because other subjects could also have been chosen to illustrate the variety of questions and objectives, "less" because, as described above, that variety had to be made to stand out in optimum fashion.

4. GENERAL PRACTICE AS A SOURCE OF INFORMATION ON THE INCIDENCE OF INFECTIOUS DISEASES

Though infectious diseases may no longer determine mortality in the developed countries, this group of disorders is still abundantly present in the morbidity. In countries with developed health care considerable time and money are devoted to the incidence of a number of infectious diseases. In countries in which less money is available for health care, the realization of an adequate vaccination programme often has priority.

Infectious disorders form part in general of the "common diseases" of which the trend depends on the strength of the causal micro-organism and the resistance of the host to overcoming the micro-organism and surviving the disease. There is effective medication or medical procedures against certain causes of infectious diseases; other infectious diseases again can be prevented by means of vaccination of the population, and finally there is a group of causal agents against which there is no protection.

In the case of an infectious disorder, in which there is rarely any question of an acute need to call in specialist medical aid, in general the family doctor is consulted as the first and only physician. On the basis of his insight into the epidemiology of the infectious diseases, his own examination of the patient, if necessary supplemented by further diagnosis, and with the availability of a number of effective medicines, the general practitioner is capable of counselling and treating the greater part of the patients with an infectious disease. A candida infection of an infant, the mononucleosis infectiosa of a young adult and the pneumonia of an elderly person; each of these disorders is in principle in safe hands with the general practitioner and rarely needs specialist care.

This situation has a number of consequences: the most important one is that for a large number of infectious diseases general practice is the only

place in health care where information can be obtained on the occurrence, trend and treatment of such a disease.

In this chapter a number of syndromes of an infectious nature are discussed that have been registered by means of the weekly return or an incidental investigation.

There were differing reasons for the registration of the infectious diseases to be discussed, which will be considered in the relevant sections. These vary from surveillance as part of a project of the World Health Organization to checking the effectiveness of measures taken under the national vaccination programme.
Registration by means of the Continuous Morbidity Registration Sentinel Stations offers the possibility of answering questions of a varying nature regarding infectious diseases, answers that cannot be given in any other way than on the basis of registration in general practice.

4.1. Influenza(-like illness)

A.I.M. Bartelds and H. Bijkerk

4.1.1. Why reporting of influenza?

Influenza epidemics such as those of 1918 and 1946 will long be remembered by people. Morbidity and mortality associated with influenza may be high, especially when the influenza virus is 'shifted'.
The aim of the WHO Influenza Programme is global surveillance of influenza to monitor which influenza strains affect the population and to what extent. It is aimed too at giving early warnings of outbreaks of influenza epidemics.

Resolution WHA 22.47, adopted by the Twenty-second World Health Assembly of the World Health Organization in July 1969, requests Member States: (i) to inform the Organization promptly by telegram or telex of the occurence of any outbreak of louse-borne typhus, louse-borne relapsing fever, VIRAL INFLUENZA or paralytic poliomyelitis in any areas of its territory; and (ii) to supplement these reports, as soon as possible, by information on the source and type of the disease and the number of cases and death (WHO, 1971).

Therefore, it is suggested that each national administration should have a system for the national surveillance of influenza.

4.1.2. Surveillance of influenza(-like illness) in the Netherlands

The system of influenza surveillance consists of several parts: laboratory data, epidemiological indices and reporting procedures. Notifications of influenza from clinicians and general practitioners should be corroborated by reports from laboratories. Laboratory confirmations may be an indication of an influenza etiology of an outbreak, if there is no evidence of other agents. Such notifications of influenza cases provide valuable insight into the trend of case incidence.

Laboratory data

The laboratory part of the national surveillance system in the Netherlands is taken care of by the National Influenza Centre in Rotterdam and nine other laboratories for virology. These laboratories are well distributed over the country: one in the northern province group, two in the eastern provinces, five in the western provinces and two in the southern provinces. This complies well with the distribution of the number of the spotter physicians over the country.

Sentinel stations

The sentinel stations of Continuous Morbidity Registration have, from the beginning in 1970 onwards, been the most obvious instrument for collecting data on the incidence of influenza(-like illness) in general practice. A 'weekly return' system for the reporting is used. The 'weekly returns' are forwarded to the Netherlands Institute of Primary Health Care (NIVEL). At times when an epidemic is expected or occurring, a weekly inquiry by phone is made to speed up the collection of the data. The information is forwarded every week to the Chief Medical Office of Health for reporting purposes.

Initially the data collected were supplemented by serological and virological data from samples taken 'on the spot' by a mobile unit. This mobile unit from the National Influenza Centre 'rushed out' as soon as sentinel practices reported a patient with an influenza-like illness; an attractive method indeed for combining tentative diagnosis of influenza and virological investigation without much patient-laboratory delay. This system was nevertheless abandoned in view of the cost involved and the relatively small benefits.

Criteria for the diagnosis

An outbreak of influenza will be superimposed on the incidence of influenza-like illness that may be caused by a variety of other micro-organisms. Therefore, such an outbreak will automatically be spotted by sentinel stations alerted to report such patients.

Influenza-like illness was put on the list of reportable items for the sentinel stations and has remained so to the present time.

In this connection it is understood that such surveillance should include the reporting of data on the serology and virology on influenza by laboratories for virology.

Right from the start the same criteria were used for a case of influenza-like illness (Pel, 1965):

a An acute onset, i.e. at most a prodromal stage of three to four days (including pre-existent infections of the respiratory tract at a non-pathogenic level).
b. The infection must be accompanied by a rise in rectal temperature to at least 38 degrees C.
c. At least one of the following symptoms must be present: cough, coryza, sore throat, frontal headache, retrosternal pain, myalgia.

These criteria are roughly the same as the criteria used by the general practitioners who contribute to the weekly returns service of the Birmingham Research Unit of the Royal College of General Practitioners (Birmingham Research Unit, 1977). This weekly returns service includes among its diagnostic categories epidemic influenza, influenza-like illness and common cold (Fleming & Ayres, 1988).

Reporting

As soon as there is an indication of an outbreak of influenza the weekly incidences together with laboratory data are reported to WHO Headquarters in a frequency depending on the spread and extent of the epidemic.

Reporting by sex was terminated after 1976, since sex appeared to be of no significance. The data are reporting as age-specific, weekly incidence by province and urbanization group. (WHO receives only the bare data on the weekly incidences.)

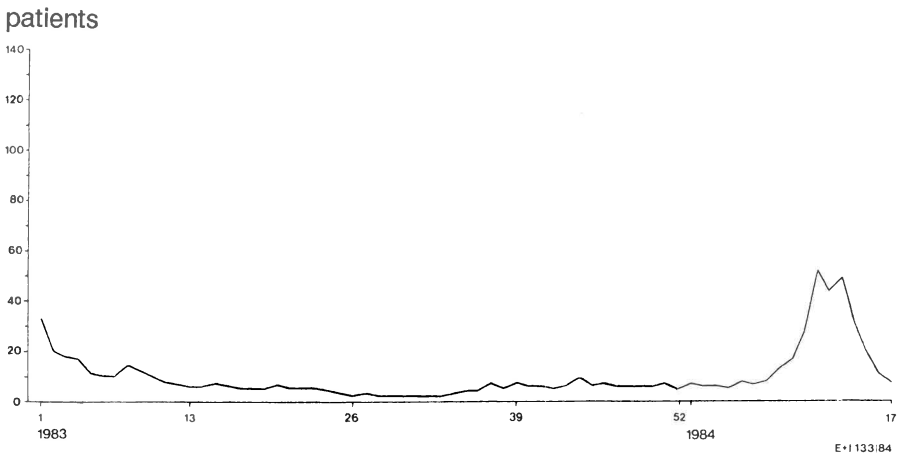
A survey of the weekly incidences for the period 1970-1987 will not be given in this chapter, since these follow the worldwide trends during that period. Those interested are referred to the relevant annual reports.

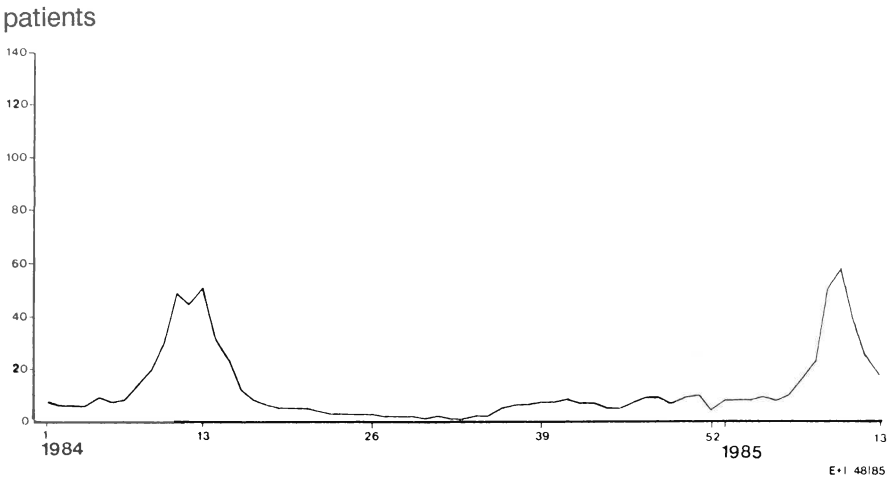
The prompt reporting to WHO fosters the worldwide surveillance of influenza, thereby facilitating the distribution of information on the

beginning and the course of an epidemic as well as on the causative influenza strains.

The weekly incidences for the influenza seasons 1983-1984 and 1984-1985 are given in Figure 4.1. as an arbitrary example of a relatively small epidemic.

Fig. 4.1.: Number of patients with influenza (-like illness) per week and per 10 000 inhabitants, 1983, 1984, 1985 and 1985 (up to and including the 13th week)





Extrapolation to the Dutch population

The incidences calculated from the results of Continuous Morbidity Registration are extrapolated to the total Dutch population (Table 4.1.). It must be borne in mind that the spotter physicians are a selected group. However, this does not seem to be an important factor for an illness like influenza. One should also realize that an unknown number of patients do not consult their general practitioner. Therefore, the extrapolated numbers are to be regarded as minimum numbers of cases.

The table shows the peak years 1970, 1971, 1972, 1974 and 1978 caused by shifts or drifts in the circulating influenza virus strains.

Table 4.1.: Extrapolation of weekly incidence of influenza-like illness to the Dutch population, annual figures

Year	Number of cases per 10 000 inhabitants	Total number for the Netherlands
1970	904	1 179 000
1971	889	1 173 000
1972	779	1 038 000
1973	699	939 000
1974	885	1 199 000
1975	695	945 000
1976	717	987 000
1977	575	797 000
1978	829	1 152 000
1979	438	613 000
1980	425	599 000
1981	491	697 000
1982	497	710 000
1983	396	568 000
1984	502	722 000
1985	464	671 000
1986	630	915 000
1987	365	533 000

4.1.3. Discussion

One may ask what the benefits are of a surveillance of influenza as is described here. The elements of the system are:

1. the 'weekly returns' system for the reporting of influenza(-like illness) as it exists in Great Britain and the Netherlands,
2. the laboratory confirmation of cases by laboratories spread all over the country, and
3. the possible use of other epidemiological indices such as sickness absence.

In a paper of the Birmingham Research Unit of the Royal College of General Practitioners (Birmingham Research Unit, 1977) it is stated that 'the patterns of all rates (morbidity, deaths, sickness absence and virus cultures) followed one another closely in this epidemic' (the epidemic from 3 December 1975 until 28 April 1976). The trends for morbidity rate are available at most seven days before any of the others.

The reported rates have, practically speaking, an important function as an early, if not earliest, consistent harbinger of an epidemic and its relative scale. The public and the medical profession can use the information for their own purpose. The usefulness of the morbidity data is conditional on the rate at which the data are available. By simple means, weekly recording and inquiring by phone, it is possible to have the data available within 24-48 hours of the end of the recording week.

At low cost an impression can be gained of the spread of influenza in the population. This impression is based on the clinical judgement of the general practitioner, which has proved to be reliable. There is no need to look for more sophisticated and more expensive ways of being informed about the spread of influenza in the population.

The reported morbidity also gives an opportunity to interpret what is happening with the influenza virus. A sharp rise in the weekly rates may suggest that an antigenic drift or shift of the virus has taken place. Confirmation by laboratory may prove this impression correct.

In relation to the morbidity data this strengthens the short-term forecasting of trends once the epidemic has actually started. The number of reported deaths can contribute to the interpretation of the severity of the epidemic.

The international surveillance of influenza fosters the production of influenza vaccines against strains antigenically different from the strains isolated in previous years. High-risk groups may therefore profit from early detection of such strains.
The spotter physicians will remain a prerequisite in such an early warning system.

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4.2. Mononucleosis infectiosa, measles and rubella(-like illness)

J. Fracheboud

Viral infectious diseases play a major role in the medicine of general practice. Many of these diseases are accompanied by fever, a feeling of malaise and an exanthem. Most are self-limited diseases and of fairly short duration. The general practitioner therefore probably sees only the tip of the iceberg. No causal therapy is possible and often too combating the symptoms is superfluous. It will be appreciated from this that supplementary diagnosis usually does not take place, despite the fact that an exact diagnosis on the basis of the clinical picture can be made only with difficulty. Certainty about the diagnosis can be obtained only by virological and/or serological examination, the results of which are often not known until after the end of the illness. Moreover, infectious diseases largely affect (small) children, which explains the reticence in using the above-mentioned diagnostic procedures.

From an epidemiological point of view this has to be regretted, because in this way a reliable picture can hardly be obtained of the infectious diseases that occur at general practitioner level, and also of their extent. True, certain infectious diseases are notifiable under the Infectious Diseases and Control of Causes of Disease Act. However, it is not known whether this requirement to report is reliably complied with. Indeed, the suspicion regularly arises that underreporting occurs. Despite this, the requirement to report proves to be a good instrument for signalling epidemics.

In the seventies mononucleosis infectiosa, measles and rubella received considerable attention, notably in the lay press too, for a variety of reasons. Mononucleosis infectiosa proved to be on the increase and attracted great interest in the media because the manner of infection ("kissing disease") and the often persistent tiredness appealed to the imagination. Science fell upon the quite recently discovered Epstein-Barr virus, the causal agent of mononucleosis infectiosa. Among general practitioners the Monosticon reaction, one of the diagnostic tests, was

called into question. In the same period the vaccination programme against measles was completed in the Netherlands after earlier vaccination programmes in other countries had proved successful. Somewhat earlier a start had already been made with vaccination against rubella. However, within the sentinel station registration rubella was of a different importance, namely the question about the extent of reporting of this legally notifiable disease.

This chapter on these three infectious diseases gives an impression of how different the questions behind them can be. In the case of mononucleosis the interest was directed towards the incidence and in particular towards a possibly rising incidence. As regards measles, the question about the elaboration of an intervention measure, viz. the vaccination programme, was in the foreground. And, as already stated, the rubella registration served as a comparison with the registration under the Infectious Diseases and Control of Causes of Disease Act.

It goes without saying that, depending on the questions put, the duration of the registration period will be different. Changes in the incidence of certain diseases cannot be noticed in one year; that requires registration over several years. For the comparison of the results of various registration systems with regard to a given disease a short duration of registration, in general a calendar year, is conversely sufficient. In what follows the results of the registration of mononucleosis infectiosa, of measles and of rubella(-like illnesses) will be discussed separately.

4.2.1. Mononucleosis infectiosa

In 1888 the German Emil Pfeiffer described for the first time a syndrome accompanied by fever, lymphadenopathy, sore throat and sometimes also enlarged liver and spleen, which he called "Drusenfieber" (Anon., 1980). Around 1920 Sprunt and Evans reported typical deviations in the white blood count that went together with this disease. In 1932 Paul and Bunnell discovered antibodies and in 1964 the Epstein-Barr virus was described for the first time. Confirmation of the clinical picture of mononucleosis infectiosa can consequently be obtained by examination of

the blood count and also serologically (positive Paul-Bunnell reaction or antibodies against the Epstein-Barr virus).

Mononucleosis infectiosa does not display any epidemic rise and is not dependent on seasonal influences. The disease manifests itself above all among the upper classes in the Western world and must be regarded as a kind of disease of civilization. Probably mononucleosis infectiosa often runs a subclinical course among children, in contrast with the adolescent age, in which the disease claims the majority of its victims. It is from this preferential age and the method of infection via droplets that the disease acquires its popular name "kissing disease". Mononucleosis is regarded as harmless but may sometimes result in months of convalescence.

In the seventies the impression prevailed that mononucleosis infectiosa was sharply increasing. Known incidence data dated from the sixties and amounted in Hodgkin to 1.4 suspect cases per 1000 NHS patients (50% serologically confirmed) (Hodgkin, 1963). Oliemans reported in his thesis an incidence of 0.4 per 1000 (Oliemans, 1969). The Rotterdam Municipal Medical and Health Service was still registering mononucleosis infectiosa at a later date (G.G. en G.D. Rotterdam, 1976).

The particular feature of mononucleosis infectiosa is that the occurrence of this disease cannot be derived from other registration systems. It is not legally notifiable, and in clinical morbidity registrations or mortality statistics mononucleosis infectiosa hardly ever occurs. Since most of the sufferers are still in an educational situation, absenteeism figures do not supply further indications either. Only a national registration at general practitioner level was capable of newly determining the actual incidence in the Netherlands and also of looking at regional differences.

In the period 1977-1979 mononucleosis appeared on the weekly return of the sentinel station registration. Reporting took place after the clinical diagnosis had been confirmed, either by a positive Paul-Bunnell reaction, or by a positive Monosticon reaction or a characteristic blood count. Prior to the registration period a discussion was conducted in the Nederlands Tijdschrift voor Geneeskunde in which doubts were voiced about the

specificity of the Monosticon test (Langenhuyzen et al., 1976; Siem et al., 1978). An inquiry was therefore held among the spotter physicians with the question which diagnostic method they preferred.

Results

Table 4.2. shows the number of cases of mononucleosis infectiosa during the three-year registration period.

Table 4.2.: Number of cases of mononucleosis per province and urbanization group, per 10 000 men and women, 1977-1979

		Province group				Urbanization group			Netherlands
		A	B	C	D	1	2	3	
Men	1977	8	32	15	7	14	15	16	15
	1978	19	25	14	18	18	15	22	17
	1979	8	23	16	11	13	16	17	15
Women	1977	12	48	16	11	25	16	20	19
	1978	16	35	12	15	25	15	16	17
	1979	17	28	15	11	16	14	23	17
Total	1977	10	40	16	9	20	15	18	17
	1978	17	30	13	16	21	15	19	17
	1979	13	25	15	11	14	15	20	16

Most cases are observed in the eastern provinces (province group B). In this province group women are usually more often the victims of mononucleosis infectiosa, but this is not confirmed in the other province groups. As regards the degree of urbanization, mononucleosis infectiosa seems to occur somewhat more frequently among women in rural municipalities. The overall incidence amounts to some 17 cases per 10 000 men and women per year in the Netherlands.

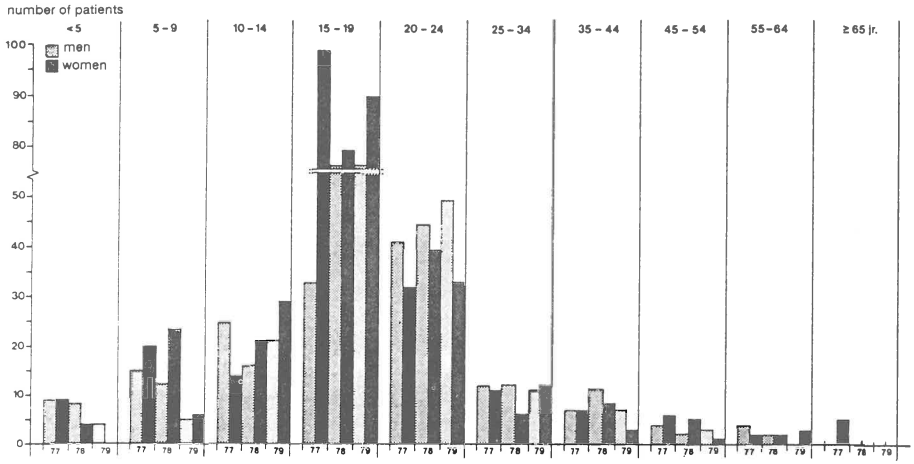
Figure 4.2. shows the distribution of the registered cases of mononucleosis infectiosa among age groups, likewise given per 10 000 men and women.

As expected, the peak lies between 15 and 24 years, among the girls notably in the 15-19 age group. The inquiry among the spotter physicians regarding the use of diagnostic methods in connection with mononucleosis infectiosa is reproduced here only briefly. 70% of the sentinel stations used the Monosticon reaction. However, with a few exceptions this was always combined with the Paul-Bunnell reaction and/or the blood count.

Discussion

The value of this registration consists above all in establishing the incidence of a disease of which the clinical picture was confirmed by supplementary diagnosis. It is important in this connection that this confirmation was not based purely and simply on a diagnostic test that was under discussion. In the great majority of the cases in which use was made of the Monosticon reaction another laboratory determination was also performed, so that a great degree of reliability can be ascribed to the registration of mononucleosis infectiosa by the sentinel stations.

Fig. 4.2.: Number of patients with mononucleosis infectiosa by age group, per 10 000 men or women, 1977-1979



Over the years 1977-1979 the incidence was around 17 per 10 000 inhabitants of the Netherlands, barely displaying any fluctuations. This tallies with the fact that no epidemic rise of mononucleosis infectiosa is known. During the three-year registration period no trend can be detected. However, in view of the short duration no premature conclusion may be drawn. On the other hand, the Rotterdam registration by the Municipal Medical and Health Service was not able either to determine a rise in the frequency of mononucleosis infectiosa in the period 1968-1978 (G.G. en G.D. Rotterdam, 1978). On the basis of the clinical picture alone approx. 35 cases of mononucleosis infectiosa per 10 000 inhabitants were registered there annually.

Compared with Hodgkin and Oliemans, who calculated an incidence of 7 and 4 per 10 000 inhabitants respectively, the results of the sentinel station registration work out at a clearly higher level. The interpretation of these differences is not so simple. Hodgkin bases his data on one practice, and in the case of Oliemans it is not clear whether the diagnoses are confirmed or not by laboratory determinations. It would be tempting to explain the difference in incidence by the increasing occurrence of mononucleosis infectiosa. However, this is contradicted by the data of the Rotterdam sentinel stations. In addition, it is improbable that the incidence of a disease strongly increases within a period of ten years and then immediately stabilizes again at a higher level.

In the sentinel station registration no convincing regional differences were found. The more frequent occurrence of mononucleosis infectiosa in the eastern provinces of the Netherlands, for which so far no explanation is available, cannot be made responsible for the higher overall incidence in comparison with Hodgkin and Oliemans, since the other provinces also showed frequencies of above 7 per 10 000 inhabitants.

The remaining analysis of the sentinel station data adds little that is new to what is already known about mononucleosis infectiosa. The disease displays no seasonal peaks, has no obvious preference for a certain sex and occurs most frequently around the age of 20. Unlike the developing countries, where the causal agent, the Epstein-Barr virus, occurs

endemically, in Western societies a shift in the manifest disease to later ages is occurring. Infection at a younger age is usually accompanied by a subclinical course and probably results in lifelong immunity. Epstein himself therefore calls mononucleosis infectiosa "delayed natural primary infections" (Epstein, Achong, 1977).

Summarizing, it may be said that in the registration period 17 out of 10 000 inhabitants of the Netherlands annually undergo mononucleosis infectiosa. These are above all young people of both sexes aged between 15 and 24. Reports that the disease is on the increase cannot be confirmed on the basis of this registration. It seems a good idea to repeat the registration 10-15 years after this first registration period.

4.2.2. Measles

Measles, characterized by a generalized maculopapular exanthem, fever, catarrhal symptoms and possibly Koplik's spots, is regarded as one of the more serious children's diseases. Complications of regular occurrence are otitis media and bronchopneumonia. On estimate, in one out of 1000 cases encephalitis occurs, often with permanent consequences. Likewise about one out of 1000 measles infections in the Western world proves fatal; in developing countries this proportion can rise to 10 percent.

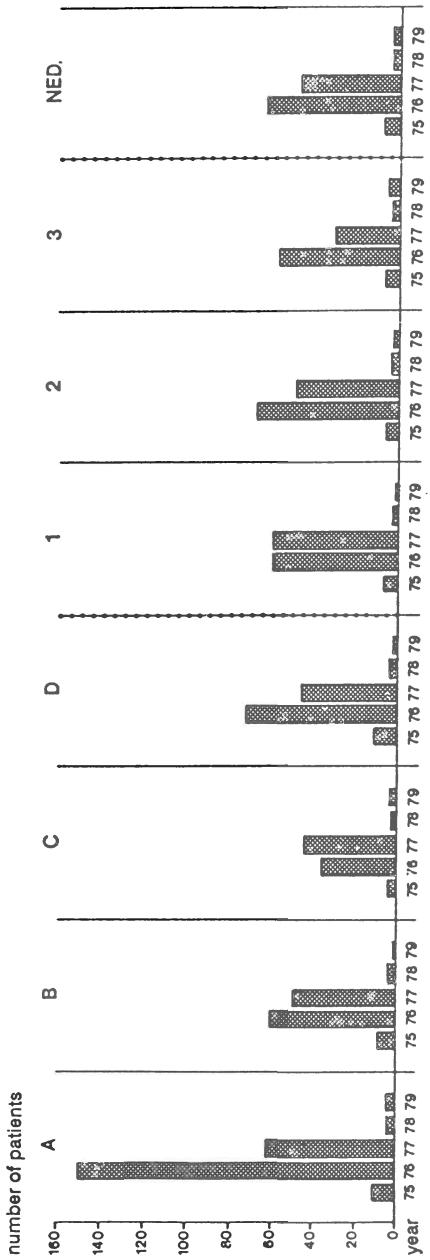
From 1963 onwards a vaccine became available in the United States that was rated highly (Public Health Service Advisory Committee, 1978). After a rather large epidemic in the Netherlands in 1976 the measles vaccine was authorized for use in the Netherlands too in 1968. In 1975 the Rotterdam Medical and Public Health Service started a vaccination campaign for all children born in 1974, which led to a marked decline in the number of cases of measles (G.G. en G.D. Rotterdam, 1976). In 1976 vaccination against measles was included in the national vaccination programme and since then all children have been invited for this at the age of 14 months. At the same time measles was made a notifiable disease under the Infectious Diseases and Control of Causes of Disease Act. In 1978 a catch-up programme for older children began; these were given a "measles jab" at the age of 4 and 9.

Registration of measles by the sentinel stations took place in the period 1975-1979. Initially age and sex were registered. From 1977 onwards the vaccination status of the patient was listed instead of the sex, because sex had proved to be no parameter of importance to catching measles or not. Because policy concerning measles was already several years to the fore in Rotterdam, the opportunity presented itself of comparing the national with the Rotterdam data. In addition advantage was taken of the national registration to look at the degree of (suspected) underreporting of measles in the light of the legal notifiability.

Results

Fig. 4.3. shows the annual numbers of patients with measles per 10 000 inhabitants per province group (A-D) and per urbanization group (1-3).

Fig. 4.3.: Number of patients with measles, per province and urbanization group, per 10 000 inhabitants, 1975-1979



In 1975 the frequency is low, which was expected since two-year epidemic rises of measles are known. The greatly increased frequency in 1976, with nationally more than 60 cases per 10 000 inhabitants and an outlier to 150 per 10 000 in the northern provinces was therefore not surprising. Against expectation the frequency in 1977 had fallen only slightly. From 1978 onwards the frequency remained below five per 10 000 inhabitants, and it seems reasonable to assume that this was a consequence of the vaccination programme that had meanwhile started.

The frequencies per quarter can be read from Table 4.3.

Table 4.3.: Number of patients with measles per quarter per 10 000 inhabitants, 1975-1979

	1st quarter	2nd quarter	3rd quarter	4th quarter	Total[1]
1975	2	2	2	2	8
1976	8	22	9	25	63
1977	27	14	5	0	48
1978	1	1	1	0	4
1979	1	1	1	1	3

1) As a result of rounding-off when calculating relative frequencies, small differences may have occured in the totals.

The highest frequencies occurred in the fourth quarter of 1976 and in the first quarter of 1977. From all the available data it must be concluded that one and the same epidemic was involved in 1976 and in 1977. This began in the first half of 1976 in the northern provinces and reached a peak in the other provinces around the turn of the year. The dip in the third quarter of 1976 came about because the epidemic in the north had already lessened but had not yet entirely peaked in the other regions of the Netherlands.

Table 4.4. shows the frequencies per age group.

Table 4.4.: Number of patients with measles per age group per 10 000 inhabitants, 1975-1979

	Age group					
	<1	1-4	5-9	10-14	15-19	>20
1975	(17)	53	20	7	-	(1)
1976	192	565	272	11	(3)	(0)
1977	243	356	232	13	(2)	(1)
1978	(25)	37	10	(3)	(2)	(0)
1979	(25)	15	17	(2)	(2)	(0)

1) As a result of rounding-off when calculating relative frequencies, small differences may have occured in the totals.
(c)Too few reports for a reliable calculation of the frequencies.

In all registration years the peak is to be found in the 1-4 age group, with the exception of 1979, in which the highest frequency was measured between the ages of 5 and 9. This could be an indication of a shift to higher age groups that at that moment were vaccinated to a smaller extent. Not one of the reported patients above the age of 10 with measles had been vaccinated against measles. In absolute terms the sentinel stations reported 56 measles patients in 1978 and 46 in 1979, of whom over two thirds proved not to be vaccinated (31 and 39 respectively). On estimate 90% of the 14-month-old children participated in the vaccination programme. Unfortunately, the age distribution of those vaccinated and not vaccinated is no longer accessible to supply a numerical basis for the effect of measles vaccination.

If the sentinel station data are extrapolated to the whole population of the Netherlands and the results thus obtained are compared with the number of legally notified cases, the underreporting of the latter proves to be enormous. In 1979 only 1.5% of all measles cases were reported to the Chief Medical Office of Health. In previous years this percentage was

about 3%. It is interesting here that in 1977 the sentinel stations complied in only 20% of all registered cases with the legal requirement to report them.

Discussion

The registration of measles by the sentinel stations lasted five years. In this period only one measles epidemic occurred, in 1976-1977. In the two years that followed measles occurred only sporadically, whereas formerly an epidemic intensification was observed every other year. As a result of the national vaccination programme introduced in 1976 for children of 14 months and later for four- and nine-year-old children too, the frequency of measles has declined sharply. In 1978 and in 1979 more than two thirds of the registered cases were not vaccinated, whereas the greater part of all reported children fell into age groups that had had the opportunity to be vaccinated. These findings tally with the experience gained earlier in Rotterdam. In Rotterdam a clear shift towards higher age groups was also observed. This development, which was to be expected, cannot (yet) be deduced from the sentinel station data, although the 1979 results may be an indication of it (highest frequency in the 5-9 age group).

Through the introduction of the vaccination programme the epidemiology of measles was changed and the two-year epidemics no longer occurred. However, at the end of 1987 the (mandatory) notification of measles increased strongly and there was evidence of a fairly large epidemic that continued until mid 1988 (Bijkerk et al., 1989). The age peak in this epidemic was among the 4- and 5-year-olds. The great majority, viz. 90%, proved not to have been vaccinated against measles, above all for religious reasons.

The sentinel station registration of measles not only confirms the suspicion that undereporting is occurring in the obligatory notification of this disease, but also indicates that the underreporting is enormous. In 1979 only 1.5% of the cases were reported. After an infectious disease has been lessened by a vaccination programme, it is important to report the cases of the disease still occurring as completely as possible, not only so as to be able to check the continuing effect of a vaccination programme

but also in the interest of the patients concerned. For the danger threatens that, if measles no longer occurs endemically, the disease will run a more serious course. It is therefore important that doctors working in practice know whether and to what extent they must still make allowance for measles in their diagnostic and therapeutic considerations.

4.2.3. Rubella(-like illnesses)

Of all children's diseases rubella is probably the most difficult one to diagnose. Cynics claim that rubella is both the diagnosis most made and also the diagnosis most missed. In itself rubella is a fairly harmless disease, accompanied by an increase in temperature, swelling of the posterior auricular glands and a maculopapular exanthem. Conversely, the infection in pregnant women is serious, notably in the first three months. Congenital rubella has a high mortality and leads in general to serious abnormalities in the foetus. A reliable clinical diagnosis cannot usually be made. Probably many rubella infections proceed subclinically, and this is possibly sufficient to build up an immunity. Infection of others can already take place before the rubella becomes clinically manifest. With a view to the prevention of congenital rubella a start was made in 1974 with the vaccination of all girls of the age of 11. From 1987 onwards all children have been given the combined MMR vaccination (mumps, measles and rubella) at the age of 14 months.

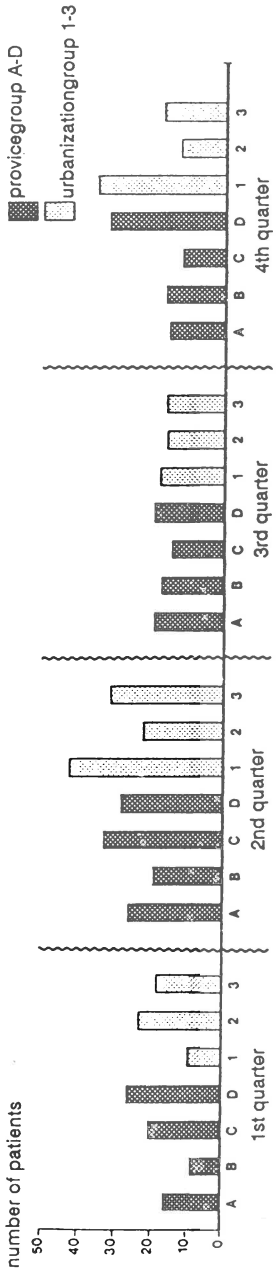
For some considerable time now rubella has had to be notified under the Infectious Diseases and Control of Causes of Disease Act. In 1971 rubella and rubella-like illnesses were placed on the weekly return of the sentinel stations so as to be able to investigate the extent to which the legal requirement to report the disease was complied with. On the assumption that the notified cases of rubella were largely unconfirmed virologically or serologically, the sentinel stations had to register illnesses resembling rubella.

Figure 4.4. shows the incidences of rubella(-like illnesses) per 10 000 inhabitants, per quarter and per province or urbanization group.

In most groups the incidence is 15-30, with a few slight variations upwards in the second and fourth quarters and downwards in the first and fourth quarters. The on average highest incidences are to be found in the second quarter. This tallies with a rubella epidemic observed on the basis of cases notified to the Chief Medical Office of Health. This occurred in the period of the 5th to the 27th week inclusive, with peaks in the 16th and in the 19th weeks. However, from the sentinel station data this epidemic can be read less clearly than with the legally notified cases.

Comparison of the two registration systems shows that only 1-5% of the number of patients with a rubella-like illness calculated for the whole of the Netherlands on the basis of the sentinel stations were notified. An explanation of this discrepancy could be that only those cases were notified that had been confirmed in the laboratory. Another explanation is a possible overreporting by the spotter physicians, for instance on account of registration of patients with an exanthem that was not caused by rubella. An indication of this may be the great similarity in results with the registration of exanthems of unknown nature held in 1970. Above all the fourth quarter of 1970 and the first quarter of 1971 display great similarities, despite the difference in questions asked.

Fig. 4.4.: Number of patients with a rubella-like illness per 10 000 inhabitants, per quarter, province and urbanization group, 1971



All in all the sentinel station registration of rubella-like illnesses gives insufficient insight into the incidence of rubella and in particular into the occurrence of epidemics. It looks as if legal notification lends itself better to this, although it is not out of the question that there underreporting occurs of which the extent is unknown.

For completeness' sake the sex and age distribution of the patients registered by the sentinel stations is also given here. The highest incidences occurred in the age groups of under 1 year and of 1-4 years. The girls were somewhat more frequently encountered in these age groups, with a maximum of 240 per 10 000 girls up to 1 year in the third quarter. In the 5-9 age group the sex distribution was fairly equal, with a highest incidence of about one hundred for girls and also boys in the second quarter and a lowest incidence of around 40 for both in the second quarter. Above the age of 9 the incidence declines strongly, and from the age of 15 rubella-like illnesses occur only sporadically, this being applicable to a somewhat smaller extent to girls or young women.

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4.3. Mastitis puerperalis

A.I.M. Bartelds

4.3.1. Introduction

Improved living conditions, adequate diet, hygienic measures and effective medication affect the degree of occurrence of a number of infectious disorders (Mackenbach, 1988).

Above all in specific situations such as in childbed and during the period of breast feeding, the body is susceptible to infections. Semmmelweis discovered in the middle of the nineteenth century the importance of asepsis, as a result of which maternity mortality fell drastically. Pasteur's work decades later made it clear why the measures proposed by Semmelweis had so much effect. The initially disputed views thereupon became commonplace.

Although the threat of an infection in childbed is still present today, the problem is of infrequent occurrence in practice. If it does occur, the physician possesses in principle effective medicaments.

Things have gone more or less the same way with another infectious disorder from the period after the delivery, puerperal mastitis. In addition to the reduced number of births, measures and circumstances mentioned above have doubtless also had an effect on the incidence of puerperal mastitis. It may be added to the factors already mentioned that the availability of good baby food makes it less necessary that the infant is breast-fed. Fewer women than before feel obliged to breast-feed their babies or, when the circumstances make it desirable, to continue with giving the breast. And since puerperal mastitis is a great exception among women who are not breast-feeding, for this reason too the occurrence of mastitis puerperalis has declined (Van Weel, 1972).

However, it is applicable to mastitis too that, despite careful prophylaxis on the basis of specific advice and counselling by the midwife, maternity nurse, district nurse and the family doctor, the threat continues to exist.

Even in 1989 the physician is still confronted with the syndrome of mastitis puerperalis, though it has become rare.

When a disorder declines in incidence and becomes rare, an unexpected problem threatens: the abnormality is no longer included as a separate topic in the current international classification systems. A consequence of this is that the general practitioners who follow the current classification method can no longer supply any data on the disorder in question.

This was in danger of happening with mastitis puerperalis. In the International Classification of Health Problems in Primary Care (ICHPPC; Classification Committee, 1983) there is no longer a separate topic for mastitis puerperalis. In the more recent International Classification of Primary Care (ICPC; Lamberts, 1987) a correction has been made on this point: mastitis puerperalis occurs again as a separate code (W94).

4.3.2. Questions

In 1981 the editorial board of the Nederlands Tijdschrift voor Geneeskunde was asked: What is the treatment of mastitis with infiltrate in a nursing mother and in a woman who is not breast-feeding ? (Anon., 1981).

The answer given on behalf of the editorial board discusses the possible forms of treatment, with their pros and cons. In conclusion it is remarked: "whether mastitis is prevented by the one or the other policy remains a question to which no answer can be given now. Perhaps this problem and the antibiotic policy regarding mastitis are suitable subjects for investigation of the general practitioners group".

Apart from the incorrect formulation "investigation of (i.e. by) the general practitioners group", the tenor is clear: "we, as experienced specialists, cannot give a definitive answer to those questions". The specialists represented on the editorial board at that time had to state that they no longer saw the disease regularly. And also the advisers consulted outside the circle of editors, of whom it was assumed that, as heads of out-patient clinics, they would repeatedly see the late, abscessing stages of

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5. CHRONIC DISORDERS AND INTERMITTENT CONDITIONS

In chronic or chronic intermittent disorders interest is often directed not so much towards the incidence as towards the prevalence. However, a tally of prevalence cannot be so simply kept within the GP's daily work as is the case with incidence. In practice the prevalence of a certain disorder can be reasonably approximated with the aid of incidence rates and knowledge of the trend.

In the case of chronic diseases, in which there will often be no question of treatment in the sense of healing, one of the most important tasks of the GP is counselling of the patient. This gives him or her good insight into the individually often inconstant course, differing from patient to patient, of one and the same disease, knowledge that cannot be gathered, or only incompletely, outside primary care.

The results discussed below in this chapter of the registration of four chronic (intermittent) diseases, which except for this criterion form no further entity, show that the network of sentinel stations can be a useful instrument for various approaches.

The registration of Parkinson's disease as an incidental investigation shows that performing a case control study of risk factors is also among the possibilities, which could be organized within the sentinel station system simply and inexpensively.

Hay fever was registered in relation to a causal factor, viz the exacerbation of complaints in dependence on the concentration of pollen in the air and on weather conditions.

Ulcus pepticum was registered twice with an interval of ten years so that any shifts in numbers in the course of time could be observed.

Finally, in the case of psoriasis the registration had the aspect of a simple and also rapid service, namely to give an indication of the occurrence of psoriasis on behalf of the newly founded Association of Psoriasis Patients.

From each of the registrations discussed here a lesson may be learnt about what is and is not possible with registration by means of a network of sentinel station practices.

5.1. A study of the incidence and risk factors of Parkinson's disease in the Netherlands[1]

A. Hofman, H.J.A. Collette and A.I.M. Bartelds

5.1.1. Introduction

In 1817 James Parkinson published his account of six cases of 'the shaking palsy'. His essay on this disease is considered to be the first description of what was later called Parkinson's disease. 'Involuntary tremulus motion, with lessened muscular power, in parts not in action and even when supported; with a propensity to bend the trunk forwards and to pass from a walking to a running pace: the senses and intellects being uninjured'.

A more recent definition used is as follows: 'a disorder that begins unilaterally, usually with tremors in the hand. In the course of the years these gradually spread to the other extremities. Further typical characteristcs are hypokinesis and extrapyramidal hypertonicity'.

The Princess Beatrix Fund, originally with a prime focus on poliomyelitis, extended its goals to include Parkinson's disease. New and more complete information on Parkinson's disease was necessary. For this main reason the Princess Beatrix Fund asked the Continuous Morbidity Registration Sentinel Stations the Netherlands to include Parkinson's disease.

The etiology of the idiopathic Parkinson's disease is much debated and speculated upon but badly understood. The major physiological lesion in patients with Parkinson's disease involves destruction of the negrotriatal dopaminergic neural system, with subsequent reduction in dopamine levels of the basal ganglia. In many patients the clinical manifestations of the disease can be substantially alleviated by administering the metabolic precursor, L-Dopa. Dopamine itself cannot pass the blood-brain barrier. Alleviation is also reached with drugs that simulate the effect of dopamine in the neural system. Further investigation on riskfactors affecting the

[1] This section appeared earlier as an article in Neuro-epidemiology and has been included here after permission, with some adaptation (Hofman, A., H.J.A. Collette, A.I.M. Bartelds, Neuro-epidemiology, 1989; 8: 296-299)

catecholamine metabolism such as smoking habits was chosen as the aim of the case-control study.
From 1981 to 1986 all new cases of Parkinson's disease occurring in 60 general practices in the Netherlands were registered. This provided the opportunity to study the incidence of Parkinson's disease, and to investigate risk factors for Parkinson's disease in a case-control study based on incident cases.
In this section we report the incidence rate of Parkinson's disease in the Netherlands from 1983 to 1985. We also report a study of risk factors in 86 confirmed patients with Parkinson's disease and in 172 healthy reference subjects.

5.1.2. Methods

In the sentinel practices of the Netherlands Institute for General Practice all incident cases of Parkinson's disease were registered in 60 general practices in the Netherlands from 1981 to 1986. These general practices are located all over the Netherlands, and cover 1.2% of the Dutch population. They are considered to provide a good representation of the population of the Netherlands in general demographic and socio-economic aspects (Collette, 1982). In 1981 the total population covered by the sentinel practices included 80 049 men (1.1% of all Dutch men) and 83 528 women (1.2%)

Cases

In the period from 1 January 1981 to 31 December 1985 all patients with Parkinson's disease were registered. The general practitioners were asked to note all new patients with idiopathic Parkinson's disease, and to exclude patients with secondary parkinsonism from the register. In the present study cases of Parkinson's disease were included only if the diagnosis, initially made by the general practitioner was confirmed by further examination by a neurologist. A total of 123 confirmed cases were registered from 1981 to 1985; the annual numbers were 39, 33, 16, 13 and 22 respectively. Because of the possible inclusion of some prevalent cases in the early phase of the registration, we decided to base our incidence estimates on the last three years of the register (1983, 1984, 1985).

All 123 confirmed cases were eligible for the study of risk factors of Parkinson's disease. Of these 123 patients, 12 had died before we could reach them, 11 could not be reached, and 12 refused to participate in the study. All other patients were asked to complete a mailed questionnaire. In four cases the questionnaire was returned but we were unable to use the data in the analysis. This left 86 patients with Parkinson's disease on which the risk factor study was based.

Controls

For each case, 2 healthy reference subjects from the same general practice, matched for age and gender, were invited to take part in the study. They were selected randomly (within the relevant 5-year age and gender group) from the population list of the general practitioner. The control subjects were asked to complete the same mailed questionnaire as the cases. Of the 172 reference subjects who where included in the analysis, 102 consented after a first selection, 46 after a second, 11 after a third and 5 after a fourth selection of reference subjects.

Data collection

Information about putative risk factors for Parkinson's disease was obtained by mailed questionnaire. The questionnaire was the same for cases and controls and, besides questions on age, sex, and socio-economic status, included specific questions about the history of cigarette smoking, severe head trauma and total anaesthesia. In general, the information on risk factors in both cases and controls was obtained within six months after the patient had been entered in the register.

Data analysis

The estimation of the incidence (incidence density) was based on the number of incident cases of Parkinson's disease in 1983 to 1985, divided by the number of person-years during those years in the 60 general practices.

The magnitude of the association of putative risk factors with Parkinson's disease was assessed by the odds ratio as an estimate of the relative risk. The relative risk is presented with a 95% confidence interval (95% CI), The matching variables (age and gender) were taken into account by

entering them in a model for logistic regression (Schlesselman, 1982). The reported adjusted relative risks (adjusted RR) are based on the regression coefficient yielded by this model. A separate matched-pair case-control analysis showed very similar results.

5.1.3. Results

Incidence rate

In Table 5.1. the incidence of Parkinson's disease is presented per 100 000 person-years for men and women, separately. It is estimated to be 11 per 100 000 person-years for men, and 12 per 100 000 for women.

Table 5.1.: Incidence of Parkinson's disease in the Netherlands per 100 000 person-years, 1983 to 1985

	Men	Women
1983	12 (9)*	9 (7)
1984	6 (4)	12 (9)
1985	16 (11)	14 (11)
Total 1983 - 1985	11 (24)	12 (27)

* Number of patients in parentheses.

Risk factors

Table 5.2. presents the frequencies of cigarette smoking once versus never for cases and controls.

Table 5.2.: Cigarette smoking once vs. never*

	Cases	Controls	Total
Smoking once	31	82	113
Smoking never	55	90	145
	86	172	258

* RR=0.6 (95% CI 0.3-1.0); adjusted RR=0.6 (0.3-1.0).

The adjusted RR amounted to 0.6 (95% CI 0.3-1.0). For smoking once but not now versus never the adjusted RR was 0.5 (0.3-1.0). For smoking now versus never, the adjusted RR was 0.7 (0.4-1.4). A breakdown by gender yielded an adjusted RR of cigarette smoking once versus never for men of 0.8 (0.4-2.0) and for women 0.3 (0.0-0.9).

Surgery with total anaesthesia was not associated with the occurence of Parkinson's disease. The adjusted RR amounted to 1.2 (0.6-2.0). For men this was 1.4 (0.6-3.8) and for women 1.1 (0.4-3.0). A history of severe head trauma with loss of consciousness was not associated with Parkinson's disease. The adjusted RR was 1.4 (0.6-2.8).

These relationships of putative risk factors with Parkinson's disease were adjusted for potentially confounding variables, particularly of socio-economic status and education. The estimates of relative risk adjusted for these potential confounders did not differ materially from the ones presented above.

5.1.4. Discussion

The main oberservations in this study are that the incidence of Parkinson's disease for men and women in the Netherlands is about 10 per 100 000 person-years, and that smoking of cigarettes appears to be associated with a halving of the risk of Parkinson's disease. These

associations persisted after adjustment for measured confounding variables.

The finding of an incidence (incidence density) of 11 and 12 per 100 000 person-years in men and women respectively is in agreement with most previous reports (Brewis et al., 1966; Gudmundsson, 1967; Jenkins, 1966; Marttila et al., 1976) (see Schoenberg, 1987 for a review). A study from Rochester, Minnesota, reported considerably higher incidence rates, but in that study patients with drug-induced parkinsonism were included (Rajput et al., 1984).

Our findings of a reduced risk of Parkinson's disease in smokers adds to be already extensive epidemiologic evidence (see Baron, 1986 for a review). Our study has some adventages over earlier ones in that it was registry-based, in the selection of both cases and controls, and that it was based on incident cases. These two features of the study design reduce the possibility of selection bias due to hospitalization or due to differential survival of smokers. We were not able to confirm a previous report (Godwin-Austen et al., 1982) of an association of Parkinson's disease with head trauma.

In summary, these observations from a registry-based study of Parkinson's disease in the Netherlands provide confirmation of previously reported estimates of the incidence and of an inverse association with cigarette smoking.

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5.2. Hay fever

J. Fracheboud

5.2.1. Introduction

In 1977, during the hay fever season, a daily report was broadcast for the first time on Dutch radio in which it was stated whether the weather conditions expected for the following day would or would not be favourable to hay fever patients. This was done by the Allergology Department of Leiden University Hospital (AZL) in collaboration with the Royal Netherlands Meteorological Institute (KNMI) and the Netherlands Broadcasting Authority (NOS).

Under the direction of the biologist F.Th.M. Spieksma the AZL had already been measuring pollen concentrations in the air for some years (Aerobiology Department) and been keeping a daily complaint score of some 120 hay fever patients. It was desired to complete these data with data on the number of hay fever patients in the Netherlands. When a planned research project of the European General Practice Research Workshop on hay fever was cancelled, it was decided to include hay fever in the sentinel station registration.

Hay fever is not really an appropriate name, for this disorder has nothing to do either with hay or with fever. Synonyms are rhinitis vasomotorica or rhinitis allergica, which in fact describe only one symptom that incidentally is not confined to hay fever. Unlike other allergic reactions of the upper respiratory tract, hay fever occurs in a relatively short period of the year - the late spring and in the summer - and there is a clear connection with being in the open air. At the same time the oversensitivity reaction extends to the conjunctivae of the eyes. Hay fever is caused above all by the pollen of wild grasses, because this is so small and light that it continues to float in the air for a long time (Spieksma, 1979). The course of the disorder varies quite considerably from individual to individual: hay fever can manifest itself at every age but displays a preference for young adults. Some patients are troubled by it for a few years, others even for many years. The severity of the complaints can both increase and

decrease in the course of time. Treatment is directed above all to preventing and/or combating the symptoms; the cause itself cannot be eliminated.

The registration of hay fever by the spotter physicians took place for five years in the period 1978-1982. In the first year new patients and patients who had already had hay fever earlier were registered separately and by sex. From 1979 only the new patients were registered without listing their sex.

The criterion for the registration of hay fever was the presence of one or more of the following symptoms:

- tickling and/or stinging sensation in the nose and/or nasopharynx;
- tickling and/or stinging sensation in the eyes;
- violent sneezing fits;
- abundant watery secretion from the nose;
- red and watering eyes;
- swollen eyelids.

The complaints had to reach a climax in the period from the end of May to mid July. By keeping to these criteria other allergic reactions, caused for instance by domestic animals or pollen of the birch, are excluded.

5.2.2. Results

In 1978 the frequencies of new hay fever patients were 26 per 10 000 men and 22 per 10 000 women. Among the patients who were already known to have had hay fever earlier, the frequency among women was higher (45 versus 40 per 10 000 women and men respectively).

Table 5.3. shows the frequencies of men and women together during the whole registration period and by province and urbanization group.

Table 5.3.: Number of new patients with hay fever, per province and urbanization group, per 10 000 inhabitants, 1978-1982

	Province group				Urbanization group			Netherlands
	A	B	C	D	1	2	3	
1978	34	36	17	25	37	21	22	24
1979	41	46	24	33	37	32	29	32
1980	21	45	24	16	45	21	25	26
1981	20	42	14	16	43	16	15	20
1982	18	44	21	15	55	15	23	24

On average the annual frequency was 25 per 10 000 inhabitants of the Netherlands, with a range of 20-32. The highest frequencies occurred in the eastern provinces (province group B) and in the rural municipalities (urbanization group 1), whereas the lowest frequencies were measured in the western provinces (group C). Throughout the years fluctuations of varying strength occurred in the subgroups. Hereby the north (province group A) displays a trend towards decrease of the frequency and the rural municipalities a trend towards increase.

Seldom does hay fever already manifest itself for the first time in the first years of life (Fig. 5.1.).

The frequencies increase quickly during school age and reach the maximum among 15-19 year-olds. Thereafter the frequency gradually decreases, but even above the age of 65 a new hay fever patient is incidentally reported.

Of the registered patients, 70-80% approached the GP in the second quarter. In all years the highest frequencies were measured in weeks 23-25. In 1978 and in 1979 the number of reports of new hay fever patients in the first quarter was higher than in 1981 or 1982. This is an indication of an earlier start of the hay fever season in the first years of registration.

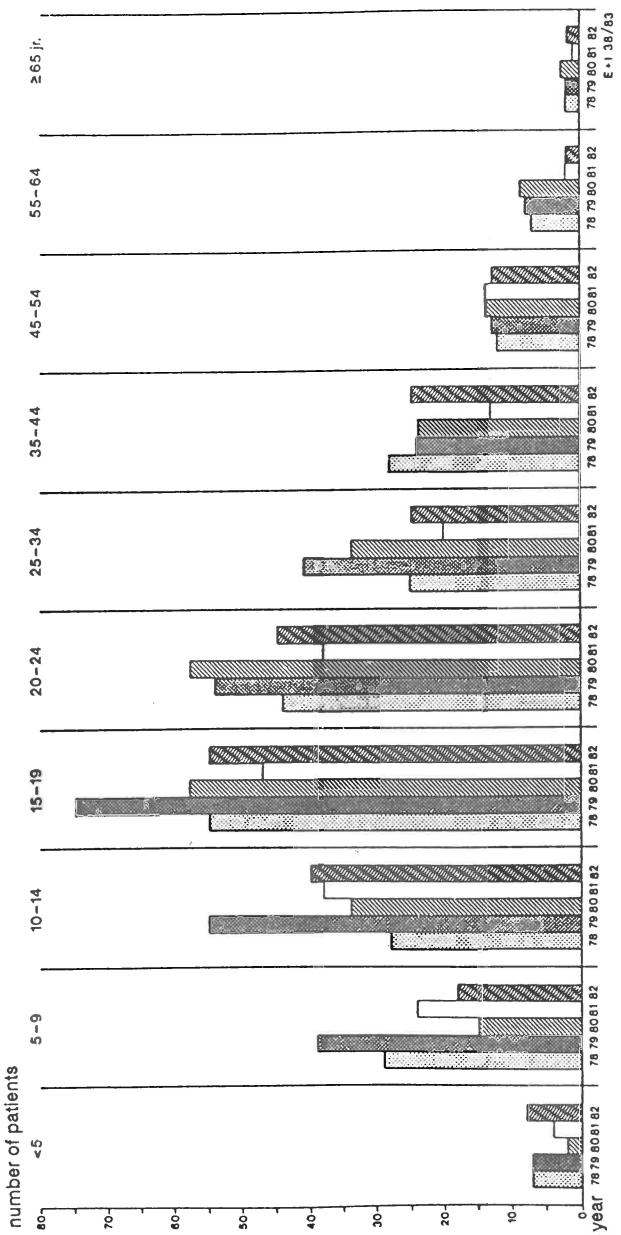
5.2.3. Discussion

On the basis of data from the sentinel station registration every year some 25 per 10 000 inhabitants of the Netherlands visit their GP for the first time on account of hay fever complaints. This number is in the vicinity of the on average 8-9 new hay fever patients per practice of 2800 persons that are reported by the Continuous Morbidity Registration Nijmegen (4 general practices in Nijmegen) (Van de Lisdonk, 1980). Extrapolation of the sentinel station frequency to the Dutch population gives a total of some 35 000 new hay fever patients per year.

In frequency of the "old" hay fever patients found in 1978 was nearly a factor of 2 higher than that of the new patients. This would mean that a hay fever patient is troubled by hay fever for only three years on average. However, practical experience shows that the complaints return among most patients for a longer period every year. It is plausible that the frequencies for the "old" patients are on the (too) low side. An explanation for this could be that the patients with a longer history of hay fever have learnt to avoid situations in which complaints can come into being and thus do not have to consult their GP. If one assumes a period of hay fever complaints of on average a minimum of five years, one arrives at at least 175 000 hay fever patients per year in the Netherlands.

The registration of hay fever in 1978 does not reveal an obvious preference for a given sex. Among the new patients the men had a somewhat higher frequency, but among the "old" patients they were registered less frequently than the women. The age distribution displays a rather symmetrical structure, with a maximum around the age of 20 and first manifestations in all age groups.

Fig. 5.1.: Number of patients who approached the GP for the first time with hay fever complaints per age group, per 10 000 inhabitants, 1978-1982



It is not surprising that the highest frequency of hay fever is observed in the rural municipalities. The relatively lowest frequency in the western provinces can be explained by the strong urbanization and the dominant westerly wind (sea wind) in this coastal region.

Most reports occurred in the second quarter of the year, with a maximum number in June, viz in the typical hay fever season. Since, however, this also formed part of the registration criteria, namely that the climax of the complaints had to lie in this period, this is not surprising but no further conclusions can be attached to it.

The sentinel station data could not be directly related to other measurements such as radiation intensity, amount of precipitation, grass pollen concentrations and hay fever complaint scores. There is too much difference in the frequency of registration for this: for the sentinel stations per week, for the other registrations per day or even per hour. It already proves difficult enough to indicate a relation between the latter on account of the strongly fluctuating factors (Spieksma et al., 1985). For instance, the daily complaint score was clearly higher than in the preceding years, whereas the total pollen concentration in 1982 was relatively low. This discrepancy is probably connected with strongly fluctuating weather conditions in June of the same year, viz a short, dry, very sunny and warm period followed by a longer cool and rainy period. In the fine weather period very high daily complaint scores were reached that pushed the annual average sharply upward.

The registration of hay fever patients gives above all a statistical foundation for the characteristics already known for hay fever. In addition, for the first time in the Netherlands the incidence of new hay fever patients is determined on the basis of national data. Important insights could also be gained as regards the aerobiological investigation of pollen and the epidemiology of the grass pollen allergy. This perhaps presents new possibilities for the prevention of a disorder from which a large number of persons suffer every year in a relatively short period.

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5.3. Reduced occurrence of ulcus pepticum in general practice?

A.I.M. Bartelds

The occurrence of ulcus pepticum in the population among patients who visit the GP with complaints and among those patients who are referred by the GP to a specialist remains a subject of discussion (Bartelsman, 1986; Van de Lisdonk, 1987; Tytgat, 1987).

In 1984 the shifts in the epidemiological pattern of ulcus pepticum over the period 1950-1981 (Hoogendoorn, 1984) were described for the Netherlands.

The national mortality and the frequency of hospital admission on account of ulcus pepticum proved to have considerably fallen for men; even very strongly among young men. As a result of opposite developments among on the one hand young women and on the other women in the higher age groups, one could hardly speak of any decline in the total group of women. Above all among the older women there was a strong increase in mortality and clinical morbidity. The data used in the analysis originated from the cause-of-death statistics and hospital registrations.

In the commentary "Is ulcus pepticum disappearing ?" devoted to the results of this analysis it is remarked that "it (remains) fairly risky to draw general conclusions regarding the incidence from trends with regard to aspects of the ulcus disease" (Van Tongeren, 1984).

The "remarkable shifts" in the epidemiological pattern of ulcus pepticum described by Hoogendoorn relate, as stated, to changes in the mortality rate of these disorders and in the frequency of admission to hospitals on account of an ulcus pepticum.

Some of the patients with an ulcus pepticum are, however, diagnosed and treated as such in general practice. The question that then arises is whether the changes described in mortality as a result of ulcus pepticum and in the frequency of admission on account of this disorder may be

found again when primary care statistics are consulted. To put it another way, can one speak of a changed occurrence of ulcus pepticum in general practice ? If this question is answered in the affirmative, then the explanation for this should be sought. Are there are perhaps changes in the diagnostic and therapeutic action of the GP as a result of which the changes in the registration are occurring? Or is there a real change for which an explanation must be sought? It is also possible that the disorder is proceeding more mildly than formerly and, with the increased possibilities of self-medication, people are capable of overcoming the problem themselves. For it is a known fact that people seek medical aid for only a small part of the physical complaints and symptoms that they experience. However, the question that must be answered first is: can the changes as described also be found in general practice?

The possibilities of answering this question presented themselves by means of the Continuous Morbidity Registration Sentinel Stations the Netherlands. In this registration project ulcus pepticum had already been the subject of registration in 1975; a repetition of the registration in the mid eighties would offer the possibility of investigating whether in the course of ten years changes had occurred in the epidemiological pattern of ulcus pepticum in general practice.

5.3.1. Set-up and method

In 1975 registration had taken place of the patients among whom for the first time the diagnosis ulcus ventriculi/ulcus dudeni had been confirmed by X-ray examination or gastroscopy. Patients with a further diagnosed recurrent ulcus were not registered in 1975 (Bijkerk et al., 1976).

In 1985 and 1986 registration of this topic took place again. The now 60 GPs, working in 45 practices, were asked to register when they encountered a suspected ulcus pepticum or one confirmed by further diagnosis.

Suspicion of an ulcus pepticum arises if a patient has stomach complaints for longer than one to two weeks: pain in the epigastrium, pain in the night relieved by food, milk or antacids, tendency to recur in the winter,

stomach complaints for years already (periodical) and a painful area that can be indicated by one finger.

Gastroscopy, X-ray examination or the surgeon's eye during an operation can confirm a suspicion. Spotter physicians were asked also to register the way in which the diagnosis was confirmed.

In addition to the distinction between suspected and confirmed ulcus pepticum, sentinel stations were asked to make a distinction between first ulcus and a recurrent one. Recurrence occurs when a new episode of complaints puts in an appearance after a complaint-free period of three months. When in a given year an ulcus pepticum manifested itself for the first time in a patient and later in the year there was a recurrence, this recurrence was not registered. One may therefore speak of under-reporting of the number of recurrences. However, for the comparison with the 1975 data this is not of importance, since in that year the recurrent ulcera were not registered either. At the same time a distinction was made by sex for all four items.

5.3.2. Results

Registration 1985-1986

The results of the registration in 1985 and 1986 (Bartelds, 1986 and 1988) show that first peptic ulcera are suspected two to three times more often than are confirmed by further investigation (Table 5.4.). For recurrent ulcera the need for further diagnosis proves to be even less.

Table 5.4.: Number of patients with a first ulcus pepticum, suspected or confirmed, and a recurrent ulcus pepticum, suspected or certain, per province and urbanization group and for the Netherlands per 10 000 men and women for 1985-1986

		Province group				Urbanization group			Netherlands
		A	B	C	D	1	2	3	
1st ulcus	M	14	11	19	14	12	16	15	15
suspected	F	11	6	15	13	6	13	15	12
1st ulcus	M	5	6	8	6	6	6	11	7
certain	F	4	3	5	9	5	5	8	5
1st ulcus	M	19	17	26	20	17	22	26	22
total	F	15	8	20	22	11	18	23	17
recurrent	M	12	13	26	20	9	16	39	20
suspected	F	8	7	10	12	4	14	15	10
recurrent	M	3	2	6	4	2	4	8	4
certain	F	-	1	3	2	1	2	3	2
recurrent	M	15	15	31	24	11	20	46	24
total	F	8	8	12	14	5	11	18	12
all ulcera	M	33	32	58	43	28	41	72	46
total	F	23	17	32	35	16	28	41	29

The differences in frequency of all ulcera, both suspected and confirmed, between men and women are not strikingly large: over both years the ratio is 1.6. For the first ulcera these ratios are smaller than for the

recurrent ulcera. For first ulcera 1.3 (22 versus 17), and for recurrent ulcera 2.0 (24 versus 12). This suggests that men tend more often towards recurrence than women.

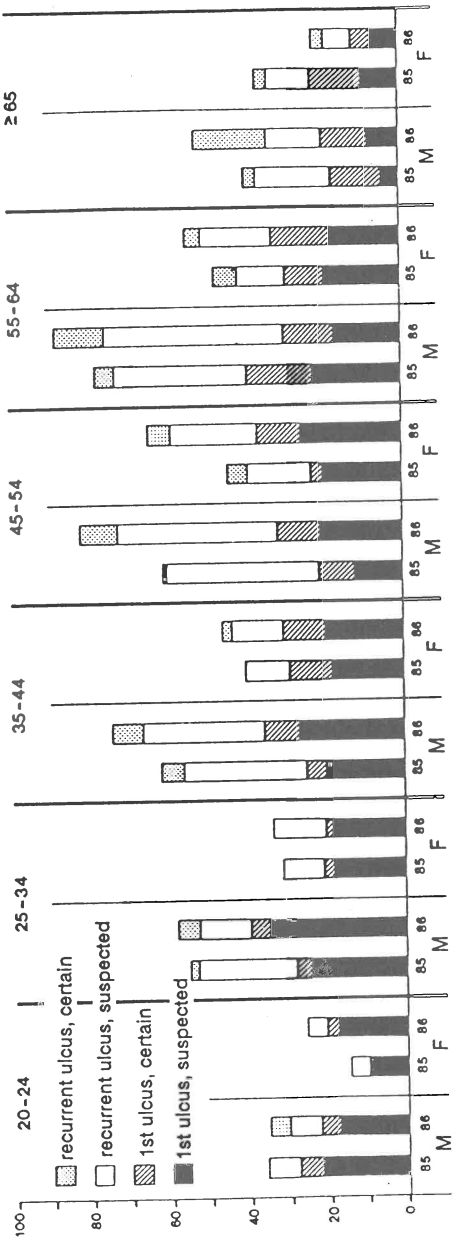
Peptic ulcera are suspected and confirmed by the GP in the cities more often than in the smaller towns and the urbanized rural municipalities. The frequency is the lowest in rural municipalities. The frequency in the cities is for both years more than double that in the country. For men 2.6 in 1985-1986; for women likewise 2.6.

In the western province group (group C) the highest frequency is found for men over both years. For women the highest frequency is found in the southern provinces (group D).

Among men the frequency of all peptic ulcera increases to the age of 65 and then decreases (Fig. 5.2.).

Among women the highest frequency is found in the 45-54 age group. The occurrence declines for women too after the age of 65. Although among men in total more ulcera are diagnosed than among women, this does not apply to all subgroups. Thus for women of 45-54 years and of 65 and older more first ulcera are suspected and in the 35-44 age group women have a confirmed first ulcus pepticum more often than men.

Fig. 5.2.: Number of patients with a first ulcus pepticum, suspected or confirmed, and a recurrent ulcus pepticum, suspected or confirmed, by age group, per 10 000 men and 10 000 women, 1985-1986



Comparison of 1975 with 1985-1986

In Table 5.5. the figures for the first ulcera confirmed by means of further diagnosis for 1975 and 1985-1986 are shown per province group and per urbanization group per 10 000 men and 10 000 women.

Table 5.5.: Number of patients with a first ulcus pepticum diagnosed by means of further examination per province and urbanization group and for the Netherlands per 10 000 men and per 10 000 women for 1975 and 1985-1986

		Province group				Urbanization group			Netherlands
		A	B	C	D	1	2	3	
1975	M	66	23	23	15	39	17	29	27
	F	3	14	11	8	9	8	14	11
1985-1986	M	5	6	8	6	6	6	11	7
	F	4	3	5	9	5	5	8	5

The pronounced decline among men of ulcus pepticum diagnosed by means of further examination stands out. In 1975 a first ulcus pepticum was confirmed among 27 out of 10 000 men. In 1985-1986 this was the case with 7 per 10 000 men. The decline that is also found among women is less pronounced: from 11 per 10 000 women in 1975 to half of the frequency, 5 per 10 000 women, in 1985-1986.

A striking finding is the frequency among women in 1985-1986 in the southern provinces, which is higher than the frequency found in 1975.

The data of the registration per age group (Table 5.6.) shows that the decline is the strongest in the younger age groups. The decline is more pronounced among men than among women.

Table 5.6.: Number of patients with an ulcus pepticum diagnosed by means of further examination by age group per 10 000 men and 10 000 women for 1975 and 1985-1986

		age group							
		10-14	15-19	20-24	25-34	35-44	45-54	55-64	>65
1975	M	-	(1)	26	39	56	43	32	40
1985-1986	M	-	(2)	(6)	(5)	7	10	15	13
1975	F	-	(1)	7	12	19	17	13	17
1985-1986	F	-	(1)	(2)	(3)	10	7	13	9

5.3.3. Discussion

On the basis of the data of cause-of-death statistics and hospital registration, shifts have been described in the epidemiological pattern of ulcus pepticum. One of the questions that was left unanswered was whether these shifts were also to be found in general practice. For it is conceivable that, given a milder course of the ulcus complaint and better possibilities of diagnosis and treatment of this complaint by the GP, fewer patients than before will end up in one of the above-mentioned registrations, without there being any question of a reduced occurrence.

The registration in the CMR Sentinel Stations of the ulcera established by means of further diagnosis in 1975 and 1985-1986
shows that the number has clearly fallen. For men, and in particular younger men, the fall is considerable; for women there is nevertheless also a fall to half of the number diagnosed in 1975.

The question that remains is then whether the fall established in the registration is the result of changes in the therapeutic and/or the diagnostic action of the GPs working in the sentinel stations. If that is not the case, then nevertheless there is a steadily increasing real decline in the occurrence of the ulcus complaint in general practice and of shifts in the epidemiological pattern of this.

Changes in the diagnostic action of the GP concerning complaints that point to an ulcus may be responsible for the fall found (Van de Lisdonk, 1987). On the basis of the data from the registration by the spotter physicians this question cannot be further answered.

However, a general fact is the constant increase in the number of X-rays requested by the GP in the last decade. From 1981 to 1985 this number increased from 992 100 to 1 416 580 (Anon., 1986). In 1986 it was 1 411 000. There has thus been considerably more diagnostic examination in the course of the years. Proceeding from a proportionate growth of all kinds of X-ray examination it may be assumed on the strength of this that further investigation of stomach complaints has increased rather than decreased. With the same incidence of ulcus complaints increase in further diagnosis ought to yield a rise in the number of further diagnosed ulcera rather than the fall found.

The increased possibilities for the GP of requesting endoscopic examination ought at the same incidence of ulcus pepticum to have led to more further established ulcera.

The question whether more recent methods of treatment, in this case above all the new medication for treatment of ulcus pepticum, have exerted an influence on the decline in the occurrence thereof in general practice seems to require a negative answer. In hospital registration there is already a decline in the occurrence before the introduction of the more recent medicines (Hoogendoorn, 1984).

In the period 1975-1985 a number of important changes in a therapeutic respect occurred. In 1977 the first H2 antagonist, cimetidine, was introduced, followed a few years later by the newer mucosa protectives. Both kinds of agent are widely prescribed; according to some researchers the H2 antagonists are even used too widely (Van Adrichem et al., 1988).

The question to what extent the widespread prescription of H2 antagonists or mucosa protectives is responsible for a further decline in the number

of first ulcera diagnosed by means of further examination cannot be directly answered. Ulcus pepticum is a disorder that, despite treatment, displays an inclination to recur (Tytgat, 1987; Rauws, 1987). It may be assumed that at any moment during the presence of (recurrent) complaints the GP will decide on further diagnosis. It is then not to be expected that the incidence of the ulcus pepticum confirmed by means of further diagnosis will decline. However, there is a decline, so that the above question must be answered in the negative.

In general practice too today fewer confirmed first peptic ulcera are being established by means of further diagnostic examination than a decade ago. There seem to be few reasons for assuming that this is the result of changed diagnostic habits of the GP. However, this registration can give no definitive answer on this matter.

The nature of the ulcus complaint as it is now understood is not such that the advent of a few new medicines has had a drastic effect on the number of further diagnosed first ulcera.

What remains as an explanation is that there is a real but as yet not understood reduction in the occurrence of ulcus pepticum in general practice.

This does not mean to say that there is also a proportionate decline of the occurrence in the population. Peptic ulcera may occur without there being complaints, so that there is little reason to consult the GP. In the case of an ulcus pepticum with only slight symptoms the GP will not always be visited either, and with the increased knowledge of the disorder and increased possibilities of self-medication it is conceivable that someone treats his ulcus pepticum himself.

It is assumed that in the case of this disorder too the GP sees only the tip of the iceberg (Van de Lisdonk, 1987). However, this tip became a considerably smaller one in the period 1975-1986.

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5.4. Psoriasis

J. Fracheboud

Psoriasis is a frequently occurring, chronically recurrent skin complaint. Estimates regarding the prevalence vary from 1 to 6% of the population believed to be suffering from this complaint. Although little is known about the cause of psoriasis, it is probable that genetic factors play a part. The disease displays a great variety of manifestations. Among a minority psoriasis is accompanied by arthrous changes. Severe but rarely occurring forms are the generalized psoriasis pustulosa and psoriasis erythrodermia. However, most patients barely have physical complaints but suffer rather from the striking changes to the skin at clearly visible places, such as the hirsute head and the (extensible side of the) extremities. This can lead to great social problems, the more so in a culture that in recent decades has begun to elevate the increasingly bared body beautiful to the new ideal.

Although GPs are frequently consulted for skin complaints, the contact frequency for psoriasis is low (Bremer et al., 1977). Many patients become discouraged through the often indifferent results of treatment and the regular recurrence of the disease. The impression exists that patients who have been wrestling with psoriasis for some considerable time visit the GP's surgery only in exceptional cases. This perhaps explains why estimates on the occurrence of psoriasis differ somewhat.

At the end of 1974 the Association of Psoriasis Patients was founded in the Netherlands. One of the reasons for this was the attention that was then devoted to bathing therapy for psoriasis patients in the Dead Sea. The Association wished to know how many persons in the Netherlands had psoriasis. In 1976 and 1977 psoriasis was included in the sentinel station registration. The disorder was defined as follows: psoriasis is a skin complaint, which is characterized by sharply circumscribed erythematous patches with mother-of-pearl-like scales (plaques), which are to be found on the extensible side of the extremities, the hirsute head and the sacral region.

In 1976 the new and the "old" psoriasis patients were registered separately and by sex. As regards the "old" patients, the spotter physicians were asked to go through their card index and to report all psoriasis patients, even if they had not visited to surgery during the year. In 1977 the sentinel station registration of psoriasis was confined to the new patients.

In Table 5.7. the incidences of new psoriasis patients per 10 000 men or women of the Netherlands are shown by age group.

Table 5.7.: Number of new psoriasis patients by age group per 10 000 men or women, averaged for 1967 and 1977 (incidence), per age group

	Incidence									
	Age group									
	< 5	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	>65
Men	7.5	10	12.5	13.5	16.5	23	23	23	31	28
Women	3	8.5	11.5	15	14.5	25	20	20	21	19.5

The table shows averages of the incidences for 1976 and for 1977. The incidence is somewhat higher for men than for women (in 1976 20 versus 16 and in 1977 19 versus 18 for all ages). No difference was observed between town and country; the incidence was the highest in the east of the country and the lowest in the west.

In 1976 approximately two to two-and-a-half as many old patients as new ones were reported. As psoriasis is a chronic disease, this ratio seems improbable and the sentinel station system is unable to state the prevalence of psoriasis.

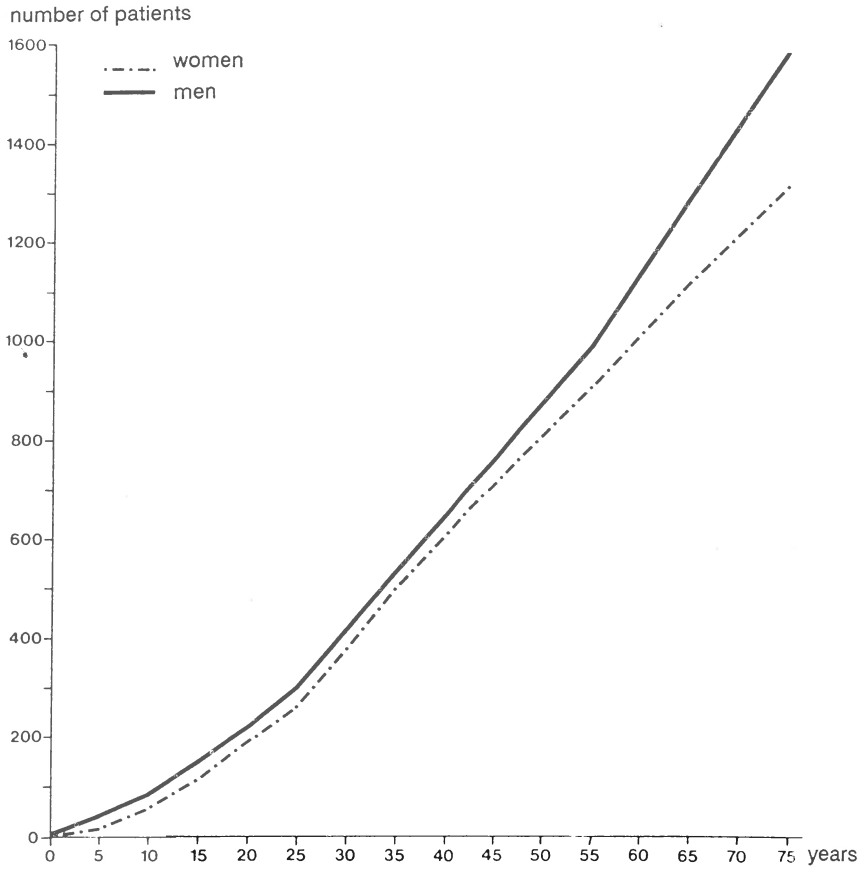
However, the prevalence per age can be calculated from the age-specific incidence. This has been done in Fig. 5.3.

On the basis of these data, the prevalence for the Netherlands is about 6%.

During the same period an investigation was made in Zoetermeer into the occurrence of psoriasis in an open population. After the respondents with patches suggesting psoriasis had been selected from the rest, a dermatologist made the definitive diagnosis among them. The prevalence for men and women together was 1.5% (Epidemiologisch Periodiek Onderzoek Zoetermeer, 1978).

As with many disorders, it proves difficult to calculate the prevalence for psoriasis too. In the case of psoriasis the chronically recurrent nature of the disease and its multiple forms of manifestation present particular difficulties. In times of (complete) remission there is no reason to consult the GP, and even in the event of exacerbations many patients forbear to call in medical aid. After all, they know where they stand and often do not have very high expectations of the various therapeutic possibilities. On the other hand, the patients who are confronted for the first time with psoriasis will probably be more inclined to consult their GP. The incidence can therefore be more easily established. For the sentinel station population this was in 1976 and 1977 about 20 per 10 000 inhabitants of the Netherlands.

Fig. 5.3.: Psoriasis, prevalence by age group per 10 000 men or women, 1976-1977



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6. SUSPICION OF MYOCARDIAL INFARCTION

J. Fracheboud

In 1978 and in the period 1983-1985 the topic "myocardial infarction (suspicion of)" appeared on the weekly return of the sentinel stations. In this topic three aspects played a role: there was a desire to gain insight into the frequency of the probable myocardial infarction, there was interest in the work load on the general practitioner through the syndrome of acute myocardial infarction and clinical pictures resembling acute myocardial infarction, and furthermore there was curiosity about the part played by home treatment of acute myocardial infarctions.

After the first reports had been heard at the beginning of the seventies in various countries about a decline in mortality as a result of acute myocardial infarctions, the question was whether a similar development could be observed in the Netherlands. At the same time there was also interest in the (development of) morbidity as a result of this disease. The two registration systems already in existence then could not give an adequate reply to these questions. The cause-of-death statistics of the Central Bureau of Statistics gave definite answers only on mortality, and the National Medical Registration of the Medical Registration Foundation (now called the Information Centre for Health Care) was concerned only with hospital morbidity. In this situation Continuous Morbidity Registration (CMR) presented itself as a national measuring instrument, since all residents of the Netherlands are registered with a general practitioner and in general no medical treatment is undergone without his knowledge.

Thus in 1978 the topic "myocardial infarction (suspicion of)" was included in the weekly return of the sentinel station for the first time. It was already the intention then to repeat this registration five years later so as to be able to establish possible trends. Unfortunately, confirmation of the diagnosis was not included among the questions, which later made interpretation of the numbers obtained difficult, for the concept "suspicion" contains a certain degree of subjectivity.

Also at the beginning of the seventies the results of a British survey were published (Mather et al. 1971 and 1976), in which the prognosis of a group of patients with an acute myocardial infection treated at home was no worse than that of a group of patients treated in hospital. In contrast to Britain, home treatment of myocardial infarctions was not usual on a large scale in the Netherlands, and in fact nothing at all was known about the occurrence of home treatment in the Netherlands. For this reason the intended sentinel station registration of "myocardial infarction (suspicion of)" seemed a favourable opportunity also to ask right away about the place of treatment of the patients suspected of a myocardial infarction.

6.1. Questions

The questions put to the spotter physicians remained unchanged during the four registration periods. The purpose was to gain a picture of the action taken in general practice with regard to a suspected myocardial infarction. Two questions were asked: the number of cases per week in which the spotter physician took measures as if an acute myocardial infarction were concerned was to be registered and also the frequency with which this led within 48 hours to admission to hospital (CMR, 1979, 46). The registration extended over all patients of a sentinel station, even if these were not seen by the spotter physician himself or herself, but by a locum. Cases of sudden death (mors subita) would not be covered by the registration, since there could not really be any question here of action taken in general practice. The patients admitted to hospital were registered as "clinical" patients, the others as "non-clinical". In the case of both groups the patient's sex was registered separately, so that the topic "myocardial infarction (suspicion of)" in fact consisted of four columns on the weekly return.

Originally registration was to be performed only in 1978 and 1983. However, the results of the 1978 myocardial infarction registration gave rise in the repetition of this registration in 1983 to an investigation into the significance of the non-clinical treatment of myocardial infarctions under

the title "Hartinfarct - hartbewaking of thuisblijven? (Myocardial infarction - coronary care or treatment at home?)". In the interests of this investigation myocardial infarction registration was continued during the two years following on 1983. The spotter physicians were informed of this intended research project at the beginning of 1983, in the hope that this would not affect their registration behaviour.

6.2. Results of the myocardial infarction registration

Every year some 400 cases of a suspected myocardial infarction were registered. The absolute registration numbers display a declining trend from 455 in 1978 to 397 in 1985. However, in this period the sentinel station population shrank and the total Dutch population grew, so that the percentage share of the sentinel station population in the Dutch population fell somewhat. The incidence of a suspected myocardial infarction per 10 000 inhabitants of the Netherlands is with 28-30 for all four registration years about the same (Table 6.1.). The proportion of non-clinical registrations averages 21.5%, with a slight outlier downwards to 18% in 1984. This is striking insofar as the investigation "Hartinfarct - hartbewaking of thuisblijven ?" started in the spring of 1984. However, no clear influencing of the registration behaviour of the spotter physicians by this investigation could be demonstrated.

Tabel 6.1.: Registration at "myocardial infarction (suspicion of)" 1978 and 1983-1985: numbers, percentages and incidences per 10 000 inhabitants of clinically and non-clinically treated patients

year	total		clinical			non-clinical		
	abso-lute	per 10 000	abso-lute	%	per 10 000	abso-lute	%	per 10 000
1978	455	30	349	77	23	106	23	7
1983	414	28	313	76	21	101	24	7
1984	412	28	336	82	3	76	18	5
1985	397	29	313	79	23	84	21	6

It is interesting that the annual registration totals and the incidences respectively differ so little from one another. For if one considers the incidences of subgroups or the registration numbers per sentinel station, it is striking that there the differences are much greater. The incidence, given per subgroup, confirms two known pieces of information: the (suspected) myocardial infarction occurs more frequently with increasing age (group) and among men. The man-woman sex ratio averages somewhat more than 2:1. From the sentinel station registration a somewhat increased incidence in the cities also emerges. The incidence per province group, on the contrary, displays a rather restless picture.

Table 6.2. shows the incidences per 10 000 inhabitants in the registration years 1978 and 1983-1985 per province group and per urbanization group by admission or non-admission to hospital within 48 hours or not (CMR, 1987, 63). The incidences may differ strongly in the course of the years both within one province group and in the interrelation of the province groups. It should, however, be noted here that the composition of the sentinel stations was identical only in 1983 and 1984.

The annual registration numbers of the individual sentinel stations display little regularity. Hardly anything can be said about the differences between the sentinel stations because numerous factors may be of influence on these, such as practice size, age structure, single or group practice and probably also a certain interdoctor variation. The maximum number registered per year by one sentinel station was 30 (in 1978) and contrasts with an absolute minimum of two sentinel stations that in 1983 did not have one single registration of a (suspected) myocardial infarction. But equally remarkable are the differences in size of the registration numbers of one and the same sentinel station during the four registration years.

Table 6.2.: Incidence of "myocardial infarction (suspicion of)" per 10 000 inhabitants of the Netherlands per province and urbanization group by hospital admission or not within 48 hours, viz clinical or non-clinical registrations (CMR 1985, 1987, 63)

	year	province group				urbanization group			Netherlands
		A	B	C	D	1	2	3	
clinical	1978	26	31	20	22	26	17	35	23
	1983	20	27	21	15	22	19	24	21
	1984	18	34	23	18	28	21	25	23
	1985	20	21	23	24	19	22	26	23
non-clinical	1978	9	9	6	7	6	6	11	7
	1983	9	10	5	6	6	6	8	7
	1984	7	6	4	4	3	4	8	5
	1985	4	8	5	7	2	6	9	6
clinical and non-clinical	1978	35	40	26	29	32	23	46	30
	1983	29	37	26	21	28	25	32	28
	1984	25	40	29	22	31	25	33	28
	1985	24	29	28	31	21	28	35	29

Somewhat more than half of all sentinel stations, viz 27, registered in unchanged staffing from 1978 to 1985. The average number of registrations per sentinel station for these 27 stations is between 3.75 and 19.5 per year. The deviations from these averages are in the case of some sentinel stations for a few years greater than the average itself. The ratio between the clinical and non-clinical registrations of a sentinel station also differs strongly from year to year in many cases. Only one sentinel station consistently never had non-clinical registrations. The other sentinel stations sometimes had none. more often a few and exceptionally once even more non-clinical than clinical registrations. Apart from the two sentinel stations mentioned earlier as having reported neither clinical nor non-clinical registrations in 1983, clinical patients were always registered.

6.3. "Hartinfarct - hartbewaking of thuisblijven?"

Under this title of 'Myocardial infarction - coronary care or home nursing?' a descriptive investigation was held from 1984 to 1986 for the purpose of getting to know something about the significance of the non-clinical registrations "myocardial infarction (suspicion of)". The prognosis of patients with a myocardial infarction who were treated clinically or non-clinically (at home) would be compared. The performance of this investigation was entrusted to the Epidemiology Division (Preventicon) of Utrecht State University. It is a follow-up investigation among patients who were earlier registered within CMR with a (suspected) myocardial infarction (Fracheboud, 1987).

For 249 of the 826 patients registered in 1983 and 1984 data were collected by means of interviews with the patients and/or the family doctors. As regards composition the 249 patients, 163 men and 86 women, barely differed from all 826 registered patients with respect to sex ratio, age structure, province group, degree of urbanization and place of treatment (clinical or non-clinical). 189 patients were registered as clinically treated and 60 as non-clinically treated. 80 had already died at the time of the investigation. The follow-up period for the 169 survivors averaged 17.3 months.

Of the 249 patients, the research population, 137 (55%) proved to have had an acute myocardial infarction when they were registered. Of these, 122 first contacted their family doctor or his locum in connection with the complaints. The remaining 15 patients were admitted to hospital without the agency of the family doctor.

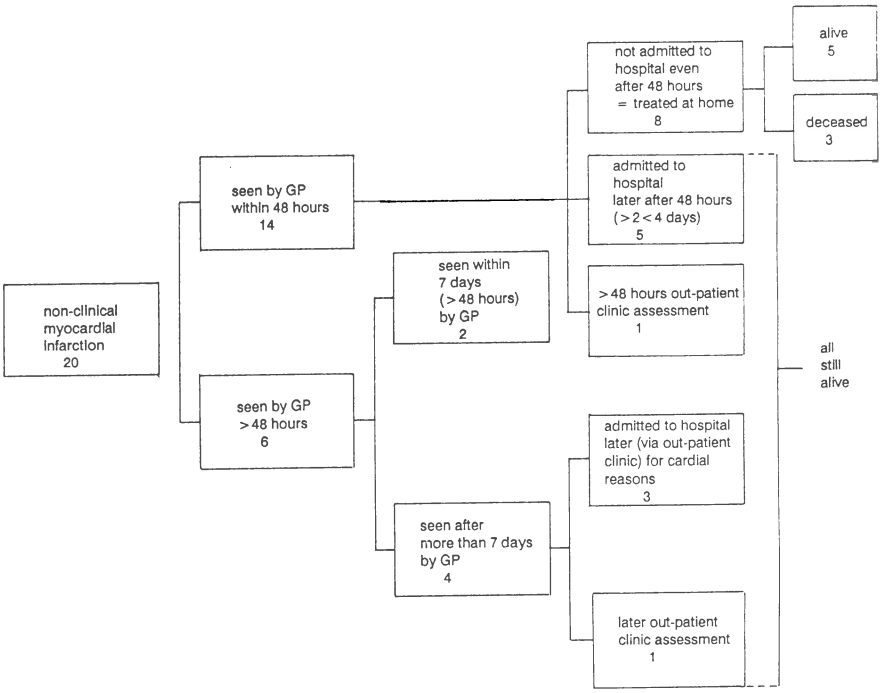
Of the 122 patients with a myocardial infarction who were first seen by the family doctor, 100 were admitted to hospital within 48 hours of occurrence of the complaints. Two other patients died in the ambulance. The remaining 20 (16% of 122) were not admitted to or treated in a hospital in the first 48 hours after the myocardial infarction.

However, further analysis of the 20 non-clinical patients revealed that only a minority received home treatment. Thus six did not first contact a doctor until after 48 hours, four not even until after the first week. These four patients were still referred to the specialist in connection with persistent complaints, whereas the other two were in fact not treated at all. 14 patients **were** treated by the family doctor in the first instance. However, six patients from this group had to be transferred to the specialist on the third and fourth day. Only eight (6.5% of 122) patients with an acute myocardial infarction who were first seen by the family doctor were kept at home and treated by the family doctor already in the acute phase of the myocardial infarction. In their case one may therefore speak of home treatment (Fig. 6.1.).

The principal characteristic of this group of patients treated at home is the high average age of 78.4 years as against an average 64.3 years for the 100 treated clinically. In all but one case the family doctor gave first aid. Five of the eight lived in a city with more than 100 000 inhabitants. In comparison with the clinical patients the myocardial infarction occurred more often during daytime, the picture of the complaints was often less clear and the infarction was not accompanied by serious complications. Three men aged 62, 86 and 87 died within a maximum of 37 days, two as the result of a recurrent infarction.

In the research population of 249 patients there were also 31 patients who had already died before the arrival of the family doctor. Contrary to the registration agreements they were registered, because there were strong indications of an acute myocardial infarction as cause of death. Their registration as non-clinically "treated" patients was responsible for the high percentage of non-clinical registrations of around 20 percent.

Fig. 6.1.: Group of patients (N=20) from the research population who suffered a myocardial infarction and were not admitted to hospital in the first 48 hours after the occurence of the complaints.



6.4. Discussion

The results of the myocardial registration by the sentinel stations in 1978 were integrated by the Council for Health Research of the Netherlands Organization for Applied Scientific Research (TNO) with data from other registration systems to obtain a picture of the frequency and the vicissitudes of acute myocardial infarction in the Netherlands (Raad voor Gezondheidsresearch TNO, 1980, 95).

From the repeated sentinel station registration of (suspected) myocardial infarction no definite trend can be derived. The incidence for the registration years 1978 and 1983-1985 is 28 to 30 per 10 000 inhabitants of the Netherlands. For the period 1983-1985 a proportion of some 60% confirmed cases of myocardial infarction could be calculated. However, nothing is known about this for 1978. It cannot therefore be indicated for certain whether within the sentinel station population the frequency of (confirmed) acute myocardial infarction in the Netherlands between 1978 and 1985 has likewise remained the same.

It is, however, now certain that the fall in mortality as a result of ischemic heart diseases and acute myocardial infarction continues (CBS 1983, Hoogendoorn 1985). According to Hoogendoorn it even seems as if the frequency of acute myocardial infarction is also beginning to fall. However, this does not tally with the constant frequency of clinically treated cases of myocardial infarction at the sentinel stations and is also at variance with the remarkable increase in hospital morbidity measured by the National Medical Registration in the first half of the eighties (SIG 1986). Possibly a changed admission policy such as more frequent transfers from the one hospital to the other (after all, admissions are registered, not persons) are of influence on this. It is also suggested that the observed shortening of the average length of nursing is connected with readmissions under the same diagnosis. Partly on account of these discrepancies a national working party was founded in 1987 on the initiative of the Netherlands Heart Foundation, which was among other things to attempt to calculate the frequency of acute myocardial infarction in the Netherlands.

The proportion of 23% patients in 1978 who were not admitted to hospital upon suspicion of acute myocardial infarction led to the assumption that they were nursed at home (Dekker, 1979). The investigation "Hartinfarct - hartbewaking of thuisblijven ?" offered the possibility of further analysing the group of non-clinical patients.

Over half of these patients proved to be erroneously registered, viz all persons who had acutely died before there could be any question of

medical treatment in any form. In addition patients were also registered as non-clinically treated who after out-patient examination by a specialist had been sent home again because they had not suffered an acute myocardial infarction. Of the 249 patients in the research population only eight were treated at home. This is 3.2% of the research population or 5.8% of the 137 patients with an acute myocardial infarction. These were above all patients of advanced age.

With some reservation as regards an interpretation for the whole of the Netherlands it may probably be concluded from this that the proportion of patients with an acute myocardial infarction treated at home occurs only incidentally and is confined above all to older patients. Perhaps this proportion will increase somewhat in the years to come through the increasing ageing of society and through the trend to reinforce primary health care and home nursing in general.

Unfortunately, the myocardial infarction registration of the sentinel stations cannot conclusively answer the question of the frequency of acute myocardial infarction in the Netherlands. It has, however, made it clear that, despite the enormous development of cardiology, even today a certain percentage of patients with an acute myocardial infarction are still being treated at home. In addition the registration gave an impression of the burden on health care because it asked about suspicion of a myocardial infarction. For this always gives rise to emergency action, irrespective of the ultimate diagnosis. Further, the myocardial infarction registration possesses the merit of having restarted the discussion on the frequency of myocardial infarction.

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7. ACCIDENTS AND INJURIES: THE FIRST-AID FUNCTION OF THE GENERAL PRACTITIONER

Almost daily the media carries stories about large and spectacular accidents. The victims of these usually get first aid from special services and are then further treated in hospital. Many people evade such accidents throughout their life, but hardly anyone escapes the daily use of knives, doors and sills, gas, hot water, electricity etc. Precisely the most banal and everyday activities are surrounded by unsafe objects or take place in unsafe surroundings. Specific activities such as work, sport and odd jobs entail new risks, also because they usually require use of the roads.

An army of aid workers are standing by to treat accident victims: the specially but not medically trained first-aid worker, the GP, industrial medical officers, physicians specializing in sport medicine, the ambulance services, the general surgeon or his colleague specializing in traumatology. It might be supposed that the choice of the right person or body to give the treatment depends on the nature and severity of the injury or injuries. However, it is a well-known fact that the circumstances in which an accident occurs, notably the time and place of the accident, at least partially determine this choice. The presence in the vicinity of a hospital with a first-aid post manned 24 hours a day, the existence of an industrial health service, the availability of a physiotherapist or a sports physician contribute to the fact that many accident victims undergo medical treatment unknown to the GP for an injury that could equally well be dealt with by the letter.

That the general practitioner in the Netherlands has a clear first-aid function in the case of accidents is also underlined by the identical opinion of both GPs and specialists that an accident victim with injuries that are not life-threatening should primarily consult the general practitioners. Because many victims are insufficiently aware of this agreement on the division of tasks between general practitioners and

surgeons, a competitive situation has wrongly come about between GPs and hospitals with regard to first aid. However the results of the registration topics discussed in this chapter confirm that the general practitioner plays an important role in the reception and treatment of victims with accident injuries.

An important aspect in accidents is the possibility of restricting the number of victims by prevention. It was known for some time from hospital statistics that accidents formed a major health care problem. But effective preventive measures cannot be taken until the extent of the problem is known as fully as possible. However, more than ten years ago the data from general practice were lacking for this. Interest was concentrated on private accidents, since the greater prosperity and the increase in leasure time gave scope for new activities, above all in the recreational sector.A manifestation of this is the tremendous growth in the number of athletes.

Traditionally, accidents are divided into the categories industrial accidents, road accidents and accidents in the private sector, which also include sports accidents. However, in the last ten years a tendency may be perceived to include sports accidents in a separate category, running parallel to the development of an independent discipline, sports medicine. This is meaningful to the extent that in sports accidents, as opposed to "ordinary" private accidents, not the whole population is at risk.

Around 1980 the spotter physicians registered accidents in the private sector (without traumas in sport) and traumas in sport. Both topics appeared on the weekly return for several years, which offered the opportunity of collecting supplementary data. These two registrations confirm that general practitioners in the Netherlands often come into contact with victims of certain accidents.

From a recently held (telephone) survey among over 24 000 Dutch households it emerges that 3 million accidents per year are treated medically (Montfoort et al., 1988). These involve 1.4 million accidents in the private sector, 1.17 million sport accidents, 285 000 industrial and

250 000 road accidents. In the first two categories the GP was the principal treating agency in about 50% of the cases. Per year 1.7 million consultations of the general practitioner take place on account of an accident. Together with follow-up consultations, the annual total of GP consultations on account of an accident is estimated at 2.75 million, which amounts to 5.6% of all GP consultations. These data are not directly comparable with the registration results discussed below. However, they leave no doubt open that the general practitioner occupies an extremely important place in the treatment of injuries as the result of an accident.

Quite different questions form the basis for registration of injuries to the musculo-skeletal system. However, this registration topic fits in well with the preceding two and sheds light on the accident problem from a different angle. There is a numerical foundation for the various registration topics: extrapolation of the sentinel station data leads to nearly 640 000 first GP consultations on account of private accidents or traumas in sport in 1981 and to approximately 750 000 first GP consultations on account of an injury to the musculo-skeletal system in 1984.

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7.1. Injuries due to home and leisure accidents

W.H.J. Rogmans

7.1.1. Introduction

The Consumer Safety Institute (Stichting Consument en Veiligheid, 1983) is responsible for the prevention of home and leisure accidents. Home and leisure accidents are receiving more attention at national and international level (EEC and WHO) and the need for effective preventive measures is clearly recognized in many developed countries. Although there are similarities as regard the nature of the problem, there are also variations in type of accidents and causal factors between countries and even between regions. In order to identify risk groups and risk areas efficiently, epidemiologic research is indispensable.

Research performed by the research department of the Consumer Safety Institute aims at achieving better insight into the severity and the extent of home and leisure accidents by recording accidental injuries to persons who are treated at hospitals as in-patients or out-patients. As a consequence, those accidental injuries treated elsewhere will not be considered. However, a survey performed by Socmar, 1976, showed that 63% of all victims of accidents reported by the respondents visit a general practitioner; that is twice as many patients as those who visit an accident and emergency department in a hospital. Another study carried out in 1982 corroborated these findings (Rogmans, 1982).
It is for this reason that the Consumer Safety Institute displayed great interest in a survey on the level of general practitioners. In the years 1981-1983 and 1986-1987 the Consumer Safety Institute participated in Continuous Morbidity Registration. The questions concerning home and leisure accidents were included in the survey at the request of the Consumer Safety Institute (director: Dr. W.H.J. Rogmans). Below we shall describe the questions asked in the survey, their purpose and the outcome.

7.1.2. Methods

In the years 1981 to 1983 all home and leisure accidents and the age and sex of the victims were recorded by the physicians participating in the project. The working definition of "accident" is: "An unpremeditated event resulting in a recognizable injury". This description is derived from a WHO publication (Backett, 1965) and is considered to be generally accepted. The concept "home and leisure accident" is defined by an exclusive description: all those accidents occurring neither during participation in traffic on the public highway, nor during the exercise of a profession.

During the registration period different questions were put:

In 1981 a subdivision was made for patients treated by the physicians and patients referred to a specialist. In the last quarter of the year the physicians were asked for the cause of accidents among children. Also in 1981 an inquiry was held among the physicians concerning the distance from the nearest hospital with an emergency department and the activities physicians usually deploy with accidental injuries.

In the first half of 1982 information was asked about the cause of the accident and whether objects were involved.

In 1983 questions were put with regard to external factors influencing the accident, such as medicines, alcohol and chronic or acute disease.

In 1986 and 1987 no accidents were recorded but only the victims of bites by animals (1986) and especially of dog bites (1986 and 1987).

7.1.3. General results of the survey

Table 7.1. gives the number of consultations for a home or leisure accidents per 10 000 men and women.

Table 7.1.: Number of (first) consultations for a home or leisure accident by sex and province and urbanization group per 10 000 inhabitants, 1981-1983

		Province group				Urbanization group			Netherlands
		A	B	C	D	1	2	3	
Men	1981	572	418	240	347	334	353	311	340
	1982	302	301	183	415	263	271	278	271
	1983	250	220	165	322	179	209	289	221
Women	1981	410	270	218	280	213	276	280	267
	1982	194	236	168	324	226	193	279	217
	1983	229	187	206	337	162	221	322	234
Total	1981	489	343	228	313	274	313	295	303
	1982	246	269	176	369	245	231	278	244
	1983	239	203	186	330	171	215	306	227

The number of consultations in 1983 is about equal to the number in 1982. In 1981 this number was higher. This may have been caused by the extra questions that were asked in 1982 and 1983, which might have resulted in a greater selectivity.
Another explanation might be the following: in 1981 a distinction was made between treatment by the physician and referring the patient to a specialist. The participating physicians might have continued to record only those patients treated by themselves in 1982 and 1983. These suppositions have not been investigated.

The numbers per subgroup display some fluctuations. The only subgroup that attracts attention is province group C (the west and centre of the country). This one displays the lowest relative frequencies every year.

Table 7.2.: Number of (first) consultations for a home or leisure accident by sex and age group per 10 000 inhabitants, 1981-1983

		Age group									
		< 5	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	>64
Men	1981	605	458	485	453	475	281	241	224	192	188
	1982	759	499	383	330	258	167	192	177	142	168
	1983	687	376	324	217	189	156	162	142	146	166
Women	1981	408	286	326	367	279	190	194	216	259	285
	1982	469	228	263	223	171	145	194	156	212	274
	1983	461	243	280	221	179	178	203	191	224	316
Total	1981	506	372	407	410	373	236	218	220	225	244
	1982	616	365	323	277	213	156	193	166	178	231
	1983	574	310	302	219	184	167	182	167	187	254

In Table 7.2. the results are presented by sex and age per 10 000 inhabitants.

The year 1981 displays the highest frequencies in almost every age group. The years 1982 and 1983 do not differ much when the corresponding age group is compared.

An age-dependence is present: the incidence among men shows a nearly continuous decrease, with the exception of the highest age group; among women the incidence increases after the age of 40. In the oldest age brackets the frequency among women is even higher than among men, in contrast to the other age groups. If the data of Continuous Morbidity Registration are compared with the data of the continuous surveillance at accident and emergency departments in the Netherlands (Consumer Safety Institute, 1986), some differences are noticeable. In the PORS surveillance the incidence among women is higher than the incidence among men after the age of 55 years, while in Continuous Morbidity Registration this female dominance is already noticeable in earlier age groups. As a second difference between the results of the two surveys, the survey in hospitals does not display a smooth decrease of incidence

per age group: the incidence increases starting at 107 at the age of 0-4 up to 159 in the 10-14 and 15-19 age groups; hereafter the incidence decreases until the age group of 70-74 years. Until now no adequate explanation has been found for these differences, except for the higher incidence of sports injuries among patients attending accident and emergency departments (see also Traumas in sport).

Referral for special treatment

In 1981 a distinction was made between patients who had been sent to a specialist for treatment in the first instance and those who had not. The percentage of patients referred to a specialist is a little higher for the metropolitan area (province group C, 23%), with respect to the other groups (province groups A, B and D 19, 21 and 15% respectively). The urbanization groups show a similar difference: in the cities 25% are referred to a specialist, in the other groups about 20%. The extrapolated total number of consultations by men and women in a year is 239 000 and 191 000 respectively.

In order to compare these figures with the results of the Socmar research (850 000 consultations in general practices a year) the sport traumas must be considered too. The extrapolated total number of consultations of a general practitioner for a home or leisure accident including sport traumas in the Netherlands is, based on the CMR, 637 000 a year.

Causes of domestic accidents among children

In the last quarter of 1981 the physicians participating in the system of Continuous Morbidity Registration were asked to record additionally the nature of the injury and the accident and to give a description of the way in which the accident happened, only if the victim was younger than twenty years.

The total number of records collected in respect to patients younger than 20 years was 407. 54% of the cases were boys and 46% girls. The following causes of the accidents were recorded: 56% a fall (from a staircase, by stumbling or slipping), 10% an accident by a sharp object (cutting, piercing), 8% an accident by a blow or a push, 5% an accident by a falling or thrown object and 3% burning by hot liquids (18% through

other causes). The injuries most recorded were an open wound (31%), a contusion or bruise (16%), concussion (10%), a burn or scald (5%), or a fracture (4%). There were 34% other injuries.

Distance from practice to hospital and range of actions performed by general practitioners

The data obtained displayed some differences in the number of home and leisure accidents reported by the various physicians. In 1981 an extra inquiry was carried out in order to trace the factors responsible for these variations. The inquiry aimed at achieving a better view of the variables determining the behaviour of victims of accidents in their choice between seeing a general practitioner or directly visiting an accident and emergency department at a hospital. The inquiry has shown that the distance between the practice and the nearest hospital open 24 hours a day for emergencies is rarely great.

Expressed in kilometres, 52% of the practices are 0 to 5 km from a hospital, 15% 5 to 15 km, 18% 10 to 15 km, 9% 15 to 20 km, and 6% 20 km or more. In terms of motor transport minutes, this would amount to: 0 to 10 minutes 54%, 10 to 20 minutes 36% and 20 to 30 minutes 10%. In addition it proves that three quarters of the practices are established in residential districts in which or near which there are two or more hospitals at a reasonable distance from the practice address, in the sense that the general practitioner usually refers patients to them.

As regards the actions that are usual a part of first aid, 95% of the general practitioners questioned said that they use slings, 33% use clamps as well and 5% use neither of these aids. Of the general practitioners, 4% never stitch skin injuries themselves, 11% do so in fewer than 50% of the cases where it is relevant, 30% do so in 50% or more of the cases, while 55% always do it themselves. With regard to removing a foreign body from the eye themselves, 67% say that they always do, 28% usually do (in 70% to 99% of the cases) and 6% do in about half of the cases. 80% of the general practitioners always try themselves to remove a foreign body from ear or nose. 20% of the physicians never have an X-ray photograph made of a suspected sprain, 43% do so in fewer than 50% of the cases, 30% do so in 50% of the cases and 8% do so in more than half of the cases.

Of the patients that need medical treatment (or think they do) as the result of a home or leisure accident, a large proportion goes first to the family doctor (approximately 70%). He can usually treat these patients himself (80%); if not, they are referred to a specialist. This referral is somewhat more common in the larger towns and cities where the distance (both in kilometres and in car-minutes) from the closest out-patient clinic is shorter than in less urbanized areas.

Factors such as distance and range of actions performed by the family doctor are of much stronger influence on the behaviour of patients themselves in seeking aid. About one third of the accident patients do not go to the family doctor but directly to the out-patient clinic or first-aid post.

This happens particularly in those cases in which such an aid post is near by and when the family doctor in question preferably does not perform certain actions himself.

On the strength of the results of this survey it must be concluded that surveillance confined to accident patients treated in hospital or in out-patient clinics, certainly in less urbanized regions, will not give a full picture of the whole problem. Supplementation of the out-patient clinic registration system started by the Consumer Safety Institute by intermittent investigation in general practice is therefore to be recommended.

Objects involved

In the first half of 1982 the practitioners were asked to describe the way in which the accident happened, as well as the object involved in the accident.

In 85% of the recorded cases an object proved to be involved. It is striking that, as in the surveillance of patients treated in hospitals, the object categories parts of the house (sills, doors, stairs), glass and recreation-ground equipment (swings, climbing frames) are mentioned frequently as objects involved in the accident (34% of all accident injuries). There appears to be no difference in the ranking of objects involved in injuries treated by the GP and those treated at hospitals.

Influence of alcohol, medicines and chronic or acute diseases

In 1983 additional questions were asked: had the patient been under the influence of alcohol or medicines or did he suffer from a chronic or acute disease? Published research (Setekleiv, 1980) showed that, in fatal home accidents concerning adults, in about half of all cases excessive use of alcohol and/or medicines had been involved. Over two thirds of the fatal home accidents concerning old people were connected with a physical disease. It could be expected that in particular the use of alcohol and medicines will increase the risk of non-fatal accidents too.

The spotter physicians confirmed in 3.4% of the cases that the patient suffered from an acute disease, in 3.8% of the cases that the patient suffered from a chronic disease, in 3.5% of the cases that the patient was under the influence of medicines and in 2.2% of the cases that the patient was under the influence of alcohol. In the 65 years and older age group more than 20% of the victims of a home or leisure accident suffered from a disease. In all age groups the proportion of women per age group who had a home or leisure accident and suffered from a disease is a little larger than the corresponding proportion of men. In the 75-85 age group the combination of a home or leisure accident and the use of medicines is most frequent; in this age group more than 20% of the patients who had a home or leisure accident were under the influence of medicines at the time of the accident. In respect of this subject no clear differences can be seen between women and men. The combination of a home or leisure accident and the use of alcohol is restricted to the age groups between 15 and 85 years. In all age groups the proportion of men that were under the influence of alcohol at the time of the accident is greater than the corresponding proportion of women. The age groups with the highest frequencies of alcohol-related home and leisure accidents appear to be for men 15-35 years and 65-75 years (more than 6% of the men of that age group) and for women 35-45 years (more than 4% of the women of that age group). Perhaps the number of people who were under the influence of alcohol is underreported. Probably the practitioners can make good judgements about the influence of diseases and medicines, but the patients may not have been honest about the use of alcohol.

7.1.4. Special study of dog bites

There seems to be a growing public concern about trouble caused by dogs. In particular injuries caused by dog bites are a serious matter of concern. Little is known about this subject. Attention is directed towards various questions, such as which are the groups at risk, or what kind of dogs inflict most injuries and are victims hurt by their own dog or someone else's?

In 1985 physicians in Rotterdam reported a high number of consultations that they had had for bites by domestic animals. Extrapolation of these figures to the Dutch population reached a number of more than 40 000 men and women who consulted a general practitioner for a bite by a domestic animal, among which in nine out of ten cases a dog was involved.
In 1986 the practitioners participating in Continuous Morbidity Registration were asked to record all victims of bites by domestic animals, their age and sex. A distinction was made between dog bites and bites by other domestic animals. In 1987 the registration of only dog bites was continued.

Table 7.3. presents the number of patients who consulted a general practitioner for a dog bite or a bite by another domestic animal per province group and urbanization group per 10 000 inhabitants in the Netherlands.

Table 7.3.: Number of patients who consulted a general practitioner for a dog bite or a bite by another domestic animal per province group and urbanization group in the Netherlands, per 10 000 men and women, 1986-1987

			Province group				Urbanization group			Netherlands
			A	B	C	D	1	2	3	
Dog bites	M	1986	29	42	26	35	39	31	25	31
		1987	32	44	19	33	41	29	17	28
	W	1986	28	24	22	18	29	22	17	22
		1987	19	26	17	13	27	18	11	18
	M+W	1986	28	33	24	26	34	27	21	26
		1987	26	35	18	23	34	24	14	23
Other bites	M	1986	4	1	3	5	2	3	4	3
	W	1986	7	10	5	4	8	6	3	6
	M+W	1986	5	5	4	4	5	5	4	5

Men are bitten by dogs more often than women: 30 per 10 000 men and 20 per 10 000 women respectively. The distribution of bites by other domestic animals is the other way round (3 per 10 000 men and 6 per 10 000 women).
The western provinces (group C) show the lowest frequencies of bites by domestic animals. Most bites appear in the eastern provinces (group B).
The frequencies found in the western provinces display a similarity to the frequencies found in the Rotterdam study: 28.3 per 10 000 inhabitants in 1985 versus 28 of Continuous Morbidity Registration in 1986.

In 1986 more bites by dogs were inflicted in spring (second quarter) and in summer (third quarter) than in the other seasons. In 1987, however, the differences between the seasons disappeared completely.

Table 7.4. gives the frequencies of first consultations for a bite by dog per sex and age group.

Table 7.4.: Number of patients who consulted a general practitioner for a dog bite per 10 000 inhabitants per age group per sex, 1986-1987

		Age group										
		<1	1-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	>64
M	1986	-	41	55	49	43	26	31	29	17	28	18
	1987	-	29	25	36	33	32	36	17	28	32	14
W	1986	-	27	41	26	39	17	21	23	17	20	13
	1987	-	27	13	26	26	20	16	16	24	18	6
M+W	1986	-	34	48	38	41	21	26	26	17	24	15
	1987	-	28	19	31	30	26	26	16	26	24	9

According to these figures, babies younger than one year are seldom bitten by dogs. The group at risk consists of children and adolescents between 1 and 19 years old, but in 1987 the difference with the other age groups is less than in 1986. A striking feature is the decrease of 60 percent in 1987 in the age group from 5 to 9 years; an explanation of this cannot be given.
In most age groups the frequency for men is higher than the frequency for women.

As a result of the additional questions asked it appears that in 37.2% of the cases the dog assaulted its master. Only 5.0% of the victims were bitten during the exercise of a profession (the proverbial postman bites). In one out of four cases the number of resulting injuries was greater than one.
8.6% of the patients were referred to a hospital.

7.1.5. Concluding remarks

The system for Continuous Morbidity Registration provides us with an important source of information on injuries due to home and leisure accidents, in addition to that collected in hospital accident and emergency departments and through national death certificate systems. Although the depth of information gathered by GPs is rather limited, it is an important

tool for corroborating findings of other surveys and for studying specific subjects of interest like dog bites and sports injuries.

The results show that there is no great divergence between information on accident causes supplied by GPs and hospital-based information. Nevertheless, it must be stressed that data collected by GPs provide an important addition to existing epidemiology knowledge, owing to the great number of injuries involved and their relative severity. Too often people are inclined to regard injuries that are treated by GPs as minor and negligible. Another aspect in data collection is the fact that mere registration contributes to an increasing awareness among the doctors involved as regards the feasibility of preventing home and leisure accidents. In the Netherlands, owing to increased efforts invested in past years in informing and educating the public and also professional groups, we notice an increased interest in accident prevention, also among health professionals. The studies that have been carried out in the frame of Continuous Morbidity Registration have contributed without any doubt at least partly to this effect.

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7.2. Traumas in sport[2]

H. Inklaar

In the sixties, passive and active interest in sport grew strongly, and within two decades the number of registered athletes rose from 1.2 to 4.2 million (including duplications of an unknown number of persons engaged in more than one sport). In addition the Netherlands Sports Federation estimates the number of practitioners of recreational sport at approximately 1 million; hoewever, other calculations arrive at three to four times this number. The development of sports medicine lagged behind this, which found expression in a series of articles in Medisch Contact (1978). The considerable expansion of the practice of sport after all also meant an increase in the number of traumas in sport. However, no reliable or at most dated information was available on this. Since sports medicine is concerned not only with curative but also and in particular with preventive aspects, recent data on the extent of the problem are indispensable.

Identification of the sport trauma problem therefore forms the first step in a prevention sequence. Incidental factors that can be registered in this first step are the nature and location of the sport traumas. By asking about age, sex and sport practised some insight can be obtained into the groups at risk. For an optimum appraisal of the extent of the problem and for calculation of the incidence, one should, however, know the population at risk and take into account the length of exposure, i.e. the time someone devotes to sport.

The second step is formed by a stocktaking of the factors that play a part in the occurrence of traumas in sport. In a third step measures are taken of which it may be assumed that the chance of sport traumas occurring and/or the severity of these will become less great. Research at the level

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2 This section appeared earlier as an article in Huisarts en Wetenschap and has been included here, after permission, with some adaption (Inklaar, 1986)

of the second and third step must preferably be performed by branch of sport.
Needless to say, the aim should be directed above all at those branches of sport that make the greatest contribution to the sport trauma problem. Meanwhile, the authorities (the Ministry of Welfare, Health and Culture) have designated football as target number one.

In a fourth step of the prevention sequence the effect of the measure(s) taken will have to be evaluated. The epidemiological research in this phase consists in fact of repetition of determination of the extent, the severity and the location of sport traumas.
With regard to the first step, the identification of the sport trauma problem, research has already been done during the last ten to fifteen years. However, this research was rather uncorrelated and did not always lend itself to reliable conclusions. The number of medically treated sport traumas is about 500 000 on an annual basis. Some 200 000 of these sport traumas are registered at the first-aid departments of hospitals and the number of cases of reporting sick on account of sport traumas is over 200 000 per year (Hlobil et al., 1985; Kranenborg, 1980; Boersma-Slutter et al., 1979; Rogmans, 1982; Anon., 1985; Vermeer, 1982; CMR, 1979-1983).

However, reliable information is missing on the place of the general practitioner in the reception and counselling of patients with sport traumas. The central part that the general practitioner plays in health care suggests that a considerable proportion of the patients with a sport trauma are seen and also treated by the GP.

In consultation with the Association of Sports Medicine the topic trauma in sport was placed on the weekly return of Continuous Morbidity Registration Sentinel Stations in the period 1979-1983. The registration had to answer the following questions:
- With how many sport traumas is the general practitioner confronted regularly and what proportion of them is referred by the general practitioner;
- What groups at risk and risk situations can be distinguished;

- What are the characteristics of the injuries suffered?

7.2.1. Methods

For the investigation use has been made of the registration for 1979-1983 of Continuous Morbidity Registration Sentinel Stations the Netherlands (Collette, 1985). In those years traumas in sport were included as a topic on the weekly return: all first contacts in connection with a sport trauma were registered. After-checks and repeat consultations lay outside the scope of the registration, no distinction was made by sex, nor was a distinction made between consultations, house calls and aid on the spot.

The traumas in sport topic had a subdivision that was changed annually:

1979: referral or not to a specialist at the time of the first contact; membership or not of a sports club (with a minimum membership for one year).
1980: indoor or field sport; team sport or otherwise.
1981: handball, hockey, football and other sports.
1982: first trauma in sport or recurrent trauma in sport (repetition after a period free from complaints of at least one year); sports accident or injury as a result of chronic overload.
1983: knee injury, ankle injury, muscle or tendon injury and other sport traumas.

The 0-4 and over 65 age groups have been omitted from the tables and figures, since the proportion of these age groups is negligible.

Data on the number of athletes have been taken from the mass survey of participation in sport by the InterView poll organization (Anon., 1978). In connection with differences in the division into age groups between our study and the InterView survey, the average percentage of athletes per age group has been determined on the basis of weighted averages.

The standard deviations used have been calculated at a 95% confidence interval. In analysis of the frequency tables of the different variables use has been made of the chi-squared test. For calculation of the average injury incidence per age group, province group, urbanization group and

quarter a theoretically average distribution function has been used; then the extent to which the various subgroups differ from this average has been investigated for each year.

Further, use has been made of the weather data from the monthly surveys of the Royal Netherlands Meteorological Institute: temperature, precipitation, relative humidity, sunshine, wind speed and number of days with thunderstorms (Anon., 1979, 1983).

For all variables the average and standard deviation has been calculated. Moreover, the Pearson product moment correlation has been determined for all pairs of variables.

7.2.2. Results

Role of the general practitioner

The numbers of first consultations on account of sports injuries are shown in Table 7.5. If we assume that every year 69% of the population on average take part in sport, that means an average incidence of 2.4% per year. On the strength of an average practice size for 2500 inhabitants, one then arrives at a total of 42 first consultations for sports injuries per practice per year.

Approximately 25% of the patients with a sports injury are referred to a specialist by the GP at the first consultation. This percentage applies to all subgroups and is therefore independent of age, degree of organization and place of residence of the patient.

Table 7.5.: First encounters with the general practitioners for sports injuries, 1979-1983. Absolute numbers, numbers per 10 000 inhabitants and numbers per 10 000 athletes*

Year	Number	Per 10 000 inhabitants	Per 10 000 athletes
1979	186 500	135	195
1980	226 600	162	235
1981	207 000	148	215
1982	207 000	200	290
1983	289 800	204	296
Mean	238 800	170	246

* The figures in this table differ from the results in the official report of the Continuous Morbidity Registration Sentinel Project in the Netherlands because a different division of the year into weeks was used.

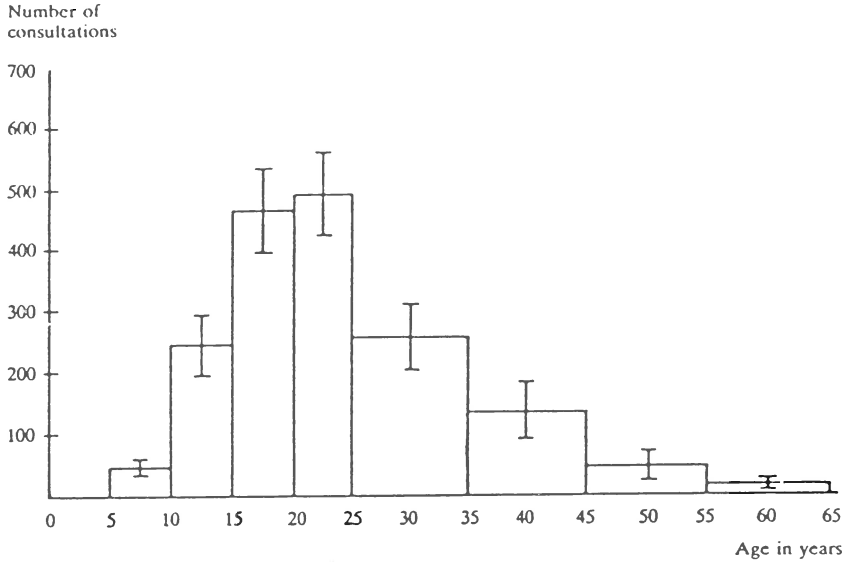
Risk profile

Over 50% of all consultations related to the 15-24 age group (Table 7.6., Figure 7.1.).

Table 7.6.: First encounters with the general practitioner for a sports injury, 1979-1983, by age group. Rounded percentages per year

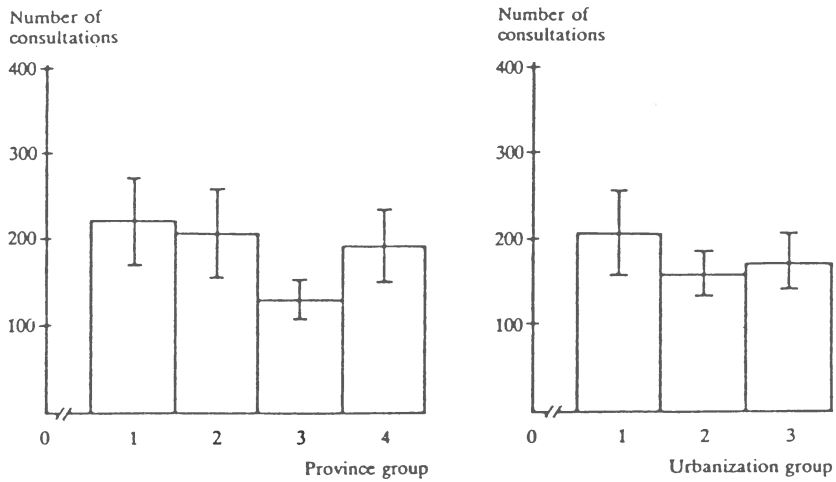
Age in years	Percentage of total population	1979	1980	1981	1982	1983	Mean
5- 9	8	3	3	2	3	3	3
10-14	9	15	14	14	15	15	15
15-19	9	29	27	29	28	25	27
20-24	8	29	31	31	26	27	29
25-34	16	15	14	16	15	17	15
45-54	11	2	3	1	3	4	3
55-64	9	1	1	0.3	1	1	1

Fig. 7.1.: First encounters with the general practitioner for a sports injury, 1979-1983. Numbers per 10 000 inhabitants per age group



With 17% of all consultations province group C (the centre and west of the country) yields the lowest percentage (Figure 7.2.). This result is independent of the participation in sport in this province group and consistent for all investigation years. However, the relation between the number of consultations and the geographic distribution proves not to be significant. Nor was a statistically significant connection between urbanization group and number of consultations on account of sports injuries present.

Fig. 7.2.: First encounter with the general practitioner for a sports injury, 1979-1983. Numbers per 10 000 inhabitants per province group (left) and per urbanization group (right)



distribution of the mean of encounters and standard deviation

Consideration of the influence of weather conditions on the number of consultations for sport injuries shows that the level of the temperature is inversely proportional to the number of consultations (Table 7.7., $p<0.001$); no significant connection could be demonstrated with the other climatological factors. However, no allowance has been made for the influence of the participation in sport.

Table 7.7.: First encouters with the general practitioner for a sports injury, 1979-1983, per trimester. Rounded precentages per year

Trimester	1979	1980	1981	1982	1983	Mean
1	22	28	28	33	29	29
2	26	26	24	26	28	26
3	20	20	22	18	20	20
4	33	26	26	22	23	25

Some two thirds of the consultations for sports injuries relate to organized sport. This percentage varies from approximately 30 in the lowest and highest age groups to over 70 in the 25-34 age group.

Of the injuries that the general practitioner sees, 67 percent occur in the practice of a **field sport**. Since the number of practitioners of an indoor sport and a field sport are in a ratio of 2:3, it may be concluded that field sports entail an increased risk of incurring sports injuries that render a consultation by the GP necessary.

Team field sports yield the highest percentage of sports injuries (46%), and individual indoor sport the lowest percentage (12%). Data on participation in sport in these combinations are not available, so that the real risk is difficult to estimate.

Football scores the highest here, with no less that 60% of all consultations for sports injuries. On the basis of the age distribution of the patients concerned and the age distribution of the members of the Royal Netherlands Football Association, a distinction can be made between an age group with a relatively high risk (15-34 years) and age groups with a relatively low risk (5-14 years, 35 years and older).

Characteristics of injuries

81% of the consultations of the general practitioner are on account of a sports **injury**; injuries caused by **overloading** the body are therefore a clear minority. However, the recurrent nature of overload injuries comes emphatically to the fore: the percentage of recurrence of overload injuries is 25%, as against only 8% for sports accidents. There is a clear link with age ($p < 0.05$).

The number of sport accidents is the highest in the 15-19 age group and outside that age groups deceases progressively. Conversely, the peak in the overload injuries is in the 35-45 age group. The proportion of overload injuries in the total number of sports injuries increases with advancing years. This emphatically applies to recurrent overload injuries.

28% of consultations for sports injuries took place on account of ankle injuries. Consultations for knee injuries and muscle or tendon injuries do not differ much at 19% and 20% respectively.

7.2.3. Discussion

With some 240 000 first consultations on an annual basis and an average of 42 first consultations per practice year, it can be said that the general practitioner is regularly confronted with sports injuries.

A comparison with incidence rates from other studies continues for the time being to be a precarious business on account of differences in the definitions used for practice of sport and sports injuries, in the research methods and in the estimation of the population at risk. Thus the incidences in other studies vary from 20% to no less then 46.5% (Kranenborg, 1980; Boersma-Slutter et al., 1979).

This discrepancy is also reflected in the absolute number of sports injuries on an annual basis. However, it is now generally assumed that the number of medically treated sports injuries is over half a million per year (Kranenborg, 1980; Boersma-Slutter et al., 1979; Rogmans, 1982). This datum and the fact that on estimate some 200 000 sports injuries are annually treated the first-aid departments of hospitals in the Netherlands (Anon., 1985) suggest a strong influence of the reporting behaviour of the athlete. There is a clear trend to consult other medical agencies without the knowledge of the GP. Thus in the densely populated centre and west of the country and in the large and medium-sized municipalities the athlete tends to hurry to the hospital. Other studies seem to confirm this finding (Rogmans, 1982; Klasen, 1983; Krishnadat, 1985).

The distance from the hospital and the accessibility of the GP (particularly in the weekend) seem largely responsible for this reporting behaviour. In addition, the expectation pattern of the injured athlete with regard to the functioning of the GP and of the first-aid department of the hospital may also play a part (Krishnadat, 1985).

That many athletes in fact wrongly report to the first-aid departments of the hospitals emerges from the results of the PARS (private accident registration system) investigation: 4.8% of the injured athletes in this study were not treated, 34.2% were discharged after a single treatment with recommendation of a check-up by the GP sufficed. The impression also exists that a not inconsiderable number of injured athletes opt directly for a paramedical channel, despite the fact that the nature and severity of the injury often require primarily a medical consultation (Anon., 1985).

As groups at risk as regards the sustaining of sports injuries treated by the general practitioner, the following could be identified: the 15-24 age group, those taking part in team field sports, in particular footballers, and finally the category of organized athletes.

These findings tally largely with the results of other studies (Kranenborg, 1980; Boersma-Slutter et al., 1979; Anon., 1985).
Explanations of these findings must be sought inter alia in the pattern of sport practised, competitive sport and the influence of external factors, such as the state of the ground and possibly climatic conditions (although De Geus can demonstrate no connection between the number of football accidents and climatic conditions; De Geus, n.d.).

If the characteristics of the sports injuries treated by the general practitioner are reviewed, it proves that the GP sees every year four times as many sports injuries as overload injuries. However, the proportion of these overload injuries increases with advancing years. The explanation must be sought in a gradually changing pattern of the practice of sports and sports conduct.

The clearly greater risk of recurrence of overload injuries (25%) in respect of the risk of recurrence of sports accidents (8%) is explained by the nature of the injury and the complexity of causal factors at the bottom of this. The treatment of an overload injury therefore often requires an integration of knowledge in various specialized fields and also sport-specific know-how. Consequently, adequate treatment of this kind of

sports injury is more a matter for specialists and may by and large not be expected of the general practitioner.

Knee and ankle injuries form nearly half of all sports injuries treated by the GP. It would therefore be logical that in the (refresher) training of the GP considerable attention is devoted to these. The high percentage of ankle injuries (28%) is reconcilable with the percentages stated in other studies of sport accidents (Boersma-Slutter et al., 1979; Anon., 1985). However, in all accidents in the private sector the percentage of ankle injuries lies considerably lower at 9% (Rogmans, 1982).

The fact that the number of knee and ankle injuries is connected with age and attains its peak in the 15-24 age group may not come as a surprise, having regard to the pattern of sport practised at this age. Sprains of the ankle joint prove to form a considerable part of the total of ankle injuries.

Research has shown that precisely these ankle sprains lend themselves well to prevention. Both ankle taping, whether or not combined with the wearing of boots, and training in neuromuscular coordination, have proved their preventive worth in this respect. There is thus an important task here for the general practitioner in the framework of primary and secondary injury prevention.

Continuous Morbidity Registration Sentinel Stations the Netherlands, together with other registration systems (such as PORS, CBS) and periodic mass screening, forms a good approach for identification of the "problem" of sports injuries. By combination of the data obtained in various ways, insight can be gained into both medical and also social consequences of sports injuries. On the basis of reliable data initiatives can be developed for reducing the number of sports injuries. Thus in the sports and health policy of the government (Nota 2000 - Ministry of Welfare, Health and Culture) a 25% reduction for the 2000 is aimed at. Injury prevention requires a multidisciplinary approach by the authorities, medical and paramedical agencies and the sports organizations. Partly on the initiative of the Netherlands the Council of Europe instituted the Committee of Experts on Research of sport injuries. Its aims are the

exchange of research data, the gearing-together of research at international level and the initiating of research in the field of the epidemiology of sports injuries.

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7.3. Traumas of the musculo-skeletal system

J. Fracheboud

Traumas of the musculo-skeletal system is a collective term for damage to various tissue structures in various parts of the body. These injuries may be harmless (e.g. a graze) or a threat to life (e.g. after a serious road accident). They may involve one or at the same time several kinds of tissue. An accident may result in one or multiple injuries. With the exception of suicide attempts, self-mutilation or maltreatment, traumas are the result of an accident. Accidents can occur anywhere, independently of place, activity, sex or age. It is therefore to be expected that the general practitioner will often be confronted with traumas of the musculo-skeletal system.

However, not all traumas end up with the GP. Just as with other complaints, the GP is not always consulted for minor injuries. Another group of patients with injuries that do require medical treatment pass the general practitioner by and seek out the out-patient department of a hospital. Industrial medical services can give first aid that in many cases will be sufficient. In the case of severe injuries in the cities or on major roads the ambulance service is often called in at once. In addition, top athletes usually have the availability of an entirely private treatment network without the intermediary of the GP. Most of these patients undergo out-patient or hospital treatment. Together with the patients referred by the general practitioners, they determine the out-patient or hospital morbidity as a result of traumas of the musculo-skeletal system.

To be able to calculate the total morbidity of traumas of the musculo-skeletal system, data from general practice, out-patient departments and hospitals must be available. The Medical Registration Foundation (now the Information Centre for Health Care) had for some time been attending to the hospital morbidity statistics, later supplemented by a separate registration of out-patient activities. However, hardly anything was known from general practice about traumas of the musculo-skeletal system. Oliemans (1969) reports an incidence of 133 accident injuries and

poisonings per 1000 persons per year, with superficial injuries and sprains forming about 70% of all traumas.

At the beginning of the eighties sentinel stations registration already included two topics concerned with accidents: a registration of traumas in sport and one of accidents in the private sector. These were above all a factor of the increased interest in accident prevention. Whereas attention in the past had been devoted particularly to industrial accidents and later to road accidents, now new sources of accidents came into being as a result of the greater leisure time and the growth of recreation culture.

The registration of traumas of the musculo-skeletal system fitted in well with this trend and with the two above-mentioned registrations in accident sector, but had in fact a quite different background. In 1983 a textbook was published entitled "Letsels van het steun- en bewegingsapparaat" (Traumas of the musculo-skeletal system) (Kingma, 1983) that was subjected to criticism immediately after publication by the authors themselves and also by a number of reviewers. Although the book was intended also and in particular for workers in primary medical care, only epidimiological data from hospital and mortality statistics were cited. The general editor therefore requested Continuous Morbidity Registration to record traumas of the musculo-skeletal system with the intention of incorporating the results in the new edition of the textbook. After the Traumatology working party of the Netherlands Orthopaedic Association asked for the same data in the same period, it was decided to place the topic traumas of the musculo-skeletal system on the weekly return of the sentinel stations.

7.3.1. Question

The sentinel stations registered the first contacts with patients with a trauma of the musculo-skeletal system for 1984. Only mechanical injuries as the result of an accident were to be reported. An accident was defined as an "unpremeditated event resulting in a recognizable injury". In the case of more than one injury the most severe one was reported and in the event of an (as yet) uncertain diagnosis the most probable injury. The injuries were classified in four groups:

- contusions, viz. bruising of the skin and underlying structures;
- sprains;
- fractures and dislocations;
- injuries to connective tissues (excepting contusions).

Questions were not asked about the sex of the injured person. Nor was it asked whether the injured person had been referred to a hospital.

7.3.2. Results

Table 7.8. shows the frequency per 10 000 inhabitants of the first contacts on accounts of a trauma of the musculo-skeletal system, broken down by province and urbanization group.

Table 7.8.: Number of first contacts on account of traumas of the musculo-skeletal system per province and urbanization group per 10 000 inhabitants for 1984

	Province group				Urbanization group			Netherlands
Nature of trauma	A	B	C	D	1	2	3	
Contusio	205	172	152	167	166	150	212	166
Sprain	160	166	109	140	180	124	124	133
Dislocation/fracture	91	83	45	61	86	58	52	61
Connective tissue trauma	172	160	107	207	168	140	154	147

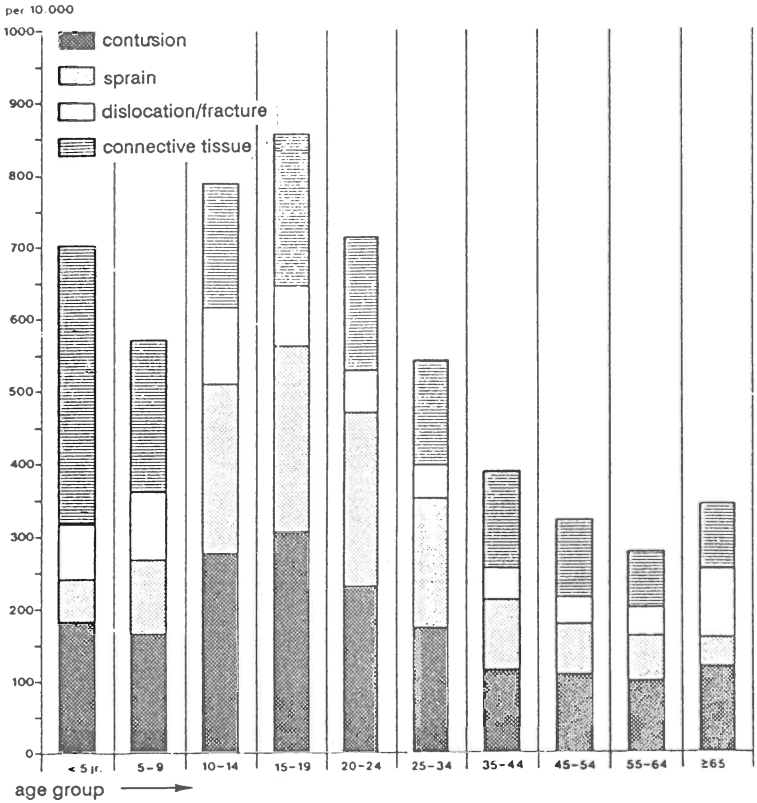
At GP level both contusions and also sprains and injuries to connective tissues occur more than twice as often as fractures and dislocations together. If the contusions are regarded as a particular form of connective tissue injury, then all connective tissue injuries together account for more than two thirds of all traumas of the musculo-skeletal system. Examined per province and urbanization group, the order of the groups of injuries varies partly in respect of the Netherlands as a whole, but in all groups the fractures and dislocations appear well in last place.

Province group C (the west and centre of the country) displays the lowest frequencies for all injuries. This also tallies with the results of the registration of traumas in sport, in which province group C also scores

the lowest. Fractures/dislocations and sprains are seen more often in rural municipalities, while in the cities the general practitioner is more frequently consulted for contusions. Comparison of the frequencies per quarter barely yielded differences within the individual injuries, so that one cannot speak of seasonal influences.

Fig. 7.3. shows the frequencies of the various injuries per age group.

Fig. 7.3.: Number of first contacts on account of traumas of the musculo-skeletal system by age group per 10 000 inhabitants, 1984



Most injuries, viz. more than 700 per 10 000 inhabitants, occur in the age groups of younger than 5 years, 10-14, 15-19 and 20-24. However, the relative share of the injuries within these groups difers. Among the

youngest children more than half have a connective tissue injury, whereas among adolescents this category comes in third place after contusions and sprains. Among the older age groups above 24 years the total frequency gradually declines. Thereby the percentages of the various injuries decrease proportionately. An exception is formed by the oldest age group of 65 and older, in which the share of fracture/dislocations is strikingly larger.

7.3.3. Discussion

The registration of traumas of the musculo-skeletal system for a one-year period gives an impression of the frequency and the nature of injuries as they are presented to the GP. The incidence averages approximately 500 per 10 000 inhabitants of the Netherlands per year, of which only about 12% are fractures and dislocations. This contrasts sharply with the hospital morbidity data. Thus in 1978 fractures were responsible for some 55% of all main diagnoses with respect to traumas of the musculo-skeletal system (Kingma, 1983). In the cases of mortality after a trauma of the musculo-skeletal system the percentage of the fractures was no less than 98%. However, as regards the sprains the percentages hardly vary from each other: both in the hospital and among GPs they form approximately one quarter of all injuries.

In 1978 a trauma of the musculo-skeletal system was the main or subsidiary diagnosis for over 92 000 patients admitted to hospital (Kingma, 1983). Extrapolation of the sentinel station data in 1984 to the Netherlands as a whole yields nearly
750 000 injuries on an annual basis for which the GP is called in. Assuming that hospital morbidity in the period from 1978 to 1984 did not increase beyond all proportions, this means that the general practitioner is responsible for treating some 85% of all patients with a trauma of the musculo-skeletal system. This percentage will in reality be somewhat smaller, because an (unknown) number of patients are admitted to hospital without referral by the GP. Probably the latter occurs more often in the centre and west of the country, having regard to the strikingly lower frequencies of first contacts with the GP in these provinces.

The registration of traumas of the musculo-skeletal system by the sentinel stations nicely shows that the presentation of a given complaint to GP and specialist differs not only in a quantitative respect but also in content. It is therefore useful to register such a complaint at general practice level if one wishes to get to know something about its social extent. Since not all injuries treated are seen by the general practitioner, this extent may even be regarded as a minimum return. These data show that the GP is often consulted on account of traumas of the musculo-skeletal system and that he or she also has an important task in first aid and treatment. It is therefore right that allowance is made for this in a textbook for medical students, GPs and physiotherapists, among others.

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8. ABORTUS PROVOCATUS, CONTRACEPTION AND STERILIZATION

E. Ketting

8.1. Introduction

Continuous Morbidity Registration started in 1970, during a period in which rapid and revolutionary changes were taking place in the Netherlands in the field of family planning. It is therefore no coincidence that in the initial years of this registration project in particular considerable attention was devoted to the theme of family planning. At the same time the interest that was demonstrated within this project in this subject indicates that Continuous Morbidity Registration was on the look-out for new tasks for the general practitioner.

The subjects that were included in the registration in those initial years were at that time still in part highly controversial in nature. This was notably the case with abortus provocatus and with family planning consultations by minors. As a result of this controversial nature the data collected usually had a considerable impact. They encouraged the formation of opinion within the professional group of general practitioners, they also formed a point of departure for the development and evaluation of government policy in this field, and the data made it clear what was needed in the way of advice and assistance in society. All of this occurred in a period in which very little knowledge was as yet available in this field.

The following topics in relation to birth control formed part of the registration project:
- abortion (request) (1970-1975)
- abortus provocatus (1971-1979)
- family planning (consultations) (1970-1976)
- morning-after pill (prescribed) (1972-today)
- sterilization of the man performed (1972-today)
- sterilization of the woman performed (1974-today)

- regretting sterilization (1980-1984; in the category "incidental investigations").

In what follows, first a concise outline will be given of the principal developments in the broad field of family planning and of the role that has been allotted to the Dutch general practitioner in that respect. Next the subjects "family planning (consultations)" and "abortion (request)" will be briefly considered. Then in two separate sections the subjects "morning-after pill (prescribed)" and "sterilization" (man and woman) will be discussed. This chapter is concluded with a discussion on the significance of the data collected in these fields.

8.2. Family planning as a new task for the general practitioner

Until approximately the mid-1960s assistance in the field of family planning was not one of the regular tasks of the general practitioner in the Netherlands. As a result, the client had still largely to fall back on the "natural" methods (coitus interruptus and the rhythm method). In addition there was the possibility of acquiring condoms, notably via the Netherlands Association for Sexual Reform (NVSH), or being measured for a pessary. As a result of this lack of alternatives, membership of the NVSH grew steadily to more than 200,000 in 1965 (Sips, 1981).

However, with the introduction of the contraception pill in 1964 this situation began to change radically. Thereafter family planning was accepted by more and more general practitioners as a part of their task. Bekkering (1969) found that in 1967 98% of the general practitioners investigated by him were already prescribing the pill, while an equally large percentage among them were of the opinion that advising on family planning was part of their work. Bangma (1970) found in his investigation two years later practically the same percentage of pill-prescribing general practitioners.

In 1968 and 1969 the last legal obstacles to the free sale of contraceptives were also done away with. Of great importance to the

further acceptance and use of family planning means was the government decree in 1971, by which all medical contraceptives were included in the services covered by the health insurance funds. This made family planning freely available to 70% of the Dutch population, above all from the lower-income groups. Partly under the influence of this measure the use of contraceptives grew very quickly around 1970 (Ketting, 1983). In 1973 contraceptive sterilization was also included in the services of the health insurance funds.

Abortus provocatus has long remained a controversial matter in moral, social and political respects. The discussion on this sensitive subject already started around 1965, but it was not until 1984 that a new law entered into force in the Netherlands. Five bills came to grief in Parliament before the sixth one was adopted in 1981 by a slender majority (Ketting & Van Praag, 1985; Outshoorn, 1986). However, in 1970 and 1971 the first abortion out-patient clinics had already been set up on the initiative of groups of general practitioners, and were largely tolerated by the judicial authorities. Since that time the actual situation in the Netherlands was that any woman could have an abortion performed at her own request, though she would have to pay for it herself.
Looking back, it may be said that by the beginning of the seventies family planning had become socially accepted and that care in this field had entered into the hands of general practitioners. Special family planning clinics, such as existed in many other countries, played only a supplementary function in the Netherlands. Even assistance with abortion was largely in the hands of general practitioners, who had founded special clinics for that purpose.

8.3. Family planning (consultations) and abortion (request)

8.3.1. Family planning (consultations)

From 1970 to 1976 it was investigated by means of Continuous Morbidity Registration how many times women were prescribed an ovulation inhibitor (the "pill") and further to what extent other primary family planning recommendations were given by general practitioners. The results are shown in Tables 8.1. and 8.2.

Table 8.1.: Number of primary pill consultations per 10 000 women, by age, 1970-1976

	age						
	10-14	15-19	20-24	25-34	35-4	45-54	all women
1970	6	585	1248	815	311	93	345
1971	7	784	1402	794	328	71	374
1972	6	999	1534	1012	459	109	454
1973	19	1302	1500	892	427	119	457
1974	24	1408	1317	785	409	155	435
1975	24	1232	1069	562	263	83	337
1976	34	1402	915	406	231	90	314

Table 8.2.: Number of other family planning consultations per 10 000 women, by age, 1970-1975

	age					
	15-19	20-24	25-34	35-44	45-54	all women
1970	69	225	268	143	36	91
1971	160	329	291	198	53	120
1972	130	309	315	236	40	123
1973	153	243	281	251	61	117
1974	196	204	260	207	64	110
1975	158	247	238	198	74	107

There are two plausible explanations for the marked increase in the number of family planning and in particular pill consultations among teenagers at the beginning of the seventies. In the first place there was among general practitioners in that period a growing acceptance of the view that young people too needed assistance in this field and were also entitled to such aid. The time-honoured idea that making contraceptives available to young people would incite them to enter into sexual relations was increasingly losing ground. There was growing conviction that young people were sexually active, irrespective of whether contraceptives were available or not. In that case giving family planning assistance at least

avoided situations in which girls became unmarried mothers or had to enter at an early age into a forced marriage. It was considered less and less relevant, possibly under the influence of the changing moral standards in this field, that possibly a barrier in the way of sexual contact was also being removed.

A second explanation of the rapid growth in family planning consultations by young people must be sought in the fact that in the same period more and more teenagers (in particular girls) became sexually active. Between 1968 and 1974 the percentage of sexually active young people in the 15-20 age group increased from 22% to 38% (Kooy, 1976).

Among adults an increase in the number of family planning consultations occurred only until 1973. By then the great majority of Dutch women of fertile age had occasionally used the pill. The data from a national survey of contraceptive use in 1974, performed by the Netherlands Institute for Socio-Sexological Research (NISSO), left little doubt about that (Fabery et al., 1976). The fall in the number of primary pill consultations after 1973 must not be interpreted as an indication of decreasing popularity of this means. This tendency has resulted from the fact that most of the women qualifying for it were meanwhile already using the pill and consequently visited their family doctor no longer for a first but only for a repeat consultation. It was not until after 1977 that use of the pill would decline in the Netherlands, above all as the result of a very rapid growth in the annual number of sterilizations (Ketting & Leseman, 1986; see also below).

In the mid-seventies the Netherlands was even the country with the highest relative frequency of pill-using women in the world! (Pop. Reports, 1982) The fact that the "other family planning consultations", as shown in Table 8.2., were only a quarter of the first pill consultations (Table 8.1.) clearly indicates that the pill played a highly dominant role in the Dutch pattern of family planning in the seventies.

A striking result of the registration data deserving of mention here in conclusion relates to the frequency distribution of first pill consultations per province and urbanization group. As regards the distribution over the

country, it proves that the pill is certainly not less prescribed in the predominantly Roman Catholic south of the country than in the rest of the Netherlands. In the years 1971-1973 the pill was even prescribed there more often than elsewhere.

In the cities the pill was accepted sooner than in rural municipalities. In 1970 twice as many pill consultations occurred in the former than in the latter category, but in the middle of that decade that difference had already practically disappeared.

8.3.2. Abortus provocatus

Abortus provocatus formed part of the registration from 1971 to 1979. In addition abortion (request) was also registered from 1970 to 1975. Registration of the two side by side already shows to some extent what the situation was with regard to abortion soon after 1970.

In actual fact, after 1970 every woman who so expressly desired could have an abortus provocatus performed, sometimes in a hospital, but usually in one of the special abortion clinics. However, the dubious legal status of the operation - formally not permitted, but nevertheless possible through very free reinterpretation of the law - prompted great caution, also among those making the referral, notably in the initial years (Ketting, 1978). The fairly considerable difference between the number of requests for abortion and the actual operations performed is closely connected with this (Table 8.3.).

Table 8.3.: Number of requests for abortion and number of abortions performed per 10 000 women, 1971-1975

	Request for	performed	% performed
1971	43	22	51%
1972	41	30	73%
1973	36	31	86%
1974	28	22	78%
1975	26	17	65%

Between 1970 and 1973 the proportion of accepted requests for abortion increased rapidly. As a result, it gradually became increasingly pointless to continue to register the requests separately. It is difficult to explain why a decline in the number of abortions performed set in again after 1973. After 1975 this topic was removed from the registration.

The development in the number of registered cases of abortus provocatus is shown in Table 8.4.

Table 8.4.: Number of cases of abortus provocatus by age, per 10 000 women, 1971-1979

	10-14	15-19	20-24	25-34	35-44	45-54	all women	extrapolation to national total
1971	(4)	50	43	52	42	(5)	22	14 000
1972	(2)	69	68	70	49	11	30	20 000
1973	-	86	91	56	48	(4)	31	21 000
1974	(2)	54	36	56	40	(2)	22	15 000
1975	(2)	23	22	50	39	(2)	17	12 000
1976	(2)	60	37	42	36	(4)	20	14 000
1977	-	42	38	36	35	8	18	13 000
1978	(2)	44	36	50	46	(5)	21	15 000
1979	(6)	44	39	36	26	(2)	17	12 000

Originally, up to 1975, the emphasis fell above all on women in the 25-34 age group. This later shifted to the younger age groups. An identical development occurred in most Western countries (Tietze, 1983; Ketting &

Van Praag, 1985). Further, it is clear that in the Netherlands, shortly after the liberalization of abortion around 1970, an increase occurred in the number of treatments for abortion. But this was only of short duration. Under the influence of the increased use of contraception, the number already decreased after 1973, stabilizing at a very low level from the international point of view. As far as is known, the Netherlands has always had the lowest abortion rates of all countries where abortion was broadly permitted (Tietze, 1983; Tietze & Henshaw, 1986).

In 1974 a new registration system started in the Netherlands for abortus operations performed in special abortion out-patient clinics. This system was set up and managed by Stimezo Nederland, the coordinating organization of abortion clinics. The first data from this new system were published at the beginning of 1976 (Schnabel, 1976).

These data, added to those periodically collected by the Chief Medical Office of Health on abortion in hospitals, demonstrated that the figures obtained from Continuous Morbidity Registration were systematically too low. The cause of this was in all probability that by no means all women came to an abortion clinic via a referral from the family doctor. Many came via a family planning bureau. As a result of this, the actual number of operations proved in general to be some 25% higher than the figures obtained by extrapolation from Continuous Morbidity Registration. Partly for this reason, the registration of abortions was halted in 1979. In 1984 registration of the operation itself by the institution attending to the patient was made compulsory under the new abortion law.

The significance of the data from Continuous Morbidity Registration is to be found on the one hand above all in the initial years, when very little was as yet known from other sources, and on the other hand because these data were the only ones to give a good picture of the national distribution of abortion. As regards the latter, it should be remarked that for all registered years together there has hardly been any difference between the various provinces, which means that in the Catholic south just as many abortions occurred as in the mainly Protestant north of the country - as also in the strongly non-denominational west.

As regards urbanization, there has been a considerable difference, notably in the first half of the seventies. The average frequency over the whole decade amounted in the non-urbanized regions to 19 per 10 000 women, in the semi-urbanized regions to 16 and in the urbanized regions to 34 per 10 000. An over-representation of abortion of this kind in cities has also been encountered in various other Western countries (Tietze, 1983).

8.4 The morning-after pill

The use of the "morning-after pill", by which the occurrence of pregnancy after unprotected coitus can be avoided, already became the vogue in the Netherlands by the end of the sixties and has since then been used on a wide scale as a final emergency measure. Up to 1980 use was exclusively made for this of a course of treatment consisting of 5 mg ethynilestradiol, to be taken for 5 successive days (5x5 EE) (Kremer & Haspels, 1986). From that year onwards use was additionally made to an increasing extent of the Yuzpe method, which entails that within 72 hours of the unprotected coitus two ordinary contraceptive pills (containing 50 mcg EE) are taken, followed by the same dose 12 hours later (2x2 method; Yuzpe, 1977).

Use of these methods has been registered within Continuous Morbidity Registration since 1972. The results of this registration are shown in Table 8.5.

Table 8.5: Number of prescriptions of the morning-after pill by age, per 10 000 women 1972-1985

	10-14	15-19	20-24	25-34	35-44	45-54	all women	extrapolation to national total
1972	(2)	148	150	117	67	7	53	35 000
1973	7	190	196	94	66	18	59	40 000
1974	(2)	266	171	104	78	34	68	46 000
1975	(5)	194	176	105	62	24	60	41 000
1976	10	204	129	102	87	21	60	41 000
1977	(6)	147	140	87	54	22	49	34 000
1978	(6)	180	156	58	60	25	50	35 000
1979	(2)	142	171	85	51	16	50	35 000
1980	-	148	134	90	67	10	50	35 000
1981	(2)	101	112	58	44	9	35	25 000
1982	(5)	109	107	56	44	(5)	35	25 000
1983	(6)	99	85	47	36	9	30	22 000
1984	(5)	144	115	62	24	13	38	28 000
1985	9	125	82	54	21	9	32	23 000

The morning-after pill has always been frequently used above all by teenagers and adolescents. An analysis of the data per individual age group over the years 1977 to 1985 shows that this method is used most intensively among 17-year-olds, followed by 18- and 16-year-olds respectively. This young age group is also the group in which the use of regular contraception, notably of the pill, still presents most problems. This is bound up with the fact that sexual experience among them is usually very minor to non-existent, and the contacts are often of an incidental nature, which hampers preventive action (Ketting, 1986).

In the period 1974-1985 use of the morning-after pill decreased significantly. This has probably been above all a result of a general improvement in the use of contraceptives in the Netherlands, as a result of which there was less need for this emergency method (Ketting & Leseman, 1986). In addition there has possibly also been some increase in the use of the new Yuzpe method without a doctor's prescription. As this method consists of four ordinary contraceptive pills, self-medication is relatively easy.

The quantitative effect of use of the morning-after pill on the incidence of undesired pregnancies (and abortion treatments) must not be overestimated. Van Santen and Haspels (1983, 1985) have shown that in a random sample only some 6% would actually have become pregnant if they had not used the method. This means that with an average annual use of 30 000 morning-after pills during the last ten years in the Netherlands, every year approximately 1800 undesired pregnancies are avoided.

The introduction of the much lighter Yuzpe method in 1980 gave rise to some disquiet in the Netherlands, because the suspicion grew that this method was less reliable than the classic 5x5 EE method. From the abortion clinics a growing number of undesired pregnancies were reported that had come about despite use of the morning-after pill, while in the same period the Yuzpe method seemed to be displacing the 5x5 EE method. Partly for this reason, from 1983 onwards the type of morning-after pill has also been included in Continuous Morbidity Registration. The results showed that in 1983 more than 70% of the prescribed morning-after pills were already in accordance with the Yuzpe method. By 1985 this percentage had increased still further to nearly 83%. These developments occasioned Stimezo Nederland, the coordinating organization of abortion clinics, to make a survey of the practical reliability of the Yuzpe method. The results of that survey, which was largely based on the data from Continuous Morbidity Registration, indicated that the Yuzpe method was in fact less reliable (Rademakers & Ketting, 1987). Above all too because the method easily gives rise to errors in use, it proved to yield only one fifth of the results of the classical method.

8.5 Sterilization of men and women

Before 1970 contraceptive sterilization of men barely occurred in the Netherlands; among women it was of very incidental occurrence and nearly always on purely medical grounds (Sips, 1981). However, from 1970 onwards this changed very quickly. The NISSO contraception survey, performed in 1974/75, revealed that in that year 11% of married

women in the 30-42 age group were already sterilized, while the same applied to 14% of married men in that age group.

It further emerged that, of the married men and women with a complete family, 43% would "perhaps" or "definitely" have themselves sterilized in the near future (Fabery et al., 1976). As these data show, the changed views about family planning had caused sterilization to become an acceptable family planning method within a short time. Because the medicotechnical possibilities of performing the operation quickly evolved and sterilization encountered fewer and fewer objections in medical circles too, the number of operations was able to increase quickly. The fact that sterilization was added in 1973 to the services covered by the health insurance funds gave an additional impetus to this development.

From 1972 sterilization of the man performed and from 1974 also sterilization of the woman performed have formed part of Continuous Morbidity Registration. Because in this way developments in this field have been kept up with practically from the start and thereafter continuously, the Netherlands possesses an almost unique set of data on the trend of the number of sterilizations. On the basis of these data the possibility also occurred of calculating by means of cohort analyses what the exact quantitative significance of sterilization has been within the national pattern of family planning in the course of the years in the Netherlands. The results of that analysis are given below.

Table 8.6. contains a survey of the relative and absolute frequency of sterilization of men and women from 1970 onwards. The figures for 1970-1971 for men and those for 1970-1973 for women are the result of estimates on the basis of various scattered surveys from that period (see above: Ketting, 1983).

Table 8.6.: Relative and absolute frequencies of sterilization of men and women, 1970-1986

	men		women		total
	per 10 000	absolute	per 10 000	absolute	absolute
1970	(3)*)	(2 000)	(1.5)	(1 000)	(3 000)
1971	(10)	(7 000)	(6)	(4 000)	(11 000)
1972	24	16 000	(10)	(7 000)	(23 000)
1973	40	27 000	(23)	(16 000)	(43 000)
1974	46	31 000	35	24 000	55 000
1975	46	31 000	46	31 000	62 000
1976	57	39 000	66	45 000	84 000
1977	53	37 000	54	45 000	82 000
1978	74	51 000	81	57 000	108 000
1979	99	69 000	90	63 000	132 000
1980	79	55 000	70	50 000	105 000
1981	59	42 000	46	33 000	75 000
1982	50	35 000	40	29 000	64 000
1983	46	33 000	39	28 000	61 000
1984	46	33 000	39	28 000	61 000
1985	44	32 000	26	19 000	51 000
1986	45	32 000	30	21 000	53 000
Total	$\bar{x}$ = 48	572 000	$\bar{x}$ = 41	501 000	1 073 000

*) the figures given between parentheses are based on estimates.

Until 1979 the annual number of sterilizations increased to the record height of 132 000 operations in that year. Thereafter the frequency fell again to the 1974 level. After this we shall see that it may not be concluded from this fall that sterilization is accepted by fewer people. The fall is connected above all with the occurrence of a saturation effect of the potential "market".

Except during the period 1975-1978, there have always been more men than women sterilized. Initially this seemed to have more to do with the fact that the operation could be performed on an out-patient basis, but when this possibility also came into being for women at the end of the seventies, there were nevertheless more men than women sterilized annually. It is not known what the explanation is for this.

The frequency of sterilization among both men and women has in practically all years been the highest in the 35-44 age group, followed by the 25-34 and 45-54 age groups. It becomes clear from this that most married couples do not regard their family as finally complete until they have passed the age of 35.

It is striking that the frequency of sterilization barely displays any relation to degree of urbanization. In the rural regions that frequency has almost always been identical with that of the cities. There is, however, a striking connection with the four province groups of the country, with the proviso that in the Roman Catholic south of the Netherlands, in particular in the period up to 1982, many more sterilizations were performed than in the rest of the country. When the summed relative frequency for the whole registered period for the Netherlands is put as a total at 100, then in the three southern provinces this index amounted to 131.4 for the men and 114.4 for the women. The three remaining province groups display no noteworthy differences among themselves. These data negate the hypothesis that sterilization is above all a big-city phenomenon occurring in particular among non-Roman Catholics.

As already indicated above, it is possible by means of a cohort analysis to convert the annual frequencies of sterilization into percentages of men and women who have been sterilized at some time in any year.

Those percentages are more interesting than annual frequencies, because they show what the quantitative importance of sterilization is within the overall pattern of family planning. In essence this cohort analysis amounts to the following.

The annual number of sterilizations performed means every year an equally large increase in the number of persons sterilized at some time. On the other hand, this number of those sterilized at some time also reduces through ageing. For only the number of sterilized persons that are still members of the fertile age group is relevant. In accordance with international conventions this means the 15-49 age group of women. Since these women in the Netherlands have on average a partner who is

two years older than themselves, in the following analysis the 17-51 age group of men has been defined as the fertile age group for men. This means that every woman sterilized at some time who in a given year reaches the age of 50 (for the man the age of 52) disappears from the relevant population. In other words, a woman who was sterilized in 1973 at the age of 38 disappears in 1985 from the relevant population of women sterilized at some time. By means of summation of age-specific sterilization frequencies per year it is possible in this way to establish at the end of each year what percentage of women and men within the fertile age group have been sterilized. [3]

As long as the annual frequency of operations is higher than the "wastage" as a result of ageing, the importance of sterilization as a family planning method grows. Initially this wastage is very small, because most people have themselves sterilized between the ages of 35 and 40. The great wastage consequently does not occur until after 10-15 years.

In Figs. 8.1. and 8.2. the results of this analysis for men and women respectively are given in graphical form. The results show that the percentage of men within the fertile age group sterilized at some time has increased from less than 1% in 1972 via over 9% in 1980 to more than 12% in 1986. For women this growth proceeded as follows: 0.5% in 1972, 8% in 1980 and nearly 11% in 1986. Within the 30-49 age group (32-51 age group for men) this increase was even more spectacular. When we assume that in all cases only one of the two partners has himself or herself sterilized (incidentally, as a result of divorce and death of the partner, followed by remarriage, this is not always the case), then in 1986 one of the two partners was sterilized in 41% of the couples of 30-49 years (women).

A crucial concept in this analysis is that of the "replacement value" (see Figs. 8.1. and 8.2.). This indicates what number of sterilizations in any

3 In the analysis no allowance has been made for the intermediating variables international migration and mortality

Fig. 8.1.: Sterilization of men, 1970-1986

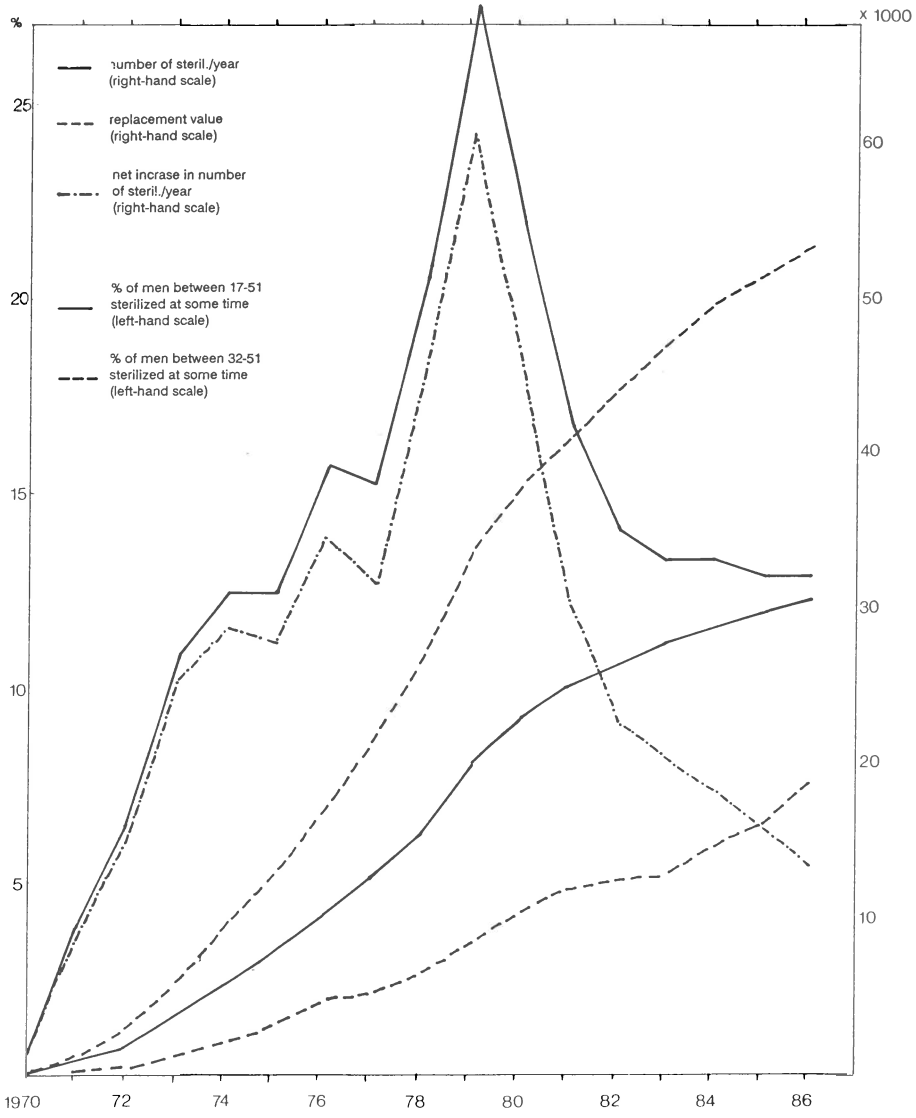
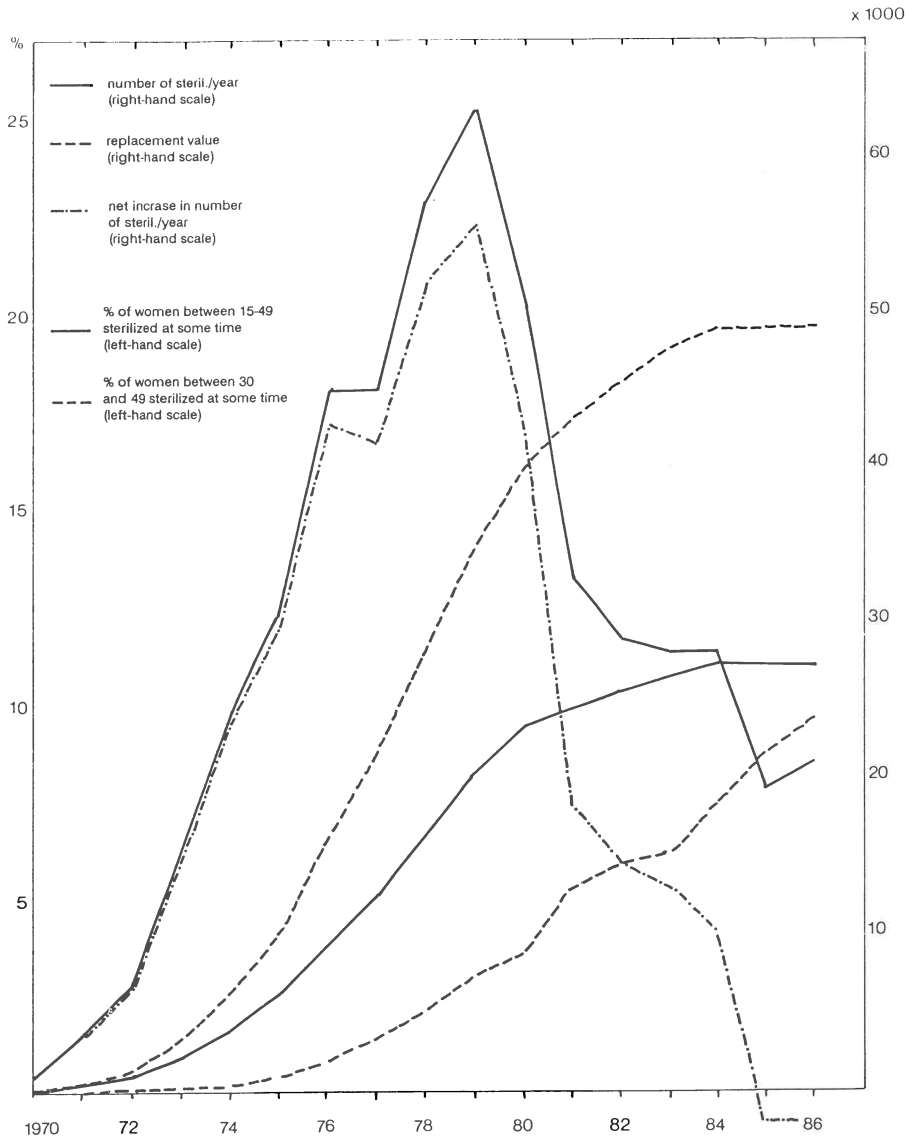


Fig. 8.2.: Sterilization of women, 1970-1986



year is necessary to keep the percentage of those sterilized at some time equal to the percentage in the previous year. The size of this replacement value depends on the population growth, the percentage of those sterilized at some time and the age distribution of the latter. As long as the replacement value remains below the current number of sterilizations, the percentage of those sterilized at some time still increases; however, if this replacement value becomes greater than that percentage, a decrease occurs. In Fig. 8.1. we see that the percentage of men sterilized at some time still displays a growth, but Fig. 8.2. indicates that among women a decline (still a slight one) has been occurring since 1985.

The net increase (i.e. the current number of sterilizations minus replacement value) is negative there in 1985 and 1986. This net decrease among women is fully ascribable to the fact that the percentage of sterilized women younger than 35 years is clearly decreasing. In 1980 6.9% of all women of 25-29 years were still sterilized; thereafter a decline occurred to 3.5% in 1986. Among the 30-34 age group a decline set in 1984 (from 13.8% to 11.8% in 1986). The percentage in the 35-39 age group has already been practically stable since 1980, whereas the percentage of those sterilized of 40 years and older is still on the increase. The latter is not so much a consequence of a high annual frequency in that age group as of the ageing of large groups of women who had themselves sterilized at the end of the seventies at the age of about 35 years.

A comparable development occurs among men, but this began later and is less well-defined. The percentage of "young sterilized men" (27-31 years) fell between 1981 and 1986 from 9.4% to 6.5%. In the successive age groups (32-36 and 37-41 years) there seems to have been a stabilization since 1985 (at approx. 15% and 20% respectively). Above this age a strong increase still takes place among men.

The development trends calculated in this way are largely confirmed by the results of the "Family-forming" surveys performed by the Central Bureau of Statistics (Van de Giessen, 1987). These data show that between 1982 and 1985 a noticeable decline occurred in the percentage

of women sterilized at some time (varying in age from 21 to 37 years), while this remained more or less stable among men.

8.6. The significance of the registration data in the field of family planning

The considerable attention that has always been devoted within Continuous Morbidity Registration to questions in the field of family planning is in all probability closely bound up with the interest that Dutch general practitioners have always shown in this theme (cf. Meyman, 1986). Conversely, that interest has also been repeatedly nurtured by information and insights such as those from Continuous Morbidity Registration.

This close interaction of aid and research has definitely contributed to the occurrence of a situation in which the Netherlands indisputably sets the tone internationally in the field of family planning (Jones et al., 1986).

The special significance of Continuous Morbidity Registration in this context has always been that it is possible with this instrument to react very effectively and quickly to new developments in this field. The result has been that this registration system has already yielded data on for instance a subject like abortus provocatus long before a registration system had been set up within aid itself. Reliable data on this subject are barely available from another source over the period up to 1974.

On the other hand it proves here too again that the value of registration systems often closely resembles the value of a good wine: the longer the period, the better the quality. The data on the morning-after pill and sterilization largely derive their value from the uninterrupted nature of collection of those data. This offers the possibility of making trend analyses that prove to yield important insights.

Besides a direct value for the development of aid and of policy, the registration data have finally been of considerable value as a point of departure for further, more detailed research. The investigation into the

reliability of the new morning-after pill is a good example of this. Because the system offers the possibility of yielding a broad but differentiated picture of the incidence and prevalence of examined phenomena, which otherwise can be obtained only by means of highly expensive surveys, more specialized research is also more feasible. The data of the registration system can in principle be used as a sampling frame. It is advisable to make more use of that possibility in the future.

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9. MENTAL HEALTH PROBLEMS IN PRIMARY CARE

9.1. Overview of mental health care in the Netherlands

P.F.M. Verhaak

This chapter deals with mental health problems as they are encountered in primary care. Treatment of depression by the general practitioner is discussed by Sigling; the confrontation of the GP with suicide and suicide attempt is described by Diekstra and Van Egmond. Peters analyses the process of referral by the GP to specialized mental health care agencies and its results. In conclusion Frankenberg and Ten Horn deal with the way back from clinical care to home care in their contribution on GPs' contacts with patients discharged from mental hospitals.

In this way the whole possible pathway through mental health care has been covered. A few comments need to be made regarding the Dutch health care system and its functioning, to get a better understanding of the contributions collected in this chapter.

Unlike many other health care systems, in the Netherlands a rather strict division between general health care and specialized health care exists. In theory[1)], patients get access to specialized (secondary) care only by a referral from general (primary) care. Most of ambulatory mental health care is specialized care, and consequently not primary health care; in this respect the Dutch situation is different from most other countries, where ambulatory care is considered primary health care. Concerning mental health care, two agencies within general care are relevant: the general practitioner and the social worker.
Their possibilities of referral are numerous: regional institutions for ambulatory mental health care (RIAGG), (out-patient clinics of) psychiatric departments of general hospitals, general psychiatric hospitals and their out-patients clinics, private psychiatrists, and crisis intervention centres, to mention only the more important ones. For a complete survey, see

Bauduin, D., A guide to mental health care in the Netherlands, The Netherlands Institute of Mental Health (NcGv), Utrecht, 1988.

An important feature of primary care, especially of general practitioners, is the fixed list of patients. In principle, each person is registered with his or her own GP, usually for many years or even a lifetime. This gives primary care a sense of personal care, which specialized care often lacks (except of course for the chronically ill). This is also the reason for GPs' claims that they are optimally equipped to supply integrated and personal care, so important with regard to mental health problems.
The structure sketched above is the one that is officially legalized and to a large extent financed from public funds. As far as the latter is not the case (e.g. GPs and hospital services for the better-off) every private insurance fund will reimburse such costs. Conversely, costs incurred with non-medical mental health specialists working outside the officially recognized mental health circuit are in most cases not reimbursed; they have to be paid privately. This is especially the case with independently established psychologists and other psychotherapists who in the last ten years have proclaimed themselves "primary care psychologists".

When we take a look at the number of patients who are involved in the mental health care circuit, from primary to clinical care, it is striking that most mental health problems never get any further than primary care. Bensing estimates in "Mental health and primary care. Dutch and Israeli experience" (NIVEL, Utrecht, 1986) that annually in about 30 million contacts explicit or hidden psychosocial problems were presented at the GP's surgery, while about 200 000 patients were treated in all ambulatory and residential mental health care together.
This leads to the phenomenon that a GP refers only a small proportion of his patients (approximately 5% of the mental problems he encounters) to specialized mental health care, while, the other way round, he is the most important supplier of clients to those institutions. (About 43% of the visitors to an institute for ambulatory mental health care were referred by a general practitioner in 1987.)

This state of affairs leads to a number of interesting research questions; a few of them will be indicated in the following contributions.

One of the important questions has to do with the degree to which a GP is equipped to perform his part of mental health care.
One important function of the GP in this is the "gatekeeping" function. He should detect and diagnose possible mental illness and decide to treat those detected cases himself or to refer them to a specialized agency.
The contributions by Sigling and Diekstra et al. teach us something about GPs' successes and failures in these respects. An alarming aspect for instance is the wide interdoctor variation in the diagnosis of depression. Apparently different doctors have different definitions in mind when talking about depression. The fact, reported by Diekstra et al., that many suicides seem not to be known to the GP, resulted in a discussion about the holes in the safety net that primary care is supposed to be. It has been argued in this discussion that a GP might miss a considerable number in absolute figures, but per GP only one or two cases a year are involved. The damage due to false positives might be larger with those small prevalence rates.
The contributions by Sigling and Peters also show that GPs prefer to take care of most mentally ill patients themselves.

Another important topic in mental health services research concerns the adjustment of the different sectors of care. Especially in a health care system characterized by strict relation, evaluation of the observance of the rules is important.
Peters and Frankenberg et al. both present data for assessing the succes of health care policy in establishing a kind of integrated system. Peters shows us the beginning of the pathway to mental health care: the referral process by GPs to specialized institutions; Frankenberg et al. deal with the (temporary) end of the route: the degree to which after-care is provided after in-patient treatment. Both studies show that a system that looks quite well-thought-out is dependent on a number of chance occurences, determined among others by patients' choices.

1) This holds true up to 1989, but a change is probably coming with the acceptance of the recommendations of the 'Dekker Commission'.

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9.2. Depression: a medical problem for the general practitioner?

H.O. Sigling

9.2.1. Introduction

Various attempts to include certain forms of mental or social morbidity on the weekly return of sentinel stations registration often came to grief on the impossibility of "formulating strict and clear criteria concerning the disease or event to be registered", to quote the requirement of the project's Counselling Committee. The same problem occurs with the inclusion of "depression" or "the depressive syndrome". Various investigations into the frequency of this phenomenon in general practice display incidence rates varying from 4.5 to 35.5 per 1000 patients per year (Oliemans, 1969; Lamberts et al., 1982; NUHI, 1980; Crombie, n.d.)

There is little reason to repeat such a quantifying morbidity investigation among the practice populations of the sentinel stations. Without a well-developed diagnostic system and sufficient guarantee of a consistent and uniform application of the established criteria with respect to each visitor to the surgery, there is little hope of the validity of the incidence and prevalence found.

Matters are different when it is desired to form a picture of the actual job load that the depressive syndrome entails in the daily practice of the GP. How often is a depressive state of mind in itself a reason for the general practitioner to take action, and in what does the help offered by him/her consist ? Answers to these questions point much more in the direction of qualitative than of quantitative aspects of aid in the depressive syndrome.

As part of an on-going project investigating the background of medical action by GPs among patients with a depressive syndrome, there was a need for a gauging of the extent and nature of the aid given by general practitioners to this group of patients. The nature of the project made it necessary in the first instance to confine it to registration of the first contact with a depressive patient who had received a treatment directed towards the depression. In this way an impression could be obtained of

the extent to which depression was regarded as a medical problem in the practices of the spotter physicians. It will be clear that in this factors bound up with the GP play a decisive role. Some general physicians regard a depressive mood as a variation of the state of mind forming part of normal life, requiring no medical intervention, whereas others are perhaps inclined to point to a sombre state of mind as the basic affliction for all kinds of vague physical and mental complaints difficult to identify.

The importance that one attaches to the influence that a depressive mood exerts on physical and mental well-being will determine whether one is prepared to react to this by taking action as a GP/aid worker. The nature of the aid given will be determined above all by the view that the GP has of the nature of a depression. Is this a disease in the sense of a biological disturbance or is it an existential problem with cognitive and affective disorganization ? It is clear that in the former case the aid expresses itself above all in biological terms, and medication will be to the fore. In the latter case the general practitioner will expect more good of a talk with the patient.

It is also important to investigate where the GP sees his own limits in aid to depressive patients. Does his referral policy regarding this disorder differ greatly from what his selecting function might lead one to expect ? In other words, is the GP inclined to refer a depressive patient extra quickly, for instance on account of the danger of suicide ?

These considerations formed the background to the questions on the weekly return under the designation "Depression (treated for)".

9.2.2. Questions

In the period 1983-1985 the spotter physicians registered the first contact with patients who were attended to on account of a prevailing sombre and negative state of mind under the diagnosis "depression" or "depressive syndrome". In the first year this was confined to a simple registration by age and sex. In the years that followed the reporting was extended by indication of the kind of action that the GP had undertaken

with these patients. The forms of action available to the GP were placed in four categories:

- the prescription of medicines (a);
- discussion with the patient (b);
- referral to other aid workers (c); and
- counselling via regular follow-up contacts (d).

Since as part of the above-mentioned investigation among half of the spotter physicians in the last quarter of 1984 an interview in depth took place, the interesting possibility presented itself of investigating what effect such an interview has on the pattern of action of the GPs. In the interview it was investigated during an exchange of ideas lasting 1 1/2 to 2 hours what the views, feelings and attitudes of these GPs were with regard to patients with a depressive syndrome. Proceeding from recent case history experience, as many aspects as possible of diagnostic and therapeutic action were considered.

Changes in the registration behaviour in the following year, 1985, may, by comparison with the results of the non-interviewed GPs, give an indication of the influence of such an interview on the pattern of action of the general practitioners concerned.

9.2.3. Results

Table 9.1. shows the number of new patients per province and urbanization group who underwent treatment for a depressive syndrome. As usual, the results are given as a frequency per 10 000 men or women.

Table 9.1.: Number of new patients 'treated for a depressive syndrome, by province and urbanization group, per 10 000 men and women, 1983-1985

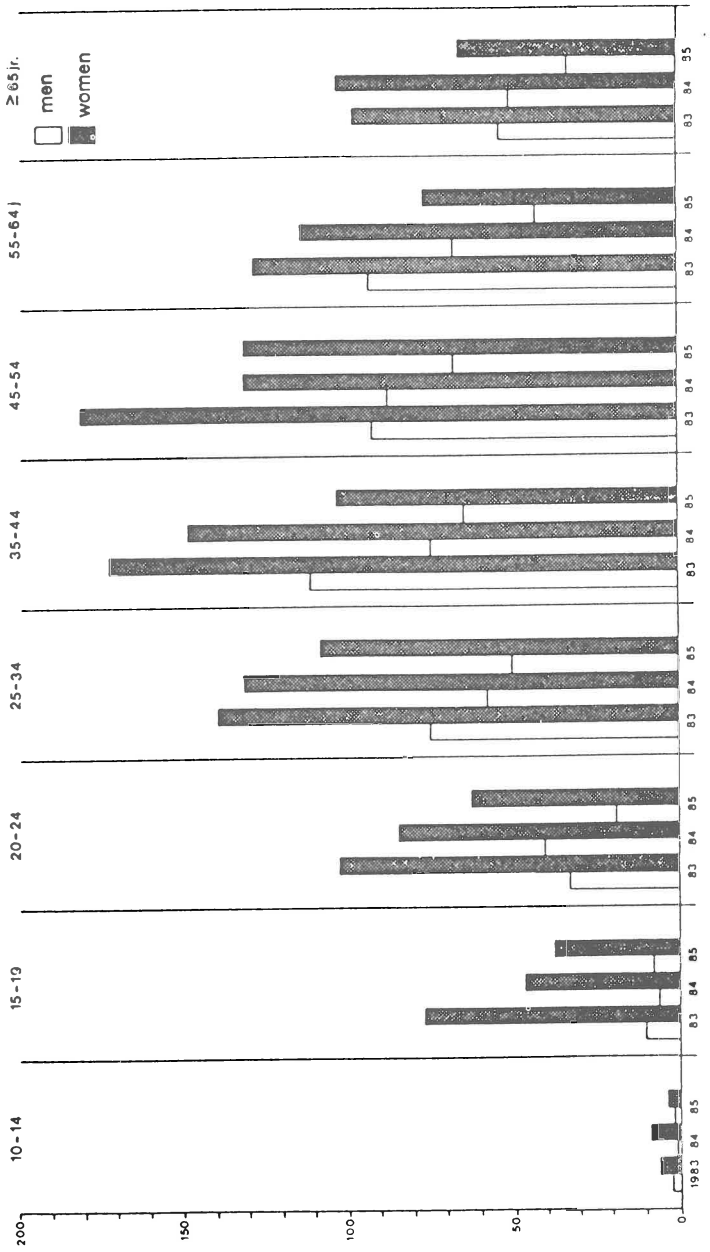
		Province group				Urbanization group			Netherlands
		A	B	C	D	1	2	3	
Men	1983	75	57	40	75	56	46	81	55
	1984	58	57	32	61	53	35	74	46
	1985	36	30	44	24	16	31	61	36
Women	1983	148	74	87	138	75	84	182	104
	1984	106	116	77	105	103	72	147	94
	1985	74	78	61	63	64	63	106	73
Total	1983	112	65	64	107	65	65	133	80
	1984	83	87	55	71	78	55	112	71
	1985	55	55	61	44	40	47	84	55

Over the years no systematic regional differences can be discovered. Alternately the northern, eastern and western provinces display the highest figures. There is, however, a clear difference as regards sex and degree of urbanization. Twice as many women as men are reported, and nearly twice as many cases from the cities in comparison with the rural municipalities or the urbanized rural municipalities. In the total a decrease in the number of reports from 80 per 10 000 inhabitants in 1983 to 55 in 1985 is striking.

Fig. 9.1. gives the registration results per age group.

The highest frequencies are found in the 35-44 and 45-54 age groups. Above the age of 54 a gradual decrease in the frequency takes place. The diagnosis "depressive syndrome" is also made in incidental cases among children. The 15-19 age group forms an exception as regards sex ratio: whereas this is in general 2:1 in the "favour" of women, in the group in question this is 3:1 or even higher (6:1 in 1983).

Fig. 9.1.: Number of new patients 'treated' for a depressive syndrome by age group, per 10 000 men and women respectively, 1983-1985



The absolute numbers of reports of patients with a depressive syndrome were also broken down by sentinel station. Table 9.2. shows the three sentinel stations with the smallest number of reports and the three sentinel stations with the largest number of reports.

Table 9.2.: Total number of patients 'treated' for depression at 3 sentinel stations with the least reports and 3 with the most reports per year, 1983-1985

	year		
	1983	1984	1985
Sentinel station A	1	4	1
Sentinel station B	3	0	2
Sentinel station C	3	2	1
Sentinel station X	61	54	44
Sentinel station Y	88	65	15
Sentinel station Z	120	108	76

The two groups of sentinel stations cannot be placed in a given province or urbanization group. "Low" reporters occur both in the cities and in rural municipalities, while the "high" reporters too are not concentrated in a given region. In this return no allowance has been made for practice size, but that could not possibly explain the difference, even if sentinel station A were the smallest and sentinel station Z the largest practice.

The spotter physicians had the choice of four actions among the depressive patients receiving treatment, more than one action per patient being possible. In Table 9.3. these choices of action are given in both absolute terms and as a percentage of the number of patients per year.

Table 9.3.: Choices of action for newly treated depressive patients. Collected figures in absolute numbers and percentages of 45 sentinel stations, 1984-1985

		choices of action				
		a	b	c	d	number of patients
numbers	1984	461	633	108	333	939
	1985	373	555	78	440	757
percentages	1984	49.1	67.4	11.5	35.5	
	1985	49.3	73.3	10.3	58.1	

a = medication c = referral
b = discussion d = counselling

In both years the discussion treatment is preferred. About ten percent of the patients are referred. Nearly half of all patients received medication therapy in connection with the depression. In respect of 1984 an intensification of counselling via regular contacts took place in 1985. However, it is uncertain whether this is not based on an incorrect interpretation of the application of this topic.

30 spotter physicians were interviewed on their views with regard to patients with a depressive syndrome. During analysis of the interviews the data of one physician were omitted because of his termination of his practice. Of the remaining 29 GPs, 21 had a single practice (group A) and 8 worked in a group practice (group B). The 15 sentinel stations for which no physician was interviewed were placed in group C. Table 9.4. examines whether the interviews had an effect on the further registration conduct, viz whether in 1985 more or fewer cases of depression were registered.

Table 9.4.: Changes in the number of reports of newly treated depressive patients by interviewed and non-interviewed spotter physicians. In percentages of 1985 in respect of 1984

	changes in number of reports		
	increase	unchanged	decrease
Group A (N=21)	33.3	23.8	42.9
Group B (N= 8)	12.5	25.0	62.5
Group C (N=15)	13.3	40.0	46.7

Group A: interviewed GPs with a single practice
Group B: interviewed GPs from a group practice (one GP per sentinel station
Group C: non-interviewed sentinel stations

In all three groups the greater part of the sentinel stations displays an inclination towards less registration. However, one third of the GPs with a single practice registered more cases of depression in 1985, which might mean a sensitization of these physicians through the interview.

A more definite answer on possible influence exerted by the interviews is given by Table 9.5., in which the forms of treatment by the interviewed GPs with a single practice are compared with the group of sentinel stations that were not interviewed.

Table 9.5.: Choices of action for newly treated depressive patients. Figures of interviewed (n=21) and non-interviewed (n=15) sentinel stations. In percentages of treated patients for 1984 and 1985

		choices of action			
		a	b	c	d
Group A	1984	55.6	56.9	11.8	47.3
(n=21)	1985	47.9	69.9	6.8	68.1
Group C	1984	44.7	76.2	9.9	32.6
(n=15)	1985	45.2	74.7	13.5	53.4

a = medication c = referral
b = discussion d = counselling

From this table two things can be derived: a difference in forms of treatment between the two groups of sentinel stations even before the interview, and a change in the forms of treatment among the interviewed practices. The latter opted in 1985 less frequently for medication and also referred less (unlike the non-interviewed sentinel stations, which referred precisely more often).

In addition they more often preferred a discussion treatment or counselling via regular contacts. These changes are possibly the result of the interviews. It is, however, striking that the non-interviewed sentinel stations also display a trend towards more counselling, although - as already stated - this may be due to incorrect registration. Quite a number of GPs listed combinations of medication and/or discussion treatment with counselling, which was definitely not the intention.

9.2.4. Discussion

The collected figures give an impression of the work load of the general practitioner through patients with a depressive syndrome. They do not lend themselves to an estimate of the occurrence of depression. For only those patients are registered for whom the GP took action. On the strength of the sentinel station figures it could be concluded that a general practitioner with a normative practice treats per year an average of 13-19 patients with a depressive syndrome. However, in view of the great differences between the practices the necessary reservations must be made here. The same applies to the conclusion with regard to the forms of treatment employed by the GP. For this group of general practitioners, on average in 70% of the cases a number of discussions are conducted, while in somewhat less than half of them medication is prescribed. For 1-2 patients a year immediate referral follows. A survey of the spotter physicians showed that, for this, preference is for a psychiatrist or the RIAGG, although more than half of the physicians sometimes also refer patients with a depressive syndrome to general social work.

The great interdoctor variation must be explained in the first place by the difference in the personal views of GPs on what constitutes a depression and on the task of the general practitioner in this regard. It is difficult to think of factors that favour a local accumulation of people with a depressive syndrome. Circumstances that **are** of influence, such as sex and living in a city, lead at most to doubling of the number.

The interviews held, which will be reported on at greater length elsewhere, confirm that the spotter physicians involved apply quite different norms for the diagnosis "depression". Some call every sombre picture of one's situation a depressive syndrome, whereas others reserve the concept for severe melancholia. With such a difference of opinion a great interdoctor variation is thus unavoidable.

A striking fact is the fall of the frequency in the successive years. This does not take place equally in the different subgroups (province and urbanization groups), but does lead to a decrease in the differences

between the various subgroups. The fall in the frequency is largely due to the strong decline in the number of reports by two sentinel stations that registered a very large number of depressions in 1983. This also has its effect on the differences between the interviewed and non-interviewed groups of spotter physicians. If the figures of the two sentinel stations that displayed a strong decrease in the frequency are not counted, the differences are less great, notably on the point of the discussion treatment. What, however, continues to apply is the difference in the percentage of referrals.

Every registration of a given phenomenon already has in itself an influence on dealings with this phenomenon, and probably this holds good to a stronger degree for phenomena of not too frequent occurrence. However, it is the question whether this has such a quantitative effect as may be observed in this registration of the depressive syndrome.

9.2.5. Epicrisis

What is the significance of the investigation results described here ? In view of the fact that here a selected group of general practitioners is concerned, the data are not automatically applicable to the Dutch GP in general.

And yet the approach of the general practitioners in particular to patients with a depressive syndrome summons up a number of questions. The in itself surprising finding that discussion treatment enjoys preference in such a high percentage gives rise to the question how and under which conditions these discussions are held. Can the conditions of time and skill be sufficiently satisfied to arrive at a good result ? Is on the one hand the remuneration and are on the other the training and refresher training adequately geared to optimization of the conditions required for this treatment ? Increasing the attention and the skill of the GP with regard to the treatment of depressive patients will also have an effect on the percentage of referrals. In particular the early referrals as registered here can be reduced in number in the event of increased skill on the part of the GP.

The great interdoctor variation with the underlying differences in opinion about what constitutes a depression and who needs treatment for it calls for further evaluation. The GP-linked investigation will have to be supplemented for that purpose by a patient-linked investigation. What happens to people who are depressive but are not treated by their general practitioner ? Are they, their contacts and society worse or perhaps better off if they do not end up in the medical circuit ?

The importance of the registration topic described here lies without doubt more in the questions that it evokes than those that it answers.

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9.3. Suicide and attempted suicide in general practice

R.F.W. Diekstra and M. van Egmond

9.3.1. Introduction

A number of studies have indicated that a considerable proportion of persons who attempt or commit suicide have consulted their physician shortly before their attempt or death (Murphy, 1975a, b; Schapira et al. 1978; Turner, 1982; Skegg et al., 1983; Diekstra et al., 1984). Estimates run from 32 to 60% of suicidal patients in general practice that were seen by their GPs in a period of 1 to 8 weeks before their suicidal act. Some studies even indicate that half of these patients visited their doctor within a week before their attempt or suicide (Van Egmond et al., 1983). Only in a small minority of cases do physicians seem to have diagnosed these patients as carrying an elevated risk of suicidal behaviour (Murphy, 1975a, b; Schapira et al., 1978; Diekstra et al., 1984).

The reasons for this are unknown. Some authors (Murphy, 1975a; Schapira et al., 1978) suggest that because of a lack of knowledge and necessary skills, many GPs are not well equipped to assess suicide risk and to deal with it appropriately. Evidence in support of this hypothesis may be found in studies reporting that between 30 and 60 percent of suicidal persons suffer from a diagnosable and treatable psychiatric disorder at the time of their suicidal act, predominantly depressive, addictive and personality disorders (Barraclough et al., 1975; Miles, 1977; Sainsbury, 1982). A substantial number of patients who meet accepted criteria for depression seen by general practitioners are in fact unrecognized and untreated (Freeling et al., 1986).

Such findings seem to lend support to the view expressed both by individual authors (Schapira et al., 1978, p. 189) and by prestigious international organizations such as WHO (WHO/EURO, 1985, p. 52) that general practitioners, if adequately trained, should bear an important responsibility for the care of the potential suicide and should act as spotters. One should, however, strike a note of caution here because the underlying assumption seems to be that persons who already commit or attempt suicide at the time of their last visit to their doctor carry a

recognizable elevated risk for suicide. Also, assumption is made that, whenever this risk is appropriately assessed, measures for effective intervention and prevention of suicide are available. These assumptions, however, have thus far gone untested.

In a study to determine the incidence and the characteristics of patients in general practice who attempted or committed suicide, we also tried to establish the number of those who at the time of their last visit were recognized by their GP as having a high suicide risk and suffering from a depressive disorder. Furthermore, we identified how those patients were treated or dealt with by their doctors.

9.3.2. Method

In this study use was made of data on fatal and non-fatal suicide attempts that were collected by the sentinel stations (Continuous Morbidity Registration, 1988) in the Netherlands over the period 1979-1986. The sentinel stations constitute a sample of general practice in the country, covering around 1% of the population, that is a fairly accurate representation of the total population in terms of age, sex, geographical distribution and level of urbanization (Continuous Morbidity Registration, 1988). The number of GPs involved varies around 60 with a range of 59 to 62 over the study period.

Data are collected from the physicians in the sample by having them complete a form every week on wich the incidence of certain illnesses and occurrances are reported (the weekly return). In the period 1979 to 1986 suicide and suicide attempt were also included as items on the weekly return. In addition the physicians also filled out a special questionnaire for every case of suicide or suicide attempt by their patients that occured in that particular week. In the questionnaire information was asked on items such as age, sex, previous attempts, method used, place of the attempt, admission to a hospital after the attempt, admission ward, duration of admission, physical state at the time of admission, number of persons in the household of the patient and his/her relationship with them and the person who reported the attempt.

Information was also gathered on when the GP had last seen the patient before the attempt, wether the GP had diagnosed and elevated suicide risk and had taken special measures with regard to that risk, wether the patient had been diagnosed as suffering from a depressive disorder, (if so) what the main symptoms of this disorder were and how the depression was treated. It was also established whether or not the drugs prescribed in the last contact were the same as the ones used (possibly in combination with other methods) for the suicidal act. Finally, the GPs were asked to indicate whether the patient was being treated/seen by a mental health/social worker/professional at the time of the attempt and, in the case of a non-fatal suicide, whether the patient had been referred for such a treatment.

For a number of these items information is available for some years only, usually the most recent ones, as will be indicated in the presentation of the results. Since relatively small numbers of observations easily lead to large oscillations between relatively short consecutive periods of measurement (i.e. a year) the analysis and discussion of results are based on data summarized over all years for which information was available.

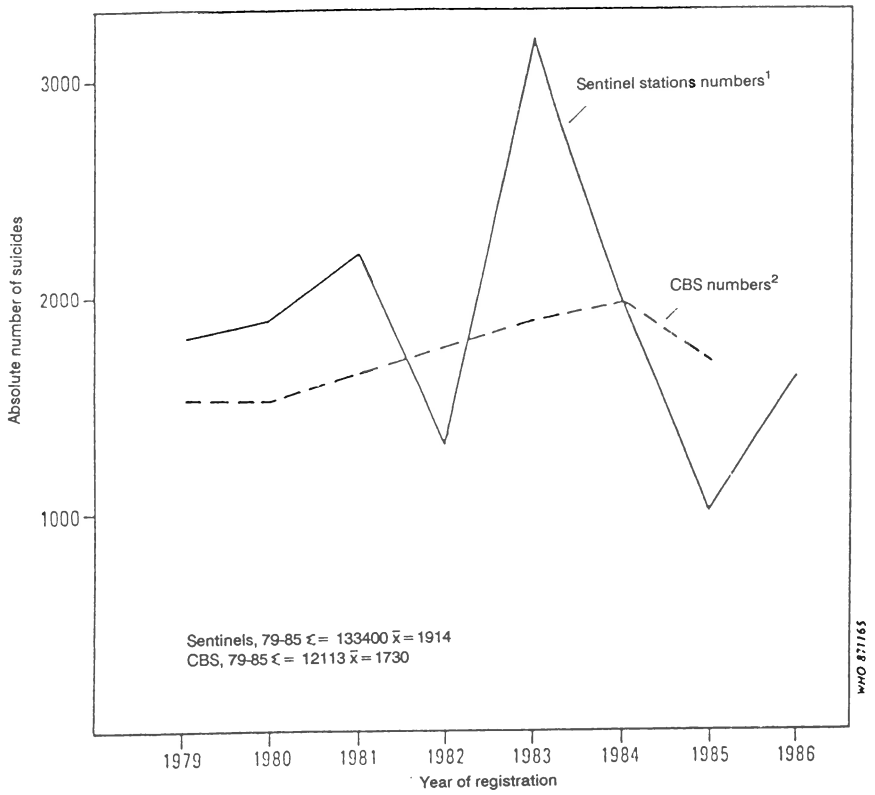
As to the question of definition of suicide and suicide attempt used in this study, case definition was left entirely up to the GPs.

9.3.3. Results

Incidence

Over the whole eight-year period the GPs reported a total of 150 cases of suicide and 712 cases of suicide attemps (involving 653 persons). This amounts to an average of 2.5 suicides and almost 12 suicide attemps per GP over the eight years, or .31 suicides and 1.5 attempts per year.

Fig. 9.2a.: Suicide in the Netherlands 1979-1986: Absolute numbers from two sources compared



1 Numbers obtained by extrapolation (Sentinel stations raw data x 100)
2 Numbers from Police and Judicial statistics, Central Bureau of Statistics, Heerlen, The Netherlands

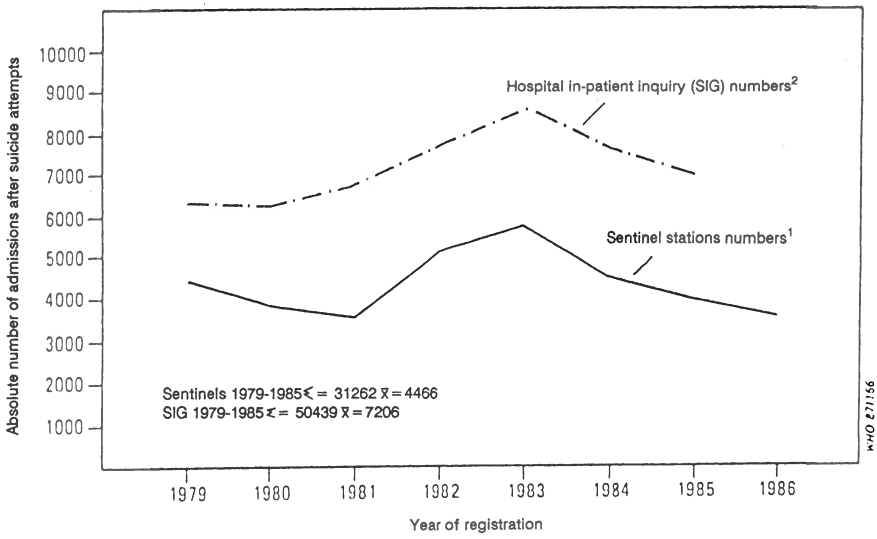
As Figure 9.2a. indicates, the suicide rate for the whole of the country extrapolated from the sentinel stations data varies considerably over the measurement period on account of small numbers of observations on which the extrapolation is based.

The averaged yearly rate reported by the sentinel stations turns out to be about 10% higher than that calculated from the data provided by the Dutch Central Bureau of Statistics. The reasons for this difference are unknown, but it may well be that GPs are informed of cases of suicide

that are not reported as such to the Central Bureau either by themselves ot by other "verifiers".

As so the non-fatal attempts, the variation in rates over the years is likewise considerable. The only possibility of checking their validity is by comparison with the suicide attempts rates reported by the hospital in-patient register (Stichting Informatiecentrum Gezondheidszorg, SIG, n.y.), which records about 95% of all discharges from general hospitals in the country. But in order to do so the sentinel station figures should be corrected for the 51% attempts that, according to the GPs, do not lead to hospital admission with a duration of at least 24 hours. What emerges from this comparison is that the GP figures underestimate the figures reported by the hospital in-patient register by an average of 38.8%.
It is of importance to note, however, that for attempted suicides the graphic picture based on the two data sources (GP-hospital in-patients inquiry) are very similar (see Figure 9.2b.).

Fig. 9.2b.: Suicide attempts leading to general hospital admission in the Netherlands 1979-1986: Absolute numbers from two sources compared



1 Numbers obtained by extrapolation (Sentinel station data x 100 /x.49)
2 Numbers obtained by extrapolation from Stichting Informatievoorziening Gezondheidszorg (SIG), Utrecht, The Netherlands, calculated as if 100% of admissions were registered

Repeated suicide attemps

Of the patients for whom a suicide attempt was reported in a particular year, on average 3.3% of those who committed suicide and 5.0% of those who attempted suicide appeared to have made at least one other attempt that same year. In fact these percentages reflect the repetition rates over a period of six months averaged. The repetition percentages over a one-year period of 6.6% and 10.0% come quite close to the repetition percentages reported elsewhere (e.g. Kreitman, 1977).

The percentages of persons who made at least one earlier attempt in their lifetime is on average 27% for the suicides and 33% for the attempters. Again these figures fall within the range of percentages reported elsewhere in the literature (see Diekstra, 1981).

Sex and age

The general findings that suicide attempts, unlike suicides, are especially characteristic of the younger age groups and of females is confirmed by the sentinel station data (see Table 9.6.). The majority of persons attempting suicide are aged 15 to 34 years against over slightly one quarter of the suicides (27.4%) that fall within this age category. The male/female ratio over all the years combined is 1.5 : 1 for suicides and exactly the opposite for attempted suicides. Understandably, the ratio of suicides to attempted suicides is rather different for the sexes, with a ratio of 1 : 3 for males and 1 : 8 for females.

Social situation of the suicidal patients

With regard to living situation there appear to be some distinct differences between suicides and attempters. One third of the suicides as against about one fifth of the attempters were living alone. Another 10% of the suicides were residing in a psychiatric hospital, halfway house or boarding house at the time of their suicidal act as against only 2% of the attempters. The remainder of both groups lived together with other persons: parents, spouses (41% of suicides, 54% of attempters) or other relatives.

These differences in living conditions between both groups are also reflected in the data on who reported (discovered) the suicide or the attempt. Whereas over 40% of the suicides were found by a person who just happened to be passing by or acted in an official capacity (especially police), this happened to be the case in only 8% of the attempters. It is noteworthy that 1 in 8 attempters reported the attempt himself or herself. As might be expected, the agencies to whom the suicidal acts were first reported differ considerably between both groups. For the suicides in over two fifths of the cases (42.5%) this appeared to be the police, the fire department or municipal ambulance unit.

Only 6.8% of the suicide attempts were first reported to these agencies. Two thirds of the attempts (65.5%) were first reported to the GP and another 16.7% were directly reported to a hospital, as compared to 41.4% and 4.6% for suicides.

Method of attempt

As was to be expected (Kreitman, 1977; Diekstra, 1985; Table 9.6.) self-poisoning appears to be by far the most common method of attempting suicide, while harder methods like strangulation, drowning and jumping (68.5%) are more common in suicides. The percentages of cases of suicide attempt by self- poisoning, however, is smaller than the ones reported in most other studies, which are usually based on hospital-admitted suicide attempts only. The difference might be explained by the fact that self-poisonings lead to hospital treatment/admission more often than other non-fatal suicide methods (e.g. wrist slashing).

Hospital admission and admission status

About 70% of the patients that made a non-fatal attempt were referred to a general hospital. Almost 20% were treated/seen at the emergency department but were not admitted. Another 5.5% were directly referred to a psychiatric hospital. The remaining percentage (25.8%) of the attempters who were not referred to hospital is quite similar to what has been reported in the few other studies that looked into this (Kreitman, 1977).

55% of the patients admitted to a general hospital went to the internal medicine ward, which is almost three times the number of admissions to psychiatric wards. Taking together the admissions to psychiatric wards of general hospitals, about one fifth of the attempters were directly referred for psychiatric treatment on an in-patient basis. Almost one fifth of the attempters were comatose at the time of admission. As to the suicides, about 10% of them were admitted to a general hospital and died probably within a couple of days at the most.

Contacts with GP prior attempt

Of both the suicides and suicide attempters, almost half (48% in both groups) had contacted their GP within a period of 8 weeks preceding their attempt or death. According to the GPs, about one third (31%) of the suicides and about one in five (20.4%) of the suicide attempters expressed suicidal thoughts or plans in the consultation. However, the GPs themselves assumed the existence of elevated suicide risk in 42% (42.5%) of the suicides and 31% of the attempters.

In almost 70% (68.9%) of the suicides the GPs reported the existence, currently or previously, of a depressive disorder. Among the attempters this percentage was almost 60% (58.0%). These percentages are remarkably similar to what has been reported by other authors (e.g. Sainsbury, 1982). Although the GP had received a description of the generally recognized criteria for diagnosing a depressive disorder, it remains uncertain whether they made use of the criteria.

The GPs were asked to list the four major symptoms of depression of the patients (only for 1984 up through 1986). The symptoms most often mentioned, both for the suicides and the attempters, were loss of energy, dysphoric mood, sleeping disturbances and social withdrawal.

Treatment prior to and following attempt

According to the GPs practically all the patients (91%) who were diagnosed as suffering from a depressive disorder at the time of their attempt had been depressed before. In more than half of all cases the

GPs had at one time or another prescribed one or more types of drugs to combat depression.

The most frequently described drugs were minor tranquillizers/sedatives and antidepressives. Of the suicides who received drug treatment, 57% were prescribed minor tranquillizers and 50% antidepressives. For the attempters these percentages were 44% tranquillizers and 61% antidepressives. Next to prescribing medication GPs referred the remainder of the depressed patients in both groups to one or more specialized helpers/agencies for further treatment. About three quarters of the patients in both groups received out-patients psychiatric treatment. Other agencies used less frequently for referral were community mental health centres, social workers and psychologists in private practice. Since these percentages are based on data for the period 1984-1986 only, and the number of observations, particularly for suicide, is small, one should be cautious with regard to conclusions ond possible differences between the two groups. What the data do indicate, however, is that a considerable number of GP patients that at one time or another commit or attempt to commit suicide have been treated for depressive disturbances both by GPs themselves as well as by professionals who are supposed to be specialized in this respect.

Depression even appeared to be the main reason for referral to/treatment by other health professionals, since 83% of all patients who committed or attempted suicide received such a referral/treatment most probably because of a 'depressive disorder'.
Of the patients who consulted the GP within 8 weeks before their attempt or death, the majority was given a prescription (55% of the suicides, 80% of the attempters). Again the most frequently described drugs were minor tranquillizers and antidepressives. 36% of the suicides and 64% of the attempters used these drugs, frequently in combination with other drugs or methods, as the means to commit or attempt suicide.

As has been noted, according to the GP, prior to their suicidal act about half of both the suicides and the attempters had been treated/seen by mental health professionals or social workers. The (non-fatal) suicide

attempt led to an increase in such contacts, since 73% of the attempters were reported to have been referred to/seen by such helpers afterwards.

Remarkably, the GPs reported that they had themselves contacted/treated attempters in more than two thirds of the cases (68%). In the majority of cases the help offered was a combination of one or a few counselling sessions and drug prescriptions on the one hand or referral to other professional helpers/agencies on the other. Referral was made in two thirds of the cases seen by the GP after the attempt.

9.3.4. Discussion

Suicide and suicide attempts are a major public health problem. In many countries in the world suicide rates have increased considerably over the last two decades, particularly in the younger age group of 15-34 years and among women (Diekstra, 1985). Suicide attempts in a number of areas have doubled or even tripled in that same period and account for a considerable percentage of medical admissons to hospital (Skegg et al., 1983). Although it has been shown, both in previous studies and the present one, that many suicidal patients consulted their family doctor shortly before their death or attempt, previous studies have not been able to substantiate empirically their claim that GPs can play a crucial role in the prevention of suicidal behaviour. The results of the present study, which is in fact the first in literature to investigate the potential role of GPs in suicide prevention on a national level over a considerable number of years, do not lend support to this claim. Our data indicate that a patient's suicide is a very rare event that on the average occurs only once per three years in a general practice of about 2000 patients. Of course, these figures are derived in a country with a comparatively low suicide rate. But even in countries that have suicide rates three times as high as that of the Netherlands, and there is really only one country in the world that comes close to that figure (Hungary, WHO/EURO), a GP on the average would have just one patient per year who will kill himself or herself. Moreover, the chances are fifty:fifty that that particular patient will consult the GP within 2 months before the suicide. And even if that is the case, it is not at all certain whether the patient at the time of the consultation will

present already recognizable signs of suicide risk or carries in fact an elevated suicide risk.

Practically the same point can be raised with regard to attempted suicide. The present study shows that in one year a GP will see only one patient within the period of eight weeks before he or she makes a non-fatal attempt. One could argue that this figure underestimates the actual number of such patients for the following reasons. First of all, the number of suicide attempters admitted to general hospitals for 24 hours or more as reported by the GPs in our study is almost half the number of such admissions reported by the hospital in-patient inquiry system. In a country like the Netherlands, where practically everybody is supposed to have his or her own family doctor, this difference seems to suggest that our GPs failed to report a great many cases of attempted suicide in their practice, provided these cases were in one way or another made known to them. There are, however, reasons to assume that the latter is often not the case. Cases of suicide attempt (as well as suicide) do not become known to the GPs because:

a) some patients themselves receive their letter of discharge and do not pass it on to their doctor;
b) some patients request the hospital doctor treating them not to inform their GP; and
c) a number of patients in fact do not have family doctor.

But even if the GPs failed to report a number of hospital-admitted suicide attempters, it is rather unlikely that these were patients who had consulted them recently, thereby possibly providing the opportunity for preventive intervention.

The conclusion therefore seems to be that the role the GP can play in the prevention of suicidal behaviour is rather negligible.

This conclusion might, however, still be premature. Our data indicate that the majority of the suicidal patients were diagnosed as suffering from a depressive disorder previously. Among the major symptoms of the depression listed by the GPs, death wishes/suicidal thoughts were

relatively seldom reported. One of the reasons might be that GPs do not routinely assess suicidal tendencies in depressed patients. Reasons for this may be lack of training in how to interview patients appropriately in this respect and irrational fear on the part of the doctor of putting 'dangerous ideas' in the heads of their patients.

One could argue that is doctors were trained well enough to assess suicide risk in their depressed patients and were able to take appropriate action, this could have an impact on suicide and suicide attempt rates.

This is, however, probably an optimistic stance, since very often depressed GP patients that later committed or attempted suicide have prior to their suicidal act been seen or treated by a mental health specialist such as a psychiatrist of psychologist, or by a social worker, and clearly they also were unable to eliminate the suicide risk.

A number of authors (WHO/EURO, 1982) have expressed their concern with regard to the competence that health professionals in general (including mental health programmes) have in dealing with suicidal patients. It might well be that adequate training in this area of general practitioners, doctors of internal medicine, psychiatrists, clinical psychologists, social workers and general and social-psychiatric nurses could be an important step in the direction of reducing the number of suicides and suicide attempts.

In a recent publication (Diekstra, 1988), the following components of such a training have been indicated.

a) information on the epidemiology of suicide and attempted suicide and acute and chronic risk factors of suicidal behaviour;
b) information on and training in the skills necessary for indentifying people with a high risk of suicidal behaviour;
c) training in interview techniques, treatment and after-care of suicidal people, relatives of people who have committed suicide and the families or friends of people who have made a suicide attempt;
d) training in the appropriate referral of suicidal people to (other) health care workers.

Whether this will indeed have the desired effect on the puzzling phenomenon of suicidal behaviour awaits to be seen. In the meantime with regard to suicide prevention there is no empirical substantiation for the viewpoint that the burden and the blame should be placed on the general practitioner.

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Table 9.6.: Suicide and suicide attempts 1979-1986 (GP data)

Variable	Suicides (%)	Suicide attempts (%)
Age		
< 20 yrs	4	9.1
20-29 yrs	15.4	30.4
30-39 yrs	22.7	22.9
40-49 yrs	11.31	8.0
50-69 yrs	18.6	12.3
70 + yrs	27.9	7.3
Sex		
M	62	38
F	38	62
Other persons in household		
none (living alone)	34	22
one	24	27
two or more	33	47
institution/hospital	9	3
other (e.g. hotel)	-	1
Person/agency reporting act		
patient him-/herself	-	13
partner/girl-/boyfriend	18	32
other family members	25	33
friends/neighbours	16	14
agencies/institutions	25	6
passers-by	16	2
Persons/agencies reported to		
GP	41	66
hospital	5	17
municipal emergency departm.	8	6
police/fire department	43	7
other (crisis line/priest/etc)	3	5
Method		
hanging/strangulation	29	3
drowning	18	3
jumping from high places/in fornt of vehicle	22	2
drug overdose	22	77
other methods of poisoning (gas)	3	4
self-mutilation/wrist-slashing	6	11

Variable	Suicides (%)		Suicide attempts (%)	
Hospital admission				
to general hospital < 24 hours	19.7			
to general hospital > 24 hours	49.0			
to psychiatric hospital	5.5			
not admitted	25.8			
Contact with GP prior to atempt				
no contact	52		53	
within 1 wk before attempt	22		21	
within 2 wks before attempt	9	48	21	47
within 4 wks before attempt	13		11	
within 8 wks before attempt	4		4	
Patients expressing suicidal thoughts/plans in last contact				
no	69		79	
yes	31		21	
Patients with suicide risk according to GP*				
no	57.5		69	
yes	42.5		31	
Diagnosis of depression**				
no	31		42	
yes	69		58	
Drug treatment for depression by GP***				
- minor tranquillizers	57		44	
- antidepressives (esp. tricycli, tetrocycli)	50		61	
- other (hypnotics, neuroleptics)	43		33	
(% of all patients with diagnosed depression)	50		67	
Drug prescription in last consultation				
no	47		21	
yes	53		79	

Variable	Suicides (%)		Suicide attempts (%)	
Prescribed drugs used in attempt				
no	64		36	
yes	36		64	
Mental health/social work contract/treatment **prior to** attempt				
no	48		56	
in-/out-patient psychiatric treatment	29		20	
psychologist/private practitioner	4		4	
social work	4	52	8	44
community mental health centre	4		5	
other	11		7	
Mental health/social work contacts/ treatment **after** attempt				
no			24	
in-/out-patient psychiatric treatment			47	
psychologist/private practitioner			6	
social work			7	76
community mental health centre			14	
treatment explicitly refused			2	

* 1982 - 1986 only
** 1984 - 1986 only
*** more than one drug may be mentioned

9.4. Referrals of mental health problems by general practitioners

L. Peters

9.4.1. Introduction

General practitioners are frequently confronted with mental health problems: in some 19% of the consultations such problems come up explicitly for discussion, while in addition, in a further approx. 43% of the consultations, mental health problems play a part in a concealed form according to the - Dutch - general practitioner (Bensing, 1986). Despite these large numbers GPs only rarely refer patients with such problems. As against an average of 230 (active) referrals per year to medical specialists per 1000 patients only six to seven referrals to specialized mental health care facilities take place (Peters, 1984). In addition an approximately equal number of patients with mental health problems are referred to general social work. This sketch of the Dutch situation tallies with that in other countries (see among others Goldberg et al., 1980; Brodaty et al., 1982).

Although the number of referrals on account of mental health problems is small from the viewpoint of the general practitioner, this is by no means the case if these figures are examined from the viewpoint of the mental health care facilities and - to a smaller extent - also general social work. For them the general practitioner in all cases forms the principal supplier of patients.

In recent years there has been an increasing discussion in the Netherlands on the question which mental health problems "belong" to general social work and which problems can better be dealt with by specialized mental health care facilities. In a policy memorandum of the Netherlands Government on mental health care (Ministerie van Welzijn, Volksgezondheid en Cultuur, 1984) a distinction between "light" and "heavy" was introduced for this purpose. Lighter disturbances of a psychosocial nature (the memorandum gives as examples relational problems, questions of upbringing, coping with grief, loneliness) ought to be dealt with by primary care (notably the GP and general social work),

whereas specialized mental health care should confine itself to severe mental problems (such as fears, depressions, delusions).

This contribution forms an interim report of an investigation in which the following question is the focus of attention: to what extent do general practitioners - if they refer patients on account of mental health problems - differentiate between general social work and the various extramural mental health care facilities and to what extent do the nature and the severity of the problem play a part in this ?

To answer this question, from 1 January 1986 to 1 January 1988 the spotter physicians registered all new referrals on account of mental health problems (excluding referrals to institutions for the treatment of addiction problems) and in addition - from 1 July 1986 onwards - provided per referral some supplementary data, such as the body to which referral was made, the nature of the problem, the load on the patient perceived by the GP, the prognosis, the initiative for referral and a number of patient characteristics.

This contribution is based on data furnished over the second half of 1986, whereby we have confined ourselves to the referrals to general social work and the extramural mental health care: Regional Institutes for Ambulatory Mental Health Care(RIAGG), out-patient clinics of psychiatric hospitals and of psychiatric departments of general hospitals, independent psychologists and independent psychiatrists. In total 348 referrals by 51 spotter physicians are involved. In the analysis of these referrals we consider the whole group of physicians. Differences between GPs, which - as is known - are great not only as regards the recognition of mental health problems but also as regards dealing with them (see among others Shephard, Cooper & Brown, 1966; Verhaak, 1986), will be left out of consideration here, on account of the small number of referrals.

9.4.2. Results

The referral pattern

If general practitioners wish to refer patients with mental health problems they have - in the Netherlands - the choice among a large number of possibilities. Within primary care general social work forms the principal facility for the treatment of such problems. However, in addition general social work also directs itself towards aid to people with material problems, such as in connection with accommodation and income. Whilst general social work is also accessible without referral by a GP, that is in principle not the case with specialized mental health care facilities: in Dutch health care they are regarded as part of secondary care and are therefore accessible only after referral from a GP (see for a survey of Dutch mental health care Breemer ter Stege and Van Heugten, 1986). Despite the fact that general social work also accepts patients directly, this facility, as Table 9.7. shows, is for the GP the principal possibility of referral in mental health problems: two of the five patients who are referred in connection with these problems end up with general social work. This makes general social work, seen from the point of view of the GP, quantitatively more important than the RIAGG, which since its founding in 1982 has been assigned the pivotal position in mental health care.

Table 9.7.: Referrals on account of mental health problems by facility (N=348)

General Social work: 40%	5%	independent psychiatrist
	9%	(out-patient clinic of) general psychiatric hospital
RAIGG: 30%	8%	(out-patient clinic of) psychiatric department of a general hospital
	8%	idependent psychologist

The initiative for referral

General practitioners could indicate on a five-point scale whether they themselves or the patient pressed for referral. Usually the initiative was taken by the GP (57%); in 22% of the referrals the patient was the more

important initiator, whereas in the remaining cases (21%) in the opinion of the GP there was a more or less equal share of both. This pattern is not the same for every facility to which referral is made (see Table 9.8.).

Table 9.8.: the initiator of the referral (excluding 21 referrals whereby another than the GP and/or the patient initiator), N=327, in percentages per facility

	(chiefly) the GP	GP and patient equally	(chiefly) the patient
Regional Institution for Ambulatory Mental Health Care (RIAGG)	55%	20%	25%
Out-patient clinic (of general psychatric hospital and psychiatric department of general hospital)	42%	22%	36%
Independent psychologist and psychiatrist	46%	19%	35%
General social work	67%	21%	12%

$Chi^2 = 19{,}61$, df = 6, $p < .005$

In the referrals to general social work the share of the patient is relatively small; in those to the out-patient clinics and independent psychologists and psychiatrists it is relatively large. An explanation of this may perhaps be sought in the above-mentioned differences in the accessibility of facilities. General social work is freely accessible (in practice 56% of the patients come there on their own initiative or at the urging of their family, JOINT, 1987), the RIAGG is accessible only after referral by the general practitioner, although provided that the patient has no objection (in practice 28% come there on their own initiative or that of their immediate environment, NVAGG, 1986), and application to an out-patient clinic or an independent psychiatrist is strictly bound up with referral by a general practitioner or other physician, unless the patient is prepared to bear the costs personally. In other words, the extent to which patients themselves press for referral during consultation of a GP is perhaps in part a function of the conditions of entry to the individual facilities.

Some characteristics of the referred patients

It is a well-known fact that women consult their family doctor more often than men. These differences have also been noted with respect to the use of mental health care facilities (see among others Bauduin, 1980 and Gove & Tudar, 1977). By way of explanation it is often adduced that it is not so much the state of health that is responsible for this as the differences in behaviour occurring in the search for help as a result of sex-stereotypical socialization (see among others Mechanic, 1978).

In our investigation too a clear over-representation of women was found: two thirds of all patients referred were of the female sex. But on the other hand there did not prove to be the slightest connection between the sex of the patients referred and the severity of the problem - as perceived by the GP - for which referral was made.

A connection between the sex and the institution to which referral was made did not prove to exist. This was to some extent the case with the way in which the patients are insured against medical expenses. Privately insured patients, in general people with a high income and a high level of education, were relatively over-represented among the referrals to independent psychologists (65% as against an average of 30% for the other facilities); for those insured with health insurance funds that was the case with the out-patient clinics of general psychiatric hospitals and to a smaller extent with general social work (90% and 75% respectively as against an average of 70%).

The final characteristic that we examined, the age of the referred patients, proved to be connected to only a small extent with the institution to which referral has been made (chi squared = 15.07, df = 9, $p < .10$): a slight over-representation of patients of 45 years and older was found with general social work (31% as against an average of 26%), of patients younger than 25 years with the RIAGG (29% as against an average of 25%) and of patients in the 25-45 age group with the independent psychologists and psychiatrists (70% as against 50% on average).

The severity of the problems

To investigate whether the severity of the problems is used in practice by the GP to refer either to general social work or to one of the mental health care facilities, the spotter physicians furnished data per referral on the burden that the problems imposed on the personal and/or social functioning of the patient and their expectations with regard to the course of the disturbance (expressed in prognosis and expected treatment time). In the following three tables (9.9., 9.10., 9.11.) these three dimensions are plotted against the kind of facility to which referral was made.

Table 9.9.: The burden on the patient and the institution to which he is referred (in percentages of the total number of referrals per institution)

Institution	degree of burden			
	not greatly	greatly	very greatly	N=
RIAGG	16%	62%	22%	106(100%)
psychiatric out-patient clinic	21%	53%	26%	58(100%)
independent psychiatrist or psychologist	36%	48%	16%	44(100%)
general social work	23%	56%	21%	139(100%)
N=	77	196	74	347

p = n.s.

Table 9.10.: The prognosis and the institution to which referal has been made (in percentages of the total number of referrals per institution)

Institution	degree of the prognosis			
	favourable	moderate	unfavourable	N=
RIAGG	44%	22%	34%	86(100%)
psychiatric out-patient clinic	47%	29%	24%	45(100%)
independent psychiatrist or psychologist	44%	33%	22%	36(100%)
general social work	47%	33%	20%	123(100%)
N=	133	85	72	290
p = n.s.				

Table 9.11.: The expected treatment time and the institution to which referral has been made (in percentages of the total number of referrals per institution)

Institution	expected treatment time			
	short (<0.5 yr)	long (>0.5 yr)	chronic/ recurrent	N=
RIAGG	37%	32%	32%	82(100%)
psychiatric out-patient clinic	24%	43%	32%	37(100%)
independent psychiatrist or psychologist	47%	27%	27%	34(100%)
general social work	57%	27%	16%	99(100%)
N=	111	78	63	252
Chi = 15,79, df = 6, p = < 0.05				

It emerges from the tables that the severity of the problems, insofar as reflected by the burden on the referred patient and the prognosis, has no effect on the kind of institution to which the patient is referred. Only the expected treatment time displays a (weak) connection in the sense that patients who were referred to general social work and - to a smaller

extent - to independent aid workers need in the opinion of their family doctor a shorter treatment than the patients who were referred to the RIAGG and - above all - the out-patient clinic.

The connection between the three components with which we have measured the severity of the problems underline the complexity of such a general criterion for policy applications: only between the prognosis and the expected treatment time did a strong connection prove demonstrable (Kendall's Tau B = .68, p = <0.0001); the connections between the burden on the patient's functioning and the prognosis or the expected treatment time are weak (Kendall's Tau B = .17, p = <0.0001 and Kendall's Tau B = .31, p = <0.001 respectively).

All in all these findings contain strong indications that for the GP the severity of the problems is barely a factor on the strength of which referral is made either to general social work or to one of the mental health care facilities.

The nature of the problems

Whilst the severity of the mental health problems proves not to be a significant factor in referring to a given type of facility, it is not excluded in advance that the kind of problem does function as such for the GP. Thus it might be supposed that mental health problems in which problems with work or accommodation play an important part are referred to general social work, whereas mental health problems involving a psychiatric syndrome are referred more to a facility with medico-psychiatric expertise.

The nature of the problems for which referral has been made has been briefly described by the spotter physicians. They were asked both about the complaints presented and about the underlying problems/diagnoses. These descriptions have been classified by us in accordance with the International Classification of Primary Care (ICPC) (Lamberts & Wood, 1987), whereby per referral a maximum of three codes are reserved for the complaints/problems as presented by the patient and a maximum of three codes for what in the GP's opinion are the underlying

problems/diagnoses. The idea behind this was that mental health problems - in particular those that end up with the GP - often cannot be captured under one classification denominator.

To answer the question whether the kind of problem is for the GP a criterion on the strength of which referral is made to general social work or to one of the mental health care facilities, a distinction has been made between the following kinds of referrals:

- referrals in which psychological problems (ICPC, Chapter P), whether or not in combination with other problems, play a part;
- referrals in which social problems (ICPC, Chapter Z), whether or not in combination with other problems, play a part.

In addition, within both the P referrals and the Z referrals a number of specific problem categories of very frequent occurrence have been devised. Table 9.12. gives a survey of the problem categories used in the analyses, the operationalization used and the corresponding referrals.

From the table it can be derived that the problems for which referral is made often consist of a cluster of both psychological and social problems. In 84% of all referrals there is also mention of psychological problems; in 71% there is also mention of social problems. This means that in 55% of the cases (84+71)-(100) a combination of both types of problems occurs.

Table 9.12.: Number of referrals in which a complaint and/or an underlying problem occurs in seven problem categories *

designation of problem category	ICPC code(s)	referrals	
		absolute number	as percentage of total number of referrals
a. psychological	one or more P codes	291	84%
- depressive problems	P03, P76	94	27%
- fear, stress, nervousness, irritation	P01, P02, P04 P74	124	36%
b. social	one or more Z codes	246	71%
- grief	Z15, Z19, Z23	49	14%
- relational problems	Z12, Z20, Z24	114	33%
- problems with study/work	Z05, Z06, Z07	51	15%
Total number of analysed referrals		348	(100%)

* An alternative method, in which selection was made only on 'principal complaint' and/or 'principal problem', did not prove to lead to other results in the processing performed by us.

The following tables investigate how the referrals differentiated in the previous table (Table 9.12.) by nature of the problems stand in relation to the facilities to which referral has been made.

Table 9.13.: Distribution of the referrals (in %) in which psychological problems (ICPC-P), depressive problems (ICPC-P03, P75) and problems of fear (ICPC-P01, P02, P04, P74) play a part, by facility to which referral has been made (N=348)

	psycholo-gical pro-blems (P) (N=291)	other problems (N=57)	depres-sive problems (N=94)	other problems (N=254)	problems of fear etc. (N=124)	other problems (N=224)
RIAGG	34.7	10.5	30.9	30.7	29.8	31.3
Out-patient clinic, psychia-tric department of general hospital	7.9	5.3	11.7	5.9	6.5	8.0
Out-patient clinic, general psychiatric hospital	9.3	8.8	7.4	9.8	12.9	7.1
Independent psychiatrist	5.5	3.5	3.2	5.9	4.0	5.8
Independent psychologist	7.6	7.0	8.5	7.1	7.3	7.6
General social work	35.1	64.9	38.3	40.6	39.5	40.2
Total	100%	100%	100%	100%	100%	100%
p=	<0.001		n.s		n.s.	
Chi^2	20.55					
df=	5					

It emerges from Table 9.13. that referrals involving psychological problems (ICPC, Chapter P) end up relatively more often with the RIAGG and less frequently with general social work than referrals in which such problems play no part. Nevertheless, the absolute share of general social work in these referrals is just as large as that of the RIAGG, namely 35%.

If we examine the two specific problem categories that come within the ICPC-P chapter - problems of a depressive nature and the cluster fear, stress, nervousness and irritation - the connection established earlier does

not emerge: referrals on account of such problems end up in comparison with referrals in which these problems play no part relatively just as frequently with the RIAGG as with general social work. This, in combination with our earlier finding that general social work is for the GP the principal possibility of referral with regard to all mental health problems, therefore finds expression in the table with regard to the specific categories depressive problems and fears: in both cases general social work, with 40%, is the most important referral destination.

Table 9.14.: Distribution of the referrals (in%) in which social problems (ICPC-Z) grief problems (ICPC-Z15, Z19, Z23), relational problems (ICPC-Z12, Z20, Z24) and work/study problems (ICPC-Z05, Z06, Z07) play a part, by facility to which referral has been made (N=348)

	social probl. (P)	other probl.	grief probl.	other tional probl.	rela- probl.	other study probl.	work/ probl.	other probl.
	N=246	N=102	N=49	N=299	N=144	N=234	N=51	N=297
RIAGG	25.6	43.1	26.5	31.4	18.4	36.8	25.5	31.6
Out-patient clinic, psychiatric department of general hospital	5.7	11.8	16.3	6.0	5.3	8.5	0.0	8.8
Out-patient clinic, general psychiatric hospital	8.5	10.8	10.2	9.0	12.3	7.7	5.9	9.8
Independent psychiatrist	4.9	5.9	0.0	6.0	7.9	3.8	2.0	5.7
Independent psychologist	7.3	7.8	10.2	7.0	9.6	6.4	5.9	7.7
General social work	48.0	20.6	36.7	40.5	46.5	36.8	60.8	36.4
Total	100%	100%	100%	100%	100%	100%	100%	100%
p=	<0.001		<0.10		<0.01		<0.05	
Chi^2	24.86		10.05		16.56		13.61	
df=	5		5		5		5	

Unlike referrals for psychological problems, with respect to social problems (ICPC, Chapter Z) general practitioners refer relatively more often to general social work than to the RIAGG. Although for these problems general social work, with 48% of the referrals, is the most important facility in an absolute sense too, this means at the same time that the extramural mental health care facilities together still are assigned more than half of these referrals, entitled "light" by the Netherlands Government.

In the three specific problem categories included in Table 9.14. that come within the ICPC-Z chapter - problems with grief, relational problems and problems concerning work and study - (weak) connections are established, but not in the same direction: whilst the relative over-representation of relational problems and above all problems concerning work and study is in keeping in general social work with the desired division of tasks between general social work and mental health care, in the cases of problems of grief it is precisely mental health care (and within it above all the out-patient clinic of a psychiatric department of a general hospital) that, more than can be expected on the strength of the total referral pattern, gets more patients.

To conclude these results, a remark on the procedure followed by us. Although the specific problem categories analysed have been chosen above all on pragmatic considerations - they were the ones most reported by the spotter physicians - the tables show that these categories are under-represented above all with the RIAGG. Evidently here, more than in the other facilities, other problems are involved. Because the number of available referrals was small, this interim report will not analyse other problem categories.

9.4.3. Discussion

In the referral of patients with mental health problems the Dutch general practitioner calls on both general social work and on specialized mental health care facilities such as the RIAGG, a psychiatric out-patient clinic or an independent psychiatrist or psychologist. Ideally the choice between

these possibilities of referral should be prompted by the specific tasks (and the necessary expertise) of the individual facilities. However, formally speaking no guidelines exist on the differences in task between the various extramural mental health care facilities, while the differences between the tasks of general social work in the field of mental health care and the tasks of extramural mental health care have been designated only in broad terms: the "light" problems should be dealt with by general social work, and the "heavy" problems by the specialized mental health care facilities.

The volume of the research data used on behalf of this contribution is too small to give a definite answer to the question of the influence of the severity and the nature of the problems on the decision by the general practitioner to whom to refer. Nevertheless, there are strong indications that - in the view of the GP at least - the burden on the patient and the prognosis do not determine the choice of a given facility. Only the expected treatment time is slightly connected with the GP's referral behaviour: patients who are referred to general social work require in the GP's opinion a shorter treatment than the other referred patients.

Nor does the kind of problem for which referral is made prove to be clearly connected with the referral behaviour of the GP. True, referrals of problems with typically social aspects (such as problems with work/study and relational problems) end up both absolutely and relatively more often with general social work. In the case of referrals in which (intra)mental aspects play a part (such as problems of a depressive nature and fears) general social work is in an absolute sense just as important to the GP as the RIAGG, which within mental health care is the principal partner for the GP.

The conclusion therefore imposes itself that it all does not make much difference: patients who are referred by the general practitioner are at least barely referred to a certain type of institution on the basis of the kind of problem or its severity. Thus, policy-makers and financiers will gratefully note that there are good possibilities here for strengthening primary care, i.e. general social work, while at the same time reducing the

capacity of the specialized mental health care facilities: it fits into the primary health care concept and is less expensive to boot. This conclusion seems a premature one. It is not impossible that other factors not examined by us (such as the verbal capacities of a patient as perceived by the GP) do in fact have an effect on the decision to refer to a certain type of facility.

Finally, we should like briefly to consider the concept "light" versus "heavy" problems itself. Our findings show that this concept is of little practical value in daily (general) practice. Of the components that we have distinguished - burden on the patient, prognosis, expected treatment time - only the latter two proved to be closely interrelated. In other words, mental health problems that entail a heavy burden for personal and/or social functioning are by no means always easier or quicker to treat than problems that burden a patient only lightly.

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9.5. Contacts of general practitioners with discharged psychiatric patients

W. Frankenberg and G.H.M.M. ten Horn

9.5.1. Introduction

Over 50 000 times a year someone in the Netherlands is discharged from an intramural psychiatric facility: a general psychiatric hospital, a psychiatric department of a general hospital, an addiction clinic etc. (Ketting, 1987). That discharge has been preceded by a longer or shorter period of care, often around the clock. What kind of care do these patients get after this?

Our knowledge on this is limited. We know something about the contacts that after discharge these patients have with mental health care facilities (Ten Horn, 1982; Van den Hout; 1985; Polis and Schnabel, 1988). Much less is known about the frequency with which this group of patients after discharge (in addition) make an appeal to primary health care. Knowledge of the degree to which the primary care disciplines are involved by the mental health professional in the (planning of the) further care for a patient is also limited. Broad information on this is given by the figures published annually by the Chief Medical Office for Mental Health (Geneesk. Hoofdinspectie Geestel. Volksgez. 1967 et seq.).

The need to obtain a clearer picture of the share of primary care in that care led to a number of research projects. After an investigation in 1985 in a medium-sized municipality in the north of the country (of which more below), the sentinel stations started in 1986 with the registration of the first contact of the GP with one of his patients after discharge from an intramural psychiatric facility. This registration was continued in 1987 and 1988.

9.5.2. Why this registration by the sentinel stations?

After analysis of the data collected by means of a patients' register over a period of five years, Ten Horn established in 1982 that only half of all patients discharged from an intramural psychiatric facility had contact with

(ambulatory) mental health care (Ten Horn, 1982). Some years later that percentage proved to have barely changed (Brook et al., 1988).

For the interpretation of this finding it is important to know whether continuation of the care given intramurally was considered necessary, but also feasible. And, if so, was this aid then planned? In other words, was the absence of contact with mental health care **intentional** or **unintentional**?

The Chief Medical Office of Health asked whether a part of the patients who after discharge have no further contact with mental health care are perhaps counselled by primary care. A related question was to what extent an overlap occurs: how often is a discharged patient counselled by both primary care and mental health care ?

The interest in continuity in care to discharged psychiatric patients is obvious. Intuitively the expectation exists that there is a link between an extramural continuation of the care given intramurally and the prevention of readmission. However, upon investigation such a relation does not prove easy to demonstrate. The number of readmissions in the group of patients with after-care is just as large as in that without after-care (Ten Horn; 1982; Van den Hout, 1985). But perhaps the group without mental health care contacts is looked after more often by primary care?

The question about the share of primary care in looking after these patients is also of importance in the light of government policy with respect to mental health care. The intended reduction of the number of beds in intramural psychiatric facilities requires, in addition to extension of the number of places in semimural facilities (the protective forms of accommodation), a reduction in the number of admissions and/or a shortening of the duration of these admissions. The consequences of this extramuralization will doubtless make themselves felt in primary care. That was partly a reason for investigating how great the pressure of work is that these psychiatric patients impose on the primary care disciplines, in particular the GP.

It was possible to make a preliminary investigation in a medium-sized municipality, where since 1973 all contacts of the inhabitants of this municipality with mental health care facilities have been recorded in a "Mental Health Register". This complete and continuous (anonymous) registration makes it possible to follow per patient his or her contacts with all mental health care facilities in this municipality and in the immediate vicinity for a longer period (Giel et al., 1976).

In this municipality in 1985 100 successive discharges from an intramural psychiatric facility were investigated to see with whom these patients had contact in the first three months after their discharge (Van Ommen et al., 1986). The cooperation between intramural and extramural aid workers was likewise investigated: what plans were made upon discharge, who had to implement these and what came of them ? Finally, it was attempted to map the image that existed reciprocally: what role did the intramural aid workers see for the GP, and how do they rank his expertise and interest?

Obviously the question arose whether the findings in the municipality of registration are representative of the national situation. So as to be able to answer that question at least in part, the assistance of the sentinel stations was sought and obtained. In 1986, 1987 and 1988 the topic "**Discharged psychiatric patients**" was placed on the weekly return.

In this contribution the results of this registration are discussed and compared with those in the municipality of registration.

9.5.3. Questions

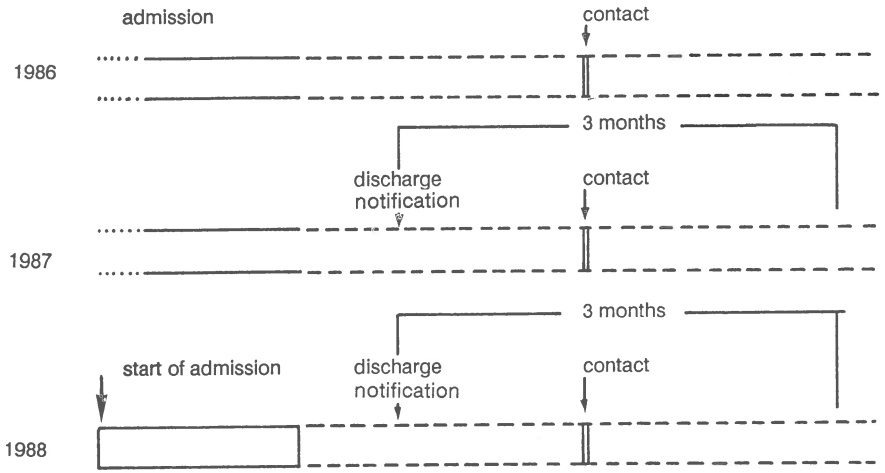
Registration by the sentinel stations began after the investigation in the municipality of registration had been concluded. It seemed desirable to await the experience gained in that investigation, inter alia regarding the registration form used.

The request made to spotter physicians was to register the first contact with a patient after discharge from a psychiatric facility, irrespective of the reason for that contact. For not every contact need to be connected with

the psychiatric problems of the patient. Contact with another person (relative, insurance physician, police officer and so on) **about** the patient also came under this registration. Initially every first contact had to be reported, but in the last two years only insofar as such a contact took place in a period of three months after receipt of the discharge notification. In the second year the procedure was changed somewhat: in addition to the contacts all **discharges** had also to be reported. In the third year **admissions** were moreover also reported (see Fig. 9.3.).

An important question for this investigation was to what extent the findings of the sentinel stations would tally with those of the municipality of registration. In the investigation in the municipality of registration it proved inter alia that in 73% of all discharges contact with the GP had taken place within three months following that discharge. But there were considerable differences between the situation in the municipality of registration and that in the sentinel station project. In the municipality of registration the GP was notified as part of the investigation that one of his patients had been discharged. This special notice was not given in the sentinel station registration. Another difference was that in the municipality of registration the general practitioners registered **all** contacts with a patient for three months after discharge. For the sentinel stations such an intensive registration for one subject was impossible. The registration was part of a much larger registration programme (in 1986 the weekly return comprised eleven subjects). The questions in the sentinel station project were therefore more limited.

Fig. 9.4.: The registration procedure in the sentinel stations project



The GPs in the municipality of registration were comparable with the spotter physicians as regards experience with registering patient data. In the past they had already been involved with the patient register. In the investigation in 1985 the participation was almost maximum: 19 of the 20 GPs from this municipality assisted in the registration.

9.5.4. Results

Number of reports

Table 9.15. presents the number of different reports per year by the sentinel stations during the registration period 1986-1988. Of the in all 456 reports, 278 related to first contacts with discharged patients. The discharge of patients was registered only in 1987 and 1988: in all 262 times. Of these, 176 patients (69%) had contact with the GP (76% in 1987 and 61% in 1988).

Table 9.15.: Number and nature of the reports per year

Reports per year	Invalid reports	Valid report	Admission	Discharge notification	First contact within three months N	% of discharges
1986: 109	4	105			102	(97%)
1987: 105	0	105		105	80	(76%)
1988: 242	2	240	83	157	96	(61%)

Table 9.16. shows from which facilities the 278 patients with whom the spotter physicians had contact were discharged. Nearly two thirds of all patients come from a general psychiatric hospital. This percentage is higher than the percentage calculated on the basis of the national numbers of discharges from mental health care facilities in 1985 (Ketting et al., 1987), in which the discharges from a general psychiatric hospital form only half of all discharges (note 1). On the contrary, the spotter physicians see relatively fewer patients discharged from a psychiatric department of a general hospital or from addiction clinics.

Table 9.16.: Percentage of contactreports received by facility from which discharge took place for the sentinel stations, 1986-1988 and percentage of discharges per facility for the Netherlands in 1985

Discharge from:	Sentinel stations 1986-1988		Netherlands 1985
	%	N	%
General psychiatric hospital (APZ)	63%	(176)	50%
Psychiatric department of gen.hospital (PAAZ)	23%	(63)	33%
Addiction clinic	4%	(11)	9%
Other psychiatric hospitals/unknown	10%	(28)	8%
	100%	(278)	100%

The distribution of these 278 contacts among the sentinel station practices was very uneven (Table 9.17.). A considerable spread in the number of discharges per sentinel station was to be expected, for instance because some sentinel stations are group practices. But practice characteristics and related differences in morbidity explain this spread only partially. In other sentinel station registrations too a not entirely explicable spread in the reporting was found.

Tabel 9.17.: Number of contacts reported per sentinel station 1986-1988

1 report	4 sentinel stations
2 reports	6 sentinel stations
3 reports	4 sentinel stations
4 reports	3 sentinel stations
5 reports	4 sentinel stations
6 reports	6 sentinel stations
7 reports	7 sentinel stations
8 reports	2 sentinel stations
9 reports	2 sentinel stations
10 reports	2 sentinel stations
11 or more reports*)	5 sentinel stations
278 reports	45 sentinel stations

* resp. 11, 13, 13, 15 en 27 reported contacts

Of the 45 sentinel stations, 4 physicians reported only one contact in three years. Only 25 sentinel stations reported in each year at least one contact. That one sentinel station (admittedly a group practice) reported 10% of the number of contacts is not a unique event in the sentinel station project (see Part I, Recording habits of sentinel practices).

Time of the contact

The sentinel stations were asked not only to register the number of contacts with discharged patients, but also to report about the time, the nature and the initiator of the contact, about the collaboration of the GP with mental health care and about the care by other institutions with regard to the discharged patient.

The question about the time of the contact must be set against the background of the fact that gave rise (in part) to the two investigations, both in the municipality of registration and within Continuous Morbidity Registration: mental health care institutions have contact with only half of all discharged patients in the first three months after discharge.

At least half of the contacts reported took place in the first week after discharge and three quarters or even more within a month (Table 9.18.). These findings tally with the data of the municipality of registration.

Table 9.18.: Time of contacts after discharge

Time of contact	Sentinel stations 1986-1988				Municipality of registration
	1986 N=102	1987 N=80	1988 N=96	1986-1988 N=278	N=73 discharges
cumulatief					
within 1 week	50%	59%	66%	58% (161)	56%
within 2 weeks	63%	65%	79%	69% (192)	70%
within 1 month	75%	80%	90%	81% (226)	81%
after 1 month or time unknown	25%	20%	10%	19% (52)	19%

The percentages in the table convey the impression that in the three years of the sentinel station registration gradually a greater part of the contacts took place within a month. In view of the small numbers one must, however, be cautious in interpreting the tables. For instance, it might be that the registration led to greater attention being paid to this group of patients.

Nature of the contact and initiator

It is often assumed that (ex)-psychiatric patients are vulnerable. They are thought to be deficient in self-care, so that partly as a result of this attaining continuity in the care is thought to be difficult. This relates in particular to linking ambulatory care to a period of intramural care. Therefore, an interesting aspect of the first contact with a discharged patient is the question who took the initiative for the contact.

Table 9.19. shows who took the initiative for the contact and what the nature of this contact was. In the majority of the cases the patient was the initiator, whereby he or she preferably attended the GP's surgery, but sometimes also made contact by telephone. If the GP was the initiator, this usually led to a house call and never to contact by telephone.

Table 9.19.: Nature of contact and initiator (sentinel stations 1986-1988; N=278 contacts)

Initiator of contact	Nature of contact: consultation %	housecall %	telephone %	other/unknown %	Total %
GP	3	71	0	14	23
patient	90	16	68	43	64
other/unknown	6	13	32	43	13
	100	100	100	100	100
(N)	(154)	(82)	(28)	(14)	(278)

In the municipality of registration the same picture occurs, although there all contacts with discharged patients were registered within the first three months (Table 9.20.). In this period the patient was the initiator of over two thirds of all contacts.

Tabel 9.20.: Nature of contact (investigation in municipality of registration; N=391 contacts)

Initiator of contact	Nature of contact: consultation %	housecall %	telephone %	Total %
GP	10	34	5	13
patient	83	39	72	69
other/unknown	7	27	23	18
	100	100	100	100
(N)	(155)	(89)	(147)	(391)

Aspects of the contact with regard to content

Table 9.21. gives an impression of the content of the contact between the spotter physicians and the discharged patients, broken down by initiator. "In connection with problems" was the designation given to a contact when it emerged from the registration form that the (psychiatric) problems

of the patient were the main reason for the contact. Here the initiative was usually taken by the GP. Into this category come a large number of contacts that are often called "social" by the GPs. These were for instance house calls immediately after discharge, with the intention of resuming the contact, sometimes described as "seeing how things are going", or "sounding things out".

Table 9.21.: Content of contact (sentinel stations 1986-1988; N=278 contacts)

	Content of contact				
Initiator of contact	(psych.) problems	medication	somatic	other/ unknown	Total % (N)
GP	90%	3%	5%	2%	100(65)
patient	58%	16%	22%	4%	100(177)
other/unknown	72%	11%	3%	14%	100(36)
	67%	12%	16%	5%	100%
(N)	(187)	(34)	(44)	(13)	(278)

Comparison of Tables 9.19. and 9.21. shows that most calls initiated by the GP were concerned with the patient's problems. If the patient took the initiative, this was concerned in more than half of the cases with a discussion of the policy with regard to the problems or with a prescription for medication (sometimes an injection). Not infrequently somatic problems were stated as the reason for the contact. The registration forms create the impression that in that case the psychiatric problems usually did not come up for discussion.

Cooperation between GP and mental health care

In the municipality of registration the GP was asked whether he felt that he did or did not have a specific task in the further care of a discharged patient. Since at the same time the care planned by the mental health professional for this patient after discharge was registered, the **opinion** of the GP could be tested against the **intention** of the intramural aid worker. In 30% of the cases there proved to be a discrepancy: the GP was of the

opinion that he had no specific task, whereas the intramural aid worker did in fact expect something of the GP, or vice versa.

The spotter physicians were asked whether they are of the opinion that the GP has or will acquire a specific task in the after-care of a discharged psychiatric patient (Table 9.22.). The spotter physicians felt that they had a task more frequently than did the physicians from the municipality of registration. These differences may be based on a selection. Perhaps such patients are more often mentioned in the sentinel station investigation. It was remarkable that spotter physicians regularly stated that they arranged medication with psychopharmacological drugs, but nevertheless stated that they had no specific task: an underestimation (by whom ?) of the importance of continuity in medication and watching out for the occurrence of side-effects.

Table 9.22.: Task of GP in further care after discharge

	Sentinel stations 1986-1988 (N)		Municipality of registration
task: yes	36%	(99)	24%
no	41%	(115)	76%
not clear	23%	(64)	-
	100%	(278)	100%

How does the GP know what is expected of him ? He has to have information on this. He will often acquire that via the discharge certificate. However, to judge by the registration forms, this certificate by no means always proves to be clear to the GP. Verbal consultation seems to take place above all when the GP **does** have a specific task. However, quite regularly the GP has to guess whether action is expected of him, or go by statements by the patient or members of his family.

At the moment of the first contact with a patient after his discharge the spotter physicians had in nearly 60% of the cases a discharge notification or even a discharge certificate in their possession: a high percentage, in view of the many contacts that already took place within the first week after discharge. Whether, and if so when, a notification about the other 40% of the discharged patients arrived cannot be derived from this registration. Nor can the nature of the discharge notification: merely an administrative advice note or (also) information about diagnosis, medication and appointments made. In the municipality of registration, in at least 10% of the discharges no report on the period of admission had been received after three months. Polis and Schnabel (1988) established in their investigation that a month after discharge half of the discharge certificates had not yet been received.

Care by other institutions

Of the 278 patients who after discharge had contact with the GP, at least 178 (64%) also had contact with mental health care. In the municipality of registration this was 60%. Further, for 6% of the registered sentinel station patients general social work was involved. By both the spotter physicians and the GPs from the municipality of registration family welfare was mentioned only incidentally as being partly involved in the after-care of a discharged patient; district nursing was never mentioned.

9.5.5. The vicissitudes of a registration project

In the municipality of registration 73% of all discharges were followed by a contact with the GP within three months. At first sight the sentinel station registration seems to confirm this percentage: 67% of the patients of whom in 1987 and in 1988 mention was made of discharge had contact with the GP within three months.

The most striking aspect, however, is the small number of discharge reports by the sentinel stations. As the sentinel station population comprises over one percent of the Dutch population (Bartelds, 1988) and, proceeding from the number of discharges from mental health care institutions in 1985 (Ketting et al., 1987), one should to expect - on condition that the sentinel station population does not differ from the total

population as regards composition - a proportionate part of the total number of discharges. On an annual basis the number of discharges for the sentinel stations ought to be about 400 and for the total three-year registration period around 1200. However, within the three-year period the sentinel stations did not even report 300 discharges (note 2).

This hampers interpretation of the sentinel station data. If one takes as a basis a figure of 400 discharges per year for the sentinel station population, one could speak of a considerable under-reporting of discharge reports. At the same time this would mean that not even a quarter of all discharges are followed by contact with the GP within three months, an enormous difference from the results of the registration by the municipality of registration.

Probably the expectation of the number of reports of contacts with discharged patients to be received, based on data from the municipality of registration, was too high. The (unexpectedly) high percentage of contacts with discharged patients that was found there is presumably not representative of what may be expected elsewhere in the Netherlands. In the investigation period the percentage of contacts with discharged patients in the municipality of registration was found to be considerably higher than in the same period of the previous year. A special enquiry after the event showed that in that period contact within three months had taken place with only 43% of the discharges instead of 81% in the period of investigation.

In the municipality of registration a special procedure had been devised for the investigation. The practice assistant was informed when a patient from the practice in question was discharged. The physician and the assistant were therefore prepared for a possible contact with this patient and the special registration form was close to hand.

An obvious hypothesis for explaining the small number of sentinel station reports is that a report was not made as a result of "forgetting". It is possible that the registering physician did not realize that a contact with a patient came within one of the registration items. Forgetting may result

from the fact that in a contact with a discharged psychiatric patient thought is no longer given to his psychiatric past. Perhaps that is more likely to occur when solely somatic problems arise in that contact. In the reports submitted a selection may have taken place of patients whose psychiatric problems **did** emerge during the contact.

If we look at the facility from which a patient was discharged (Table 9.15.), then the number of reports of a contact after discharge from a general psychiatric hospital is relatively somewhat greater. Assuming that among this category of patients their psychiatric problems persist more often after discharge (a general psychiatric hospital often admits patients with a more severe psychiatric symptomatology than for instance the psychiatric ward of a general hospital), then in this relative over-representation confirmation can be seen of the assumption expressed above that contacts in which psychiatric problems (still) exist are more likely to be reported.

There is no explanation for the very small number of discharges from an addiction clinic. For this category of patients a specific, closed circuit seems to exist, as a result of which the GP barely has contact with these patients about their problems. In the municipality of registration too the GP had fewer contacts with patients with the diagnosis addiction than with patients with a different diagnosis.

The conjecture that "forgetting" was the main cause of the small number of reports led to changes in the procedure. For that matter the spotter physicians themselves recognized problems in indicating this group of patients. As the result of a discussion of the 1986 results, the procedure was amended. From 1987 reporting to the sentinel station secretariat took place after receipt of a patient's administrative discharge notification. After three months the spotter physician was asked by the secretariat to send in the form on the first contact, if any, if that form had not meanwhile been received. Likewise resulting from the annual discussion with the spotter physicians, it was decided in 1988 to register the admissions too. Table 1 shows that the adjustments to the procedure have not led to a

greater number of contact reports; in the second year a drop even occurred.

Through the procedure in the municipality of registration it was out of the question that a GP remained unaware of a discharge. Even if we assume that elsewhere in the country the GP is not always informed about an admission and/or a discharge (statements on the registration forms make it clear that this happens), the assumption still exists that forgetting has played an important part, although the extent of it could not be established.

In a number of cases, among others when there was a readmission, the absence of data on previous admissions and/or discharges in the registration period could be established. Because of the obviously missing this no attempt has been made to try to investigate how many patients from this three-year cohort experienced more than one admission. Nor have the reports been divided by province and urbanization groups, as is usual in the sentinel station project.

Many forms have been filled in incompletely or inaccurately. The question arises whether overburdening of the spotter physicians may have played a part in this. Complaints are occasionally made about the burden of registration! Filling in the registration form entailed extra work: a number of data (date of admission, receipt of discharge certificate etc.) had to be looked up.

One of the lessons of this registration must therefore be that the sentinel stations probably cannot be used without more ado for questioning of this kind. It was a matter of indicating an event that does not occur very frequently. In a practice with 2500 persons a discharge as referred to here occurs on average ten times a year. This then concerns some seven patients. Contact with such a patient will in many cases definitely not be a striking event in the daily work. The physicians in the municipality of registration had only one item to register, the spotter physicians many.

Summarizing: with regard to the differences found a number of hypotheses were discussed that possibly explain some of the small number of reports:

- an incorrect expectation with regard to the number of contacts; the findings from the municipality of registration are probably not representative of the rest of the country;
- forgetting to register, because the spotter physician did not realize that a patient formed part of the population to be reported: on the one hand through the absence of an indication, on the other because the reason for the contact was something else than the psychiatric problem;
- inadequate motivation for this topic, possibly (in part) by overburdening of the spotter physicians.

A number of factors may also be mentioned that have possibly likewise contributed to the smaller number of reports.

(1) The instructions to the sentinel stations implied that, in the event of a readmission within a week of a discharge, that discharge need not be reported. In the municipality of registration there were in the investigation period in addition to the cohort of 100 discharged patients a further 15 who were readmitted within a week. Such readmissions have, however, been included in the total of 50 000 discharges a year.

(2) An unknown number of the Dutch have a GP in theory but not in practice. These include homeless, but also students not living in their parents' place of residence. This may also apply to patients who after discharge live temporarily in an intermediate facility, such as supervised accommodation. In this group the chance of admission to a psychiatric facility may be greater.

9.5.6. Discussion

The aim of the registration project was to gain an impression of the share of primary health care in the care of psychiatric patients after their discharge from an intramural psychiatric facility. The registration of the first contact after that discharge over a three-year period yielded only a limited number of reports.

The question to what extent the findings of the investigation in the municipality of registration are representative of the whole country cannot be fully answered, partly through the small number of reports. That question is only of limited importance. After all, in the municipality of registration there was a (temporarily) deviant situation. However, the findings of this investigation show what is possible in certain circumstances.

In the discussion of the results it was indicated that the findings of the two investigations are, however, partly comparable:

- when the GP had contact with a discharged patient, that contact usually took place fairly quickly after discharge;
- at least two thirds of the patients with whom the GP reported contact also received care from (ambulatory) mental health care;
- the possibilities of continuity in care that are situated in the rapid and easy contact with the GP seemed to be inadequately utilized, judging by the fact that in a large number of cases it was not clear to the GP what his task is in further care;
- the threshold to the GP was apparently low for this category of patients, given the finding that the GP himself did not often take the initiative for the contact, but mainly responded to a request by the patient or another.

Does this investigation give any insight into the quality of the care, and are deficiencies in that care visible ? It is difficult to pronounce on this. The small number of contacts that were reported by the sentinel stations do not in any case permit of a verdict on the quality of the care in comparison with that in the municipality of registration. It may not be derived from the fact that a GP has no contact with a patient that that patient received no or insufficient care.

Nor does the finding that approximately half of all discharges are not followed by a contact with mental health care within three months (the reason for this investigation) allow of a conclusion about the quality of mental health care. Discharge from a psychiatric facility is increasingly a

phased event, though not yet for large numbers of patients. More and more frequently a discharge is only the administrative termination of a period of care, in which the admission proper with "round-the-clock care" has for some time been "watered down" via periods of leave and/or (part-time) day treatment. During that watering-down phase, which in earlier patient register research was counted as after-care, adequate attention can be devoted to making the patient independent (again), as a result of which less mental health care contact may be necessary. The absence of mental health care contact after discharge must perhaps also be viewed against the background of the large number of patients who leave an intramural facility against the advice of that facility. In the municipality of registration that was 39%, in the investigation by Polis and Schnabel 30%. However, the patients who left against advice did not come less frequently into contact with mental health care.

The term "after-care", which is often used for care following on a discharge, needs some relativizing. In the communication with primary care the term has little meaning, for usually for the GP it is a question of the continuation of a relation with a patient temporarily interrupted by an admission. But within the mental health care circuit too the term after-care has only a relative significance. The dividing line between what is after-care and what is pre-care is vague. Only 15% of all admitted patients have never had contact before with a mental health care institution; 40% of all discharged patients are readmitted within a year. An admission is therefore in very many cases a (repeated) intramural episode in a longer-lasting contact with mental health care. The fact that the GP plays no part or only a limited one in that relation does not allow in itself of any conclusions about the quality of the care that a patient is given.

And yet we believe that we may say that the quality of the relation between primary and secondary health care is open to improvement. That a GP is unaware of an admission and/or a discharge of one of his patients may after all be described as problematic. For the GP it must be clear whether he has a task in care of a patient or not. In a recent investigation it was found that between secondary and primary care there is little communication about transfer of a treatment and task demarcation

(De Ridder and Visser, 1987). Elsewhere it was advocated in the contact between primary and secondary care to devote more attention to collaboration on the content of the care, unlike the present situation, in which the communication concerns above all procedural aspects (Frankenberg, 1988).

The registration of the contacts (as in the municipality of registration) gives little insight into the content of those contacts. Nor can it be investigated whether certain (diagnostic) categories of patients are relatively over- or under-represented in the sentinel station investigation. The investigation in the municipality of registration yielded no indications that patients regarded as "difficult" by the GP (for instance patients who had been admitted frequently with a psychosis) had less frequent contact with the GP.

In both investigations the initiative for the contact usually came from the patient. There proved to be no relation between the task that the GP thought that he had or did not have in
(after-)care and the action that the GP undertook. A connection between the diagnosis or the fact that a patient had been admitted before and the action by the GP (house call on own initiative, whether or not after receipt of the discharge certificate or waiting until the patient reports to the GP) could not be established. To put it another way: many GPs apparently have an "empirical ritual" with regard to these patients too (Van Lidth de Jeude, 1971). Sizing up the situation after discharge (which seems a good thing !) is something that some doctors do, evidently as a routine, with every patient. Conversely there are patients with many admissions who apparently never see their GP after returning home.

The conclusion from the above is that the GP has a central position in the network around the discharged patient, that he easily resumes the contact after discharge, but that he could make a more rational use of that favourable position.

Both in the municipality of registration and in the sentinel stations it was found that other core disciplines in primary health care (district nursing,

general social work and family welfare) play a modest part in care after discharge. At least, in both investigations they were rarely mentioned as being (also) involved in that care during the first months after discharges. Even when account is taken of the fact that the information on the share of these disciplines came from the GP, so that under-reporting possibly occurred, it would nevertheless seem that little use is made of the expertise of other core disciplines in primary care.

In the municipality of registration the simultaneous registration by the intramural aid worker and the GP, and the coupling of their registration to the data from the patient register, gave more insight into a number of aspects of the collaboration between GP and mental health care. The discrepancy between expectations of the GP and the intramural aid worker with regard to the role of the GP has already been mentioned, as also the function of the discharge certificate (and the not infrequent absence thereof some considerable time after discharge). The sentinel station data, however limited, point in the same direction. In addition to a number of heartfelt cries on the forms sent in about difficulties experienced in the collaboration, it became clear that the GP himself regularly (in an in our opinion improper manner) had to manage to find out what he was supposed to do. On the one hand direct consultation on a patient occurred rather frequently, but on the other hand a situation often existed of guessing at or deriving intentions from statements by the patient or his family.

For about two thirds of the patients reported the spotter physicians believed that the patient in question (also) received aid from a mental health care institution. Unlike the municipality of registration, it could not be investigated how many of these patients were actually undergoing treatment in mental health care. In the municipality of registration the GP quite often proved to be of the opinion that a patient had contact with a mental health care institution whereas that was not in fact the case, and vice versa.

9.5.7. Conclusions

A question put repeatedly, among others by the policymakers, is that about the contribution of primary health care to the care of patients with psychiatric or psychosocial problems. Patients with a (recent) admission to a psychiatric facility behind them form only part of this group. They are, however, important, in view of their great chance of readmission: at least one third of all discharges are followed within a year by a new admission, most of them already in the first three months after discharge.

Neither the investigation in the municipality of registration nor the sentinel station registration make it clear what primary care, and more particularly the GP, exactly does. The GP remains an easily accessible figure for these patients. However, his actions are rather unpredictable. A more formal approach to this aspect of his package of tasks might facilitate cooperation with secondary care. At present it is often unclear to others what may be expected of the GP.

Comments on hiatuses in the communication between secondary and primary care have a fixed place in statements about cooperation and reports on attempts to promote continuity in care. It must gradually be clear that the strengthening of primary care, which has been advocated for years, and the intended shift of care to primary care, is conditional on a complementary interpretation and performance of the tasks in primary and secondary care. It is an illusion to continue to hope that this will come about of itself.

Note 1

The number of **discharges** is based on figures on the number of **deregistrations** from intramural psychiatric facilities in 1985 (Ketting et al., 1987).

Deregistrations (principal facilities for adults)

General psychiatric hospitals	25 559
Addiction clinics	4 748
Psychiatric university clinics	4 250
Psychiatric departments of general hospitals	15 057
Other psychiatric hospitals	1 610
	51 224

A number of admissions are terminated by the death of the patient. Allowing for this, the number of discharges may be put at some 50 000 per year.

Termination of an admission to a psychogeriatric nursing home usually ends by decease. For that reason the more than 10 000 terminations in such facilities have been left out of consideration.

Note 2

There are indications that the use of intramural mental health care facilities may vary per municipality. For the province of Drenthe significant relations were found between the number of inhabitants admitted from a municipality and the presence of a psychiatric department of a general hospital or a general psychiatric hospital in a municipality (Sytema et al., 1988).
In consequence variations in the number of discharges per 1 000 inhabitants are to be expected.

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10. REQUESTS FOR APPLICATION OF EUTHANASIA

A.I.M. Bartelds

In existential extremity people dare to ask their general practitioner for radical decisions, decisions that may have social consequences and in which ideological views play a part, for both the patient and his environment and the physician. In addition doctors are involved against their will in diverse matters, partly because the context in which a medical problem is presented proves upon closer inspection to comprise further aspects (also non-medical ones), and partly too because the physician is of the opinion that a problem is not within his province.

A society is aware of the existence of such problems confronting its physicians. A current Penal Code contains sections laying down what is considered acceptable and what is not, and a body of rules of conduct exists for physicians indicating how they should act in defined situations.

However, social developments may result in people having ideas about what they consider acceptable or not that differ from those that formerly played a part in preparing legislation or formulating rules of conduct.

A strained situation then occurs between what is officially unaccepted or forbidden and what is practised. People, both patients and doctors, function in this strained situation, and something like a secret practice comes into being.

In the past three decades social unrest of this kind has occurred in the Netherlands on, among others, a couple of distinctly doubtful matters: abortus provocatus or a request for application of euthanasia. Time Magazine of 10 August 1987 devoted a cover story to this situation in the Netherlands: "Backlash and Debate. Permissiveness: the Dutch are wondering if things have gone too far" (Painton, 1987).

One of the aspects - there are several - in which these subjects correspond to each other is that an inversely proportional relationship seems to exist between the amount of discussion that is conducted in society - from living room to Parliament - on such a subject and the knowledge about how often such a situation, a request for abortus provocatus or a request for application of euthanasia, now actually occurs. The absence of any quantitative data on these questions formed the reason for endeavouring to try to gain more insight into the occurrence of these requests by means of registration by the sentinel station practices.

The results of the registration of the requests for abortus provocatus and the abortions performed have already been discussed in the chapter on abortus provocatus, contraception and sterilization. This chapter will consider the results of registration of the requests for application of euthanasia. However, prior to presentation of these results a brief outline will be given of the situation in the Netherlands. A survey of the results of the registration completes the chapter.

The Dutch situation (Leenen, 1987; Rigter et al., 1988)

The application of euthanasia at the patient's request and giving assistance with suicide are not new subjects, despite what is often thought. In the Dutch Penal Code, which dates from 1886, it is already laid down that euthanasia and assistance with suicide are forbidden (Sections 293 and 294).

In the discussions about the admissibility of euthanasia and assistance with suicide there has long been some confusion about the content of the two terms. Partly as a result of publication of the recommendation by the State Commission on euthanasia, this lack of clarity has been ended. As was current in the literature at that time, euthanasia is interpreted as intentional termination of life by somebody other than the person concerned at the request of the latter. Assistance with suicide is involved when the life-terminating act is performed by the suicide with the requested assistance of another person, for instance by providing the means.

The difference from the bloodshed in German history between 1933 and 1945 will doubtless be clear. Nor does this definition cover termination of life by a doctor without there being an explicit request by the patient and euthanasia at the request of members of the family. A legal definition of euthanasia or assistance with suicide "serves to determine whether or not a given set of facts legally constitutes euthanasia or assistance with suicide".

However, since 1886 nearly one hundred years have gone by. With the expansion of curative medicine since the Second World War a situation has come about in which it is possible to keep people alive for many years even with a poor physical condition. However great one's admiration of the skill and efforts of doctors and nurses, negative aspects are also noted of rigorous application of the knowledge of medicine. Increasingly people are coming to learn that this amounts to a prolongation of suffering and the dehumanization of dying. For patients and their family this can tip the balance and further treatment is refused. However, the suffering continues and in the short or somewhat longer term death is the only certain prospect. The increased desire among the population to decide their own fate and the reduced acceptance of statutory norms affecting private life are further reasons why people decide not to live any longer and ask their general practitioner or specialist to terminate their life.

That is a request with which a physician may not comply under the Dutch Penal Code. But doctors are also human beings who form part of the period in which they live and are influenced by the views that prevail. In addition they too have family-members who may suffer from painful and untreatable diseases. And these are doctors who have access to the means by which life can be terminated in a way that meets the wishes of the patient and his family: a dignified death.

It is therefore no coincidence that doctors have been involved in court cases involving infringement of Section 293 of the Dutch Penal Code. Nor must it be regarded as chance that the first court cases in which

physicians had to answer a charge of application of euthanasia involved termination of the life of a family-member. In 1952 a doctor in Utrecht was given a suspended sentence for application of euthanasia to his seriously ill brother. In is verdict the court did not include any grounds that are of importance to the acceptance of euthanasia; however, the fact that the sentence was a suspended one does suggest some sympathy.

Twenty years later, in 1973, a doctor again appeared in court in Leeuwarden charged with application of euthanasia. The doctor had at the repeated request of her mother, who had entered into a situation of hopeless suffering as the result of a erebro-vascular accident, administered an overdose of morphine to her. The physician treating the deceased patient, a staff doctor of the nursing home where the patient was living at the time of the termination, refused after consultation with the Medical Officer of Health of the province in question to sign a certificate of natural death.

In the proceedings that followed, the doctor was given a symbolic and suspended sentence. The case, conducted by both the prosecution and the defence in a restrained manner, attracted attention both at home and abroad. The attention that the trial attracted at home was not least due to the veiled confessions by other doctors that they too had submitted in such circumstances to the wishes of their patients. In addition the court's ruling certainly drew attention too. In its verdict the court suggested for the first time that euthanasia could be acceptable in certain circumstances: the patient must be incurably ill and find the resultant suffering unbearable, the patient must expressly request that his life be terminated and the euthanasia must be applied by the doctor treating the patient or in close consultation with the latter. Not all grounds are given here, since these are now no longer of importance.

The verdict of the Leeuwarden court met with a violent reaction. The public discussion on the acceptability of euthanasia on a number of strict conditions escalated. Every social trend made itself felt: representatives of the various intellectual and religious movements formulated their points of view, as did the representatives of professional groups such as doctors

and lawyers. And the political parties followed, with the dividing line between supporters and opponents often running not between but right across parties and factions. As was the case with abortus provocatus, a vigorous appeal was made to the legislator to amend the Penal Code on this point. The Penal Code from 1886 should, the supporters felt, be adapted to the situation in health care and society, which had changed in the course of nearly 100 years. In what had meanwhile become a pluriform society it was and still is the view of the supporters of euthanasia that the legislator had to leave room for different beliefs. The opponents of the application of euthanasia demanded maintenance of Sections 293 and 294 of the Penal Code, the sections in which euthanasia and assistance with suicide are forbidden, and called for a more active policy on the part of the Public Prosecutor's Office in the detection and prosecution of cases of euthanasia. More legal security for patients and doctors on the one hand; the enforcement of given norms and established values and rules on the other: a verbal and legal/ethical civil war.

At the end of the seventies and the beginning of the eighties the developments gained momentum. Hearings took place before the medical disciplinary bodies and the civil courts in which various facets of euthanasia were considered in detail. In the more liberal climate physicians dared to stand up for their decisions and to have these verified (Meyboom-de Jong, 1983; Kenter, 1983; Schudel, 1986). The legislator recognized the seriousness of the situation, the growing gap between the theory of the Penal Code and practice and the verdict on this as laid down in jurisprudence, and in 1982 appointed the State Commission for Euthanasia, which submitted its final report to the government on 9 July 1985 (Netherlands State Commission on Euthanasia, 1987). Likewise in 1982 the Royal Netherlands Society for the Advancement of Medicine (KNMG) had instituted a committee to prepare a standpoint for the general council on the doctor's role in the application of euthanasia and assistance with suicide. The committee was also requested to indicate the criteria and limiting conditions to be followed by the physician. In 1984 the general council of the KNMG published its point of view on euthanasia, in which it lays down that euthanasia is applied on request,

and that its point of view relates solely to those cases where the patient in question is capable of making his wishes known, and in which it describes the requirements of care that the doctor's action must satisfy. These are the verification whether the request was a voluntary one and of the durability of the request, the consultation of one or more colleagues, the performance of the euthanasia in a responsible medico-pharmacological manner and the truthful completion of the death certificate (KNMG, 1986).

This viewpoint was to bring the Dutch doctors' organization into conflict with the World Medical Association and the Permanent Committee of Physicians in the European Community. Both organizations take the point of view that termination of life on request is unacceptable whatever the patient's condition.

However, representatives of the KNMG queried the way of decision-taking on these matters by the above organizations (Scherphuis, 1988). It was argued that the views on voluntary euthanasia in several countries belonging to one of these organizations are more differentiated than suggested by the official point of view.

In the Dutch parliament D'66, a small progressive liberal party in the Second Chamber, had meanwhile taken the initiative in 1984 to introduce a bill on euthanasia. In March 1986 a debate was held in parliament. It would take us too far here to describe the course of the parliamentary debate in detail. The result was that the then Cabinet, consisting of conservative liberals and Christian Democrats, managed to achieve postponement of a vote on a bill for which there was a majority until after the elections in May 1986.

The new Cabinet, consisting of the same parties as the previous government, came forward with its own viewpoint on euthanasia in January 1987. An expert described this viewpoint as a "half-way decision": the ban on the application of euthanasia is not lifted, but the doctor may plead force majeure when criteria for careful action to be determined later, including consultation of another doctor, have been satisfied and the

administrative rules have been complied with. The correct completion of the death certificate plays a central part in this. The then government wished to attain a number of goals with this bill: meeting the objections in principle to euthanasia that exist among some of the denominational members of the population and eliminating the anxiety among a part of the older population. In the autumn of 1984 the country had been startled by the disclosure of information on the administration of fatal doses of insulin without the express permission of the patients by a staff doctor of a nursing home for the elderly.

At the legislative level the situation has now come about in which in 1989 parliament was to discuss a couple of bills: a government bill and one submitted by D'66. However, since the government fell in the spring of 1989 and since a new government has yet to take office, the debates in the Second Chamber on the euthanasia bill have been postponed. Practice has opted for another way, of necessity, but supported by a majority of the population. In the course of twenty years, between 1966 and 1986, the number of advocates of any form of euthanasia on request changed from two fifths to four fifths of the population. Of the Roman Catholics, 77% state that they are in favour of some form of voluntary euthanasia, of the Dutch Reformed 70% and of the Calvinists 52% (Anon., 1989). And according to the utterances of a head of patient care at a hospital that is situated in a predominantly Protestant region of the country, the application of euthanasia in his hospital has meanwhile been regulated in an internal guideline. The contents of this guideline have been partly determined in discussion with representatives of the churches in the catchment area of the hospital, and go further than the Christian Democrats and the government wish (Trommelen, 1989). In the same week as this interview was published in a national daily, a large clinic in which advanced care is given to cancer patients announced that an internal guideline exists for the application of euthanasia that, if complied with, offers a great degree of certainty that prosecution will not follow. Other hospitals had led the way.

For the application of euthanasia by GPs too there are already regulations at various places that have been drawn up in consultation with

representatives of the Public Prosecutor's Office (Laane, 1989; Kenter, 1989).

What has so far proven impossible for the legislator is being increasingly achieved by those concerned: more legal security for patients and doctors as regards the application of euthanasia. In the above-mentioned interview the head of patient care says: "It was expected that after the introduction of the guideline little would change in practice in the hospital. That proved correct. At most five real considerations of euthanasia a year are concerned, with in a number of cases even a different solution being chosen to the patient's satisfaction".

Certainly in the years after the Leeuwarden case there was great uncertainty about the number of requests for application of euthanasia and how often such a request was granted. There were clear indications that this was a complex and extensive problem. This occasioned the bodies responsible for health care to ask the sentinel stations to chart aspects of the problem.

Requests for (application of) euthanasia made to the general practitioner

Objective and method

The objective of the registration is to gain insight into the number of requests for euthanasia. The question about the readiness to apply euthanasia must be put by the patient himself or herself to the GP and **not** by the family. The question whether or not the request has been granted is not asked in the registration. The legal aspects of the application of euthanasia do not permit of this. And it is expected that such a question would have a negative effect on the readiness to register.

Registration of the requests for (application of) euthanasia started in 1976. For rare diseases and events the system of incidental investigation is used. At the beginning of the registration year the GPs are informed which questions are to be asked about which diseases and events at the

end of the year. They are asked to keep their own notes on which patients are concerned, so that the data can be looked up. Over the whole registration period (1976 to the present day) the questionnaires have been returned by all spotter physicians.

As stated, the objective of registration is to acquire insight into the number of requests for application of euthanasia made to the spotter physicians. This general objective has a limited, descriptive character. The complexity of the subject and its sensitive nature make it necessary to date to keep the questioning simple. Nevertheless, a number of aspects of this simple questioning may be identified. One of the questions is of a methodological nature: the distribution of the number of requests among the sentinel stations.

In other words, is it above all certain sentinel stations in which the GPs are confronted with requests for application of euthanasia ? Since the notifications can be traced back to the sentinel stations, the answer can be given. This is inherent in the method also used for the registration of other topics. On the basis of this type of registration and the given distribution of the sentinel stations insight can also be obtained into the distribution of the requests over the country.

A comparison with the results of the registration of the same subject in The Hague and Amsterdam is made to see whether there are differences with the national registration.

The choice of the aspects of a request for euthanasia on which further questions are put has been determined in part by the grounds taken by the Leeuwarden court described in the previous section. It should be borne in mind that the registration started in 1976, three years after the Leeuwarden case. To another extent the questions are inspired by reflection on the additional essential aspects for patients and doctors of a request for euthanasia.

The circumstances in which euthanasia could be acceptable, described in the verdict of the Leeuwarden court, relate to the patient who asks for

euthanasia and the care with which the doctor deals with the request. Insight into the situation regarding requests for termination of life benefits from information on patients who ask for it. The reason for the request and the underlying disorders are of importance to this, in addition to the age and sex of the patient, and the place where the patient is receiving care. These data are requested from the GPs. The disease(s) from which the patients are suffering at the time of the request are placed in five groups when the data are processed:

- malignant neoplasms and leukemia,
- cardio-vascular disease,
- chronic obstructive pulmonary disease,
- symptoms and incompletely described disorders,
- other disorders, including endocrinological and neurological disorders and aids.

The International Classification of Diseases (1975, 9th revision) has been used as a guide. When it could not be derived from the data whether a defined disorder was involved, when only symptoms were stated and also when there was no question of a disease a notification was placed in the group symptoms and incompletely described disorders. Thus the notification of a request by a woman of 92 years in which the disease present was stated as "old age" was placed in the above-mentioned category. Another problem is the multiple pathology inherent in old age. During classification of the diseases choices are therefore made that are perhaps arbitrary. Must a patient who is reported as having had a cerebro-vascular accident and who is suffering from carcinoma of the colon be placed in the group "cardio-vascular disease" or the group "malignant neoplasms" ? In general, however, the questionnaires received were clear on this point; the GP indicated what in his perception was the relevant disorder in the framework of the request for application of euthanasia.

In the court cases that have been held as a result of the application of euthanasia by doctors, attention has been expressly paid to the aspect of the explicit will of the patient. In the registration this aspect has been considered in the question whether in the making of a request for

application of euthanasia use has been made of a "euthanasia declaration". This means a written request for euthanasia to the treating doctor on certain conditions.

The last of the questions that the doctor should answer with regard to a request for application of euthanasia concerns the form of euthanasia wanted by the patient: the indirect or the direct form of euthanasia. Indirect euthanasia is the deliberate application of a pain-relieving treatment without the intention of shortening or terminating life, but with recognition of the risk that one of these may be the consequence of the treatment. Direct euthanasia means the deliberate application of a pain-relieving treatment in such a way that it may reasonably be expected to produce a considerable shortening of life, or termination of life.

Results, 1976-1987

1. Total number of requests for application of euthanasia

In the period 1976-1987 the absolute number of requests for application of euthanasia was 316. Of these 316 requests, 168 were made by men. On one occasion a request was made to the GP by the parents of a child with severe congenital defects. This request has been left out of the processing.

In the presentation of the data the use of 4-year periods has been opted for. This choice has in part been prompted by pragmatic reasons through the total registration duration of 12 years. In addition, division into 4-year periods presents the possibility of investigating whether there has been an increase in the number of requests according as greater clarity developed in jurisprudence. Table 10.1. gives insight into the number of requests for application of euthanasia per 4-year period.

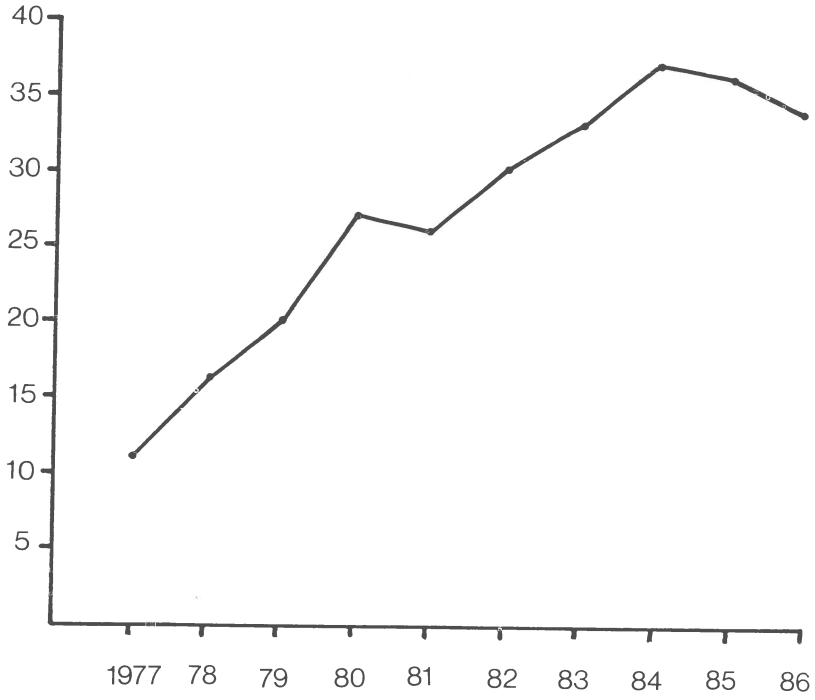
Table 10.1.: Number of request for application of euthanasia, number of sentinel stations and number of doctors per 4-year period, 1976-1987

period	number of request	number of sentinel stations	number of doctors
1976-1979	62	45	60
1980-1983	111	46	62
1984-1987	143	45	61

In the course of the registration period the number of requests has increased from 1.4 to 3.2 per sentinel station per 4 years and from 1.0 to 2.3 requests per GP per 4 years.

In the last 4-year period the number of requests for application of euthanasia was the highest. If the first 4-year period is compared with the second four years, 24 sentinel stations report more requests in the second period and 7 fewer requests. For 16 sentinel stations the number is the same in both periods. In the third period 24 sentinel stations again report more requests than in the second period. Now 17 report fewer requests and 6 an equal number. The 17 sentinel stations that report fewer requests in the third period than in the second one include the two sentinel stations that ceased to function as sentinel stations with effect from 1 January 1985. The comparison between the first and third periods shows that in the latter period 32 sentinel stations report more requests, 8 fewer and 7 an equal number. On the basis of these data it may be concluded that there was an increase in the number of requests for application of euthanasia between 1976 and 1987 (see also Fig. 10.1.).

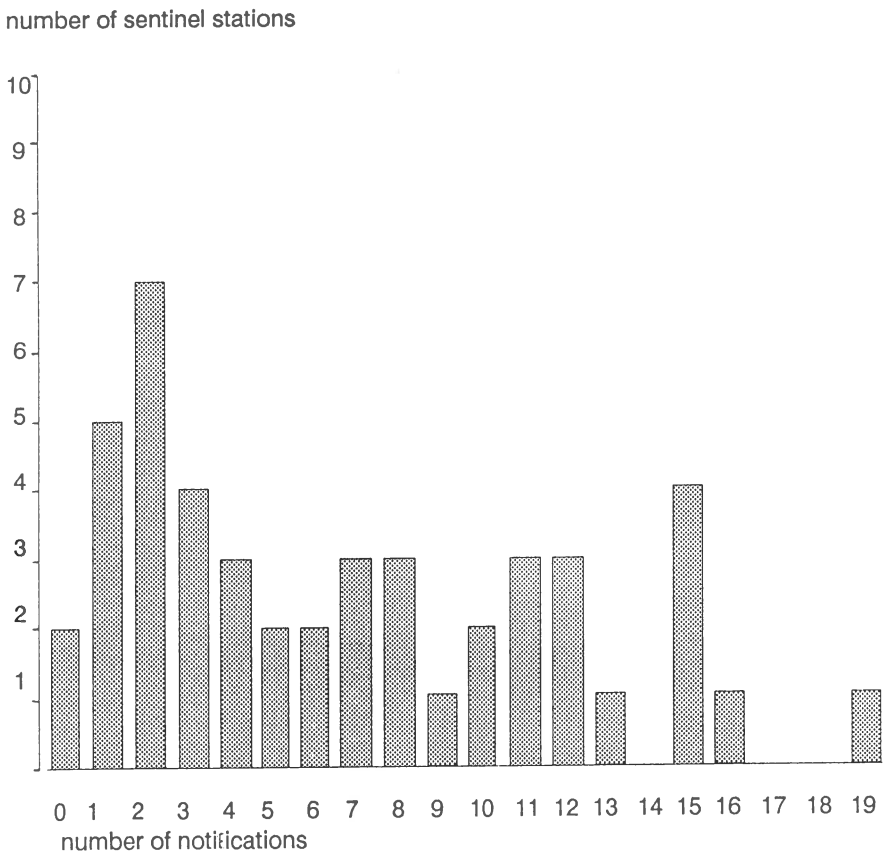
Fig. 10.1.: Progressive three-year average of the number of requests for application of euthanasia, 1976-1987



2. Number of requests for application of euthanasia per sentinel station

One of the questions that can be formulated with respect to the topic is whether all spotter physicians are confronted to the same extent with requests for application of euthanasia. It is to be expected that this is not the case. If this expectation is correct, the question is whether there is a skew distribution. Fig. 10.2. shows how many sentinel stations have reported which number of requests for application of euthanasia. Various doctors may work in a sentinel station, so that this distribution gives no information on the number of requests per doctor.

Fig. 10.2.: Number of sentinel stations per number of notifications of requests for application of euthanasia, 1976-1987



With the exception of two sentinel stations, all of them were in operation during the whole registration period. However, in a number of sentinel stations changes of personnel occurred: in 29 out of the 47 stations.

Tables 10.2. and 10.3. contain the information on the distribution of the requests for application of euthanasia among the various province groups and urbanization groups.

Table 10.2.: Number of requests for application of euthanasia per sentinel station per province group, 1976-1987

province group	A: north	B: east	C: west	D:south
average	6	6	9	5
distribution	(0 - 13)	(1 - 19)	(0 - 16)	(1 - 10)

Table 10.3.: Number of requests for application of euthanasia per sentinel station by degree of urbanization, 1976-1987

urbanization group	1: rural municipalities	2: municipalities with urban characteristics etc.	3: municipalities with a population of 100 000 or more
average	5	6	9
distribution	(2 - 12)	(0 - 16)	(1 - 19)

In all sentinel stations except for two, requests for application of euthanasia are made to the GPs. As by far the greater part of the sentinel stations functioned as such during the whole registration period, it may be said that requests for application of euthanasia are not confined to certain regions of the country or just to the cities.

3. Comparison with other registrations

During the last years of the 1976-1987 registration period the topic request for application of euthanasia was recorded by two other GP registration systems in the Netherlands. The GP registration system in The Hague had the requests for euthanasia recorded in 1985 and 1986, and the Amsterdam sentinel station project in 1987. Unlike the registration by the Continuous Morbidity Registration Sentinel Stations the Netherlands, it was also asked in the other two registration systems whether the requests had been granted (Oliemans et al., 1986; Schudel, 1987; Anon., 1988). In Table 10.4. the data of these three registrations for the years in question have been compiled in such a way that they are comparable (1).

Table 10.4.: Number of notified request for application of euthanasia per 100 GPs in three GP-registration systems in the Netherlands, 1985-1987

	CMR sentinel stations the Netherlands		GP-registration The Hague	Amsterdam sentinel station project
	Total	western provinces		
1985	66	108	68	
1986	47	62	48	
1987	59	79		75

The figures of the national sentinel station system tally well with those of the registration system in The Hague. The Amsterdam GPs report more requests for application of euthanasia.

In each of the registration systems the number of physicians participating is such that comparison of the results is justified. What has to be put into perspective is that in the two local registration systems the topic has perhaps been recorded for a short duration (see also the chapter Recording Habits of Sentinel Practices).

If the figures from the CMR Sentinel Stations are compared for all urbanization groups for just the western provinces with the data from the Hague and Amsterdam registrations, the number of requests reported by the CMR sentinel stations is higher than in The Hague and approximately equal to the number in Amsterdam. In the western CMR sentinel stations 108 requests per 100 GPs were reported in 1985, 62 per 100 GPs in 1986 and 79 per 100 GPs in 1987.

4. Disorders for which requests for application of euthanasia were made

In addition to the question about the absolute number of requests for application of euthanasia and the question whether GPs are confronted with this to the same extent, the most important aspect is in what situation the request is made. In other words, what disorder is involved when people ask for application of euthanasia.

Table 10.5. presents the data on the disorders of the patients who requested application of euthanasia. Use has been made for this of the International Classification of Diseases (1975, 9th revision). The data have been placed in five categories.

Table 10.5.: Survey of the disorder for which application of euthanasia was requested by 4-year period from 1976 to 1987 and by group of disorders

period	1976-79	1980-83	1984-87	1976-87
disorders:				
Malignant neoplasms	42	76	102	220
Cardio-vascular disease	10	12	7	29
Chronic obstructive pulmonary disease	2	5	7	14
Signs and symptoms	3	9	7	19
Other	5	9	20	34
Total	62	111	143	316

The malignant neoplasms form the largest group: more than 70% of all disorders over the whole registration period. This finding occasions no surprise. In the GP registration in The Hague the percentage of malignancies was 47 in 1985 and 62 in 1986. The Amsterdam GPs reported that, of the patients requesting euthanasia, in 74% a malignancy was involved.

Table 10.6. shows the percentage that the separate categories of disorders form of the total number of requests per age group.

Table 10.6.: Percentage of requests of the total number of notified requests per age group by category of disorders over the whole registration period 1976-1987

	<55		55-64		65-74		75-84		>84		total
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)	n
Malignant neoplasms	77	(38)	87	(63)	88	(77)	50	(38)	16	(5)	220
Cardio-vascular disease	0	(0)	1	(1)	2	(2)	19	(17)	25	(9)	29
Chronic obstructive pulmonary disease	2	(1)	4	(2)	2	(1)	10	(8)	6	(2)	14
Signs and symptoms	4	(2)	4	(2)	1	(0)	1	(1)	45	(14)	19
Other	16	(8)	4	(3)	7	(86)	20	(14)	8	(3)	34
	100	(49)	100	(71)	100	(86)	100	(78)	100	(33)	316

Each category of disorders has its own pattern, leaving out of consideration the group symptoms and incompletely described disorders.

The malignant neoplasms already play a role at a relatively younger age; Table 10.7. below shows that this differs again for a subdivision of the malignant neoplasms.

This seems to be less the case with the category cardio-vascular diseases. If someone has a poor cardio-vascular system but no fatal heart infarction or cerebro-vascular accident occurs, than someone becomes old in a poor condition. The loss in quality of life that lies ahead in that case is probably not compensated for by the gain in a quantitative sense obtained with intensive treatment. The same can be said about the category bronchitis, emphysema and asthma, which can likewise occur in later life as severe infirmity.

One can only speculate about the category symptoms and incompletely described disorders.

In Table 10.7. the various categories of disorders are divided in percentages into an age group up to 65 years and an age group of 65 years and older. The category malignancies is divided for this into a number of locations of the neoplasms.

Table 10.7.: Percentage of requests of the total number of requests for application of euthanasia by patients younger than 65 years and of 65 years and older per group of disorders, 1976-1987

	total number	< 65	(n)	> 64	(n)
* all disorders	316	38%	120	62%	196
* all malignancies	220	46%		54%	
- of stomach	19	47%		53%	
- of colon and rectum	32	44%		56%	
- of trachea and lung	62	45%		55%	
- of mamma	26	65%		35%	
- other	81	42%		58%	
* cardio-vascular disease	29	3%		97%	
* bronchitis, emphysema, asthma	14	21%		79%	
* symptoms and incomplete	19	21%		79%	
* other disorders	34	33%		67%	

The group other disorders is heterogeneous; two subgroups can be identified in it in which the ratio of the number of patients below 65 years and those of 65 years and older is reversed. Terminal renal insufficiency, the final stage of diabetes mellitus, Parkinson's disease and advanced rheumatoid arthritis are disorders in which the patient's age often lies above 70 years. In the case of pancreatic fibrosis (cystic fibrosis), multiple sclerosis and aids (one case up to now), clearly younger ages are concerned.

5. The patient's abode, the form of euthanasia requested and the use of a "euthanasia declaration"

The greater part of the patients who request the GP for euthanasia are nursed at home: 300 out of the 316. "At home" is also taken to mean the nursing home. Sixteen patients make their request while hospitalized.

When patients request application of euthanasia, 84% of the requests are for application of direct euthanasia.

Use is made of an euthanasia declaration in only a small number of the requests: in 46 out of the 292 requests regarding which this has been registered (since 1978).

The answers to the question as to what led to the request for application of usually direct euthanasia are not given in a table. The reason will be clear: the words and emotions of the patients reproduced by the GP in brief wording are only a reflection of the distress and fear felt and the pointlessness experienced of having to live on with no other prospect than an often rapidly progressive painful and hopeless suffering and inevitable death.

Discussion

From 1973 onwards, as a result of the Leeuwarden case, euthanasia committed at the express request of the patient became the centre of often violent discussions. For the first time a court suggested in a verdict that euthanasia might be acceptable in certain circumstances.

As stated, this often led to violent discussions, the more so since there were cautious utterances by physicians that they were able to understand and respect the wishes of a patient with an incurable disorder that entails unbearable suffering. However, nobody was able to give a meaningful answer to the question how often doctors are asked by patients to apply euthanasia, in which circumstances such a request is made, from which disorders the patients who make such a request are suffering and how

the doctors reacted to such a request. It is the last thing for which doctors are prepared in their training.

In 1976 registration started of the requests for application of euthanasia made to the GPs working in the Continuous Morbidity Registration Sentinel Stations. The registration is of a continuous nature. It is the only registration of this topic in the Netherlands of such a long duration. In 1985 and 1986 a similar registration took place in the GP registration system in The Hague. In the Amsterdam sentinel station project a registration of the requests for euthanasia likewise occurred in 1987. The particular feature of these registrations was that in them it was also asked whether the patient's request had been granted by the doctor. This question was not put in the registration by the CMR Sentinel Stations. As regards the requests for application of euthanasia there is a similarity between the two registration systems for 1985 and 1986. The equality of the results of the registration in the two networks is an indication of the reliability and the validity of the registrations.

In the registration period from 1976 onwards there is an increase in the number of requests. Doubtless this is a reflection of the increased acceptance of some form of euthanasia among the population (Anon., 1989). It is not impossible that the openness in the media about the cases in which the courts, the Public Prosecutor's Office, doctors and those concerned cautiously laid down the conditions in which euthanasia is not an offence contributed towards that increased acceptance.

In the case of untreatable suffering people wish to return home from hospital, to their own family. Even with good medical and nursing aid suffering may be felt in the course of time as hopeless and unbearable and the desire to end this life may impose itself insistently.

In that case people dare to ask their GP or specialist to terminate their life. In this registration all sentinel stations except two were approached with such requests (Spreeuwenberg, 1981). People perceive it as the task of a GP to help them in such situations too. The suggestion that these requests for application of euthanasia are the result of inadequate

counselling of the patient in his terminal phase and more particularly of inadequate treatment of the pain and the possible other complications call at most for good training of the doctors in this matter (2). It must be assumed that in principle every doctor who gives such care can get such requests, and therefore in the training and above all the education of GPs and specialists attention should be devoted to this subject (Spreeuwenberg, 1988).

It can be derived from this registration in which situation a request for application of euthanasia may be expected. In the main (70%) patients with often metastasized, malignant neoplasms are concerned. However, there are also a number of other more or less specific circumstances in which application of euthanasia is requested. In the counselling of patients with such disorders the doctor may at any moment in the final stage of the disorder expect a request for termination of life.

A striking finding is that in a relatively small number of the cases the use of a euthanasia declaration is reported. In the court cases it was stated with some emphasis that a written will is considered necessary as a record of the patient's wishes. And in the requirements of care that have meanwhile been formulated it is laid down that when the declaration dates from some time ago it must be reconfirmed.

The registration shows that matters proceed differently in practice, whereby it must incidentally be borne in mind that often euthanasia will be spoken of in the presence of others in the contacts that the doctor has with his patient and the patient has given evidence of a clear will. It may then be expected of the GP that he makes a note of this.

The majority of the patients requesting application of euthanasia are living at home at the time of the request. That is not surprising. If the patient is at home, the GP is the doctor who in general has most contact with the patient. The fact that a number of patients request the GP for euthanasia during their stay in hospital may mean that the GP is regarded as the doctor with whom to discuss such a request. It could also mean that a request has been evaded in the hospital.

The registration discussed here has been performed by a non-random group of GPs. There can thus be no question of extrapolation. There is some agreement with the results of registration of the same topic by GPs in The Hague and Amsterdam.

The significance of the results discussed here is that for the first time some quantitative insight has been gained into the requests for application of euthanasia. The latter is a theme that has been intensively discussed in Dutch society for more than twenty years now and for which no satisfactory statutory regulation doing justice to the pluriform nature of that society could be found in 1989 either.

Notes

Leenen (1987)
Since this article gives a good survey of the events since 1973, a short summary of the article is given here.

This article discusses the developments in euthanasia in the Netherlands. To a large extent unanimity has been reached on the definition of euthanasia. Since 1973 the courts have been involved in euthanasia cases. The lower courts and the Supreme Court accepted euthanasia on request on certain conditions. In 1982 a State Commission on euthanasia was instituted. This Commission produced a bill on euthanasia and assistance with suicide on request. The Commission delineated requirements to be met if euthanasia were not to be an offence. Although a majority of the Dutch population is in favour of liberalizing legislation, the political situation delays the latter's adoption.

Rigter et al. (1988)
This article discusses among other matters the report on euthanasia by the British Medical Association and the position adopted in that article against voluntary euthanasia. The Dutch situation and the viewpoint of the KNMG are discussed. A description of a situation in which a Dutch doctor

grants a request for euthanasia and how that is done forms the explanation of the Dutch situation.

Spreeuwenberg (1981)
In this thesis the author distinguishes between various types of doctors. Doctors who are opposed to the application of euthanasia and operate in the "paternalistic" model state that they never receive requests for application of euthanasia (pp. 60-70 and 117-120).
Whether this qualification applies to the two spotter physicians who up to the end of 1987 had not made one single notification of a request for application of euthanasia is not under discussion here.

(1) The absolute numbers of requests for euthanasia in three registration systems are shown in the following table. It is stated in parentheses for the GP registration system of The Hague and the Amsterdam sentinel station project what number of requests was granted by the GP. This does not mean that the euthanasia was performed by the GP himself.

	CMR sentinel stations the Netherlands		G.P. registration The Hague		Amsterdam sentinel station project	
	number of requests	number of GPs	number of requests	number of GPs	number of requests	number of GPs
1985	39	59	17 (9)	25		
1986	28	60	13 (6)	27	23 (16)	31*
1987	36	61				

* One GP registered in 1987 only in the first half of the year

(2) In April 1989, just before the parliamentary debate, which, however, was not held, an edition of the Journal for Medical Ethics (Vol. XV, No. 2, extra edition April 1989) was distributed on a large scale. This journal is a publication of the Netherlands Doctors Union, an organization of doctors who are opposed to inter alia abortus provocatus and the application of euthanasia at the express request of the patient. In other words, advocates of conservative denominational medical ethics. The leading article of this publication, distributed free

of charge and unsolicited, is entitled "Good terminal counselling makes application of euthanasia superfluous". On the inside page an anaesthesiologist writes under the title "Good combating of pain: an important means of forestalling a request for euthanasia".

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11. REGISTRATION OF CERVICAL SMEARS

W.A. van Veen

11.1. Background information

Until the first half of the seventies cervix-cytological examinations were performed in the Netherlands on only a modest scale, and principally by gynaecologists. Only from 1974 onwards could general practitioners make free use of the smear test among their patients.

In 1975 it was decided to perform an experimental mass screening in three regions that together comprise a quarter of the Netherlands. The target group consisted of all women in the 35-54 age group, and the screening interval was three years. Participation in the experimental mass screening in the three screening rounds held between 1976 and 1985 was 71, 65 and 61 percent respectively (Ministerie van WVC, 1988).

At the urging of the Second Chamber of Parliament mass screening was also rendered financially possible in the rest of the country in 1976. In practically the whole country the mass screening also actually came about, with Amsterdam as the chief exception. The mass screening outside the experimental regions was in general likewise aimed at the 35-54 age group, with a screening interval of three years. However, no scientific evaluation was attached to it.

In 1981 1 million smears was taken on estimate. The total female population then numbered 7.1 million, of whom 4.0 million in the 20-64 age group, and 1.6 million in the 35-54 age group.

In 1982 the Minister of Health expressed the wish to terminate the separately organized mass screening in phases and to integrate it into primary care. The taking of smears, until then performed by specially trained women, would have to be done in the new-style mass screening by the general practitioner (Tweede Kamer, 1981-1982). In 1985 mass

screening came to an end almost everywhere. Not until 1988 did the National Association of General Practitioners (LHV) and the medical insurance bodies reach agreement on the remuneration that the general practitioners had demanded for this "new" activity. Today the new-style screening is making a hesitant start.

11.2. Reason for the 1982 change in policy

An important consideration for leaving taking of the smear to general practitioners was that it fits in well with the policy of reinforcing primary health care or countering a further erosion of the tasks of the GP (Tweede Kamer, 1981-1982). General practitioners take smears anyway, and must also be able to do that well. Provided that the quality is monitored from the laboratory, the quality of smears taken by general practitioners need not be inferior to that of smears taken by specially trained women (Tweede Kamer, 1983-1984). In many other countries, too (such as Denmark), the mass screening has been integrated into the existing health care facilities.

The second consideration was efficiency (Tweede Kamer, 1981-1982). As already mentioned, around 1980 an annual total of some 1 million smears was being taken in the Netherlands, whereas only half of these would be required for national mass screening according to the prevailing guidelines (35-54 years, once every three years). It had to be assumed that there was a considerable overlap of women who were having a smear taken both under the mass screening and by the GP and/or the gynaecologist (Tweede Kamer, 1983-1984). Incidentally, the evaluation in the experimental regions shows that, despite the very high number of smears, some 20% of the women in the 30-54 age group were "not protected" (no recent smear, no uterus extirpation undergone) (Ministerie van WVC, 1988).

11.3. Relevance for policy of the sentinel station data

Although the costs of the cytological assessment alone must be estimated at an annual 30 to 40 million guilders, only fragmentary data are available on the total number and the distribution of the smears. Thus the health insurance funds and the private medical insurers cannot supply national data on the smears claimed for by the curative sector. From the mass screening outside the three experimental regions data are available on the numbers of smears subsidized under that scheme and - fragmentarily - on participation figures by age from annual reports. Only on the mass screening in the three experimental regions have detailed statistics been published in the EVAC reports (for a survey see Ministerie van WVC, 1988). Finally, mention may be made of unpublished data from the Annual Hospital Enquiry, and the annual reports of a number of large cytological laboratories. In what follows it will be outlined to what extent the data from the sentinel stations were able to meet the need for information for the policy.

11.4. How many smears are taken in the Netherlands, and what part does the GP play in this ?

Estimates of the total number of smears and their distribution among the bodies taking the smears must, as stated, be based on a variety of sources. For the period 1976-1984 the numbers of smears taken under the mass screening are known with a fair degree of accuracy. From 1976 extrapolations can be made on the basis of the Continuous Morbidity Registration (CMR) data for estimates of the national number of smears taken by general practitioners.

Although the spotter physicians are not chosen at random, there are no indications that they form a select group with regard to the performing of smears, so that the extrapolations probably sketch a reasonably good national picture. The number of smears taken by gynaecologists can only be estimated very approximately. The response to the Annual Hospitals Enquiry is incomplete and varies from year to year and, as regards the

figures furnished on cervix-cytological examination in one's own laboratory "for third parties", allowance must also be made for smears from the mass screening and the GPs. Against this background, the following picture can be sketched.

In 1965 only a few tens of thousands of smears were taken in the Netherlands. In 1974, the year in which an agreement was concluded between the health insurance funds and general practitioners on reimbursement of the cytological assessment of smears submitted by general practitioners, the national number shot up to 400 000. By 1978, when the mass screening also got started properly (152 000 outside the experimental regions and 81 000 in the experimental regions), the total number had doubled to 816 000 smears. In the period 1979-1983 the total was around 1 million, more or less equally divided between the mass screening (inside and outside the experimental regions together), general practitioners and gynaecologists. At present the total number of smears is about 800 000, of which over half originate from GPs.

11.5. To what extent do general practitioners reach the target group?

Initially it was thought at the Ministry that no call-up system would be required any longer for the new-style mass screening. This optimistic idea was born of literature findings indicating that general practitioners are quite capable of attaining a high degree of participation in preventive activities by the "anticipatory approach" (Van Weel, 1981). In this approach, during the usual doctor-patient contacts an offer is made to those patients that belong to a defined target group to perform a preventive action, in this case a smear. It is true that a high degree of participation can be attained with an anticipatory approach, also known as opportunistic screening. However, the publications in all cases originate from highly motivated general practitioners, so that the results attained by them say absolutely nothing about the question what kind of a job the average GP makes of it. Against this background data were needed on the smear activities of general practitioners not specially selected on their

motivation for screening for cervical cancer. An indication of this could be obtained only from the sentinel stations. It emerged that the general practitioners who practise in an area where no mass screening was held in general reach only a small minority of the target group (on average 39% of the 35-44 age group and 28% of the 45-54 age group) in a three-year period (the duration of a mass screening round) (CMR, 1981). Moreover, the number reached proves to differ strongly per general practitioner. Later data, also from another source, lead to the same or even more unfavourable conclusions (CMR, 1985; Amsterdam, GG en GD, 1986). When it is borne in mind here that a general practitioner must carefully screen on average for at least two years to detect one cytological aberration (and even longer for a histologically confirmed aberration), it must be feared that even very active GPs become demotivated in the long run (Van Veen, 1984). In addition it is not acceptable that the accessibility of the preventive facility for the target group has to depend on the motivation of an individual general practitioner. In view of the complete inadequacy of the anticipatory approach, and the impossibility of overcoming this by an effective call-up system at the level of general practice, the use of civil registries remains indispensable for an adequate approach to the target group (Van Veen, 1984; Olesen, 1986, Lynge et al., 1984).

11.6. How efficiently do general practitioners screen?

Efficient is interpreted here as following the national guidelines with regard to target group and screening interval. For the question to what extent general practitioners aim at the target group, i.e. the 35-54 age group, the CMR data are an eye-opener. They suggest great inefficiency.

Table 11.1. gives the proportional distribution of the total number of smears by three age groups (CMR, 1976-1987). The group younger than 35 years increasingly lays claim to the total number of smears in the course of the years, rising to 49% in the period 1981-83. Since then this percentage has been gradually decreasing, possibly under the influence of the attention that has been devoted to it (Tweede Kamer, 1983-1984; Van

Veen, 1984). The share of the target group itself has been increasing correspondingly since 1984, and in 1987 exceeds 50% for the first time since the initial years of registration. The share of the age group of 55 and older has never been a large one, and remains at a level of 7-8%. This age distribution also applies broadly to only "preventive" smears or "first" smears.

Table 11.1.: Total number of smears taken by GPs, divided by the woman's age, 1976-1987, in percentages

Year	Percentage per age group		
	< 35	35-54	> 55 years
1976	40	54	6
1980	48	44	8
1981-1983	49	43	7
1984-1986	44	48	8
1987	38	54	7

The general practitioners who practise in an area where no mass screening is performed also perform about half of their smear activities on women outside the target group. The same picture has emerged from other Dutch registrations, and also from foreign publications (Amsterdam GG en GD, 1986; Van Veen, 1984).

This efficiency is fostered by the repeated cropping-up of reports about an "alarming increase" in cervical cancer among women under the age of 35 (Boon et al., 1988; Steenhorst, 1989). On the strength of insufficient data it is then advocated that the mass screening should begin at an earlier age. However, data from the (population-based) cancer registration in the three Dutch experimental regions do not give the slightest indication of an increase in the occurrence of carcinoma in situ or invasive pavement-cell carcinoma in the 20-34 age group (Ministerie van WVC, 1987). Nor do the mortality figures display any increase. Other arguments, such as the high risk of spontaneous regression of pre-invasive aberrations at a young age, strongly argue precisely against

reduction of the present age limit for mass screening (Van Veen, 1984). A remarkable aspect of all this is that, according to the CMR data, it is precisely at a young age that the initiative for preventive smears emanates twice as often from the general practitioner as from the woman in question.

To what extent general practitioners adhere to the three-year screening interval cannot be properly derived from the CMR data. It is, however, clear that repeat smears are registered relatively often. While in the three-year period 1985-87 for instance in the 35-44 age group 27 percent had a "first" smear, per 10 000 women in this age group 1448 repeat smears were registered (Table 11.2.).

Table 11.2.: Numbers of first smears and repeat smears by the women's age, 1985-1987, per 10 000 women

	20-24	25-34	35-44	45-54	55-64 years
a. first smears	1228	2761	2658	1906	721
b. repeat smears	225	974	1448	1313	425
ratio of b to a	0.18	0.35	0.54	0.69	0.59

That does not in itself mean to say that for 14.5% of the women a shorter interval than three years was adhered to, for a repeat smear may have been registered more than once for one and the same woman. How often the latter was the case has not been registered. The above percentage of 14.5 thus gives a maximum estimate of the number of women with a repeat smear. Moreover all smears, including those on medical indication, come under the definition of "repeat smear" used in the CMR registration when a smear has already been taken from the woman in question less than three years before. Nevertheless, the ratio between the number of repeat smears and first smears is food for thought. From the age of 35

onwards this ratio is approx. 0.6. Even if half of the repeat smears should relate to the above-mentioned "inaccuracies", then nevertheless too short an interval would be adhered to for some 30 percent of the women attended to by the GP. This suspicion of a "revolving-door phenomenon", a small group of women from whom a smear is taken unnecessarily often, has been confirmed with better data from other sources by various researchers (Amsterdam GG en GD, 1986).

To sum up, it may be said that general practitioners on the whole screen very inefficiently. Some seldom if ever take a smear, others take (very) many. Many women from the target group are rarely if ever reached by the GP. And insofar as women **are** reached, a considerable number are either younger than 35 years or have already had a smear taken a short time before. This implies that opportunistic screening is largely directed at those women that will benefit the least from it. Moreover, unfavourable effects of screening occur above all among younger women, because among them the risk of spontaneous regression of the preliminary stages of cervical cancer is very high and declines strongly with age.

A recently concluded investigation into the costs and effects of mass screening for cervical cancer confirms that the cost-effectiveness of opportunistic screening (by general practitioners and gynaecologists) is very unfavourable, with a ratio of nearly f. 50 000 per year of life gained. With an effective mass screening only half of the costs would be needed to achieve the same effect as with opportunistic screening. To put it the other way, with the same costs a 45 percent higher effect could be attained (Habbema et al., 1988). This is in accordance with earlier calculations with less accurate methods of calculation (Olesen, 1986).

11.7. The general practitioner's work load

A GP has on average nearly 300 women from the 35-54 age group in the practice. With a three-yearly screening interval 100 women per year qualify for a smear. On the strength of the cost-effectiveness analysis mentioned above it has been recommended to lengthen the screening interval and to

extend the target group with older women (Habbema et al., 1988). Whether the latter is in fact necessary is now being further investigated on the instructions of the Ministry. In the first instance the question is to what extent a pavement-cell carcinoma still occurs in women who before their 55th year had one or more negative smears, and whether the screening test after the menopause is in fact sufficiently sensitive and specific.

Assuming that the target group were to consist of the 35-65 age group and the interval is extended to five years, then annually 535 000 women (instead of 626 000) would qualify for a smear in the Netherlands, i.e. on average 85 (instead of 100) per GP.

On the basis of the CMR data it can be calculated that a general practitioner now takes on average some 70 smears per year, of which 7 to 10 on medical indication. The average work load with reference to preventive smears will therefore hardly need to increase, even with a high degree of participation in the new-style mass screening. It is a matter above all of a more efficient distribution of the smears. This is favoured by four factors:

- the periodical invitation to the women from the target group to have a smear taken by the general practitioner;
- the reimbursement of the GP for taking these smears agreed in 1988;
- the fact that the six-monthly pill check, which had a considerable intimidating effect on the taking of smears from young women, is becoming obsolete;
- the information on the new-style mass screening by cancer-combating bodies, basic health services and integrated cancer centres.

These factors call for no effort on the part of the general practitioner, with the exception of supporting the provision of information.

A major improvement in the efficiency could be further obtained with a refined call-up system, as used in Denmark. Under this system the invitation to a woman from whom a smear has already been taken within the screening interval is postponed until the screening interval has lapsed (Olesen, 1986; Lynge et al., 1984). This requires a registration system in

which all cervix cytology is included. That registration system is now being developed (Vooijs et al., 1988). In that framework it is now being investigated whether a link is possible - and desirable in the Dutch system - between registration and call-up system so as to apply the Danish refinement in the Netherlands too.

Another possibility of the registration system under development is devoting special attention to the women from whom a smear has not been taken for a long time, for instance five years. GPs who of their own volition carried out such a catching-up manoeuvre have described favourable results of this. The active attitude is accepted by practically all women and even appreciated. Only 2 to 4 percent refuse categorically to take part (Risdale, 1987; Meijman, 1986; Ponsioen, 1989). With the necessary care and caution the registration system could be an important aid to the GP in reaching precisely that group most likely to benefit from the screening.

11.8. Conclusion

Since 1976 the sentinel stations have been furnishing important data with which the smear activities of general practitioners in the Netherlands can be closely followed. According to the Proceedings of the Second Chamber the sentinel station data have also been intensively used for government policy with regard to mass screening for cervical cancer. Examples of this have been described in this chapter.

Besides policy, the data are also used for research, as in the above-mentioned cost-effectiveness analysis (Habbema et al., 1988).

However, the sentinel station registration, with its inherent limitations, is insufficient as a system for an adequate supply of information on behalf of the performance, quality control and monitoring of a mass screening. A mass screening is a much too complex facility for that. Mass screening for cervical cancer was introduced as a facility in 1976 without such an information system. Now the requirement is being made that first a

nationally usable information system is developed and tested. That is therefore happening now in the preparation of the mass screening for breast cancer. In the case of cervical cancer it is still so that the information system is being developed while the new-style mass screening is already being introduced (Vooijs et al., 1988). As long as this information system has not be implemented nationally, the data from the sentinel stations continue to retain their value.

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12. REFERRALS IN SENTINEL PRACTICES

12.1. Referrals to hospital consultants

A.B.M. Gloerich, V. Schrijnemaekers, J. van der Zee

12.1.1. Introduction

Referral of general practitioners to hospital consultants has been the subject of study for several decades now. In 1961 Starey in the United Kingdom and in 1964 Bremer in the Netherlands published studies on this very subject, and from that time on a steady flow of reports and papers has appeared. The phenomenon of referral continues to attract attention.

Referral to the specialistic echelon is important in several aspects: not only for the patient in a social and medical sense, because of a potential, more or less serious illness, but also for the providers of care. The general practitioner leaves the patient to his specialistic colleague, and this results in a completely different organizational and financial picture for the patient, as well as for the general practitioner and the consultant, and not least for society as a whole.

The role of the general practitioner is important with respect to when and how patients are referred: in some systems specialistic care is accessible only after referral from the general practitioner (as in Britain and the Netherlands), whereas in other systems specialistic care is directly accessible (as in the United States and France). Systems in which specialists can be consulted only after mediation of the general practitioner are considered more cost-effective and more time-consuming, although these systems offer opportunities to change unagreeable developments. Directly accessible systems are more expensive, but increase patients autonomy. Hull (1988) considers insurance type also of importance to referral to the specialistic echelon.

Because of the important consequences of referral, admittedly in particular the financial ones, referral behaviour is very often under debate. Some critics consider the number of referrals too high and favour a close watch on high-referring general practitioners. Others argue that if there are practitioners who refer too often, then there must be practitioners who refer suboptimally, thus withholding specialistic care from a patient (cf. Herman; Cocks; Michael; Michael et al., 1988). They demand, complementarily, that the low-referring general practitioners be encouraged to refer patients (Wilkin and Smith, 1986).
Another issue that came up recently was the self-referral phenomenon, i.e. a referral without the intermediary of the general practitioner (cf. Howarth and Maitland; Pearson; Perkins; Marinker, Wilkin and Metcalfe, 1988). Some writers claim that these increasingly common self referrals must be considered explicitly as bypassing the general practitioner and unacceptably cost-increasing. Consultants should in their view withhold care in the case of nonacute disease.
In other letters and papers overreferral is discussed in relation to record-level waiting lists for outpatients. Methods are proposed to overcome too long waiting periods for patients with more acute or serious disease.

Thus the ideal situation, in which an individual patient is appropriately referred to the right specialist at the right time (Hull, 1988) has not emerged yet.

All these arguments about overreferral or underreferral, self-referral, waiting lists and, in general, exceeding limited budgets take place in a setting in which health care expenditure is rising through increasing medical consumption and use of expensive new technologies, and in which costs are being scrutinized. (See also the discussion about the National Health Service, induced by the white paper 'Working for Patients' (1989) in the British Medical Journal from February 1989 onwards).

As stated above, referrals are extremely costly in their consequences and weigh heavily upon total health expenditures of multi-tier, indirectly accessible health care systems. Evans et al. (1989) conducted a study on the effects of different funding systems for health care in otherwise very

similar countries like Canada and the United States. It appears that the Canadian universal, tax-financed funding system along with a centralized cost-controlling system makes health expenditure lower than health care funded on a free market basis, as in the United States, despite the fact that both systems allow universal access on equal terms and conditions and despite universal coverage without user charges in Canada. This is an example of how alternatively funded systems can differ with respect to total health costs, despite the supply of almost equal (both quantitative and qualitative) care in similar cultural settings.

There are, however, also enormous differences in more similarly funded systems, as in Britain and the Netherlands. Care should be taken in comparing referral rates of two countries, because all kinds of administrative singularities can distort the picture (cf. van der Zee, 1982; van Es, 1985). Nevertheless the number of referrals in the Netherlands seems to outstrip by far the number in the United Kingdom: 30 - 60 per 100 patients in the Netherlands (average 51%) as against .5 - 15 per 100 patients in the United Kingdom (average 11%). According to Hull (1988) insufficient communication between the general practitioner and the specialist is one of the causes of this phenomenon. Only 25% of the referral letters are considered to be of good quality (as against 75% in Britain) and only 30% of the referrals were appropriate (70% in Britain). Bremer (1989) reports similar results: only 11 out of 97 referral letters were adequate. This difference in referral rate might at least in part be explained by differences in the method of payment of both the general practitioner and the consultant. In the Netherlands almost all specialists are paid per item of service, whereas in Britain specialists are salaried. General practitioners in the Netherlands are paid per capitation and have - financially -nothing to lose when a patient is referred, even if the referral is inappropriate. The Dutch specialist on the other hand, gains only by accepting all, even inappropriate referrals and is not rewarded (financially or otherwise) for referring the patient back to the first echelon. Thus it seems that this system of reimbursement possibly induces overreferral.(See for an interesting review Donaldson and Gerard, 1989.)

This was also the view of the Netherlands Government, which installed in early 1980 a commission for restructuring the reimbursement system of the specialist: the Van Mansvelt Commission. In its report (Van Mansvelt, 1982; cf. Andriessen and van der Vos,1983) the commission explicitly formulated some recommendations that in its view would decrease the number of referrals and hospital admissions. The pertinent proposals include the replacement of general, all-purpose referral letters by more specific ones. The reason and goal of the referral has to be explicitly defined. According to the commission, reimbursement of the specialist has to take place on the basis of:

1. referrals for advice only (with respect to diagnosis or therapy), as indicated by the general practitioner. The latter continues treatment afterwards.

2. referrals for therapy, as indicated by the general practitioner, with a validity of three months. These referrals can be extended only by the GP to 9 or 12 months.

3. referrals for some highly specialized diagnostic or therapeutic activities, not often encountered in specialistic practice. These are indicated by the specialist.

4. also indicated by the specialist is the referral for interfraternal consultation.

Along with a degressive reimbursement system for hospital care and replacing the per-capitation fee of the general practitioner by a mixed system of capitation/fee for service, this method of payment is meant to guarantee a continuing involvement of the general practitioner in the treatment of his patient and a reduced medical consumption of specialistic care.

But alas, as often happens to proposals of a rather radical character, on which several conflicting parties (in this case the general practitioners, the specialists and the health insurance funds) are trying to reach agreement,

there is still no consensus, although the pertinent proposals have not yet been rejected.

The discussion still continues, as Laffree and Verdenius report (1989). They state that the starting point should be that people are healthy, until there is proof of the contrary. This means that overconsumption of medical care and medicalization have to be avoided and that patients must be enabled to live as long as possible in normal conditions, i.e. in their own social environment. And yet the conviction prevails that specialists must be financially stimulated to refer back to the generalistic echelon if and as soon as possible and that the general practitioners must be encouraged to perform substition sensitive medical techniques.

12.1.2. Problem definition

The above-mentioned discussion induces two kinds of questions, one relevant for authorities with respect to the effect of intended policy on reducing health care costs and the other of a more scientific character.
The Van Mansvelt proposals relate to different referral types, though it is not properly known how different referral types contribute to the overall referral rate and the effect of the proposals cannot be estimated exactly.
It is therefore important to establish how the various referral types/components contribute to the overall referral rate.

Various studies stress the importance of structural factors, and of practice and general practitioner characteristics on referral rate (see e.g. Wilkin and Smith, 1986). It is not properly known yet whether and to what extent these characteristics influence the number of the referral components separately.

Summarizing, we intend to answer the following two questions:

1. How do the various referral types/components contribute to the overall referral rate?

2. How are these referral components affected by structural, general practitioner and practice factors?

12.1.3. Method/data

Both questions are being studied by analysing:

1. Referrals as reported by general practitioners.
2. Questionnaire data.
   These data were obtained by encompassing the relevant questions in the questionnaire of Continuous Morbidity Registration Sentinel Stations in 1984.
3. LISZ referrals rates (not distinguished by motive; LISZ is the Landelijk Informatie Systeem Ziekenfonds: National Information System of the Health Insurance).

12.1.4. Reported referrals

Sixty-one general practitioners (in 46 practices) were asked to record per referral:

a. the age category of the referred patient
b. speciality
c. nature of referral:
   - i referral for reassurance
   - ii referral for diagnosis
   - iii referral for therapy
   - iv referral for both diagnosis and therapy

Referral types i to iv are called active because the GP is actively involved in the decision to invoke specialistic help

   - v refraction referral
   - vi other referral (posterior, extended); a referral note allows access to the second echelon only for one year, for one particular speciality. If the specialist considers continuation necessary, an extension of the referral is needed.

Refraction, posterior or extended referrals are passive in the sense that no conscious, active decision of the GP is required.

Only publicly insured patients were involved in this study and the data were recorded in 1984, five days a week. The observation period covers January to December. Sex of patients was not taken into consideration, for practical reasons.

In addition to these weekly reported data a questionnaire was completed with questions on the following subjects:

- STRUCTURAL FACTORS (supply variables)
  - . distance from hospitals
  - . number of beds per 1000 inhabitants
  - . number of hospitals

- PRACTICE CHARACTERISTICS
  - . number of contacts per day
  - . type of practice (single vs group)
  - . frequency of interdisciplinary consultations
  - . average duration of consultation
  - . use of diagnostic facilities (lab/x-ray)

- GENERAL PRACTITIONER CHARACTERISTICS

  The general practitioners are asked to what extent they consider the following three fields of activities as part of their job as against the consultants' job. These professional attitude scales are adopted from Dopheide (1982).

  - . attitude to performing medical techniques
  - . attitude to diagnosis
  - . attitude to therapy

The next two scales are adopted from Grol (1983):

- . attitude to sharing responsibility with patient (cooperation)
- . attitude to taking risks (tolerance of uncertainty).

The LISZ, the National Information System of the Health Insurance funds provided referral rates per speciality per 1000 patients.

12.1.5. Results

Spotter physicians systematically underestimate referrals compared to both their 'official' LISZ rate and the national LISZ rate (327 per 1000 publicly insured as reported by the GP, 424 as reported by the LISZ and 495 as a national LISZ index). Particularly passive referrals are underrecorded. Data of five extremely underrecording practices are not taken into account with respect to the analyses of the passive referrals.

Contribution of referral components to overall referral rates

The contributions, both relative and absolute, of the various referral types to the overall referral rate are presented in Table 12.1.

Table 12.1: Referrals per component per 10 000 publicly insured patients

Components	N	Mean	Total	Percentage
Active	45	1 332	59 958	43
reassurance	45	71	3 198	3
diagnosis	45	255	11 497	8
therapy	45	596	26 802	19
diagn./ther.comb	45	410	18 461	13
Passive	40	1 977	79 080	57
refraction	40	731	29 240	21
other (ext./post.)	40	1 246	49 840	36

Refraction and ext./posterior referrals make up 57% of the total referral rate. The remaining, active referrals can be subdivided into 3% reassurance referrals, 8% referrals for diagnosis, 19% for therapy and 13% referrals for a combination of diagnosis and therapy. Thus in 43% of the cases the general practitioner is actively involved in the referral process.

These results are in line with those reported in other studies, as is obvious from Table 12.2.

Table 12.2.: Percentage referrals per component as reported in comparable studies

	reass.	diagnosis	therapy	combin.	refr.	ext./post.
v. Es & Pijlman						25% (ext) 51%
Pel (1975)	(init. gp: 24%/patient: 17%) 41%				18%	41% 59%
Dopheide and Others (1983)	54%					46%
Mokkink (1986)						(ext.) 25%
Kuyvenhoven & de Melker (1986)	31% ------ (internal diseases) ----- 69%					
	54% ------ (surgery) ---------- 46%					

The proportion of active referrals varies between 40 and 55% and, inversely, passive referrals between 45 and 60%. Kuyvenhoven and de Melker report considerable differences between various specialities.

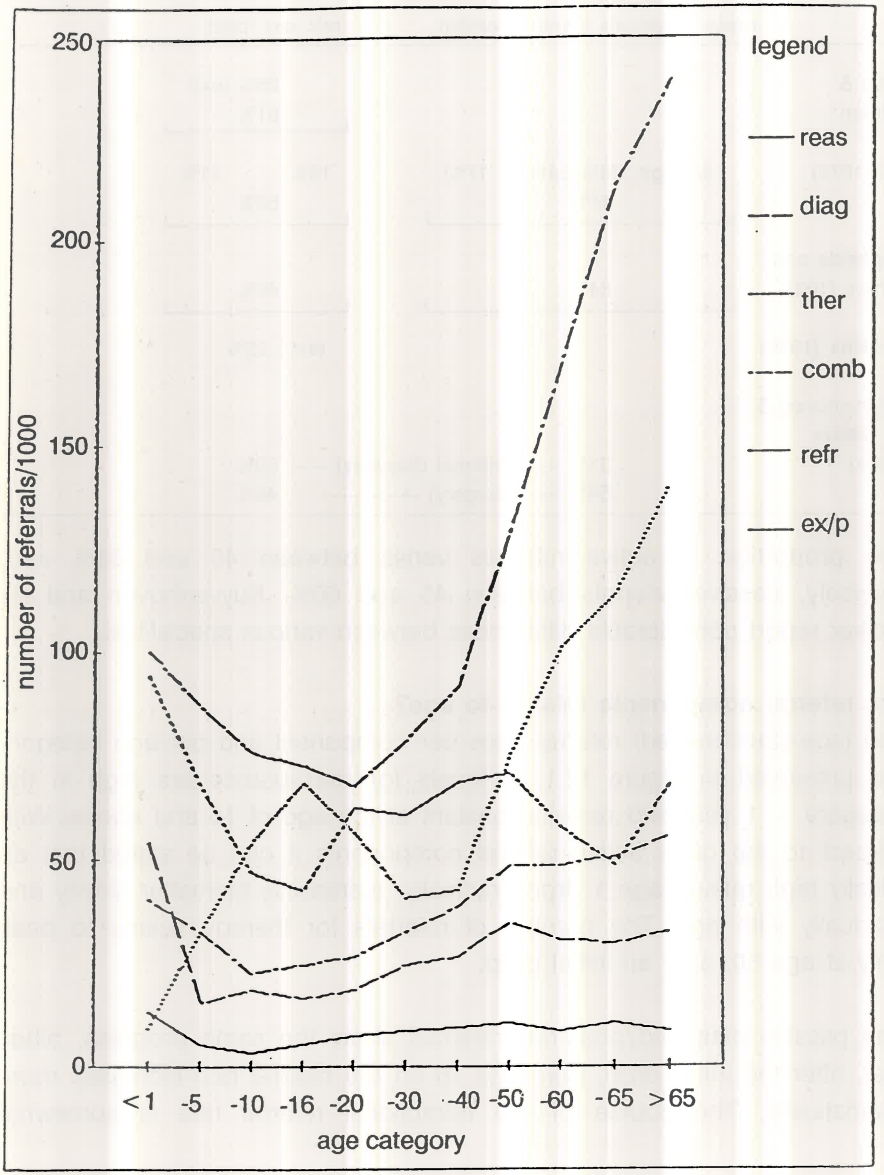
Are referral components related to age?

The (age-standardized) referral rates per component and per age category are presented in Figure 12.1. Referrals for reassurance are high in the category < 1 year and remain constant at the age of 16 and above. With respect to the other active referral components it can be stated that an initially high rate at age 1 drops radically, increasing thereafter slowly and gradually with age. The number of referrals for therapy seems to peak only at age 50, after an initial drop.

The passive extended/posterior referrals show the same progress, albeit that, after the initial drop, from age 16 on the referral rate increases more dramatically. The course of the refractional referral rate is somewhat

deviant in that it increases from age 1 to age 15, decreases until age 30 and, again, rapidly increases after the age of 30.

Figure 12.1.: Referrals per 1000 (publicly insured) patients per referral component and per age category in 1984



The relative contribution per component per age group is presented in Table 12.3.

Table 12.3.: Proportion of referrals per component per age group

	age groups										
	<1	1-4	5-9	10-15	16-19	20-29	30-39	40-49	50-59	60-64	>64
reassurance	4.1	2.0	1.1	1.5	2.6	2.8	2.7	2.2	1.6	1.5	1.0
diagnosis	17.6	6.0	7.8	6.3	6.8	9.6	10.0	9.5	7.2	6.1	6.0
therapy	30.1	30.3	21.1	19.0	25.9	24.5	24.7	19.1	13.7	11.7	12.2
combination	12.8	14.4	10.1	10.4	11.6	13.9	14.0	13.9	11.6	10.8	10.6
refraction	2.9	13.7	25.0	30.9	24.0	16.9	16.0	20.4	24.2	24.2	26.0
ext./post.	32.6	33.6	34.9	31.9	29.2	32.3	32.9	35.4	14.8	45.7	44.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The proportion of referrals for reassurance and for diagnosis is highest in the youngest age group (<1 year), drops somewhat in the 1-4 age group and remains at a constant level afterwards. The relative referral rate for therapy and diagnosis seems to diminish after the age of 50, whereas the extended/posterior referral rate increases at this age. These extended referrals most likely relate to extensions of referrals for therapy (and diagnosis). The refractional referrals peak at age 5-20 and increase dramatically after 50.

How do referrals and the various referral components relate to specialities?

Table 12.4. shows the relative contributions of the Sentinel and LISZ referrals to the medical specialities. The classification is adopted from Mokkink (1986). Referral rates from both sources appear very similar and seem to reflect the actual distribution among specialities.

Table 12.4.: Proportion of LISZ referrals (total and for sentinel practices) per speciality

specialities	LISZ total	LISZ sentinel
Ophtalmology	21.4	24.7
Ear, nose & throat	8.3	8.0
Surgery	23.9	24.1
Gynaecology	7.4	7.5
Psychiatry	7.0	3.1
Dermatology	6.5	6.4
Internal medicine	18.8	18.1
Paediatrics	3.2	2.5
Other	3.4	5.5
Total	100.0	100.0

In Table 12.5. the correlations between the referral components and the specialities are presented . The total passive referral rate correlates highly with the ophthalmic referral rate (.63) and - to a lesser degree - with the rate for dermatology (.35). The active referral rate relates significantly to referrals to ENT (.61), Surgery (.52), Psychiatry (.36), Dermatology (.35), Internal Medicine (.35) and Paediatrics (.36).

As expected, there are considerable differences between various specialities. As for ophthalmology, for instance, 37% of the referrals are refraction referrals. Furthermore referrals are very often extended (cf. Mokkink, 1986).
Both active and passive referrals correlate significantly with total dermatology referrals. Hence general practitioners often seem to extend referrals, after a first active referral for diagnosis and therapy.
Referrals for diagnosis, therapy and the combination relate particularly to Surgery and ENT referrals.

Table 12.5.: Pearson correlations between specialities and referral components. Significant correlations ($p < .05$) bold faced

	act	reass	diag	ther	comb	pass	refr ext/post	
Ophtalmology	.16	**.26**	.21	.01	.08	**.63**	**.64**	**.48**
ENT	**.61**	**.26**	**.41**	**.40**	**.32**	.07	-.02	-.12
surgery	**.52**	-.03	**.36**	**.32**	**.33**	.66	-.12	.18
Gynaecology	.21	**.27**	.19	.07	.11	-.04	-.10	.02
Psychiatry	**.36**	-.07	**.32**	.16	**.26**	.19	.09	.23
Dermatology	**.32**	.06	.13	.20	**.27**	**.35**	.14	**.42**
Int. medicine	**.35**	.02	**.26**	**.25**	.18	-.17	**-.35**	.01
Paediatrics	**.36**	.02	.03	.21	**.34**	.10	-.11	.23
Other spec.	.12	.18	.11	.08	.02	-.11	-.12	-.09
N	45	45	45	45	45	40	40	40

12.1.6. Are referral components affected by structural factors, practice or general practitioner characteristics?

Structural factors

The variables of interest here are supply of and distance from hospitals or beds. Mean, standard deviation and range are shown in Table 12.6a.

Table 12.6a.: Mean, standard deviation and range of structural variables

Variables	Mean	s.d.	min	max
Distance from hospital	7.8	6.6	1.0	20.2
Number of referrable hospitals	9	.8	1	3
Number of beds 0/00	4.7	.9	3.4	7.9

How these structural variables interrelate with the various referral types is demonstrated in Table 12.6b.

Table 12.6b.: Correlations of structural variables with referral components. Significant correlations bold faced ($p < .05$) or bracketed ($.05 < p < .1$)

	Distance	N of hospitals	N of beds
LISZ rate	**-.32**	**.30**	**.59**
Sentinel rate	(-.25)	(.21)	(.37)
active ref.	-	**.24**	**.28**
passive ref.	**-.34**	-	**.30**
reassurance	-	**.43**	-
diagnosis	(-.20)	(.20)	-
therapy	-	-	**.25**
diagnosis + therapy	-	-	-
refraction	-	-	-
ext./post.	**-.38**	-	**.41**

The overall referral rate increases with decreasing distance from the nearest hospital. The number of beds per 1000 inhabitants and the number of hospitals are positively related to the overall LISZ and to a lesser extent to the sentinel rate: the more hospitals or the more beds, the more referrals take place. These results are in line with other reported studies (cf. Rutten and van der Gaag (1977), Rutten (1978), Van der Gaag (1978), Wijkel (1986a,b), Posthuma and van der Zee (1977), Dopheide (1982), Kruidenier (1977,1984), Raupp (1971)).

Referrals for reassurance and diagnosis are not related to the number of beds (as is expected, because very often admission is not necessary), whereas a positive relation is found with respect to the number of hospitals: the more hospitals (facilities, specialities, higher degree of urbanization), the more referrals for reassurance and diagnosis. Referrals for therapy are positively related to the number of beds.

With respect to passive referrals, only extended/posterior referrals seem to be affected by the structural variables: negatively by distance and positively by the number of beds.
Refraction and extended referrals are not influenced by the number of hospitals.

Table 12.7a presents the mean, standard deviation and range of the following variables:
- Number of contacts per day;
- Type of practice;
- Multidisciplinary consultation;
- Average duration of consultation;
- Use of laboratory and X-ray facilities;

Table 12.7a: Mean/frequency, standard deviation and range of practice variables

	Mean	s.d.	min	max	freq
Number of contacts per (normal) day	34	12.3	16	50	
Type of practice					
single					24
groep					22
Multidisciplinary consultation (0-6; 0=no cons., 6=once a week)	3.3	1.6	0	6	
Duration of consulation (min)	9.2	1.9	5	15	
Use of lab. and X-ray facilities (2-10; 2=never, 10=often)	8.6	1.8	3	10	

How these practice factors affect referrals is shown in Table 12.7b.

Table 12.7b: Pearson correlations of practice variables with (different types of) referrals. Significant correlations bold faced ($p < .05$) or bracketed ($.05 < p < .1$)

	N contacts	type of practice	multid. consult	durat. cons.	use of lab/X-ray
LISZ rate	-	-	-	-	-
Sentinel rate	-	(-.23)	-	-	**-.28**
active ref.	-	-	-	-	**-.39**
passive ref.	-	-	**-.27**	-	-
reassurance	**-.26**	(-.20)	-	-	-
diagnosis	-	-	-	-	**-.27**
therapy	-	-	-	-	**-.31**
diagnosis + therapy	-	(-.22)	-	-	-
refraction	-	-	-	(-.25)	-
ext./post.	-	-	**-.37**	-	-

Surprisingly, the number of contacts (both consultations and visits) does not seem to affect active or passive referrals. As far as more contacts imply a higher workload, the hypothesis that higher workload conditions induce an active referral policy is not confirmed by these data. The correlation between referrals for reassurance and the number of contacts is, somewhat unexpectedly, negative and significant. Lower workload appears to leave more room for doubt, though more study is needed for a decisive answer.

General practitioners with a single practice do not refer more for diagnosis than their group colleagues to non-surgical specialists, as reported elsewhere (Wijkel, 1986a,b), though there is a weak relation between practice type and referrals for reassurance and diagnosis +

therapy in the expected direction. We observed no relation between practice type and overall active or passive referrals.

Multidisciplinary consultations (particularly of social workers and community nurses) reduce the number of passive, extended referrals. The hypothesis that - apparently - replacement of specialistic care by primary health care (fewer passive referrals) takes place in the case of more multidisciplinary consultations is not valid. The correlation between passive referrals and multidisciplinary consultation corrected for the number of beds/1000 does not reach significance and drops from -.27 to -.09. Thus the degree of urbanization rather than multidisciplinary consultation seems to determine therapeutic referral. Partial correlation analysis reveals the important role of urbanization. Multidisciplinary cooperation does not affect the number of referrals for diagnosis, therapy or their combination.

A longer duration of the consultation, supposedly leaving more time for diagnostic or therapeutic activities, does not decrease the number of active referrals. A shorter duration induces unexpectedly, and unexplicably, more refraction referrals.

The use of laboratory and x-ray facilities by the general practitioner has a considerable influence on active referrals. Particularly the diagnostic and therapeutic referral rate decreases if the use of these facilities increases. There is no relation between use and passive referrals.

General practitioners characteristics

In table 12.8a the mean, standard deviation and range of the variables are presented:

- professional attitude with respect to performing medical techniques (range 1-5);
- professional attitude with respect to diagnosis (range 1-4);
- professional attitude with respect to therapy (range 1-4);
- professional attitude with respect to sharing responsibility with the patient (range 1-5);
- professional attitude with respect to taking risks/uncertainty tolerance (range 1-5).

A high score on one of these scales indicates that the general practitioner considers the relevant tasks/activities (like performing medical techniques, diagnoses, or therapies) more as part of his job and less as part of the consultant's job.

A high score on the risk-taking or responsibility-sharing scale indicates that the general practitioner is willing to take more risk or share more responsibility with the patient.

Table 12.8a: Mean, standard deviation and range of general practitioners characteristics

Professional attitude with respect to	Mean	s.d.	min	max
medical techniques	1.96	.57	1.0	3.57
Diagnosis	1.89	.42	1.0	2.64
Therapies	2.31	.28	1.68	2.88
Sharing responsibility	3.16	.55	2.11	4.44
Taking risks	3.15	.63	1.80	4.40

The correlation of the GP characteristics with the referral types is shown in Table 12.8b.

Table 12.8b: Pearson correlations of general practitioner characteristics with referral components. Significant correlations bold faced ($p < .05$) or bracketed ($.05 < p < .1$)

	attitude with respect to				
	med. techn.	diagn.	ther.	resp.s.h.	risk
LISZ rate	-	**.28**	**.44**	-	-
Sentinel rate	**.51**	-	(.24)	-	-
active	**-.45**	(.24)	-	-	-
passive	**-.39**	-	-	-	-
reassurance	-	-	-	**-.25**	-
diagnosis	**-.32**	-	-	(-.23)	-
therapy	**-.24**	-	-	-	-
diagnosis + therapy	**-.28**	(.24)	-	-	-
refraction	(-.25)	-	-	-	-
ext./post.	**-.39**	-	-	-	-

Obviously, the most important characteristic is the general practitioners' attitude towards performing medical techniques. General practitioners who are more inclined to perform medical techniques themselves refer fewer patients actively to the specialistic echelon. But passive referrals too are reduced. This confirms the results of Kersten (1984a,b) and Mokkink (1986), who stated that even extending referrals requires a more or less active decision by the general practitioner. Partial correlation techniques, however, reveal that the correlation between passive referrals and attitude to medical techniques is partly due to distance from hospitals and number of beds. Hence the professional attitude to performing medical techniques in combination with urbanization is important to passive referrals.

The attitudes towards diagnosis and therapy do not relate significantly to the various referral components, except for the weak correlation between

attitude with respect to diagnosis and active referrals in general. That is, those practitioners who consider diagnosing relatively more than others as part of their job do in fact refer fewer patients. The same goes for referrals for diagnosis + therapy. This means that the results of Dopheide (1982) are not replicated. Dopheide reported significant correlations between both diagnosis and therapy attitudes on the one hand and active and total referral rate on the other. The relation between referrals for diagnosis and the attitude towards diagnosis fails to reach significance.

General practitioners who are more inclined to share responsibility with the patient refer less for reassurance and (only marginally significant) for diagnosis. There is no relation with other active referral components, nor with active and passive referrals in general.

The attitude towards uncertainty tolerance is not significantly related to any of the referral types.

General practitioners with a broad professional conception might take more time per consultation than their colleagues with a narrow view: they perform more medical techniques, diagnose and treat the patient more often. It is therefore possible that duration confounds the reported relations. We recalculated the correlations between active referral components and the attitudes to diagnosis and therapy, this time corrected for the duration of consultation.

A major change takes place with respect to the effect of attitude towards therapy. If the influence of duration is removed, general practitioners who consider therapy as a specialist job indeed refer more patients to the specialistic echelon and vice versa: general practitioners who consider therapy an important part of their job refer fewer patients. This relation holds for both active referrals in general and referrals for the combination of diagnosis and therapy (partial correlation of .33 and .32 respectively). No changes exist with respect to the attitude to diagnosis.

12.1.7. Summary and conclusions

This study is both modest and ambitious in intent: it aims at revealing, on a rather detailed level, the influence of structural, practice and general practitioner characteristics of several referral types by means of analysing data of a limited number of Dutch spotter physicians. One has to bear in mind that all conclusions are based on only 60 participants in 45 practices. More study is needed to confirm, clarify and replicate the indicated results.

Spotter physicians systematically underrecord referrals compared to both their 'official' LISZ rate (as recorded by the National Information System of the Health insurance funds) and to the national LISZ rate. Passive referrals in particular are underrated.

About 43% of the referrals can be considered active; 57% are passive.
Of the active referrals, about 5% are for reassurance, 19% for diagnosis, 45% for therapy and 31% for both diagnosis and therapy. The passive referrals consist of 37% refraction referrals and 63% posterior/extended referrals.

Referral components are age-related. Active referrals increase gradually after the age of 20, initially peaking at the age category of < 1 year. Passive referrals increase dramatically at the age of 30 and older, again, after an initial peak at (very) young age. Refraction referrals also peak at age category 10 - 15 years.

Ophthalmological referrals consist of 37% refraction referrals. Therefore, the ophthalmological referrals correlate higher than any other speciality with the passive/refractional and posterior/extended referrals. Referrals for diagnosis, therapy and their combination relate most significantly with Ear/Nose/Throat and Surgery (.61 and .52 respectively). Dermatology is the only speciality that relates significantly both to active and passive referrals, indicating that often a first active referral is followed by an extended referral.

Active referrals are positively related with both the number of hospitals and the number of beds per 1000 inhabitants: the more hospitals/beds, the more referrals in which general practitioners are actively involved. More specifically, referrals for reassurance and - to a lesser degree - for diagnosis are significantly related to the number of hospitals, but not to the number of beds, because only some of these referred patients need admission. As expected, more referrals for therapy take place if more beds are available.

Passive referrals are related to the distance from hospitals and the number of beds. Particularly the extended referrals behave in that respect as active referrals: referrals are more often extended in the case of greater availability of beds and the distance from the hospital is smaller. Refraction referrals show no relation to any of the structural factors.

Active referrals are also related to the use of laboratory and x-ray facilities: the more general practitioners use these facilities, the fewer patients are actively referred, particularly for diagnosis and for therapy. This relation is somewhat distorted by the structural variables number of hospitals and number of beds per 1000, but still holds if the influence of supply/urbanization is removed.

Multidisciplinary consultations are highly correlated with passive, particularly extended/posterior referrals: the more multidisciplinary contacts take place, the fewer referrals are extended. This, however, is not (only) a substitution effect, in that extended referrals are replaced by primary health care, but seems, according to our data, largely a reflection of the urbanizational character of multidisciplinary consultations.
The number of contacts appear to be related to referrals for reassurance in that more contacts go together with fewer referrals. The question whether fewer contacts leave more room for doubt needs to be studied in a follow-up.

The professional attitude towards performing medical techniques seems to be the most important general practitioner characteristic: this attitude correlates significantly with both active and passive referrals. If general

practitioners are more inclined to perform medical techniques themselves, they tend to refer fewer patients for diagnosis, therapy and their combination. They also extend fewer referrals. As far as these results seem to indicate an active element in passive referrals, in that even extending referrals require a more or less active decision (cf. Kersten (1984a,b) and Mokkink (1986)), this hypothesis is somewhat counteracted by the structural variables distance from hospitals and number of beds. If the influence of these latter variables is removed, the indicated relation is less prominent, though still present.

All in all the proposals, intended to avoid unnecessary referrals to the specialistic echelon (and in general reduce overall referral rate) by means of restructuring the reimbursement system of specialists, as mentioned in the introduction, appear - in principle - to be useful. They are meant among other things to cut down on the automatically extended referrals, which make up some 30% of the total referrals. Furthermore, in another 30% of the referrals therapy is involved. It is, however, not known to what extent continuation of therapy after consultation of the specialist can take place by the general practitioner.

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12.2. Referrals to physiotherapy: the relation between the number of referrals, the indication for referral and the inclination to refer

J.J. Kerssens and P.P. Groenewegen

12.2.1. Introduction

General practitioners vary considerably in their patterns of practice. Checked on differences in the composition of their practice population or even on differences in the complaints presented by the patients, general practitioners prove to differ in the interpretation of the complaints of their patients - e.g. according to the somatic-psychosocial dimension (Verhaak, 1985) - and in the kind of intervention, such as referrals or pharmaceutical prescriptions (Wilkin et al., 1987).

This general statement also applies to the number of referrals from general practitioners to physiotherapists and to the pattern of indications for referral (Ritchey et al., 1989). The number of referrals to physiotherapists varies considerably between general practitioners. An analysis of the determinants of this variation has been reported in Kerssens et al (1987a). Not only does the number of referrals vary, but so does the pattern of indications for referral in terms of the diagnoses for which patients have been referred. An indication for this phenomenon is given in Kerssens et al (1987b) who show the variation between general practitioners in the percentage of patients referred for purely somatic complaints, the percentage of referrals at the request of the patient, the percentage of referrals without a prescribed treatment and the variation for selected groups of diagnoses. These variations between general practitioners have not yet been studied systematically. In this article we present the first results of this study. Our analysis centers around the question whether the pattern of indications for referral differs for the group of general practitioners with the highest number of referrals, compared to the group with the lowest number of referrals.

The study population consists of general practitioners participating in the Netherlands Sentinel Stations Network (CMR, n.y.). These general practitioners have recorded data on all referrals to physiotherapists made during one year.

We start this chapter with a short description of the position of general practitioners and physiotherapists and the relations between them in the Dutch health care system (Section 2). Next the research question and hypotheses concerning the relation between referral rate and pattern of indications will be described (Section 3), while the fourth section is devoted to the methods of data collection, the classification of indications for referral and the methods of analysis. The fifth and the sixth sections contain the results of our analysis and a discussion of the results respectively.

12.2.2. General practice and physical therapy in the Dutch health care system

General practitioners

General practitioners have a central position in the Dutch health care system. Normally, they are the first professional health worker to contact in case of health problems and health-related problems. A number of other health services, including physical therapy and medical specialists, are accessible only after a referral by a general practitioner. In these respects the position of the Dutch general practitioner resembles the situation in the United Kingdom or Denmark and differs from the situation in countries with direct access to medical specialists, such as Belgium, France, or the USA. Most of the general practitioners are in independent practice. Only 4% are in salaried service. The majority work in single practices, but this majority is becoming smaller. The percentage of single practices decreased from 86% in 1970 to 55% in 1988 (Van Dam et al., 1988). The remuneration of general practitioners is based partly on an annual capitation fee, for the 65% of the population who are publicly insured, and partly on a fee for service, for the privately insured part of the population (Rutten et al., 1987). Publicly insured patients have free health care, except for a small co-payment for pharmaceutical prescriptions and recently also for a referral to a medical specialist. Privately insured patients pay their GP and, depending on their private insurance policy, may receive reimbursement. The number of GPs totaled 6275 in 1988. The list size averaged 2345 people.

Physiotherapists

The number of physiotherapists in the Netherlands is relatively high. The total number of active physiotherapists was estimated at 13 350 in 1986 (Min. WVC, 1988). Of the professionally active physiotherapists, approximately two thirds work in primary care, numbering 8986 in 1987 (Van Dam et al., 1988); the other third work in hospital or institutional settings.

The physiotherapists in primary care receive their patients through referrals, mainly from general practitioners (80% of their patients), and in smaller numbers from specialists (20%). The referred patient is introduced by a referral letter. This constitutes the first contact between general practitioner and physiotherapist. A quarter of the GPs do not restrict this contact to a referral letter; they also contact the physiotherapist before referral or in the course of treatment, or they accompany the referred patient with background information (Groenewegen et al., 1989).

In the referral letter a diagnosis is stated and it may or may not include a prescription for the kind of physical therapy to be applied. If a prescription is included, the physiotherapist is legally obliged to follow it, unless there are very strong contra-indications, in which case the physiotherapist should contact the general practitioner. When the patient's therapy is finished, the physiotherapist reports the results to the general practitioner. For the legal position of physiotherapists in the Netherlands, see Kortenhoeven (1982). The shared responsibility for the patient - the GP's for the diagnosis and the physiotherapist's for the treatment - is one of the principal characteristics of the relationship between the two professionals. In this respect their relationship differs from that between a general practitioner and a medical specialist. Once a patient is referred to the medical specialist, the GP is no longer involved. Once a patient is referred for physical therapy this clearly should not be the case.

Before starting the therapy of a publicly insured patient, an authorization from the insurance organization is necessary. Generally, these authorizations are granted for twelve combined-treatment sessions (a combined-treatment session consists of massage and/or exercise therapy and the application of a physical agent). Physiotherapists in primary care are remunerated on a fee-for-service basis. In the case of a privately insured patient, fees are directly charged to the patient who then, just as

in the case of visits to a GP, depending on his insurance policy, can claim reimbursement. For the treatment of publicly insured patients physiotherapists declare their services directly to the insurance organization. The fee structure is based on the amount of time the different kinds of services are supposed to take; more time-consuming services are costed at a higher level (Curfs et al. 1986; Van Doorslaer et al., 1987).

12.2.3. Research question and hypotheses

In an analysis based on data from the sentinel practices the number of referrals based on the weekly recording of referrals and the actual composition by age and sex of the practice population and of referred patients were available. The age and sex composition is by far the most important determinant of the variation in the number of referrals. If the age and sex composition is taken into account, the variation is reduced to 60% of the original variation (Kerssens et al., n.y.). Still, considerable differences remain between practices in the number of referrals to physiotherapists. Removing the influence of age and sex is a shortcut for controling for situational differences between practices in health status of the practice population. The remaining variation is supposedly related to the decision process of the general practitioner in interactions with patients and physiotherapists to whom he refers, and under structural and situational conditions of practice.

To explore the remaining variation we pose the following question:

Is there a difference in the pattern of referral indications between general practitioners who have a relatively high referral rate and those with a relatively low referral rate, when the influence of the age and sex composition of the practice is checked for?

There are two possible answers to this question, and in both cases we are interested in hypotheses for explaining the result.

If it turns out that GPs with a high number of referrals have a different pattern of indications compared to the GPs with a low number of referrals, our hypothesis is that the high-referring GPs see a broader range of conditions of patients as indications for referral to physical therapy. The decision to refer the patient is more often a relevant alternative for these general practitioners. The pattern of indications should

differ in the sense that more patients are referred for conditions that are less commonly accepted as indications for physiotherapy and therefore fall out of scope as an alternative for other GPs.
When no difference in the pattern of referral indications between the high-referring and the low-referring group is found, this implies that high-referring GPs refer more patients in all categories of the referral indications. The hypotheses to explain this result refer to the decision making situation (patient pressure, cooperative relations with physiotherapists, pressure of a busy practice) and to the perception and knowledge of GPs (evaluation of patients' complaints, knowledge of physiotherapy). Our first hypothesis for explaining this result (if it proves to be true) is that GPs with a high referral rate are more inclined than their low-referring colleagues to accede to their patients' demands to be referred to physical therapy. Our second hypothesis, which does not exclude the first, is that the high-referring GPs are possibly more generally inclined to refer patients for physical therapy, whereas other GPs confronted with the same conditions of the patients, would wait and see or first try some other therapy (rest, a diet, exercise, a prescription). It then of course may be asked why these GPs are more inclined to refer. We shall explore five possible explanations, based on: a different judgement of patients' complaints, a clinical approach rather than a general medicine approach, the pressure of a busy practice, relations with physiotherapists and knowledge of physical therapy.
First of all, the GP's evaluation of the complaints of the patients as having a somatic or also a psychosocial background might influence his inclination to refer patients for physiotherapy. Evidence on the influence of these kinds of judgement on GPs' decisions is provided by Verhaak (1986). The hypothesis is that high-referring GPs judge complaints of their patients more often as somatic problems and therefore belonging to the field of competence of physiotherapists. Our data pertain only to referred patients. However, research indicates that the evaluation of complaints in terms of somatic or psychosocial problems is a (rather) stable characteristic of the GP, related to his style of working. A bias towards judging complaints as somatic problems is reflected by a clinical approach. Grol (Grol, 1983) developped a scale that measures the attitude of general practitioners to share responsibility with patients, revealing a

general medicine or, in contrast, a clinical approach. We hypothesize that high-referring GPs will exhibit a clinical approach compared to low-referring GPs, who will display a more general medicine approach.(1)

As far as the pressure of a busy practice is concerned, we hypothesize that the relation between the number of patients on the general practitioner's list and the number of patients referred to physiotherapy is positive and conditional on the number of patients on the list. The fourth and fifth explanations relate to the fact that high-referring GPs are more knowledgeable about physical therapy and that GPs who know more about physical therapy are more inclined to refer patients. This could be caused either by closer cooperation with physiotherapists or by a generally higher level of knowledge about the possibilities of physical therapy. There is evidence that knowledgeable physicians refer more patients and that they tend to be prescriptive, directing the physiotherapist as to what treatment to apply (Uili et al., 1984). However, if high-referring GPs cooperate more closely with physiotherapists, this might also result in a less directive style of referral because of a relation of mutual trust.

We summarize the preceding discussion in Figure 12.2.

Fig. 12.2: Summary of research question and hypotheses

Research question	Hypotheses
Do GPs with high and low referral rate differ in pattern of indications?	YES - high-referring GPs have a broader range of indications
	NO - high-referring GPs are more inclined to accede to patient's demands - high-referring GPs are generally more inclined to refer - high-referring GPs evluate complaints more often as somatic - high referring GPs dispaly a clinical approach - high-referring GPs have busier practices (list size) - high-referring GPs cooperate more closely with physiotherapists (referrals less directive) - high-referring GPs know more about physiotherapy (referrals more directive)

12.2.4. Methods

During 1985 participants in the Sentinel Stations Network recorded a number of data on each referral for physical therapy. The sex, age and insurance status of all referred patients were recorded on a weekly recording form. A distinction was made between new referrals and referrals for continuation of a current treatment. This distinction relates to regulations of the public health insurance system, requiring a new referral and authorization, usually after twelve combined treatment sessions (Van Doorslaer et al., 1987). New referrals are defined as being the first time a patient is referred or referrals after a period free from complaints.

Additional data on each new referral have been recorded:

- the GP's diagnosis of the patient's complaint (later coded in the ICD-9-CM) (ICD, 1979);
- source of the initiative for the referral (a five-point scale ranging from the GP's initiative to the patient's initiative);

- the extent to which psychosocial aspects are involved (a six point scale developed by Verhaak) (Curfs et al., 1986);
- whether or not a treatment was prescribed and, if so, what treatment;

The GPs also completed a questionnaire mailed to them. The following topics are of interest:

- the range of indications that GPs regard as suitable for referral for physical therapy, measured by their response to 20 short case descriptions;
- closeness of cooperation with physiotherapists;
- the GP's own evaluation of his knowledge of physical therapy;
- clinical versus general medicine approach.

In short, there are three kinds of data: all recorded referrals, additional data on new referrals, and the questionnaire. Data on all recorded referrals were only used to standardize the referral rates. Since the composition of the practice population in terms of age and sex is known, we are able to standardize referral rates and thus establish whether or not a GP refers more or less than is to be expected from the age-sex distribution of his patients (2).

To answer the question concerning the pattern of indications, we aggregated the number of referred patients with a specific diagnosis and made a percentage distribution of the 25 most common diagnoses for each general practitioner. GPs who refer a relatively low number of patients exhibit many zeros in this distribution. This impedes our analysis to a great extent. We solved this problem by forming three groups of GPs. In the "low" group we categorized general practitioners (totalling 14) who referred fewer patients than would be expected from their practice population. GPs who referred about the same number of patients as expected (totalling 15) fell into the "medium" category. The "high" group consists of GPs (totalling 16) who referred more patients than expected.

Diagnoses were classified in the International Classification of Disease and Causes of Death, the ninth revision, Clinical Modification. The ICD-9-CM was selected because it differentiates between more disorders and diseases than any other classification. From a physical therapy point of view, the ICD is not completely adequate (Curfs et al., 1987). The main criticism is related to the section on 'dorsopathies'. This inadequacy has been solved by classifying some disorders in the sections on

'arthropathies' and 'rheumatism' with additional digits to indicate the location (spine, sacroiliac joint and back).

Statistical analysis

In the following section results are presented mainly as percentages. Percentages have the advantage of being easy to interpret. The practical significance of differences is easily determined by the use of percentages. The reader may wonder whether the differences are statistically significant. It is important to keep in mind that we have data on the level of new referrals and on the level of general practitioners. Statistical significance depends on the way in which we answer the research question and hypotheses. When we give answers in terms of subgroups of more than 6000 new referrals, all the differences (even small and unsystematic differences) are statistically significant. See for example Bakan (1966) for illustations of this phenomenon. The main research question and the first three hypotheses are answered in terms of additional data on new referrals. For these hypotheses, statistical significance is an inadequate criterion.

When we give answers in terms of subgroups of general practitioners, only very large differences (more than 40%) are statistically significant. So in this case statistical insignificant differences still can be of considerable practical interest. The last four hypotheses are answered in terms of GPs. We therefore do not use significance in the statistical sense as the criterion of acceptance or rejection of our specific hypotheses. We shall, however, use the sign test to check whether the number of confirmed hypotheses, based on the GPs as units of observation, is higher than can be expected by chance.

12.2.5. Results

Our GPs' diagnoses relate to 6397 new referrals (diagnoses were missing for a small number of patients). More than 600 diagnoses were differentiated in the ICD-9-CM classification. Diseases or disorders of the musculoskeletal system are most frequent in more than 90% of the patients. To reduce the vast number of diagnoses, without simplifying it too much from a physiotherapist's point of view, we have used the 25 most common diagnoses (or small groups of diagnoses). Table 12.9 gives

the percentage distribution of these diagnoses for high-, medium- and low-referring GPs.

Table 12.9: Indication for referral in percentages for three types of general practitioners according to their standardized referral rates. Figures relate to percentages of new referrals

Referral rate Disorders	low %	medium %	high %
muscle/soft tissue (back)	10%	12%	11%
muscle (low back)	10%	12%	11%
enthesopathy (shoulder)	8%	7%	6%
cervico-brachial syndrome	5%	3%	4%
spondylosis	3%	5%	2%
intervertebral disc	5%	3%	2%
enthesopathy (elbow)	3%	3%	3%
curvature of spine	2%	3%	3%
pain in spine/sacro-iliac	3%	3%	3%
sciatica	2%	2%	3%
respiratory system	4%	2%	2%
muscle/soft tissue (shoulder)	1%	3%	2%
muscle/soft tissue (pelvic)	2%	2%	2%
neuritis	2%	3%	1%
osteoarthrosis knee	3%	2%	2%
contracture spine	1%	2%	2%
sprains and strains of ankle	1%	1%	2%
derangement knee	1%	2%	2%
migraine/headache	1%	2%	2%
osteoarthroship	1%	1%	1%
enthesopathy (knee)	1%	1%	2%
enthesopathy (ankle)	1%	1%	1%
enthesopathy (hip)	1%	1%	1%
hyperventilation	1%	1%	1%
muscle/soft tissues (neck)	1%	1%	1%
classified elsewher	28%	26%	30%
total	100%	100%	100%
N (new referrals)	1130	1756	3606
N (practitioners)	14	15	16

Inspection of the table shows that the differences between groups of GPs are very small and not systematic. The answer to the central question is therefore that there is no difference between high- and low-referring GPs in the pattern of referral indications (3). Given this answer, there is no reason to suppose a different range of referral indications between high- and low-referring GPs. Therefore, there is also no point in exploring the hypothesis that high referring GPs regard a broader range of indications as fit for referral to physiotherapy.

To account for the fact that there is no difference in referral pattern, we have first of all hypothesized that high-referring GPs are more inclined to accede in to their patient's demands. To test this hypothesis we looked at the percentage of referrals that were made on the initiative of the patient rather than of the GP (scale values 4 and 5). This percentage is 40% for the low-referring group, 37% for the middle group and 39% for the high-referring GPs. This hypothesis cannot be accepted.

To find out whether high-referring GPs have a different way of evaluating their patient's complaints, we looked at the percentage of referrals in which the GP evaluated the complaints as purely somatic (scale value 1). For the low-referring group of GPs this percentage was 48%, for the middle group 51% and for the high-referring group 60%. The differences were as predicted and the middle group is indeed in between the two extremes. It should be noted that the hypothesis was more broadly formulated than the data used to test it; the hypothesis was that high-referring GPs generally evaluate the complaints of all their patients (not only those who were referred) in more somatic terms. The hypothesis that high-referring GPs exhibit a clinical approach in contrast to the low-referring group was not rejected, although the difference in this respect was only small: 38% of the high-referring group, 31% of the medium and 31% of the low-referring GPs revealed a clinical approach. These results indicate that the evaluation of referred patients' complaints on the dimension somatic-psychological has more influence on the referral rate than the GPs approach.

The next hypothesis links list size to referral rate. List sizes have been classified into small, medium and large. The association of list size and referral rate proved to be slightly positive; 44% of the high-referral group have large practices and 29% of the low-referral group have large

practices. The medium group was not quite consistent in this respect, because only 13% had large practices. There is some support for this hypothesis (4).

The next hypothesis stated that high-referring GPs cooperate more closely with physiotherapists. Cooperative relations between the GPs and physiotherapists in relation to the referral rates was tested in four different ways:

- the number of physical therapy practices to which patients are referred;
- the priority of working with physiotherapists as compared to other primary care professionals (district nurse, social work);
- the extent to which discussion of referred patients' cases takes place;
- the presence of a physiotherapist in the GP's social network.

We would posit that a GP with close cooperative relations with physiotherapists refers to a small number of physical therapy practices, gives high priority to working with physiotherapists and communicates with the physiotherapist when he refers a patient. Finally, the presence of a physiotherapist in his social network covers the relationship from a non-professional point of view. High-referring GPs should display more social relations with physiotherapists than their low-referring colleagues.

Our data show that 62% of the GPs in the low-referring group refer their patients to three or fewer practices, whereas 44% of the GPs in the high-referring group refer their patients to three or fewer practices. This result contradicts our hypothesis that high-referring GPs have closer relations. It might be suggested that high referring GPs, to meet the demand they create, need more than a few physiotherapists on call. But because the average physical therapy practice with 2 or 3 physiotherapists can easily handle the demand of 3 or 4 general practitioners, this suggestion seems very unlikely. As far as the priority of cooperating with physiotherapists and discussing patients' cases is concerned, our assumptions are confirmed: 52% of the high-referring GPs state that this priority is high in respect of 39% of the low-referring GPs. 63% of the high-referring GPs give the physiotherapists background information on the patients referred compared to 36% of the low-referring GPs. When we look at the presence of physiotherapists in the GPs' social network, 72% of the GPs in the high-referring group have a physiotherapist in their social network, compared to 51% of the GPs in the low-referring group.

Finally, we look at the directiveness of referrals. According to our hypotheses high-referring GPs were either more directive (when high-referring GPs are also more knowledgeable about physiotherapy) or less directive (when high-referring GPs work closer together with physio-therapists). The percentage of referrals without a prescribed treatment turned out to be 21% for the low-referring GPs, 25% for the middle group and 51% for the high-referring group.
This means that our assumption about high-referring general practitioners and the mechanics of mutual trust is not contradicted. High-referring GPs both have a closer relation with physiotherapists and are less prescriptive in their behaviour towards physiotherapy. To see whether knowledge of physiotherapy is an influence on its own, we present the last percentages. 72% of the high-referring GPs consider their knowledge of physical therapy satisfactory and 47% of the low-referring group make a similar assessment of their own knowledge. The medium group is not quite consistent in this respect, since 75% of the GPs regard their knowledge as satisfactory. We conclude that our assumption about knowledgeable GPs is confirmed. However, the hypothesis that the high-referring GPs are in consequence more directive in their referrals is not confirmed.
Table 12.10 summarises the information on the hypotheses discussed in the above text and gives an evaluation of the hypotheses.

Of all hypotheses based on the GP as our unit of observation, only one is clearly rejected. The difference for the hypothesis on clinical approach is relatively small, but in the predicted direction. The probability of six out of seven hypotheses falling in the predicted direction by chance is .06.

Table 12.10.: Evaluation of the hypotheses. The three columns with percentages relate to three types of general practitioners according to their standardized referral rates

Hypothesis confirmed/rejected				C/R
Referral rate	low %	medium %	high %	
hypotheses answered in terms of new referrals				
indication for referral (e.g. class. else)[a]	28%	26%	30%	R
patient-initiative	40%	37%	40%	R
purely somatic	49%	51%	60%	C/R[b]
N (new referrals)	1130	1756	3606	
hypotheses answered in terms of general practitioners				
clinical approach	31%	31%	38%	C
large practice	28%	13%	56%	C
refers to < 3 practices	62%	43%	52%	R
priority high	39%	43%	52%	C
communicates	36%	64%	63%	C
friend	51%	54%	76%	C
knowledge satisfactorily	47%	75%	72%	C
N (practitioners)	14	15	16	

a) This is one of the rows of table 12.9 because we cannot reproduce the complete table in this evaluation.

b) Given the fact that high referring GPs have closer relations with physiotherapists, we expected more non-directive referrals. This hypothesis is confirmed. But given the fact that high referring GPs are more knowledgeable about physiotherapy, we expected less non-directive referrals, which is not confirmed.

12.2.6. Discussion

With regard to our main research question, we conclude that high-referring general practitioners do not refer qualitatively different categories of patients (in terms of disorders) than their low-referring colleagues. To explore in which way high-referring GPs differ from low-referring GPs, we found that high-referring GPs are no more inclined to accede to their patients' demands. High-referring GPs evaluate their patients' complaints more as purely or mainly somatic and are slightly more clinical in their approach. Furthermore, the results point to the fact that high-referring GPs have busier practices, have a closer cooperative relationship with physiotherapists and evaluate their knowledge of physiotherapy as more satisfactory than low-referring GPs.

In our analysis we did not bother much about statistical significance. Our main research question was answered in terms of subgroups of patients totalling up to more than 6000. With such a large number even small and unsystematic differences are statistically significant (Bakan, 1966). The reader can judge the practical significance of these differences by examining tables 1 and 2. On the other hand, some of our hypotheses were answered in terms of subgroups of general practitioners. With only 45 GPs none of the differences were statistically significant but some of them were, at least in our view, of practical significance. The small number of GPs made it also impossible to apply multivariate statistical analysis, so that we were not able to determine the relative importance of our independent variables in a more comprehensive way. This will await further analysis in an ongoing project (Foets et al., 1986).

In general it may be said that the variation in referral rates is generated by differences in the practice population and by differences in characteristics of general practitioners (leaving aside structural factors such as supply of physical care (5)). In this chapter the emphasis has been on characteristics of general practitioners. We did not consider a principal factor like morbidity in the practice population to be one of the explanatory factors for variation in referral rates. As the morbidity of the practice population is unknown, we used the age-sex distribution as a proxy. Given the fact that this proxy reduced the variation between general practitioners to a considerable extent, the question arises as to how much of the remaining variation could be explained when morbidity

is checked. Furthermore, our data showed that high-referring general practitioners judged their patients' complaints in more somatic terms than low-referring GPs. These judgements were only slightly associated with a general bias towards expressing complaints in somatic terms (the clinical approach). An alternative explanation is that high referring GPs see more patients with musculoskeletal disorders and consequently refer more to physiotherapists than their colleagues, an explanation which cannot be checked.

In this section we shall briefly consider two items. The fact that the presence of a physiotherapist in the GP's social network is associated with a relatively high number of referred patients does not seem to be very useful and even irrelevant (De Wolff, 1989). But observations like this point to the limits on policy-making. If variation between general practitioners in the number of referred patients is caused by factors like this, an attempt to influence this variation is beyond the scope of legislation or incentive programs.

Ritchey et al. (1989) conclude: "... greater professional autonomy is likely to be acquired by physical therapists making physicians aware of the extent of therapists' capabilities." This conclusion was reached on the basis of the fact that knowledge of the concrete pragmatic services that physical therapists can provide is the decisive variable in increasing referrals at all levels of competency. Our data too, showed the knowledgeable general practitioner as a relatively high referrer. Most general practitioners judge their knowledge after graduating from university as unsatisfactory (Kerssens et al., 1987a). Their knowledge improves with their experience and they regard the physiotherapists as their main source of information. This explains why knowledge and close cooperation covary with each other. Of course, the validity of a GP's own judgement on his knowledge of physical therapy can be questioned. Stanton et al., 1985, show, however, a deficit in resident physician's knowledge of physiotherapy in a more valid way. If we assume that GPs can accurately judge their knowledge in this respect, the policy of improving this knowledge seems worthwhile.

There are several ways in which knowledge of physical therapy options can be transferred to general practitioners. Of course, a better training in

physical therapy is one option. Uili et al. (1984), however, state that physicians with more knowledge of physical therapy procedures are those with more years in the field, so intervention in the medical school is less reasonable.

Another option is to carry out clinical trials in physical therapy to ascertain the effects of physiotherapy for different kinds of patient. The outcome of such studies should then be communicated to general practitioners to enable the provision of care in a standardized form.

Yet another option is to create conditions in which the general practitioner and the physiotherapist can come to a better understanding of one other. Lack of understanding is reported in Bourne, 1978, in an evaluation of a physiotherapy seminar at which difficulties with doctors rather than patients were conspicuous.

In the present situation the physiotherapists' main emphasis is on the treatment of patients. In most cases this treatment will take approximately 4 - 8 weeks. When the treatment is finished the physiotherapist sends a report to the GP. Feedback on the referred patient will not come to the attention of the GP until much later. This feedback loop can be shortened by sharing the responsibilities for the indication for physical therapy more equally between GP and physiotherapist. In this option a patient is not referred until both GP and physiotherapist examine the patient and consult one other about the best treatment for the patient. This strategy should not be followed automatically; it should be applied only in cases in which the GP is uncertain as to whether physical therapy can improve the patients' health status or not. If the former's the case (according to both GP and physiotherapy) under-utilization of physical therapy is reduced. But if both GP and physiotherapist conclude that there is little chance that physical therapy will improve the patients' health status, they should refrain from treatment to reduce over-utilization. This means a reconsideration of the process of supplying physical therapy care in the sense of extending the options of referral for consultation purposes only. In this process the number of prescriptive referrals probably decreases, which might enhance the professional status and authority of physiotherapists.

12.2.7. Summary

This article studies the relation between the number and the type of patients that general practitioners refer for physiotherapy. Patients are described in terms of their health problems by means of a diagnosis.
The study population consists of general practitioners participating in the Netherlands Sentinel Stations Network. These general practitioners recorded data on all referrals to physiotherapy during one year. In addition they answered questionnaires on the way they view their job and their relations with physiotherapists.
Results show that the pattern of indications for referral for high-referring GPs does not differ systematically from the pattern for low-referring GPs. Furthermore, results point to the fact that high-referring general practitioners evaluate their patients' complaints more as purely or mainly somatic. These evaluations were not associated with a general bias towards expressing complaints in somatic terms. High-referring general practitioners were no more inclined to give in to their patients' demands, had busier practices, closer relations with physiotherapists and viewed their knowledge of physiotherapy as more satisfactory than low-referring general practitioners. Some policy implications are discussed in respect of these results.

Notes

1. This is a Likert-type scale which contains nine items, originally developped by Grol (1983). In our sample the reliability (Cronbach's alpha) of this scale is 0.70, as shown by Schrijnemaekers (1987).
2. The expected number of patients were calculated as follows. We formed proportions by dividing the number of referred patients (for all the GPs together) by the number of patients on all the practice population lists together for each sex-age category.
   With the assumption that GPs do not differ in their referral strategy, these proportions are the same for each GP. We then calculated the expected number of referrals by multiplying these proportions by the number of patients on each of the GPs' list for each sex-age category. Finally, we computed the sum of these expected numbers for each GP.

We then compared the expected number of referrals with the recorded number of referrals.

3. We have come to this conclusion in spite of the statistical significance of the differences. Owing to the overwhelming power of our analysis, even very small differences are significant.

4. Owing to small power these differences are not statistically significant.

5. In an analysis of both structural factors and characteristics of GPs in relation to the number of referrals to physiotherapists, the accessibility of physiotherapeutical care and the type of practice in which the GP works showed a relation with referral rates (Kerssens et al., 1987a; Groenewegen et al., 1989).

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13. THE DUTCH SENTINEL PRACTICE NETWORK; LESSONS FROM THE PAST AND CAVEATS FOR THE FUTURE

J. van der Zee and A.I.M. Bartelds

What do Abortion, Accidents, Alcoholism, Concern about Aids, Depression, Diabetes, Dog bites, Discharged psychiatric patients, Malignancies, Measles, Parkinson's disease, Suicide attempts, Psoriasis and the prescription of Rohypnol have in common?
The answer is easy: these subjects were recorded by the Dutch sentinel practice network in the period 1970 - 1988, hence in one way or another the recording of these events had some relation to public health policy. The fact that a general practitioner recorded these items during the contact with his patients had some significance.
Sometimes the focus was on the general practitioner himself and his activities. In that case topics recorded have included the number of cervical smears (1976 - 1989), the number of prescribed anti-hypertension drugs (1976), tranquillizers (1972 - 1974), peculiar sleeping pills (Rohypnol, 1987 - 1988), the number of referrals to hospital consultants (1984), referrals to physiotherapy (1985), referrals to speech therapists (1989), all examples of recorded activities in general practice in which the general practitioner himself was the subject of study.
In most cases, however, it was not the activities of the general practitioner in which policy was interested, but his perception of the medical and social problems that patients in his practice presented at his surgery. Most of the topics listed in the appendix to Chapter 1 deal with the incidence or prevalence of morbidity in general practice.

Information from general practice versus other sources of information about health and illness

Why should public health policy be interested in epidemiological information from general practice? This becomes clear when one considers the traditional sources of epidemiological information relevant to public health policy. These are:
- mortality statistics;

- clinical morbidity, i.e. hospital morbidity such as discharge diagnoses;
- population surveys, to be divided into HES (Health Examination Surveys) and mass-screening programmes on the one hand and Health Interview Surveys (HIS), household surveys with subjective information on morbidity and well-being, on the other.

All these sources have explicit advantages and disadvantages as tools for public health policy. Let us focus on the disadvantages of each.

Mortality statistics provide information about causes of death. There are two problems with this: the first problem is that there are many diseases and handicaps that are rarely relevant as causes of death, but cause much inconvenience among the population (like diseases of the musculo-skeletal system), and secondly, in many cases there is no very clear cause of death when people suffering from multiple pathology die of old age in their home environment.

Clinical morbidity and hospital morbidity have some disadvantages too. The first is that usually the information cannot be attributed to persons or a population. Every hospital admission or discharge has a diagnosis attached to it, but double or triple admissions for the same person with the same diagnoses cannot usually be traced. Moreover, in many countries (like the USA, France, Germany, the Netherlands) hospitals have a floating adherent population; an obstacle to epidemiological studies. Thirdly, hospital information, like mortality statistics, concerns the more serious types of illnesses and gives no complete picture of morbidity in the population.

The last category, **population surveys**, consists of two sub-categories. The best-known category is the Health Interview Survey or Household Survey, which contains information supplied by the population on their subjective description of illnesses and well-being. The other type, the Health Examination Survey, in which this subjective information is completed with objective diagnostic information or the information has been checked by a medical professional, requires a gigantic organization and huge resources.

The general practitioner gives in most cases (certainly in countries where the access to specialist medical care is channelled via a visit to the GP, as in the UK and the Netherlands) the first medical professional judgement on the health problems of his patients. Usually he has knowledge of hospital-based information on his patients but many of the problems presented to him are handled within general practice itself.
The general practitioner has a strategic position with regard to epidemiological information from the group of patients for whom he is responsible.
However, this strong point is also the greatest weakness of the information he furnishes. A general practitioner is usually dependent on what is presented to him; there is a clear selectivity in the proportion of problems presented and there is a selectivity in the doctor's labelling of the problems that the patients present to him.
In Chapter 3 (recording habits) and in the chapter about contacts with discharged psychiatric patients (Chapter 9.5) the possibly selective perception of the general practitioners has been discussed; we shall return to that later.
The specific position of the general practitioner versus the dominant sources of information for public health policy (mortality statistics and clinical morbidity) is easily found again in the choice of the topics recorded.

Reasons for inclusion of a topic in the weekly list

Sometimes a reason for admitting a topic to the annual list is that there is a suspicion that the usual source of information does not cover the whole domain or is selectively biased. An example of this, recorded in 1978 and from 1983 to 1985, was the idea that some myocardial infarctions did not reach the clinic, not because patients die before they see a hospital, but because they are treated at home. The same suspicion is the origin of the recording of malignancies; there were severe doubts whether the official recording of malignancies covered all cases. In the case of myocardial infarction, further studies revealed (Chapter 6) that home treatment was an extremely rare phenomenon, but the idea that there is more than the clinic was one of the reasons for putting it on the list. The same goes for

accidents and accidents in the home environment. Here the role of general practice in the treatment of accidents was studied because there were indications that first-aid clinics covered only a selective part of all accidents.
The major reason for including the number of injuries of the musculo-skeletal system in the list in 1984 stems from a request by the author of the standard clinical textbook, who received criticism from general practitioners about the fact that he had neglected this domain in his book. Thus in some cases the sentinel practices either supplement existing clinical or mortality data or point to the fact that the information from the clinic is biased and therefore forms an inadequate source for public health policy. Fortunately this is not the only "raison d'être" of the sentinel practices. In many cases information from general practice is used as information in itself. The general practitioner is regarded as a good look-out for morbidity in the population. All recordings of infectious diseases can be grouped under this heading. The direct relation of a general practitioner with his circumscribed practice population makes general practice very suitable for the study of the incidence of illnesses of which either it is not the absolute incidence that is all-important but relative differences over time (as in the case of infectious diseases like influenza, rubella, measles etc.) or the fact that cases can be traced back to a well-defined population is relevant too. General practice is for instance highly suitable for case control studies. In the history of the Dutch sentinel practices it has been used once in this respect (to find case controls for new cases of Parkinson's disease) but the fact that not only the age and sex of the population are known, but also the place of residence, the neighbourhood and even the medical habits of the general practitioners makes general practice a unique source of case control studies.

Maintaining a national network is cost-effective

Sometimes the interest of public health policy in morbidity and general practice is not caused by a pure interest in morbidity statistics in general, but can be traced back to an urge to have some base line data in order to judge whether a certain incident is an extreme case or the tip of an iceberg. For public health policy makers it is crucial to know whether concern about Aids is an exclusive phenomenon of big cities or has

spread to the provinces as well. The same goes for the prescription of the drug Rohypnol; is that a widespread phenomenon or just a media incident? The existence of a national network could prevent a policy based on incidents.

This is particularly important for "sensitive areas" in health policy, where even simple descriptive data are very hard to obtain. The Dutch sentinel network has a long tradition of providing information on sensitive policy subjects. From 1970 to 1975 requests for abortion were recorded, but from 1971 to 1977 actual figures for abortus provocatus were produced by the participating doctors. Suspicion of child abuse is a similar topic, but the most politically sensitive topic is the recording of requests for euthanasia since 1976. With the information provided by the sentinel practices, the political discussion about euthanasia can be guided away from horror-stories and incidents to basic descriptive information.

Strong and weak points of the sentinel practices network method

Strong points

A. A very strong point is that an **existing network**, once created, is extremely cost-effective, although ad hoc studies and ad hoc recruitment could be more adequate in some cases. But the trouble of recruiting a sufficient sample of practices, the trouble of counting, recording, verifying and checking the practice population and the trouble of creating a positive attitude towards accurate and meticulous recording require such an effort that ad hoc studies are deemed to suffer from haphazard participation.

B. The judgement of a general practitioner, is usually the first professional judgement of the medical nature of the patients' problems and the judgement that is closest to the onset of physical and mental problems in the population. Here too, cost-effectiveness is high, compared to the efforts that coincide with ad hoc studies, for which professional examination of a population's complaints has to be organized separately from the existing medical services.

C. The general practitioner can act in several ways as a source of information for public health policy. Firstly, by showing what he is

doing, as a vital key person in a health care system, especially in health care systems where he has a typical gate-keeper function.
Secondly, by professionally assessing and labelling the complaints, illnesses and problems presented at his surgery and thirdly by lifting a seal - under strict conditions of confidentiality, anonymity and indemnity - on matters of life and death in his practice. The terms suicide, euthanasia, abortion, concern about Aids speak for themselves.

Weak points

The doctor himself is both the strongest and weakest point in the sentinel-practice approach. Chapter 3 endeavours to explain general mechanisms and recording habits of the spotter physicians. The most striking element of the recording habits of spotter physicians is this variance in recording. There is no system in that, or rather none that has been discovered. There are no systematically low or under-reporters on all subjects. It is not that obvious. Nevertheless, variance among doctors and patients is considerable and remains so after the age/sex composition of the practice population has been accounted for.

The case of the vanished psychiatric patients

A peculiar phenomenon is that usually frequencies reported by the spotter physicians are lower and sometimes much lower than expected. In Chapter 9.5 (on GPs' care of discharged psychiatric patients) only a quarter of the expected discharged patients turned up in the doctor's surgery.
A result like this induces a debate between the NIVEL staff and the Indignant Investigator, who questions the reliability of the recording by GPs, which goes as follows:
I(ndignant) I(nvestigator) : Your sentinel practices do not pay enough attention to my subject. There is severe under-reporting.
N(ivel): Are you sure your expectations are all right?

a) Your expectations stem from discharge rates, not discharged persons (you do not take readmissions into account).

b) Not all discharged patients return to primary care (death, nursing homes).

c) This might be a group that has somehow lost its roots; being on the GP's list requires some stability (a permanent residence etc.).

d) You might be right.

I.I.: Ok, let's forget the 25%, but even then, we should expect 50% higher rates.

N. : Let's change the recording system and start a monitoring of discharge letters and give an extra alert (letter, telephone) not to miss a case.

I.I.: We'll wait and see.

AFTER ONE YEAR - no improvement. Dialogue starts again. NIVEL is more confident of the results. The investigators are still suspicious of GPs' recording habits.

Now we have a basis for a serious in-depth study of the relations between psychiatric care and general medical care, from which it might turn out that both (adapted) expectations and results are correct and that indeed a considerable group of psychiatric patients does not return to regular general medical care.

The suspicion of under-reporting possibly caused by the doctor's selective perception, however, does not disappear. As has been shown in Chapter 3 on the recording habits of general practitioners, it has some serious consequences for the 'ideal' size and composition of the sample of practices and for the caution one has to observe before conclusions on trends in time can be drawn.

Recommendations

Let us repeat the conclusions and recommendations of Chapter 3 (section 3.5).

- If one's sole and only interest is one single national figure, then the now existing 1% sample of practices is sufficient, but for any subdivision - regional, urbanisation, type of practice - the minimum subset is 25/30 practices - that is to say, if one wants to use the sentinel figures for

displaying rough regional differences (north, south, east, west) a minimum of 100 practices is required.

- Sentinel practices are not suitable for the recording of phenomena with a very low incidence. At least 4 or 5 cases per year in a standard single-handed practice (2500 inhabitants) should be expected and even then, in order to derive statistically reliable figures, one should extend the recording period to three years and one should check (statistically) whether an average trend is found again at the level of a considerable number of separate practices. And, before that, data should be corrected for missing periods and less relevant denominators.
- This book is proof that the sentinel recording system is suitable for recording not only infectious diseases but also many other policy-relevant phenomena - varying from chronic illnesses (at least the common ones) to performance indicators of general practitioners like referral rates. One should bear in mind, however, that the original criteria for inclusion of a subject on the weekly list remain as valid as when they were formulated:
- clear-cut description and definition of the subject;
- should fit easily into the GP's daily work pattern.

With these criteria and the results of the statistical investigation into the reliability of the recording, the future of the sentinel network is as promising as the past has proved to be fruitful.

Future developments

The sentinel practice recording activities have not been changed since 1970. The Dutch doctors still indicate their cases by Stone-Age primitive tallying. Data processing at NIVEL has changed considerably, allowing refined statistical analyses that were not possible when the project started. For the future network the following questions should be answered:

1. are there more efficient ways of data production and transmission? (The question is rather rethorical: yes, there are.)
2. should we stick to selective recording or change to recording all morbidity and (even) GP activities?
3. is it sufficient to have an age-sex register as a basis for epidemiological data; should it be extended to information on social class/occupation, household composition/marital status, ethnicity/nationality in order to fit

better into national health policies such as reducing inequalities (or differences, as Donald Crombie correctly stated; Crombie, 1984) in health and detecting groups at risk?

4. How does the national network relate to several existing and emerging regional networks?

1. Electronic communication

In the editorial of the American Journal of Public Health it was called the French connection: a description by Valleron and others of their electronic network of recording general practitioners (Valleron et al., 1986) in France aided by the futuristic facilities of the French Minitel communication network. By connecting general practitioners to a central data base, communication could take place at the moments that suited the doctors best while on the other hand the participants could have immediate feedback of their rates compared to their colleagues and the national or regional average. Health care policy-makers have direct access to aggregated data, too. They can, on direct request, see how a flu epidemic starts in the south-east and spreads to the north-west by receiving maps with calculated rates.

Both elements, facilitated communication and direct access to aggregated data for health care policy and health research, can, as the French example shows, be integrated into a new network of electronic mail.

2. Comprehensive or selective recording

The answer to the second question depends on the one hand to a considerable extent on technical developments (will there be manageable data-base system suitable for general practice?) and on the other on the perhaps fundamental but in any case practical incompatibility of the information requirements for common medical practice and research or policy. Information recording for research purposes requires much more precision and comparability than recording for standard purposes of the daily medical practice. A typical feature of the items recorded in the sentinel network is that very often additional questions have to be answered by the participants. Thus it is impossible that comprehensive recording could ever replace selective recording and that one just should

'tap' the relevant items from a comprehensive data base provided by the GP in his surgery.
Apart from practical problems it is an illusion to think that information relevant to research or policy is just a selection and aggregation of primary process data. Many data cemeteries have their origin in this mistake.

3. Age/sex or more

The British National Morbidity Surveys are unique in the sense that they (still) manage to link census data to medical records in general practice (OPCS, 1982).
Apart from the fact that the last Dutch census took place in 1971 (mainly because of accumulating protests of the privacy- conscious population), linking of census data and morbidity records in general practice would cause a wave of objections and emotional protests.
Nevertheless, there is a strong desire for additional information on the epidemiological denominator; extension of the standard population characteristics to occupation/social class would yield detailed information on socio-economic health differences. A similar type of reasoning goes for the inclusion of family composition/marital status and, although politically sensitive in the Netherlands, for the inclusion of ethnicity/nationality as background information on the practice population.
This could increase the relevance to public health policy (at least for the Dutch policy aiming at the reduction of health inequalities), but it would complicate data collection to a considerable extent.
The creation and maintenance of a population data base with five instead of two demographic characteristics would cost a fortune in obtaining and especially maintaining the required information.
It sounds so simple and yet it is so difficult to collect even a limited set of population characteristics. But, when it succeeds, it has a great epidemiological potential.

4. National and/or regional networks

In the Netherlands regional public health authorities (BaGDs - Basic health services) have a certain responsibility for collecting and processing information on the health of the population for whom they are responsible.

One way, and an increasingly successful one, to achieve this goal is by creating a regional general practice sentinel network. The different regional networks are not connected and there is no coordinating agency to tie them together. Coordination would be contradictory to the need for **regionally** relevant data: HIV tests in big cities and dog-bites in rural areas.

But every regional health officer feels inclined to compare his data with some average or some standard, so that there might be a useful exchange of information between a national network (as a reference) and the local network.

A futuristic vision of a coordinated set of regional networks that form together - at an aggregated level - the national network might be somewhat contradictory to the slightly anarchistic nature of a not so centralistically oriented nation like the Dutch.

Conclusion

A network of selectively recording general practitioners of a size that allows of rough subdivisions, partly as a source of information on general practice and general practitioners but mostly for the provision of medically conformed information from general medical practice, exchanging information by modern communication techniques, can be an efficient and very cost-effective tool for public health policy. The editors of this book hope to have shown this or at least to have made it seem most probable.

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