

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/262335910>

European Influenza Surveillance Scheme Annual Report 2000–2001 influenza season.

Technical Report · December 2001

CITATIONS

0

READS

173

5 authors, including:



William John Paget

Nivel – Research for better care

228 PUBLICATIONS 3,809 CITATIONS

[SEE PROFILE](#)



Koos van der Velden

Radboud University Medical Centre (Radboudumc)

357 PUBLICATIONS 2,730 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Sonar Global [View project](#)



Provider payment reforms in Ghana's National Health Insurance Scheme (NHIS) [View project](#)

ANNUAL REPORT

2000-2001 INFLUENZA SEASON



European Influenza Surveillance Scheme



European Influenza Surveillance Scheme

Annual Report

2000-2001 influenza season

Utrecht, December 2001

Nivel, Netherlands Institute for Health Services Research
Postbus 1568, 3500 BN Utrecht, the Netherlands
Drieharingstraat 6, Utrecht, the Netherlands

The European Influenza Surveillance Scheme Annual Report was prepared by the EISS co-ordination staff with the collaboration of the members of EISS.

EISS co-ordination staff (Nivel):

Aad Bartelds, Tamara Meerhoff, John Paget, Koos van der Velden, Jouke van der Zee

Members of EISS:

Aymard M (FR), Bartelds AIM (NL), Charlier N (B), Christie P (UK), Cohen JM (FR), Falcao I (PT), Fleming DM (UK), Grauballe P (DK), Havlickova M (CZ), Heckler R (DE), Heijnen M-L (NL), de Jong JC (NL), Lina B (FR), Linde A (SW), Manuguerra J-C (FR), de Mateo S (ES), Mensi C (IT), Mosnier A (FR), Müller D (CH), Mullins N (IRL), Nolan D (IRL), O'Flanagan D (IRL), Paget WJ (NL), Perez-Brena P (ES), Pregliasco F (IT), Prosenc K (SL), Rebelo de Andrade H (PT), Samuelsson S (DK), Schweiger B (DE), Socan M (SL), Thomas D (UK), Thomas Y (CH), Tumova B (CZ), Uphoff H (DE), Valette M (FR), Vega T (ES), van der Velden K (NL), van der Werf S (FR), Watson J (UK), Yane F (B) and Zambon M (UK).

EISS is funded by the European Commission (DG-Health and Consumer Protection). EISS also receives funding from GlaxoSmithKline and Roche.

Neither the European Commission, GlaxoSmithKline nor Roche, nor any person acting on their behalf is liable for any use made of the information in this report.

Suggested citation:

European Influenza Surveillance Scheme. Annual report: 2000-2001 influenza season. Utrecht, the Netherlands: Nivel, December 2001.

The report is accessible via the EISS website: www.eiss.org

ISBN 90-6905-550-3

Table of contents

European Influenza Surveillance Scheme: participating countries and institutions	5
Abbreviations	6
Country codes	6
Netherlands Institute for Health Services Research (Nivel)	6
Summary	7
1 Background	9
1.1 Introduction	9
1.2 Communicable disease surveillance in Europe	9
1.3 The funding of EISS	10
2 European Influenza Surveillance Scheme	12
2.1 Introduction	12
2.2 Objectives	12
2.3 Methods	13
2.4 Results	15
2.4.1 Objectives for the 2000-2001 influenza season	15
2.4.2 2000-2001 influenza season and previous seasons	17
2.5 Conclusions	24
3 Output	25
3.1 EISS Weekly Electronic Bulletin	25
3.2 Publications and conferences (2000-June 2001)	25
4 References	27
5 Appendices	28
5.1 Partners	28
5.2 Indicators of influenza activity	28
5.3 Members	29

European Influenza Surveillance Scheme: participating countries and institutions

Belgium	Scientific Institute of Public Health	Brussels
Czech Republic	National Institute of Public Health	Prague
Denmark	Statens Serum Institut	Copenhagen
France	Open Rome Institut Pasteur Université Claude Bernard	Paris Paris Lyon
Germany	Arbeitsgemeinschaft Influenza Niedersächsisches Landesgesundheitsamt Robert Koch-Institut	Marburg Hanover Berlin
Ireland	National Disease Surveillance Centre Irish College of General Practitioners	Dublin Dublin
Italy	Università degli Studi di Milano Istituto Superiore di Sanità Università di Genova	Milan Rome Genoa
Netherlands	Erasmus University National Institute of Public Health and the Environment Netherlands Institute for Health Services Research	Rotterdam Bilthoven Utrecht
Portugal	Instituto Nacional de Saude	Lisbon
Slovenia	Institute of Public Health	Ljubljana
Spain	Instituto de Salud Carlos III	Madrid
Sweden	Swedish Institute for Infectious Disease Control	Solna
Switzerland	Swiss Federal Office of Public Health University Hospital of Geneva	Bern Geneva
United Kingdom	Public Health Laboratory Service Royal College of General Practitioners Scottish Centre for Infection and Environmental Health Public Health Laboratory Service (Wales)	London Birmingham Glasgow Cardiff

See appendix 5.3 for further details.

Abbreviations

ARI	Acute respiratory infection
CET	Central European Time
EISS	European Influenza Surveillance Scheme
EC	European Commission
EPIET	European Programme for Intervention Epidemiology Training
EU	European Union
EuroGROG	European Groupe Régional d'Observation de la Grippe
FluNet	Global WHO surveillance system of influenza
GPs	General practitioners
GROG	Groupe Régional d'Observation de la Grippe
ILI	Influenza-like illness
Nivel	Netherlands Institute for Health Services Research
PHLS	Public Health Laboratory Service
RSV	Respiratory syncytial virus
WHO	World Health Organization

Country codes

Belgium	B
Czech Republic	CZ
Denmark	DK
France	FR
Germany	DE
Ireland	IRL
Italy	IT
Netherlands	NL
Portugal	PT
Slovenia	SL
Spain	ES
Sweden	SW
Switzerland	CH
United Kingdom	UK

Netherlands Institute for Health Services Research (Nivel)

The EISS co-ordination centre is based at Nivel in Utrecht, the Netherlands. Nivel is an independent, non-profit research foundation. It has approximately 75 researchers and a gross annual turnover of about 10 million Euros.

Nivel has been in charge of the Dutch sentinel surveillance network since 1970. It is a WHO Collaborating Centre for Primary Health Care and has an ISO-9001 certification for its research activities.

Summary

The European Influenza Surveillance Scheme (EISS) was established in March 1996. The original members of EISS were: Belgium, France, Germany, the Netherlands, Portugal, Spain and the United Kingdom. EISS has gradually grown over the years and now has 14 member countries covering 16 influenza surveillance networks: Belgium, the Czech Republic, Denmark, England, France, Germany, Ireland, Italy, the Netherlands, Portugal, Scotland, Slovenia, Spain, Sweden, Switzerland and Wales. During the 2000-2001 influenza season, two new members joined the scheme: Ireland and Slovenia.

The surveillance of influenza by the members of EISS is based on an integrated clinical and virological surveillance model. Sentinel primary care physicians report cases of influenza to a data collection centre and take nose and/or throat swabs from patients for laboratory testing. All laboratory tests are performed by a national reference laboratory. The integration of clinical and virological information allows the presentation of influenza morbidity rates and virological data in the same population.

Mild to moderate influenza activity was reported by the members of EISS between November 2000 and February 2001. The levels of influenza activity in the United Kingdom, Spain and the Netherlands were very low; the activity recorded in the Netherlands was the lowest since 1970. Networks that experienced influenza activity that was similar to previous seasons were the Czech Republic and Germany. Denmark and Portugal recorded levels of influenza activity that were slightly higher than those observed during the 1999-2000 season.

Influenza activity in the EISS countries during the 2000-2001 influenza season was largely due to the influenza A/New Caledonia/20/99 (H1N1) virus, which co-circulated with influenza B viruses in some countries. Influenza A(H3N2) viruses were isolated sporadically. Influenza A (H1N1) tended to be the dominant virus circulating in the population in the first half of the season and influenza B in the second half. The 2000-2001 influenza vaccine (containing the A/Moscow/10/99 (H3N2), A/New Caledonia/20/99(H1N1) and B/Beijing/ 184/93-like viruses) provided good protection to the viruses in circulation.

EISS initiated a number of projects during the 2000-2001 influenza season:

- The EISS Weekly Electronic Bulletin was launched (see below);
- The integration of EuroGROG into EISS (see below);
- The European Influenza Diagnosis Quality Control Assessment was implemented;
- The Clinical Reporting Quality Control Project was launched;
- The Denominator Project was initiated.

The EISS Weekly Electronic Bulletin was introduced during the 2000-2001 influenza season. This bulletin provided a weekly overview of influenza activity in Europe on the EISS website in the form of a map, a table and commentary written by experts from the EISS group. The bulletin appeared for 28 consecutive weeks, from week 41 in 2000 to week 16 in 2001.

EISS also began the integration of the EuroGROG influenza surveillance system (a surveillance system that covers 29 countries in Europe) during the 2000-2001 season. A new EuroGROG website is planned for the 2001-2002 season which will have the same structure as EISS and will allow the combined surveillance systems to present a more comprehensive overview of influenza activity in Europe.

EISS has established formal links with other communicable disease surveillance networks in Europe (those funded by the European Commission) and has continued its active support of the global WHO FluNet influenza surveillance system.

We welcome your visit to the EISS website (www.eiss.org) and comments to this annual report.

1 Background

1.1 Introduction

Influenza is an important public health problem in the industrialised world. It is associated with increased general practice consultation rates, hospital admissions and excess deaths (Goddard et al., 2000; Fleming et al., 1999). It must also be considered in terms of increased days lost to absence from work, health care planning and influenza pandemic planning.

The WHO established an international network for the surveillance of influenza in 1949 (WHO, 2000). This global surveillance system (called FluNET) comprises over 110 national influenza centres, and influenza activity is published every week on the Internet (Flahault et al, 1998). National influenza centres in Europe have participated in this surveillance system since its creation.

The surveillance of influenza morbidity in the general population began in the 1960s in western Europe (in England and Wales) and was based on sentinel physicians reporting clinical cases of influenza to a central registry. In the early 1990s, efforts to integrate virological information was achieved by collecting nose and/or throat swabs from patients diagnosed with influenza. The swabs were sent to the national influenza reference laboratory for testing and subtyping. The integration of clinical and virological data collected in the same population is the basis of the European Influenza Surveillance Scheme (EISS) (Snacken et al., 1995; Fleming and Cohen, 1996; Snacken et al., 1998; Aymard et al., 1999; Zambon, 1998).

Efforts to create a European surveillance project have been ongoing since the 1980s. The first project was the Eurosentinel scheme (1987-1991). This was followed by the ENS-CARE Influenza Early Warning Scheme (1991-1994) (Snacken et al., 1995; Fleming and Cohen, 1996), the European Influenza Early Warning and Surveillance Scheme (1995) and the European Influenza Surveillance Scheme (1996-) (Snacken et al., 1998; Aymard et al., 1999). The European Influenza Surveillance Scheme (EISS) began with the participation of seven countries: Belgium, France, Germany, the Netherlands, Portugal, Spain and the United Kingdom.

There are many reasons why influenza surveillance networks in Europe have got together to share information. Influenza is a communicable disease that spreads rapidly and efficiently; this means that it is very beneficial for countries to be informed about influenza activity in neighbouring countries (clinical morbidity and the influenza types and strains). Other benefits of working together are that the different surveillance systems can learn from each other and that shared experiences can be used to advise and guide the development and creation of new influenza surveillance networks in Europe.

1.2 Communicable disease surveillance in Europe

The European Union's competence in public health has steadily increased over time. While some mention of health was present in the early treaties, going back as far as the European Coal and Steel Community (ECSC) Treaty of 1951, its first substantive appearance was in the Single European Act of 1987 (McKee and Maclehose, 2000-2001). This Act enabled the development of the Europe Against Cancer and Europe Against AIDS programmes (McKee and Maclehose, 2000-2001).

It was only in 1992, in Article 129 of the Maastricht Treaty, that a competence in the field of communicable disease was actually defined (McKee and Maclehose, 2000-2001). The Amsterdam Treaty of 1997 (Article 152) reinforced this competency and emphasised that "a high level of health protection should be ensured in the definition and implementation of all Community policies and activities" (McKee and Maclehose, 2000-2001).

The provisions of the different Treaties have enabled the development of a range of policies on communicable disease prevention and control (McKee and Maclehose, 2000-2001). In 1998, the European Parliament and the Council decided that a network for the epidemiological surveillance and control of communicable diseases should be established in the Community (2119/98/EC, 24 September 1998).

On 22 December 1999, two Commission Decisions were adopted which further defined this framework. The first Decision (2000/57/EC) concerned the terms of action for an early warning and response system: events that are potential public health threats are to be monitored and reported. The Decision describes procedures for the exchange of information, and stipulates the action to be undertaken in case of potential threats and in the case of confirmed threats to public health. The second Decision (2000/96/EC) identifies the communicable diseases and special health issues that have to be covered by epidemiological surveillance in the "Community network". Influenza is one of the communicable diseases listed in this Decision.

As a result of these two Decisions, a new European early warning and response system for communicable diseases was officially launched on 1 January 2000. EISS is one of the epidemiological surveillance networks that the EC funds to monitor communicable diseases in Europe.

1.3 The funding of EISS

EISS began receiving funding from the European Commission (EC) in November 1999. By this time, the scheme included eight European Union (EU) Member States and two EU-related States. Today, 16 surveillance networks are members of EISS: Belgium, the Czech Republic, Denmark, England, France, Germany, Ireland, Italy, the Netherlands, Portugal, Scotland, Slovenia, Spain, Sweden, Switzerland and Wales.

EISS has received funding from industry since September 2000 (GlaxoSmithKline and Roche).

The EISS project uses the following formula to separate EC and industry funding:

EC projects: All projects which concern the ongoing running of the surveillance system, the EISS website, the two regular annual meetings of EISS, the harmonisation and standardisation efforts (e.g. the quality control studies), and the extension of EISS to other countries in Europe, particularly Member States and pre-accession countries

Industry projects: All other projects (e.g. the EISS Weekly Electronic Bulletin)

In 2000 and 2001, 70-75% of the total EISS budget was funded by the EC and 25-30% by industry.

EISS has a strict “code-of-conduct” concerning the influence of industry on its activities and publications, including those on its website. Industry is not involved in the management structure of EISS (industry has an observer status at its two annual meetings) or in the preparation of EISS documents, reports and publications.

2 European Influenza Surveillance Scheme

2.1 Introduction

The EISS project involves different partners in each country: sentinel surveillance systems, national influenza reference laboratories and national communicable disease surveillance centres. These various partners are connected via an Internet website (www.eiss.org) (Snacken et al., 1995) which allows members to view influenza activity in the other networks and to launch detailed clinical and virological queries. Maps, figures, tables and data from previous years can also be downloaded from the EISS database.

The co-ordination of the EISS project is based at the Netherlands Institute for Health Services Research (Nivel) in Utrecht, the Netherlands. The role of the co-ordination centre is to:

- Co-ordinate the EISS website;
- Manage and update the EISS database;
- Co-ordinate EISS projects (e.g. the quality control projects);
- Present results (e.g. write scientific articles);
- Encourage the exchange of information between EISS participants;
- Represent EISS at meetings (e.g. EC meetings);
- Manage contracts (with the EC and industry);
- Organise EISS meetings twice a year;
- Write an annual report.

Two meetings are organised each year to co-ordinate the activities of EISS, one before the influenza season (September/October) and the second at the end of the season (April/May). The meetings have been organised on a regular basis since 1996 and represent an important moment to exchange information, research findings and initiate new projects. In September 2000 the EISS meeting was held in Crete (at the Options for the Control of Influenza Conference) and in May 2001 it was held in Siena, Italy.

2.2 Objectives

EISS has the following objectives:

- To facilitate the rapid exchange of information on influenza activity in Europe;
- To combine clinical and virological data in the same population;
- To identify causal viruses in the population and recognise virological changes;
- To provide standardised information of high quality.

A number of specific objectives were established for the 2000-2001 influenza season:

- Integrate two new surveillance networks into EISS (Ireland and Slovenia);
- Implement the EISS Weekly Electronic Bulletin (a weekly report on influenza activity in Europe);
- Implement the European Influenza Diagnosis Quality Control Assessment;
- Launch the Clinical Reporting Quality Control Project;
- Integrate the EuroGROG surveillance project into EISS;
- Establish an automatic data transfer between the EISS and WHO FluNet;
- Further develop the Denominator Project (objective: all EISS networks present influenza rates based on the same denominator);
- Organise EISS meetings before and after the 2000-2001 influenza season;
- Write an annual report for the 2000-2001 influenza season.

2.3 Methods

Membership

All countries in Europe are welcome to join EISS. Full members must meet the following criteria:

- The network is nationally or regionally representative;
- The authority of the network is recognised by the national or regional health authority in the country or region;
- Clinical surveillance and virological surveillance are integrated in the same population (community);
- The network has functioned successfully for two years;
- The network can deliver data on a weekly basis.

A total of 11 EU (Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom) and 3 non-EU states (the Czech Republic, Slovenia and Switzerland) are presently members of EISS. Since Scotland and Wales have their own influenza surveillance networks, there are 16 networks in EISS. With the exception of the Spanish network, all networks are national; the Spanish influenza surveillance network is made up of 6 regional networks covering 53% of the total population in Spain.

Two networks are “associate” members: the Irish and the Swedish networks. The Irish network is an “associate” member because it has not yet been in operation for two years and the Swedish one because it does not yet combine clinical and virological data in the same population.

Clinical information collected by EISS

The clinical surveillance of influenza by the EISS networks is generally based on reports made by sentinel general practitioners. Some of the sentinel surveillance systems also include paediatricians (the Czech Republic, France, Germany, Italy, Slovenia, Spain, Switzerland) and physicians with other specialisations (Slovenia and Switzerland) (Table 1). The physicians usually represent 1-5% of physicians working in the country, community or region.

Table 1 Summary characteristics of the sentinel surveillance networks in EISS

Country/network	Year network was started	Year network joined EISS	General practitioners ¹	Paediatricians ²	Others ³	Numerator ⁴	Case definition (yes/no)	Denominator
Belgium	1985	1996	60	-	-	ARI+ILI	yes	Consultations
Czech Republic	1951	1998	2230	1240	-	ARI	yes	Population
Denmark	1994	1999	100	-	-	ILI	yes	Consultations
England	1964	1996	360	-	-	ILI	no	Population
France	1984	1996	361	41	-	ARI	yes	Consultations
Germany	1992	1996	450	100	-	ARI	yes	Consultations
Italy	1996	1998	500	40	-	ILI	yes	Population
Netherlands	1970	1996	67	-	-	ILI	yes	Population
Portugal	1989	1996	170	-	-	ILI	yes	Population
Scotland	1971	1996	90	-	-	ILI	no	Population
Slovenia	1999	2000	11	14	19 ⁴	ILI	yes	Population
Spain	1994	1996	200	60	-	ILI	yes	Population
Switzerland	1986	1997	154	43	68 ⁵	ILI	yes	Consultations
Wales	1986	1996	30	-	-	ILI	yes	Population
Associate members:								
Ireland	2000	2000	32	-	-	ILI	yes	Population
Sweden	1999	2000	90	-	-	ILI	no	Population

¹ Number of physicians during the 2000-2001 influenza season

² Physicians working in community schools (children) and youth health services

³ Physicians specialised in internal medicine

⁴ ARI: acute respiratory infection; ILI: influenza-like illness

The case definitions and denominator populations used for the clinical surveillance of influenza vary by network. Most sentinel surveillance systems report data on the number of new cases of influenza-like illness (ILI) (Denmark, the Netherlands, England, Ireland, Italy, Portugal, Scotland, Slovenia, Spain, Sweden, Switzerland and Wales), whilst others report the number of new cases of acute respiratory infection (ARI) (Belgium (ARI and ILI), the Czech Republic, France and Germany) (Table 1).

Some sentinel surveillance systems have denominator populations that are based on patient lists (the Czech Republic, England, the Netherlands, Ireland, Italy, Portugal, Scotland, Slovenia, Spain, Sweden, Wales) whilst others are based on the total number of consultations (Belgium, Denmark, France, Germany and Switzerland). Surveillance systems with population denominators present the number of cases per 100,000 population and those with consultation denominators the number of cases per 100 consultations (%) (Table 1).

Virological information collected by EISS

For the virological surveillance of influenza, the sentinel physicians are asked to take nose and/or throat swabs from patients with influenza-like illness or acute respiratory infection (depending on the sentinel surveillance system - see above). The swabs are sent to a central laboratory and tested for influenza viruses (if positive, subtypes are determined) and a panel of other respiratory viruses. The panel includes infections that can cause symptoms that are similar to influenza e.g. respiratory syncytial virus (RSV).

EISS also collects data on influenza tests carried out by the participating reference laboratories on non-sentinel surveillance material (e.g. material submitted by hospitals).

2.4 Results

2.4.1 Objectives for the 2000-2001 influenza season

EISS Weekly Electronic Bulletin

EISS successfully introduced the Weekly Electronic Bulletin on the public pages of the website during the 2000-2001 influenza season. This bulletin provided a weekly overview of influenza activity in Europe in the form of a map describing the geographic spread of influenza, a table (morbidity rates and the dominant virus type for each network) and a commentary written by experts from the EISS group. The bulletin appeared for 28 consecutive weeks, from week 41 in 2000 to week 16 in 2001.

The European Influenza Diagnosis Quality Control Assessment

This is a project that aims to assess the quality of virological testing by influenza reference laboratories in Europe (in EISS and non-EISS countries). The study was carried out by Dr Martine Vallette and Professor Michèle Aymard at the University of Lyon in France.

Laboratories across Europe were first asked if they would be willing to participate in the study. Sixteen reference laboratories accepted in the following countries: Belgium, Czech Republic, France (2 laboratories), Germany, Italy, Norway (2x), Portugal, Romania, Spain, Sweden, Switzerland, the Netherlands (2x) and United Kingdom.

The co-ordination centre in Lyon first prepared a panel of 24 coded samples (influenza A, B, RSV and no virus). Two panels of twelve samples were sent to the participating laboratories for

testing: one on 20.11.00 and the second on 4.12.00. All results were reported back to the co-ordination centre in Lyon, where the analysis and assessment was made. Preliminary findings of this assessment were presented at our EISS meeting in May 2001.

The Clinical Reporting Quality Control Project

This project aims to standardise and harmonise clinical reporting systems in EISS. Dr Jean-Francois Aguilera, an EPIET trainee based at PHLIS in London, is carrying out the project in collaboration with the EISS co-ordination centre. The project has two main components:

- 1) An inventory of methods used for the surveillance of influenza in Europe;
- 2) The establishment of a clinical surveillance protocol and the evaluation of this protocol in a number of EISS networks. The latter involves a visit to the country, discussions with all parties involved in the surveillance system (the co-ordinators and a sample of sentinel physicians) and a written report.

An evaluation of two EISS influenza surveillance networks (one of which will be Spain) is planned during the 2001-2002 influenza season.

EuroGROG

EuroGROG is a complementary influenza surveillance scheme that is based at the Institut Pasteur in Paris and covers 29 countries in Europe. The difference between EISS and EuroGROG is that whilst EuroGROG collects (limited) descriptive information on influenza activity from a large number of European countries, it does not collect standardised clinical and virological data derived from the same population.

The EC has provided EISS with funding to create a new EuroGROG website which will have the same structure as EISS. The plan is to develop a website and data collection procedure which are similar to EISS. Combining information from the two surveillance schemes will enable EISS to provide a more comprehensive picture of influenza activity in Europe.

The original objective was to have the new system running during the 2000-2001 influenza season. This was not possible and the EuroGROG website will now be launched during the 2001-2002 influenza season.

Data transfer EISS-WHO FluNet

European networks participating in EISS enter their data into the EISS database every week during the influenza season (week 40 to week 20 of the following year). Most of the networks also enter their data into the WHO-FluNet database. The members of EISS would like to establish an automatic data transfer between EISS and FluNet. The implementation of this data transfer was planned for the 2000-2001 season but is now scheduled for the 2001-2002 influenza season.

Denominator Project

Five networks in the EISS project present influenza rates per 100 consultations (Belgium, Denmark, France, Germany and Switzerland). They do so as they do not know the population covered by their sentinel physicians (in many countries this data is available in the form of patient lists as persons must be registered with a physician) (Schlaud, 1999). The objective of the Denominator Project is to develop a methodology that allows all EISS networks to use the same population denominator.

The EISS group achieved a consensus at its May 2001 meeting on the following points:

- 1) The selection of a common denominator (the number of cases of ILI or ARI per 100,000 population);
- 2) A method of calculating the population denominator, when patient lists are not available;
- 3) All networks participating in EISS will report population denominators during the 2001-2002 influenza season.

The agreed method to estimate the population denominator is based on the percentage of sentinel physicians compared to all physicians in the country. For example, if 1% of GPs in the country participate in the sentinel surveillance system, the population denominator is 1% of the total population. Performing this calculation by geographic region is recommended.

EISS meetings

The EISS meetings are organised twice a year; the meetings take place before and after the influenza season. In September 2000, the meeting was held Crete and in May 2001, the meeting took place in Siena, Italy.

2.4.2 2000-2001 influenza season and previous seasons

The 2000-2001 influenza season is presented in two ways: a) clinical and virological data collected during the 2000-2001 season, and b) clinical data collected by EISS since 1996 (data available in the EISS database by the 30th of June 2001).

a) The 2000-2001 influenza season: clinical and virological data

Figures 1 and 2 present influenza activity based on the clinical and virological data for the different EISS networks in the 2000-2001 influenza season (Manuguerra et al., 2001). Data is shown for week 40 (2000) up to week 15 (2001), which corresponds to a typical influenza season (Manuguerra and Mosnier, 2001). The clinical data collected by the physicians is displayed as the number of ILI/ARI per 100,000 population or per 100 consultations by week. There was no virological data for Sweden, as this network does not collect clinical and virological data in the same population (Sweden is an "associate" member of EISS; see methods).

Influenza was most prominent between week 3 and week 8 of the year 2001 in most of Europe. The first influenza A positive specimens obtained by sentinel physicians were reported at the beginning of October (week 40, 2000) in France and Ireland. In November, influenza A appeared in Belgium, Germany, Portugal and the United Kingdom. In December, positive specimens were recorded in the Czech Republic, the Netherlands, Switzerland, Italy and Denmark. Finally, influenza A virus was reported in January in Spain and Slovenia. Influenza A(H1N1) co-circulated with influenza B viruses in some countries and was predominant in Ireland, Portugal and the United Kingdom. Italy was the only country where no influenza B was detected.

Networks reporting ILI per 100,000 population

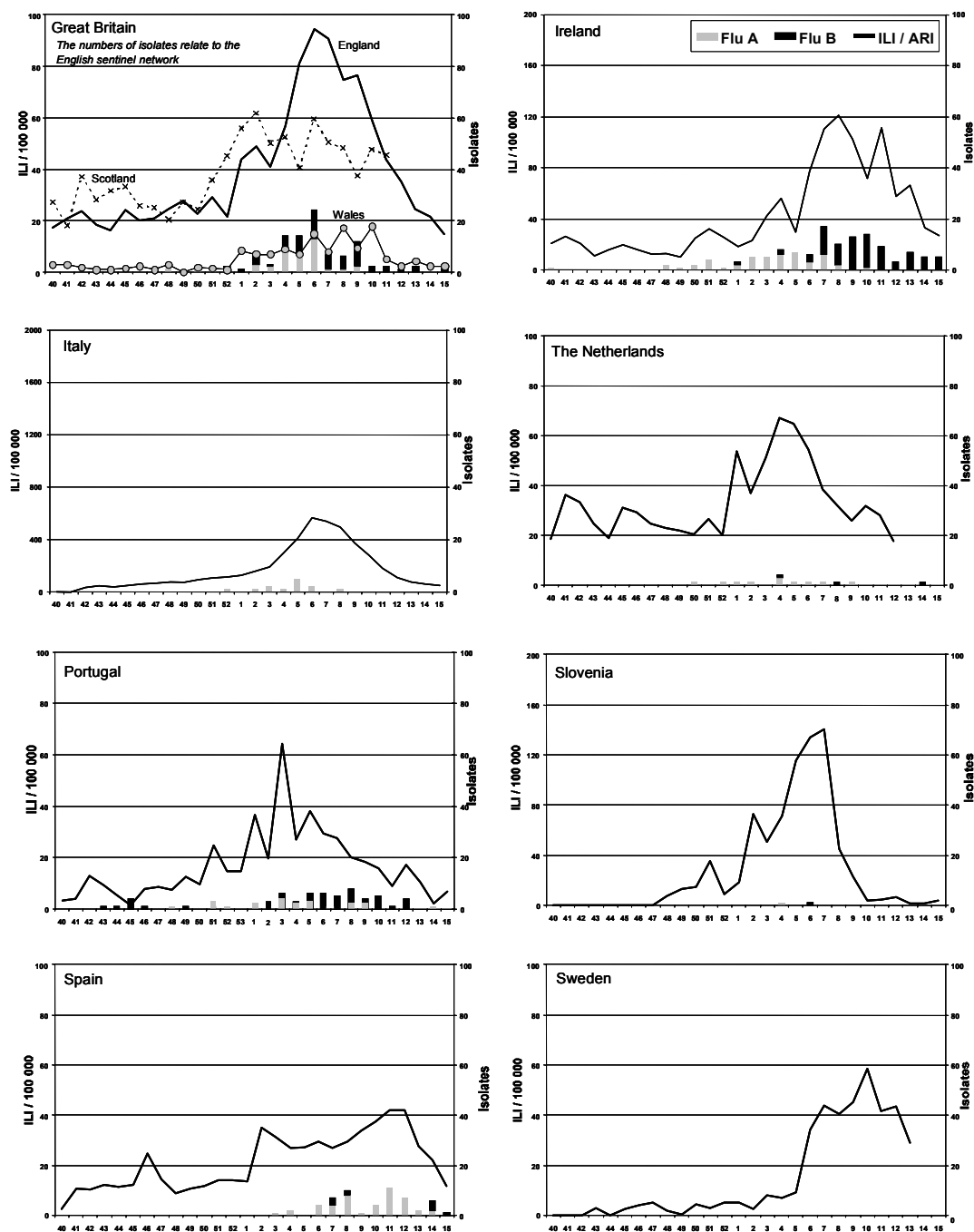
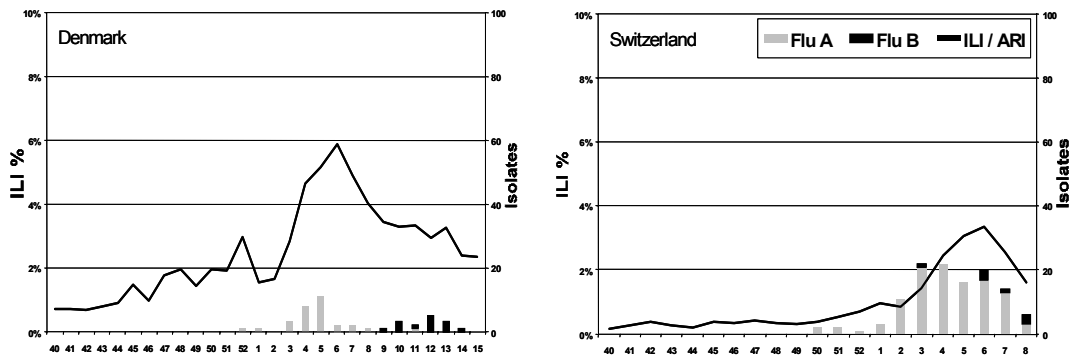


Figure 1 Clinical and virological sentinel monitoring of influenza in European member countries of the EISS during the 2000-2001 influenza season

Morbidity rates for ILI per 100,000 population are indicated from week 40 (2000) to week 15 (2001). Isolation of influenza positive swabs are indicated in the bar chart. For Great Britain, morbidity indicator graphs are provided separately for each of the three British networks: England, Scotland and Wales, whereas the bar charts correspond to the English network.

Networks reporting ILI per 100 consultations



Networks reporting ARI per 100,000 population (Czech Republic) and per 100 consultations

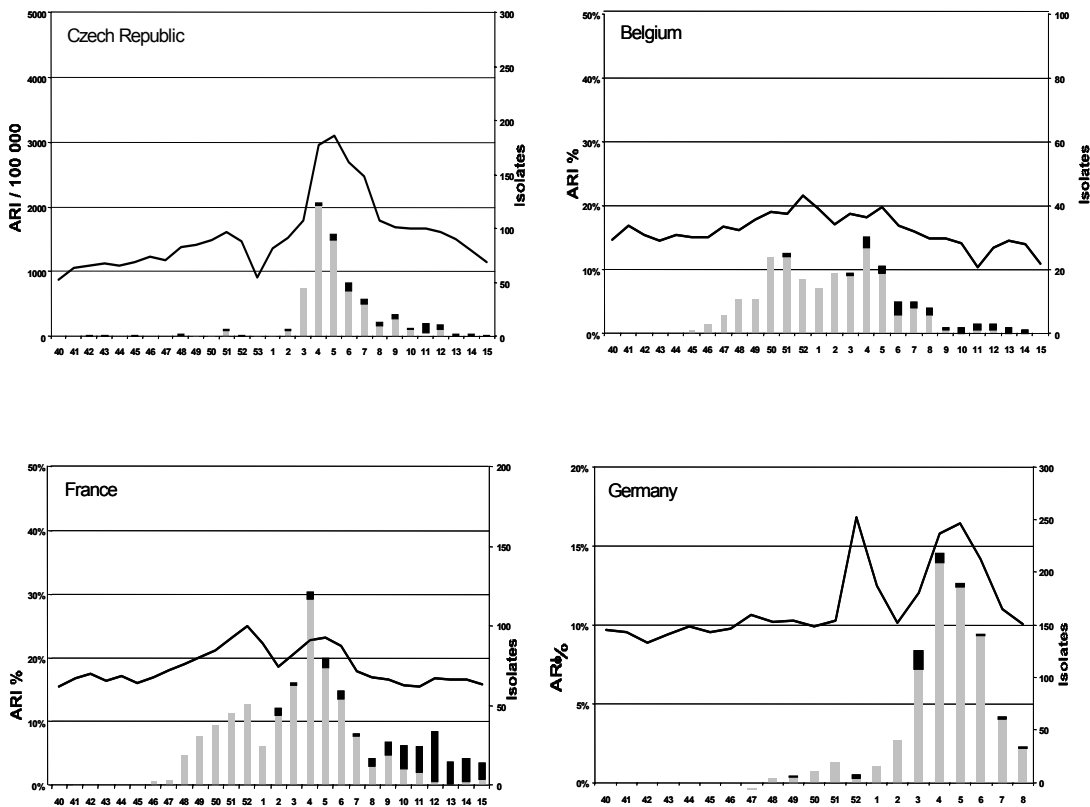


Figure 2 Clinical and virological sentinel monitoring of influenza in European member countries of the EISS during the 2000-2001 influenza season

Morbidity rates for ILI per 100 consultations and ARI /100,000 population or 100 consultations are indicated from week 40 (2000) to week 15 (2001). Isolation of influenza positive swabs are indicated in the bar chart.

A total of 3212 sentinel specimens were reported to EISS during the 2000-2001 influenza season. Influenza A was detected in 83% of the specimens and influenza B in 17% (see figure 3). Influenza A (H1N1) was detected most often, 98% of the subtyped influenza A virus cases were this subtype. The influenza A H1N1 strains were most often related to A/New Caledonia/20/99. The isolated B-strains were similar to the variant B/Yamanashi/ 166/99.

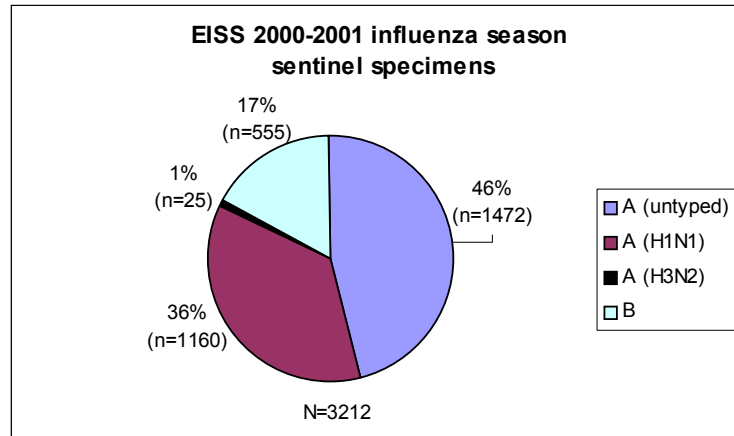


Figure 3 Virological data of all EISS networks in the 2000-2001 influenza season

Sentinel swabs were analysed and subtypes were determined. A total of 3212 swabs tested positive for influenza. 83% of the swabs were positive for influenza A and 17% positive for influenza B. 46% of the influenza A positive swabs were untyped. 36% were determined to be of the H1N1 subtype and only 1 % were subtyped to be H3N2.

Within EISS, influenza activity is described according to five different levels: no influenza activity, sporadic activity, local activity, regional activity and widespread activity (see Appendix 5.2. for a description of these different levels). The levels of influenza activity reached during the 2000-2001 season were assessed by the networks as follows:

- 1) Widespread activity: Germany, France, the Czech Republic, Denmark and Sweden;
- 2) Regional activity: Belgium, Switzerland, Italy and Scotland;
- 3) Local activity: Ireland, Slovenia and the Netherlands;
- 4) Sporadic activity: England, Spain, Portugal
- 5) No influenza activity: Wales.

b) Influenza seasons 1996-2001: clinical data only

Figures 4 and 5 (see page 22 and 23) display levels of influenza activity during the influenza seasons between 1996 and 2001, as recorded in the EISS database. Networks that have been a member of EISS since 1996 have data for five seasons and the other networks have data since joining the surveillance scheme. There are no figures for Ireland, Slovenia and Sweden as they joined EISS in 2000.

The figures highlight the different numerators (ILI or ARI) and denominators (per 100,000 population or per 100 consultations) collected across Europe. Efforts to harmonize the EISS denominators are underway and it is planned that all networks will present rates per 100,000 population during the 2001-2002 influenza season (see the Denominator Project, page 16).

Figure 5 displays two graphs for Germany. The first graph shows the number of cases of ARI per 100 consultations based on data recorded in the EISS database. The second graph shows data from the national database and displays an index of ARI activity. The index is calculated by subtracting a "background" level of ARI activity from the observed level of ARI activity (ARI per 100 consultations). The result is an estimate of ("excess") consultations (%) resulting from acute respiratory infections.

The EISS networks generally experienced a mild to moderate 2000-2001 influenza season. Influenza activity was particularly low compared to previous seasons in the United Kingdom, the Netherlands, Spain and Switzerland. In the Czech Republic, France and Germany the morbidity rates were similar to previous seasons. Denmark and Portugal recorded morbidity rates that were a little higher than those observed during the 1999-2000 season (Manuguerra and Mosnier, 2000; Manuguerra et al., 2001).

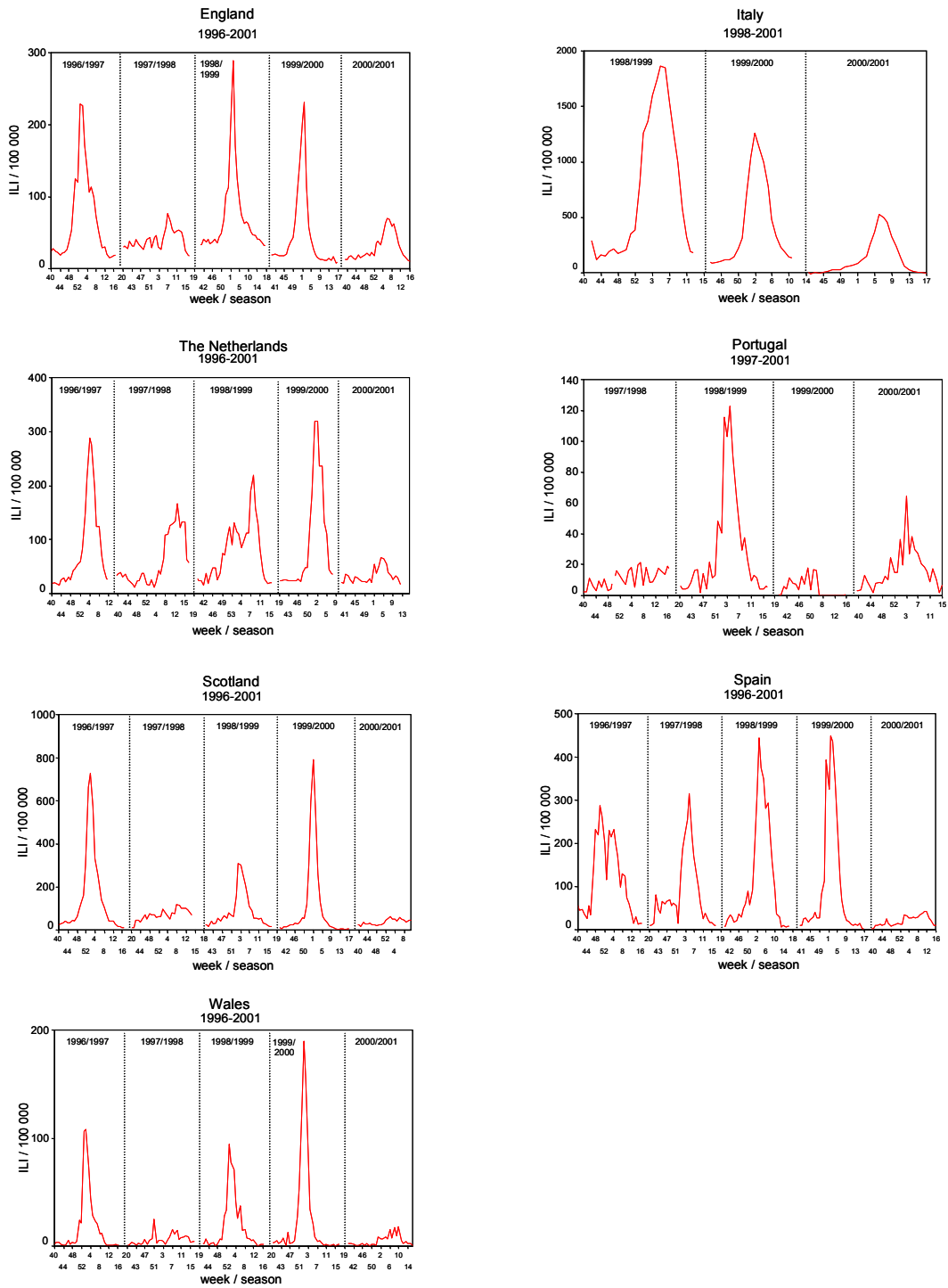
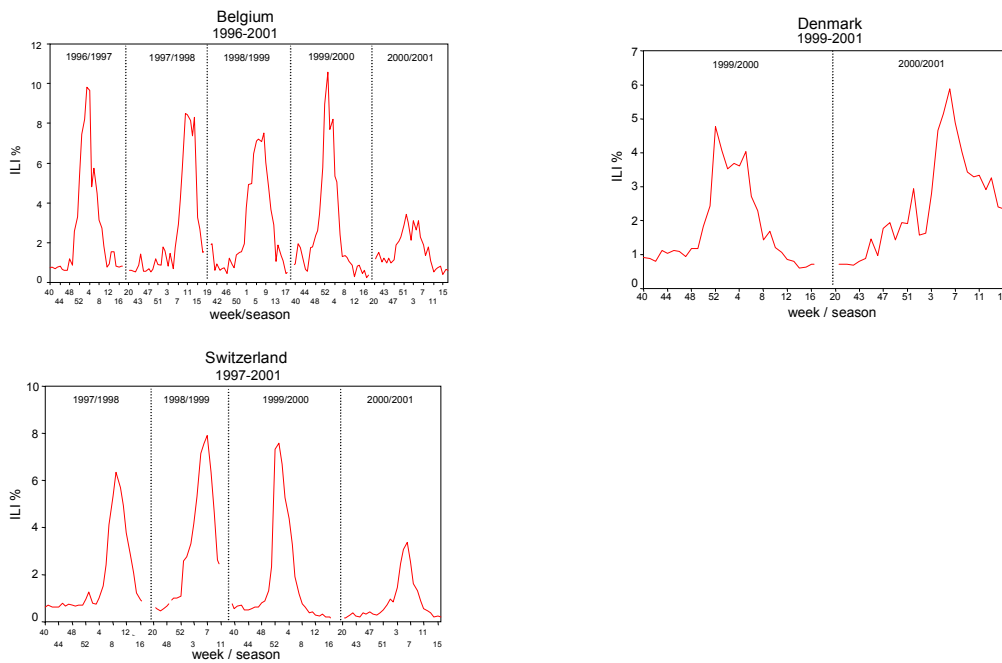


Figure 4 Clinical sentinel monitoring of influenza in member countries of EISS during the influenza seasons 1996-2001

Morbidity rates for ILI/100,000 population for each member country in the EISS programme are indicated from week 40 to 20 for different influenza seasons (1996-2001).

Networks reporting ILI per 100 consultations



Networks reporting ARI per 100,000 population (Czech Republic) or per 100 consultations

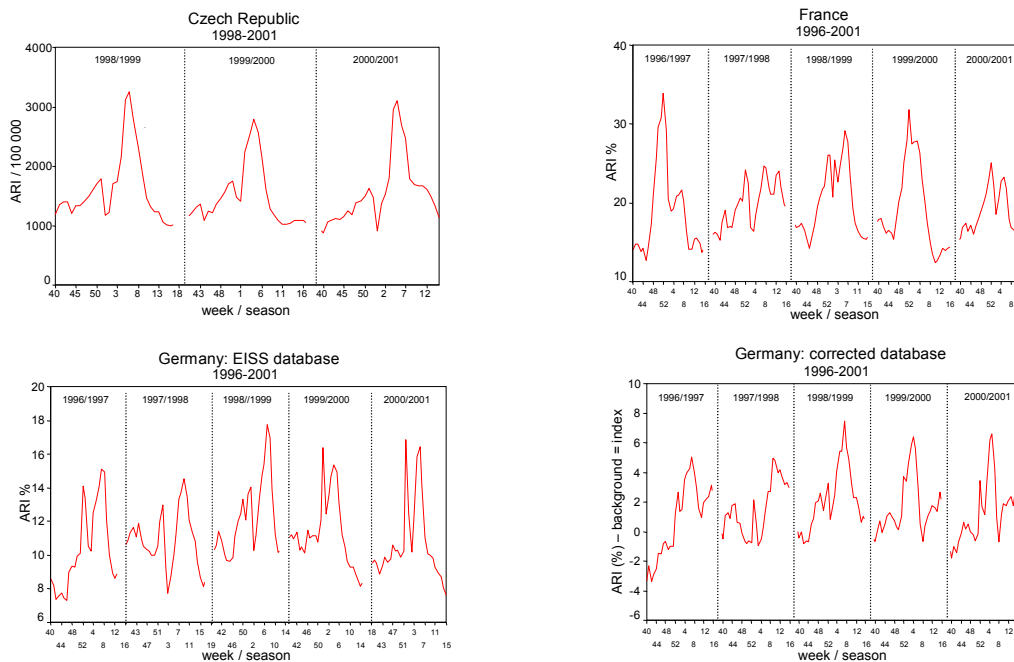


Figure 5 Clinical sentinel monitoring of influenza in member countries of EISS during the influenza seasons 1996-2001

Morbidity rates for ILI per 100 consultations and ARI/100,000 population or 100 consultations for each member country in the EISS programme are indicated from week 40 to 20 for different influenza seasons (1996-2001). There are two graphs for Germany. The first graph shows the number of cases of ARI per 100 consultations based on the EISS database. The second graph shows data from the national database and displays an index of ARI activity. The index is calculated by subtracting a "background" level of ARI activity from the observed level of ARI activity (ARI per 100 consultations). The index represents an estimate of ("excess") consultations (%) resulting from influenza.

2.5 Conclusions

The EISS project reached most of the specific objectives it set itself for the 2000-2001 influenza season. The project successfully integrated Ireland and Slovenia into EISS. It also initiated a number of new projects: the European Influenza Diagnosis Quality Control Assessment project, the Denominator Project, the EISS Weekly Electronic Bulletin and the Clinical Reporting Quality Control project.

An automatic data transfer between the EISS database and the WHO FluNet databases was not achieved and the definition of the data-set to be transmitted is ongoing. EISS was also not successful in launching the EuroGROG project during the 2000-2001 influenza season. These two projects will be implemented during the 2001-2002 season.

Differences in the scale of influenza morbidity were observed among countries using the same activity parameters (e.g. ILI per 100,000 population). These differences can be explained by the use of different case definitions (e.g. different ILI), some networks also having paediatricians reporting influenza activity (e.g. Germany, Switzerland and France) and differing consultation rates for influenza. Consultation rates for influenza are probably higher in Belgium than in the United Kingdom as a medical certificate is required in Belgium after one day of absence from work. In the United Kingdom, a medical certificate is only necessary for absences of 5 days and more.

Influenza activity was predominantly due to the influenza A virus (H1N1), antigenically similar to the vaccine variant A/New Caledonia/20/99. The B influenza viruses were predominant in certain countries such as Ireland, Portugal and the United Kingdom. Influenza infections were active during the period of January and February/March 2001, with little time lag between countries.

At the beginning of the season, the influenza A/H1N1 virus circulated in the population. At the end of the season, influenza B became the dominant type. The 2000-2001 vaccine contained the A/Moscow/10/99(H3N2), A/New Caledonia/20/99(H1N1) and B/Beijing/184/93-like viruses. This vaccine provided good protection to the circulating viruses.

3 Output

3.1 EISS Weekly Electronic Bulletin

A total of 28 Weekly Electronic Bulletins were produced during the 2000-2001 influenza season, from week 41 in 2000 to week 16 in 2001. These can be viewed on the EISS website.

Three of the bulletin texts (edited) appeared in *Eurosurveillance Weekly*, an internet-based publication specialised on communicable diseases in Europe:

Influenza activity in Europe remains limited
Eurosurveillance Weekly, Issue 3
13 January 2001

Low levels of influenza activity continue in Europe
Eurosurveillance Weekly, Issue 5
1 February 2001
See: http://www.eurosurv.org/2001/pfp/010201_pfp.htm

Influenza activity back to pre-winter levels in most of Europe
Eurosurveillance Weekly, Issue 15
12 April 2001
See: http://www.eurosurv.org/2001/pfp/010412_pfp.htm

3.2 Publications and conferences (2000-June 2001)

Publications

- Manuguerra J-C, Mosnier A (on behalf of EISS). Surveillance of influenza in Europe from October 1999 to February 2000. *Eurosurveillance* 2000; 5: 63-68.

Conferences

- Manuguerra J-C, Mosnier A, van der Werf S, Cohen J-M (on behalf of EISS). Surveillance of influenza in Europe from October 1999 to February 2000 by the European Influenza Surveillance Scheme (on behalf of EISS). Options for the control of influenza IV conference, Hersonissos, Crete, Greece, 23-28 September 2000; Abstract P1-33.
- Manuguerra J-C (on behalf of EuroGROG). Surveillance of influenza: a pan European perspective. Options for the control of influenza IV conference, Hersonissos, Crete, Greece, 23-28 September 2000; Abstract W11-3.
- Mosnier A (on behalf of EISS). Proposal for a standardised clinical influenza surveillance in Europe. Options for the control of influenza IV conference, Hersonissos, Crete, Greece, 23-28 September 2000; Abstract P1-32.

- Uphoff H, Cohen J-M, Fleming D, Noone A. Reporting of influenza surveillance morbidity data from an international European surveillance scheme: a simple index. Options for the control of influenza IV conference, Hersonissos, Crete, Greece, 23-28 September 2000; Abstract P1-24.
- Van der Velden K (on behalf of EISS). Five years European Influenza Surveillance Scheme: a follow-up. Options for the control of influenza IV conference, Hersonissos, Crete, Greece, 23-28 September 2000; Abstract W21-8.

4 References

- Aymard M, Valette M, Lina B, Thouvenot D, the members of Groupe Régional d'Observation de la Grippe and European Influenza Surveillance Scheme. Surveillance and impact of influenza in Europe. *Vaccine* 1999;17: S30-S41.
- Flahault A, Dias-Ferrao V, Chaberty P, Esteves K, Valleron A-J, Lavanchy D. FluNet as a tool for global monitoring of influenza on the web. *JAMA* 1998;280(15):1330-1332.
- Fleming DM and Cohen J-M. Experience of European Collaboration in Influenza surveillance in the winter 1993-1994. *J. Public Health Medicine* 1996;18:133-142.
- Fleming DM, Zambon M, Bartelds AIM, de Jong JC. The duration and magnitude of influenza epidemics: a study of surveillance data from sentinel general practices in England, Wales and the Netherlands. *European Journal of Epidemiology* 1999;15:467-473.
- Goddard NL, Joseph CA, Zambon M, Nunn M, Fleming D, Watson JM. Influenza surveillance in England and Wales: October 1999 to May 2000. *Communicable Disease and Public Health* 2000;3(4):261-266.
- Manuguerra J-C, Mosnier A on behalf of EISS. Surveillance of influenza in Europe from October 1999 to February 2000. *Eurosurveillance* 2000; 5:63-68.
- Manuguerra J-C, Mosnier A, Paget WJ on behalf of EISS. Monitoring of influenza in the EISS. European network member countries from October 2000 to February 2001. *Eurosurveillance* 2001;6:127-135.
- McKee M & Maclehorse L. Enlarging the European Union: implications for communicable disease control? *Eurohealth* 2000-2001;6(5):6-8.
- Schlaud M, editor. Comparison and harmonisation of denominator data for primary care health care research in countries of the European Community: the European Denominator Project. Amsterdam, the Netherlands: IOS Press, 1999.
- Snacken R, Bensadon M, Strauss A. The CARE Telematics Network for the surveillance of influenza in Europe. *Methods of Information in Medicine* 1995;34:518-522.
- Snacken R, Manuguerra J-C, Taylor P. European Influenza Surveillance Scheme on the Internet. *Methods of Information in Medicine* 1998;37:266-270.
- WHO. Communicable diseases 2000. WHO/CDS 2000.1:36-37.
- Zambon M on behalf of EISS. Sentinel surveillance of influenza in Europe, 1997/1998. *Eurosurveillance* 1998; 3(3):29-31.

5 Appendices

5.1 Partners

European Commission

Health & Consumer Protection Directorate-General
Luxembourg

Industry

GlaxoSmithKline Roche Pharma
United Kingdom Switzerland

The EISS project would also like to thank Chiron Vaccines for hosting, in collaboration with the Italian influenza surveillance network, our EISS meeting in May 2001 in Siena, Italy.

Web Service

Quad Logic
France

5.2 Indicators of influenza activity (2000-2001 influenza season)

The levels of influenza activity are defined as follows:

ILI:	influenza-like illness
ARI:	acute respiratory infection
Region:	the population under surveillance in a defined geographical area. Countries may be made up of one or more regions for these purposes
No report:	no report received.
No activity:	reports indicate no evidence of influenza virus activity. Cases of ILI/ARI may be reported in the region but the overall level of clinical activity remains at baseline levels and influenza virus infections are not being confirmed. Cases occurring in people recently returned from other countries are excluded.
Sporadic:	isolated cases of laboratory confirmed influenza infection in a region, or an outbreak in a single institution (such as a school, nursing home or other institutional setting), with clinical activity remaining at baseline levels. Cases occurring in people recently returned from other countries are excluded.

Local outbreak: increased ILI/ARI activity in local areas (such as a city, county or district) within a region, or outbreaks in two or more institutions within a region, with laboratory confirmed cases of influenza infection. Levels of activity in remainder of region, and other regions of the country, remain below baseline levels.

Regional activity: ILI/ARI activity above baseline levels in one or more regions with a population comprising less than 50% of the country's total population, with laboratory confirmed influenza infections in the affected region(s). Levels of activity in other regions of the country, remain below baseline levels.

Widespread activity: ILI/ARI activity above baseline levels in one or more regions with a population comprising 50% or more of the country's population, with laboratory confirmed influenza infections.

5.3 Members

EISS co-ordination centre

Institution:

Netherlands Institute for Health Services
Research (Nivel)
PO Box 1568
3500 BN Utrecht
The Netherlands
Tel.: +31 30 2729 700
Fax: +31 30 2729 729

Individuals:

John Paget
Koos van der Velden
Jouke van der Zee

Belgium

Institution:

Scientific Institute of Public Health
14, rue Juliette Wytsman
B-1050 Brussels

Individuals:

Fernande Yane

Czech Republic

Institution:

National Institute of Public Health
National Influenza Centre
Šrobárova 48
100 42 Prague 10

Tel.: +42 2 6708 2402

Fax: +42 2 7173 0695

Individuals:

Martina Havlickova
Bela Tumova

Denmark

Institution:

Statens Serum Institut
Department of Epidemiology
Artillerivej 5
DK 2300 Copenhagen

Tel.: +45 32 68 3268

Fax: +45 32 68 3874

Individuals:

Per Grauballe

Susanne Samuelsson

France

Institution:

OPEN ROME - Groupes Régionaux
d'Observation de la Grippe (GROG)
39, rue St Antoine
75004 Paris
Tel. +33 1 42 71 49 50
Fax. +33 1 42 71 77 15

Centre National de Référence de la Grippe
(France Nord)
25, rue du Docteur Roux
75724 Paris Cedex 15
Tel.: +33 1 4568 8722 / 25
Fax: +33 1 4061 3241

Centre Hospitalo-Universitaire de Lyon
Centre National de Référence de la Grippe
(France Sud)
8 Avenue Rockefeller
69373 Lyon Cedex 08
Tel.: +33 4 7877 7029
Fax: +33 4 7801 4887

Individuals:

Michèle Aymard
Jean-Marie Cohen
Bruno Lina
Jean-Claude Manuguerra
Anne Mosnier
Martine Valette
Sylvie van der Werf

Germany

Institution:

Arbeitsgemeinschaft Influenza (AGI)
Schuhmarkt 4
35037 Marburg
Tel.: +49 6421 29320
Fax.: +49 6421 25730

National Reference Centre for Influenza
Niedersächsisches Landesgesundheitsamt
Roesebeckstraße 4
30449 Hannover
Tel.: +49 511 4505 201
Fax: +49 511 4505-140

Individuals:

Rolf Heckler
Brunhilde Schweiger
Helmut Uphoff

Ireland

Institution:

Irish College of General Practitioners
4-5 Lincoln Place
Dublin 2
Tel.: +353 1 676 3705
Fax: +353 1 676 5850

National Disease Surveillance
Sir Patrick Dun's Hospital
Lower Grand Canal Street
Dublin 2
Tel.: +353 1 661 7346
Fax: +353 1 661 7347

Individuals:

Dermot Nolan
Darina O'Flanagan

Italy

Institution:

Istituto de Virologia – Università degli Studi
di Milano
Via Pascal 38
20133 Milano

Tel.: +39 0223 67494
Fax: +39 0226 680713

Dipartimento di Scienze della Salute
Università de Genova
Via Pastore 2
16132 Genova
Tel.: +39 01035 38571
Fax: +39 01035 38572

Istituto Superiore de Sanità (ISS)
Viale Regina Margherita
00161 Roma
Tel.: +39 06 4990 1
Fax: +39 06 4938 7118

Laboratorio virus respiratori (ISS)
Tel.: +39 0649 903243
Fax: +39 0649 902082

Laboratorio Epidemiologie (ISS)
Tel.: +39 0649 902273

Individuals:
Fabrizio Pregliasco

The Netherlands

Institution:
Erasmus University Rotterdam
Faculty of Medicine
Department of Virology
PO Box 1738
3000 DR Rotterdam
Tel.: +31 10 408 8067
Fax: +31 10 408 9485

National Institute of Public Health and the
Environment (RIVM)
PO Box 1
3720 BA Bilthoven
Tel.: +31 30 274 2115
Fax: +31 30 274 4409

Netherlands Institute for Health Services
Research

PO Box 1568
3500 BN Utrecht
Tel.: +31 30 2729 700
Fax: +31 30 2729 729

Individuals:
JC de Jong
Marie-Louise Heijnen
Aad Bartelds

Portugal

Institution:
Instiuto Nacional de Saude
Av Padre Cruz
1699 Lisboa Codex
Tel.: +351 21 751 9200
Fax: +351 21 759 0441

Individuals:
Isabel Marinho Falcão
Helena Rebelo de Andrade

Slovenia

Institution:
Institute of Public Health (IPH)
Trubarjeva 2
01 Ljubljana
Tel.: +386 1 4323245
Fax: +386 1 2323940
Laboratory for Virology (IPH)
Bohori eva 15
01 Ljubljana

Individuals:
Katarina Prosenec
Maja Socan

Spain

Institution:
Instituto de Salud Carlos III

Centro Nacional de Epidemiología
Servicio de Vigilancia Epidemiológica
C/Sinesio Delgado, 6
28029 MADRID
Tel: +34 91 3877802
Fax: +34 91 3877816

Individuals:

Salvador de Mateo
Pilar Perez-Brena
Tomás Vega Alonso

Sweden

Institution:

Swedish Institute for Infectious Disease
Control
SE-171 82 Solna
Tel.: +46 8 457 23 00
Fax: +46 8 32 83 30

Individuals:

Annika Linde

Switzerland

Institution:

Swiss Federal Office of Public Health
Division of Epidemiology and Infectious Diseases
3003 Bern
Tel. +41 31 323 87 06
Fax +41 31 323 87 95

National Influenza Centre
Laboratoire Central de Virologie
Division des Maladies Infectieuses
Hôpital Cantonal Universitaire de Genève
rue Micheli du Crest, 24
CH-1211 Geneva 14
Tel. +41 22 372 40 81
Fax +41 22 372 40 88

Individuals:

Daniela Müller
Yves Thomas

United Kingdom

Institution:

England

Public Health Laboratory Service
Central Public Health Laboratory
Communicable Disease Surveillance Centre
61 Colindale Avenue
London NW9 5EQ
Tel.: +44 20 8200 6868
Fax: +44 20 8200 7868

Royal College of General Practitioners
(RCGP)

Research Unit

54 Lordswood Road
Birmingham B17 9DB
Tel.: +44 121 426 1125
Fax: +44 121 428 2084

Scotland

Scottish Centre for Infection and
Environmental Health

Clifton House, Clifton Place
Glasgow G3 7LN
Tel.: +44 141 300 1151
Fax: +44 141 300 1170

Wales

PHLS Communicable Disease Surveillance
Centre

Abton House
Cardiff CF4 3QX
Tel.: +44 2920 521997
Fax: +44 2920 521987

Individuals:

England

Douglas Fleming
John Watson
Maria Zambon

Scotland

Peter Christie

Wales

Daniel Thomas

This report was produced by a contractor for Health & Consumer Protection Directorate General and represents the views of the contractor or author. These views have not been adopted or in any way approved by the Commission and do not necessarily represent the view of the Commission or the Directorate General for Health and Consumer Protection. The European Commission does not guarantee the accuracy of the data included in this study, nor does it accept responsibility for any use made thereof.