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Hepatitis A and B surveillance and immunization programmes in Europe: EUROHEP.NET project

by

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Abstract

Aim: *EUROHEP.NET is a concerted action, funded by the European Commission, studying the feasibility of creating a network on surveillance, epidemiology and prevention of vaccine-preventable viral hepatitis in Europe. The project aims to make an inventory of and to analyse the existing methods of surveillance and prevention policies, to identify the hurdles and to propose potential guidelines for standardisation in 28 countries.*

Material and Methods: *Local contact persons at the National Institutes for Public Health or at the Ministries of Health were requested to complete a survey on these items in 2003.*

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Results: *In all responding countries (N=22), hepatitis A and B are notifiable diseases, but the surveillance methods differ widely. Differences in case definitions increase the difficulty of analysing and comparing epidemiological data. Overall, hepatitis B immunization programmes for children as well as immunization programmes for risk groups for both hepatitis A and B are almost everywhere in place.*

Discussion: *There is a need for harmonisation of surveillance methods and prevention activities in Europe. Potential hurdles for this harmonisation have been identified: e.g. difference in case definition used, different age categories used for surveillance purposes. A network like EUROHEP.NET is feasible and useful to create a platform for discussion. A setting in which representatives of Ministries of Health, Institutes of Public Health, experts in the field and academic personnel are gathered, offers a unique opportunity to exchange expertise and knowledge and illustrates the need for a future network.*

Keywords: *hepatitis A, hepatitis B, surveillance, vaccination programmes*

Introduction

Disease surveillance is the process of systematic collection, orderly consolidation and evaluation of pertinent data with prompt dissemination of the results to those who need to know, particularly those who are in a position to take action (1). The ultimate goal of each communicable disease surveillance system is to collect the required information enabling to undertake, whenever needed, appropriate action for disease control and prevention. Up to now all decisions regarding the control and prevention of viral hepatitis in Europe are taken at national, or even sub-national level. The European Commission is committed to protect and to improve human health by prevention of communicable diseases (2). With millions of people crossing internal and external European borders every day, there is an increasing call for disease surveillance and prevention networks at the level of the European Union. The recent enlargement of the EU adds a new dimension to this.

Viral hepatitis A and B are listed in decision No 2000/96/EC on the communicable diseases to be progressively covered by the Community network under Decision No 2119/98/EC of the European Parliament and of the Council. In April 2004, the regulation (EC) No 851/2004 of the European Parliament and the Council on establishing a European Centre for Disease Prevention and Control was published. One of its numerous tasks is to co-ordinate collection, validation, analysis and dissemination of data at European Union level, including data on vaccination strategies (Article 11).

Worldwide, the prevention of hepatitis B infection has become a high priority as the consequences of acute and chronic hepatitis B infection have been recognized as a major public health problem (3). Europe is a patchwork of hepatitis B endemicity and the migration of workers and populations across Europe and the world has led to a recent change in the HBV epidemiology in some EU countries, where residents from countries with high and intermediate HBV endemicity mix with inhabitants of low endemicity countries (4,5). Furthermore, several European countries had a changing hepatitis A endemicity in the recent years, making discussions on implementation of HAV immunization programmes difficult, yet necessary.

EUROHEP.NET is a concerted action granted by the DG Research of the European Commission (QLK2-2002-01579) that started on September 1st, 2002 and lasted for 36 months. EUROHEP.NET was set up for a future European network on surveillance and prevention of vaccine-preventable hepatitis in 28 countries (15 countries of the European Union, the 12 associated states in 2002 and Israel). Besides the fact that EUROHEP.NET combines surveillance and prevention aspects for hepatitis A and hepatitis B, from a methodological point of view it is unique in terms of the region that is targeted, and by the fact that it brings together various stakeholders involved in infectious disease surveillance activities i.e. Public Health Institutes, Ministries of Health and academia.

Although most of the European Union countries make use of a mandatory routine surveillance system for acute cases of hepatitis A and hepatitis B, the existing data cannot be simply combined.

A wide variety of surveillance systems (6) and prevention measures (7) are applied. Countries have historically chosen for surveillance systems that were affordable and feasible in their local context, the goal has always been to control communicable diseases on the own territory. The same applies for hepatitis A and B vaccination strategies that are implemented in the EU, the associated states and Israel; they vary from closely regulated and compulsory in some member states, to non-reimbursed, optional vaccination programmes in others.

However, the real magnitude of the diversity of surveillance and vaccination strategies for hepatitis A and B, also taking into account the new member states of the enlarged EU, the associated states and Israel, has never been mapped out. In order to comment on the feasibility of establishing a future European network that covers the surveillance and prevention of vaccine-preventable hepatitis, it is a prerequisite to make an inventory of the currently applied methods and measures in the different member states and associated states. This inventory will be

valuable to identify possible hurdles towards harmonisation of the surveillance and immunization programmes within this region.

Methods

Twenty-eight countries were invited to join the project in December 2002. All countries were addressed through their Ministries of Health or National Institutes for Public Health.
The survey questionnaire was composed of four sections:

- Surveillance: including description of the surveillance systems, flow chart of the reporting, details of reported data and used case definitions for surveillance purposes in 2001
- Epidemiology: including total number of acute cases per year, age-specific incidences, carrier rates and sources for this information during the period 1990-2001.
- Burden of disease: including hospitalised cases and hospitalisation days, mortality, carrier rates for hepatitis B, cirrhosis cases and liver transplantations during the period 1995-2001.
- Prevention: including active immunization programmes for risk groups, universal programmes, vaccines used, reimbursement modalities and booster policy at the time of the survey.

Retrospective data were collected for the period 1990-2001. The questionnaire was available online on the Eurohep.net website to all epidemiologists in 28 countries. Active reminding was performed to improve the response rate.
Results were discussed during the partners' progress meetings and country-specific information was returned to all participants for validation and feedback. Interim results were presented at the EUPHA 2004 meeting (8).

Results

Responses were received from 20 countries (Austria, Belgium, Bulgaria, Czech Republic, England & Wales, Estonia, Germany, Greece, Hungary, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Romania, Slovak Republic, Slovenia).
Eight countries did not join the project for several reasons, of which the most important were personnel shortage and participation in content-related ongoing projects.
Two additional countries, Turkey and Norway, joined the project in a later stage (spring 2004).

1. Hepatitis A

a. Surveillance systems:

The collected surveillance data were analysed with regard to their comparability of measurement and reporting of hepatitis A epidemiology. In all 22 responding countries, hepatitis A is included in the national surveillance system (Table 1).

TABLE 1
Basic information on surveillance systems for hepatitis A and B

Basic information on surveillance systems according to the responses of the countries		**Number of countries**	
		Hepatitis A	Hepatitis B
Included in the national surveillance		22/22	22/22
Type of surveillance:	active	5	3
	passive	18	20
	mandatory	22	22
	voluntary	2	2
	sentinel	2	2
	laboratory	11	12
Availability of the surveillance data at the central level (National Surveillance Centre and/or MOH)			
	individual data	15	15
	aggregated data	10	11
Frequency of data reporting to the surveillance centre			
	monthly	5	5
	weekly	4	4
	continuously	11	11
Frequency of data analysis at the surveillance centre			
	quarterly	1	1
	monthly	4	5
	weekly	7	6
	continuously	9	9

Five countries report active surveillance and 18 passive surveillance. Belgium has a sentinel system in place for HAV. Italy has two systems in place: Sistema Epidemiologico Integrato dell'Epatite Virale Acuta (SEIEVA) and the surveillance system of the Ministry of Health. The latter system covers the whole Italian population and is based on data collected through obligatory notifications, sent by clinicians to local health

units. SEIEVA covers approximately 60% of the Italian population, based on a number of local units wishing to participate. A public health professional at this local unit actively contacts the case when a case is reported through the obligatory system. A questionnaire is filled out and information on risk factors is provided. SEIEVA does not strictly search actively for acute cases, but does an active investigation of reported acute cases.
EC case definition[1] for HAV is used in 15 of the 22 countries. In 6 countries another definition is used, of which 3 close to the EC case definition for a confirmed case. One country has no standard case definition for acute HAV for surveillance purposes.

Definition of a hepatitis A outbreak differs widely although 10 of the 22 countries use the following definition: 'two or more epidemiologically linked cases'. Norway adds 'an unexpected number of reported cases among risk groups' as a second part of this definition, 4 countries require at least 3 epidemiologically linked cases. One country needs 'more than 5 cases' to report an outbreak and one country defines an outbreak 'if 1/3 of the members of the community are infected'. In 4 countries the following similar definitions are used: 'any extreme incidence according to place, time'; 'incidence higher than the average in a specified population and time'; 'accumulation of cases in a specific time and location'; 'occurrence of cases with common source of infection and ways of spreading in a community or region'. Turkey reported to have no standard definition for hepatitis A outbreaks.

A wide variety exists in age categories used for calculating age group specific incidences. Three countries do not report age categories at all for hepatitis A surveillance, nine countries use age categories that are different from all others and 10 countries have age categories that are similar with at least one other country. The most uniform way of splitting a population into age categories, used in 6 countries, is:
<1/1-4/5-9/10-14/15-19/20-24/25-29/30-34/35-39/40-44/45-49/50-54/55-59/60-64/65+, which is identical to the categories used by WHO (9) (Table 2).

[1] Probable: clinical picture compatible with hepatitis (e.g. discrete onset of symptoms and jaundice or elevated serum aminotransferase levels) and epidemiological link. Confirmed: clinical case definition and laboratory confirmation (IgM antibody to hepatitis A or nucleic acid in serum or antigen in stool).

TABLE 2
Age categories used for surveillance purposes

4 countries	0	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
2 countries	0	1-4	5-9	10-14	15-19	20-24	25-34		35-44		45-54		55-64		65+
1 country	0	1-4	5-9	10-14	15-24		25-34		35-44		45-54		55-64		65+
1 country	0	1-4	5-9	10-14	15-24		25-44				45-64				65+
1 country	0	1-4	5-14		15-24		25-44				45-64				65+
1 country	0	1-4	5-9	10-14	15-44						45-64				65+
1 country	0	1-4	5-9	10-14	15+										
4 countries	0	1-11		12-18	19-34				35-64						65+
1 country	0	1-3	4-7	8-14	15-19	20-29		30-39		40-49		50-59		60+	
1 country	0	1-6		7-14	15-17	18-29		30-39		40-49		50-59		60+	
1 country	0	1-2	3-6	7-9	10-14	15-19	20-29		30-39		40-49		50-59		60+
1 country	0-14				15-24		24+								
	0-14				15-24		25-64								65+

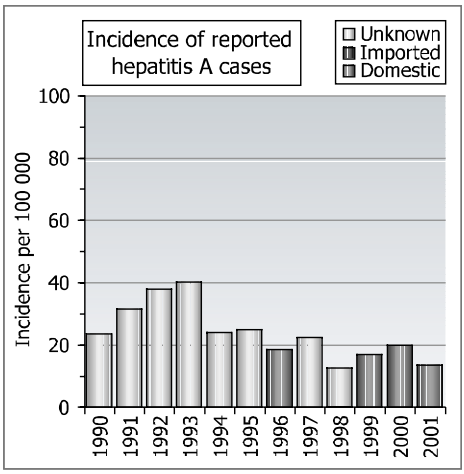
In countries with electronic databases with individual data at national level, any age category is possible. 11 countries report individual data at the central level (Belgium, Czech Republic, Germany, England & Wales, Greece, Israel, Italy, Luxembourg, Malta, The Netherlands and Norway).

If a country has an electronic database with individual data at national level, the rearrangement of age groups is feasible.

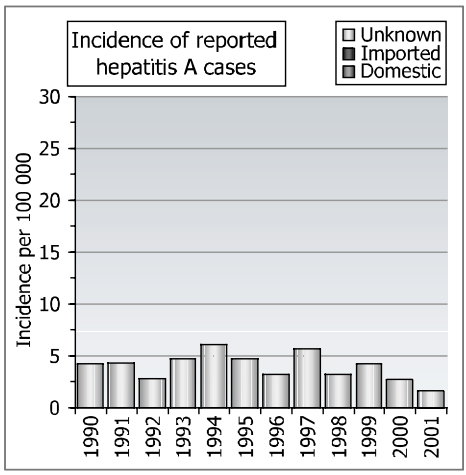
b. Epidemiology

A diversity of data is now available as a result of different surveillance systems, but this is no guarantee for obtaining comparable country-specific hepatitis A data. Four different patterns of incidence of acute hepatitis A (Figure 1) were distinguished in analysing incidence change in countries over time: countries with relatively high incidences (>20 acute cases/100,000/year) that do not seem to decrease over time (e.g. Slovak Republic), countries with relatively constant and low incidences (<10 acute cases/100,000/year) (e.g. Austria) and countries with high incidence, rapidly falling over time to much lower incidences (e.g. Latvia). The fourth graph shows the situation in a country with universal vaccination: in Israel the fall in incidence since 1999 is likely to be due to the implementation of a universal hepatitis A programme for 18-months old children (10). The figure shows the amount of acute cases that is domestically acquired, imported from abroad or of unknown acquirement.

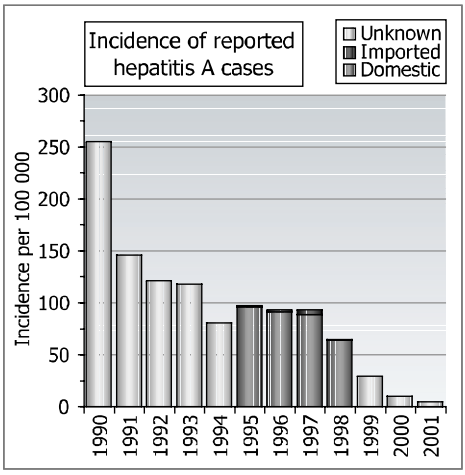
FIGURE 1
Four different patterns of acute hepatitis A incidence



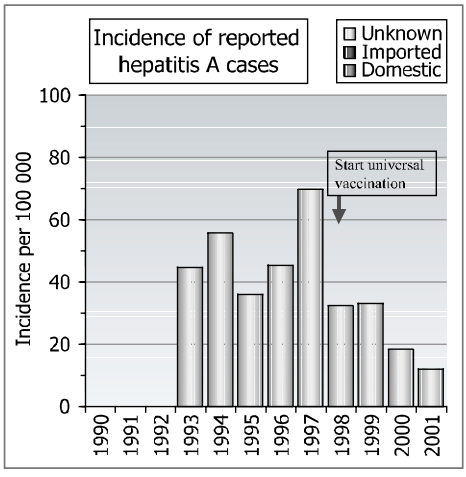
Slovakia



Austria



Latvia



Israel

c. Burden of disease

Data on hospitalised acute hepatitis A cases, as well as number of hospitalisation days, mortality by acute hepatitis and liver transplants were surveyed as an indicator of the burden of disease for hepatitis A.
For hepatitis A the source of the hospitalisation data is official notification (8 countries), hospital statistics (8 countries), clinical records (1 country), not specified (1 country) or not available (4 countries). Source for the mortality data due to hepatitis A is the official notification in 15 countries, hospital statistics in 1 country, not specified in 3 countries and not available for 3 countries.
A major problem in the analysis of these data on burden of disease, is the use of both ICD-9 and ICD-10 codes, whereas in the ICD-9 no distinction is made between viral hepatitis types, nor between acute and chronic cases. In 2000, sixteen countries officially used the ICD-10 (2000) (11): Austria, Czech Republic, Estonia, Germany, Hungary, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Romania, Slovak Republic, Slovenia, England & Wales.
In five countries (Bulgaria, Czech Republic, Hungary, Romania, Slovakia) hospitalisation is compulsory for acute hepatitis A cases. All suspect cases must be admitted to an infectious disease hospital ward: in reality, some cases are treated at home by family doctors.

d. Immunization strategies

Apart from active or passive immunization strategies, no further questions on other preventive issues were asked.
Universal vaccination for hepatitis A is in place in Israel, vaccinating all infants at the age of 18 months (and second dose at 24 months) since 1999. Italy has a regional hepatitis A programme in place in Puglia.
All other participating countries perform risk group vaccination (Table 3).

2. Hepatitis B

a. Surveillance systems

The collected surveillance data were analysed with regard to their comparability of measurement and reporting of hepatitis B epidemiology. In all 22 countries, viral hepatitis is included in the national surveillance system (Table1).
Three countries report active surveillance and 20 countries passive, Italy has two systems in place (see hepatitis A) and Turkey did not answer the question. The Netherlands have an additional sentinel system for molecular typing of hepatitis B.

TABLE 3
Risk group vaccination programmes for hepatitis A

	Countries	Total
1) Risk behaviour		
IV and non-IV drug users	BE, BG, HU, IL, IT, LV, LT, NO, SI	9
Men who have sex with men	BE, BG, DE, IL, LV, LT, SI	7
International travellers to endemic areas	BE, BG, CZ, UK, EE, DE; HU, IL, IT, LV, LT, LU, MT, NL, NO, SK, SI	17
Pre-school children attending day care centres	LV, LT	2
2) Medical risk		
Chronic liver disease patients	BE, BG, UK, DE, GR, HU, IL, IT, LT, LU, MT, NL, NO, SI	14
Clotting factor disorder patients	BE, BG, UK, DE, GR, HU, IT, LV, LT, NO, SI	11
3) Occupational		
Medical and paramedical personnel in hospitals including kitchen staff and cleaners	BE, DE, LT, LU, MT, SK	6
Day care centre personnel	BE, DE	2
Food service establishment workers/ food handlers	BG,GR, LT, MT, PL	5
4) Others		
Persons residing in areas of extended community outbreaks	AT, BG, UK, EE, HU, IT, LV, LT, RO	9
Residents and staff of closed communities (psychiatric institutions and institutions for mentally disabled)	AT,BE, BG, DE, HU, IT, LV, LT	8
Contacts of infected persons (post-exposure prophylaxis)	AT, BE, CZ, UK, EE, DE, GR, IL, IT, LV, LT, MT, LU, NL, PL, RO, SK	17
Children of migrants (visiting an endemic country of origin)	BE, UK, NL, NO, SI, IT	6
Other*	BE, BG, DE, LV, SK	5
No risk group vaccination	TR	1

AT= Austria; BE= Belgium; BG= Bulgaria; CZ= Czech Republic; EE= Estonia; DE= Germany; GR= Greece; HU= Hungary; IL= Israel; IT= Italy; LV= Latvia; LT= Lithuania; LU= Luxembourg; MT= Malta; NL= Netherlands; NO= Norway; PL= Poland; RO= Romania; SK= Slovak Republic; SI= Slovenia; UK= England and Wales; TR= Turkey

*Other risk groups mentioned: candidates for liver transplantations, professionals (sewage water treatment) in contact with waste water and faeces, laboratory personnel, staff of social care institutions.

The EC case definition[2] is used in 16 of the 22 countries. In 6 countries another case definition is used of which 2 similar to the EC case definition.

A wide variety exists in age categories used for age-specific incidences (Table 2). Six countries do not report age categories at all, 8 countries use age categories that are different from each other and 8 countries have age categories that are similar with at least one other country. The availability of centralized individual data in 15 countries offers the opportunity to create any form of age categories.

b. Epidemiology

Fifteen participating countries are considered of low endemicity for hepatitis B (carrier rate < 2%) (Austria, Belgium, Czech Republic, England & Wales, Estonia, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Netherlands, Norway, Slovak Republic, Slovenia). Three countries have prevalences of hepatitis B carrier rates between 2 and 8%: Bulgaria, Romania and Turkey.
No data on the HBsAg prevalence were communicated by Israel, Luxembourg, Malta and Poland. Since used case definitions differ, a comparison between reported incidences and prevalences of acute hepatitis B cases can hardly be made.

c. Burden of disease

Data on hospitalised acute hepatitis B cases, as well as number of hospitalisation days, mortality by acute hepatitis, incidence of liver transplants, number of cirrhosis cases and hepatocellular malignancies, are used to estimate the burden of disease for hepatitis B.
The sources of the hospitalisation data are official notification for 7 countries, hospital statistics for 9 countries, clinical records for 1 country. In 5 countries hospitalisation data are not available. The sources related to mortality due to hepatitis B are the official notification in 16 countries, hospital statistics in 1 country and not specified in 3 countries. In 2 countries mortality data are not available.

[2] Probable: clinical picture compatible with hepatitis, e.g. discrete onset of symptoms and jaundice or elevated serum aminotransferase levels and that is HBsAg positive. Confirmed: a case that meets the clinical case definition and is laboratory confirmed (IgM antibody to antiHBc or detection of HBV nucleic acid in serum)

A major problem with the analysis of these data on burden of disease, as for hepatitis A, is the use of both ICD-9 and ICD-10 codes.
Compulsory hospitalisation is in place in the Czech Republic, Bulgaria, Hungary, Romania and Slovakia for a fixed time period, varying between 14 and 35 days.

d. Immunization strategies

Apart from the immunization related prevention measures, no questions were asked on other preventive strategies.
Antenatal universal screening policies for pregnant women are in place in 14/22 countries, except for Bulgaria, Israel, Lithuania, Luxembourg, Norway, Poland and Romania. Turkey has selective antenatal testing.
The presence of antenatal screening policy depends on other installed programmes.
Luxembourg has a recommended universal infant vaccination programme at 1-2 months, and Lithuania a mandatory vaccination at 2-3 days of age; a gap appears to exist between birth and first vaccination for children of carrier mothers. In Bulgaria, Israel, Poland and Romania, neonatal vaccination is performed within 12 hours after birth, which makes antenatal screening unnecessary.
In Norway, no universal infant vaccination programme is in place and universal antenatal screening is planned to start in 2005.

Universal infant or childhood hepatitis B vaccination policies, in addition to risk group programmes, are in place in 18 countries (Table 4). In Germany, vaccination is voluntary, however, a 'universal' hepatitis B vaccination is recommended for all infants, children and adolescents up to the age of 17 years (inclusive) since 1995.

Three countries do not have a universal vaccination programme: the Netherlands, Norway and England & Wales. These 3 countries are low endemic and therefore, hepatitis B is viewed as a minor public health problem that does not justify additional expenses on the health care budget. They chose to provide hepatitis B vaccines only to well defined risk groups.
In 8 countries both neonatal/infant and childhood/adolescent programmes are implemented simultaneously: Belgium, Czech Republic, Estonia, Greece, Italy, Lithuania, Poland and Romania. These countries only have to keep the adolescent programme running until the first cohort of vaccinated infants reaches the age of adolescent vaccination. This was already the case for Italy, where the first infant cohort, vaccinated in 1991, reached the age of 12 years in 2003.

TABLE 4
Universal hepatitis B vaccination programmes in responding countries

Country	Prenatal screening	Newborn/ Infant Universal Vaccination Programme			Adolescent/ Childhood Universal Vaccination Programme		
		Starting at age	Year of introduction	Schedule in months	Starting at age	Year of introduction	Schedule in months
Austria	Universal	Infant (3m)	1998	0.1.2.12			
Belgium	Universal	Infant (2m)	1999	0.1.2.12	Adolescent (12 y)	1999	0.1.6
Bulgaria		**Newborn***	1991	0.1.6			
Czech Republic	Universal	**Infant (9-12 w)***	2001	0.1.6	**Adolescent (12 y)***	2001	0.1.6
England and Wales	Universal	No universal programme					
Estonia	Universal	Newborn	2003	0.1.6	Adolescent (12-13 y)	1999	0.1.6
Germany	Universal	All children Infant (2m)-Adolescent (17y)	1995	0.1.6	All children Infant (2m)-Adolescent (17y)	1995	0.1.6
Greece	Universal	**Infant (2m)***	1998	0.1.6	**Child (6 y)***	1998	0.1.6
Hungary	Universal				**Adolescent (14 y)***	1999	0.1.6
Israel		Newborn	1992	0.1.6			
Italy	Universal	**Infant (3m)***	1991	0.2.8	**Adolescent (12 y)***	1991	0.1.6
Latvia	Universal	**Newborn***	1997	0.1.6			
Lithuania		**Newborn***	1998	0.1.6	**Adolescent***	2002	0.1.6
Luxembourg		Infant (1-2 m)	1997	0.2.10			
Malta	Universal				**Child (9 y)***	1997	0.1.6
Netherlands	Universal	No universal programme					
Norway		No universal programme					
Poland		**Newborn***	1993-1996	0.1.6	**Adolescent (14 y)***	2000	0.1.6
Romania		**Newborn***	1995	0.2.6	**Child (9 y)***	1999	0.1.6
Slovak Republic	Universal	**Infant (9 weeks)***	1998	0.1.6			
Slovenia	Universal				**Child (7 y)***	1998	0.1.12
Turkey	selective	Infant (3m)	1998	0.1.6			

*** Mandatory vaccination**

No booster policy was reported in any of the universal hepatitis B immunization programmes. Coverage rates for the universal vaccination programmes are available in 15 countries.
In all 12 countries with mandatory universal immunization programmes, complete reimbursement is provided.
Several countries with universal vaccination programmes also have extensive risk group programmes (Table 5).

In twelve countries booster vaccination for risk groups is recommended. Slovenia reports recommended post-vaccination anti-HBs testing of immunocompromised persons every 6 months. Booster policy in England & Wales exists for groups at continued risk. The decision whether somebody is at risk, is made at the local level on an individual basis. If an individual from a high risk group is considered to be at risk after a number of years (normally 5 years) after the primary hepatitis B immunization, then a booster dose will be given. In Germany there is a recommendation for a booster dose after 10 years for those with continuous risk of infection and expected exposure to high infective doses (e.g. IV drug users, recipients of blood products,…). Additional risk groups that are vaccinated were mentioned in 12 countries.

Discussion

Several limitations were encountered in the analysis of the data. As the major aim of EUROHEP.NET is to study the feasibility of creating a network, the availability of data is an important issue. Data were recorded retrospectively for the period 1990-2001.
The source of the data is not always national. Often there is decentralisation or only data from a limited number of regions are available. Data in this publication are as reported by the respective countries and validation has only been done at country level. We recognize the need for a continuous validation and update of the data.
Due to the wide range of questions, the country correspondents not always had direct access to the requested information. Missing information could also be interpreted as not available or not traceable for the correspondent at the time of the survey, or not existing. Possible differences in interpretation can occur in terminology used in the questionnaire: e.g. active or passive surveillance, without mentioning what is precisely understood by active or passive surveillance.
Potential hurdles for harmonisation are related to existing differences in case definitions used, variety in age categories used for surveillance purposes and the frequency of data reporting (continuously, quarterly, yearly,…) and analysis at the central level. Case definitions used in the

TABLE 5
Risk group vaccination programmes hepatitis B

Risk group programmes	Countries	Number of countries with risk group programme in place (N=22)	Number of countries where the programme is mandatory	Number of countries where a booster is given	Number of countries where the programme is reimbursed
Injecting drug users	AT, BE, BG, CZ, UK, DE, GR, IL, IT, LU, MT, NL, NO, SK, SL, TR	16	2	1	10
Men who have sex with men	BE, BG, UK, DE, GR, IL, IT, LU, MT, NL, NO, SK, TR	13	1	0	7
Attendees of STI clinics	BE, BG, DE*,UK, GR, IL, IT, MT, NL, SK, SI, TR	12	0	0	5
Dialysis patients	BE, BG, CZ, UK, DE, GR, HU, IT, LV, LT, LU, MT, NL, NO, PL, SK, SI, TR	18	8	8	13
Groups with occupational risk	AT, BE, BG, CZ, UK, EE, DE, GR, HU, IL, IT, LV, LT, LU, MT, NL, NO, PL, RO, SK, SI, TR	22	11	3	16
Household contacts of known hepatitis B carriers	BE, BG, UK, DE, GR, HU, IL, IT, LV, LT, LU, MT, NL, NO, PL, RO, SK, SI, TR	19	7	1	13
Hospitalised patients					
Neonates born to HBsAg positive	AT, BE, BG, UK, EE, DE, GR, HU, IT, LV, MT, NL, NO,PL, RO, SK,	18	12	1	14
mothers	SI, TR				
Others**	BE, BG, UK, DE, GR, HU, IT, MT, NL, NO, PL, SI	12	2	0	5

*Germany does not have STI clinics but the recommendation is in place for STI risk groups.
**sex workers, children of migrants, migrants < age 25 years, prisoners for a longer period, travellers in some conditions, (para)medical students, residents in institutions for learning difficulties, patients with chronic kidney diseases, hepatitis C carriers, clotting factor disorder patients, transplantation candidates, thalassaemia patients, patients with severe mental handicap, chronic liver diseases patients, HIV+ patients, multi-transfusion patients, children with oncohaematological diseases.

participating countries differ widely in clinical description, laboratory criteria, and in case classification for acute viral hepatitis when we compare with different international standards (EC, WHO, CDC). Even these international standards differ from one another. In addition, some countries report to use the EC case definition, but in the correspondent's comments, minor to major differences become noticeable. For data to be reliable, it is necessary to establish quality control and collect data in an accepted, standardised way using common definitions.
Since the surveillance methods and the case definitions used differ so widely in Europe, comparison of epidemiological data is almost impossible. Furthermore, surveillance systems are designed for monitoring trends, obtaining accurate incidence rate is often not their primary goal. A detailed comparison of different surveillance systems however is not possible, not only because of the different case definitions, but also because the surveillance systems work in different ways.
Many countries report on hospitalised cases and mortality rates, but different ICD codes are used. ICD-10 was endorsed by the 43rd World Health Assembly in May 1990 and came in use since 1994 in the WHO member states. Many countries, though, have not yet adopted this standard many years later (12). Data on hospitalisation days, total number of liver transplants and the eventual proportion due to hepatitis A or B are rarely available. The burden of disease for chronic hepatitis B is not quantifiable in all participating countries.

Most countries have risk group vaccination strategies against hepatitis A. The overall incidence rate is not sufficient to decide on preventive measures, since age specific prevalence, regional variations, variations by ethnic groups and by risk groups are equally important. Further on, dynamics and the estimate of the burden of hepatitis A should be taken in consideration.
Also, different vaccination strategies against hepatitis B are used. Vaccination programmes have evolved in different countries in function of the perceived disease burden in their populations and the availability of an effective vaccine. Three responding countries have no universal vaccination programme in place, and all participating countries mention at least one risk group to be vaccinated against hepatitis B. Countries with both neonatal/infant and childhood/adolescent programmes in place, are able to reach a significant part of the population in a relatively short time. As soon as a critical mass of a certain cohort is vaccinated, we may expect that circulation will diminish, transmission will be better controlled in that group and the effect of the programme will be more than the individual benefit (13).
Studies on vaccination coverage as well as epidemiological surveys are important to evaluate vaccination effectiveness.

Conclusions

The collaboration of the various stakeholders from different countries involved in infectious disease surveillance activities (Public Health Institutes, Ministries of Health, and Academia) makes it possible to collate data on surveillance with data on immunization programmes and to identify gaps. This creates the optimal platform for a future network. The current results clearly show the patchwork of existing programmes and policies in the European region. Based on the information gathered through the project, the feasibility of implementing standardised guidelines, respecting as much as possible the current practices in the different countries and guaranteeing optimal protection of all EU citizens against vaccine-preventable hepatitis, will be studied.

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Résumé

Objectif: EUROHEP.NET est une «action concertée», financée par la Commission Européenne, qui étudie la faisabilité de créer un réseau européen pour la surveillance et prévention des hépatites virales vaccinables. Ce réseau rassemble les informations nécessaires sur les techniques et la méthodologie du système de surveillance en place et les mesures de prévention par vaccination, décrit les différences entre les pays participants et, finalement, propose des recommendations à la Commission Européenne pour harmoniser cette surveillance et la prévention en Europe.

Méthode: L'enquête EUROHEP.NET menée en 2003, a été répondue dans 22 des 28 pays invités à participer.

Résultats: Dans tous les pays participants, un système de surveillance de l'hépatite A et B est en place, mais les méthodes utilisées varient beaucoup. Les différentes définitions pour un cas aigu rendent les analyses des données épidémiologiques difficile. Des programmes de vaccination universelle contre l'hépatite B sont généralement en place pour les enfants, ainsi que des programmes ciblés pour les groupes à risque pour les hépatites A et B.

Discussion et conclusion: En Europe, il y a un besoin d'harmonisation du système de surveillance utilisé pour les hépatites A et B et des mesures de prévention par vaccination. Les obstacles potentiels pour cette harmonisation ont été identifiés au cours de ce projet européen: p.e. la différence entre les définitions de cas, les différentes catégories d'âge utilisées. Nous pouvons conclure que la création d'un réseau comme l'EUROHEP.NET est faisable en Europe et est utile comme plate-forme de discussion avec les différents partenaires des institutions concernées. Un tel réseau avec comme partenaires les Ministères de la Santé, les Instituts Nationaux pour la Santé Publique, et les universités, offre une opportunité unique pour échanger des informations valables avec une dimension nationale et internationale.

Samenvatting

Doelstelling: EUROHEP.NET is een 'concerted action', gefinancierd door de Europese Commissie, die de haalbaarheid bestudeert van het creëren van een netwerk in Europa rond surveillance en preventie van vaccineerbare virale hepatitiden. Het netwerk verzamelt de noodzakelijke informatie op niveau van de deelnemende landen omtrent gebruikte surveillancetechnieken en preventiemaatregelen door vaccinatie, spoort de onderlinge verschillen op en brengt deze in kaart om uiteindelijk aanbevelingen voor te stellen aan de Europese Commissie voor harmonisatie van deze surveillance en preventie in Europa.

Methode: De resultaten van de Eurohep.net enquête die in 2003 werd uitgevoerd rond deze onderwerpen worden hier weergegeven voor 22 deelnemende landen.

Resultaten: In alle deelnemende landen gebeurt surveillance van hepatitis A en B, maar de methoden variëren sterk. Verschillende definities van een acuut ziektegeval bemoeilijken de analyse van de epidemiologische data. Hepatitis B-vaccinatieprogramma's voor kinderen en hepatitis A- en B-vaccinatieprogramma's voor risicogroepen, zijn bijna overal aanwezig.

Discussie en conclusie: Er is duidelijk nood aan harmonisering van de gebruikte surveillancemethoden en preventieve maatregelen in Europa voor hepatitis A en B. De mogelijke obstakels hiervoor werden geïdentificeerd: onder andere verschillen in de gebruikte definities van een acuut ziektegeval, variatie in gebruikte leeftijdscategoriëen, frequentie van rapportering van gegevens. We kunnen besluiten dat het opzetten van een netwerk als het EUROHEP.NET haalbaar is in Europa en nuttig als platform voor discussie met partners uit verschillende instellingen. Het samenbrengen van partners uit ministeries van volksgezondheid, nationale gezondheidsinstituten, experten in het betrokken domein en academici, biedt een unieke gelegenheid tot uitwisseling van waardevolle informatie met nationale en internationale dimensie.

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