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Nationwide outbreak of *Salmonella enterica* serotype Give infections in infants in France, linked to infant milk formula, September 2008

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On Thursday 18 September 2008, the hospital of Nantes in west France informed the District Health Office of a case of salmonellosis in an exclusively bottle-fed infant. On Monday morning 22 September, two additional cases of salmonellosis in infants were reported by the hospital of Niort in southwest France. The serotype of the three cases was unknown at that time.

At the same time, the database of the French national reference centre (NRC) for Salmonella showed a recent increase in the proportion of *Salmonella enterica* serotype Give isolates from infants. The overall number of S. Give isolates received by the NRC in 2008 was 19, similar compared to the same period in previous years. However, six of the recent isolates had been obtained from infants, whereas this proportion was zero in previous years.

Epidemiological investigations

An investigation was started to identify any common exposures between the three reported cases of infant salmonellosis, and to identify the serotype(s) involved. In addition, we investigated the cases of S. Give in infants identified by the NRC.

The parents of the three reported infant salmonella cases were interviewed by the district health office on their consumption of foods and drink and other exposures. The infants, aged 9 weeks, and 4 and 5 months respectively, had developed symptoms of febrile diarrhoea between 13 and 18 September and had been hospitalised between 17 and 19 September. The infants had not been in contact with other diarrhoea cases, and had no common exposures except for their infant formula milk. All three drank the same brand (brand X) formula milk. The batch number of the product consumed during the days before the onset of symptoms was known for two cases. The serotype of one of the three isolates was known on 25 September and confirmed as Give.

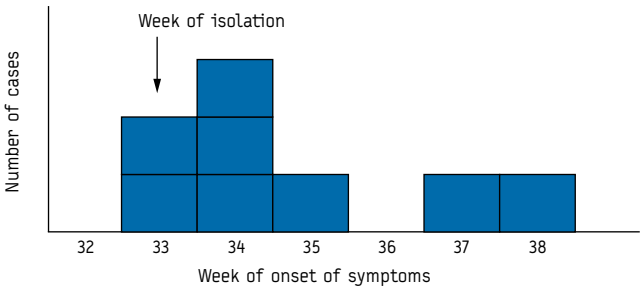
As of 25 September, five of the six infant cases of S. Give in the NRC database have been investigated. The infants are between 1.5 and 4.5 months of age and live scattered throughout France. They developed symptoms between 17 and 28 September: all had diarrhoea, which was bloody for four infants, four had fever, and two were hospitalised. The parents of all five infants reported feeding their infants the same brand X of infant powdered formula milk in the week before onset of symptoms. The batch number is known for one case and it is the same batch as in the two cases mentioned above. No other common exposures were identified.

The preliminary results of the investigation strongly suggest the brand X formula milk as the vehicle of transmission. On 22 September, the authorities and the producer decided to recall the incriminated batch. On 23 September, the producer initiated the recall of this batch. On 24 September, the recall was extended to all batches since consumers had difficulties identifying the batch number. Consumers have been advised not to drink the product and to return it to the place of sale.

Investigations are ongoing, particularly microbiological examination of the product and investigations of additional infant salmonellosis cases. Since the recall, five additional cases of infant salmonellosis have been reported. All five infants had consumed the incriminated product before illness. The isolates of these cases are currently being serotyped

Figure 1

Cases of *Salmonella* Give infection in infants, by week of onset of symptoms, France, August - September 2008



A European alert was issued by France through the Rapid Alert System for Food and Feed (RASFF) on 23 September.

A warning was posted on the European Early Warning and Response System on 25 September, and information was sent via the European Food and Waterborne Diseases and Zoonoses Network at the European Centre for Disease Prevention and Control (ECDC).

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West Nile fever in a patient in Romania, August 2008: case report

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On 25 August 2008, the National Institute of Research Development for Microbiology and Immunology (the "Cantacuzino" Institute) in Bucharest, Romania reported the detection of IgM antibodies against West Nile virus in the serum of a male patient in his mid forties, from Braila town (Braila county, south eastern part of Romania).

Case report

Clinical data

On 3 August 2008 the patient fell ill with fever between 38° and 39°C, severe headache, macula-papular exanthema, vomiting, diarrhea, ocular aches. His symptoms worsened and five days later he was admitted to the infectious disease section of the local hospital with moderate clinical symptoms of meningitis. A possible rickettsiosis was diagnosed and he received doxycycline and symptomatic treatment. The patient fully recovered and was discharged on 15 August. Patient history revealed that he had gone fishing two weeks before the onset of disease, in Gropeni village in Braila county, on the shores of the Danube river where IgG against West Nile virus had been detected in horses in 2007.

Laboratory findings

Cerebrospinal fluid (CSF) sampled at time of admission was clear, the cell count was 20 per mm3 with 100% lymphocytes. Leptospirosis was considered as differential diagnosis but the slide agglutination test was negative. Samples were sent to "Cantacuzino" Institute on 18 August for further testing for *Rickettsia conorii*, however, the immunofluorescence test was negative. Although the samples had been sent only for the diagnosis of a rickettsial disease, they were also tested for antibodies against West Nile virus, according to the requirements of surveillance system for West Nile fever [1]. IgM antibodies against West Nile virus in the patient's serum were detected on 25 August, the positive result of the CSF sampled at the time of hospital admission was obtained on 3 September. The case was thus confirmed according to the European Centre for Disease Prevention and Control (ECDC) case definition.

Epidemiological investigations

The local public health authority (PHA) of Braila sampled mosquitoes in the village where the patient had been fishing. The samples sent on 4 September to the "Cantacuzino" Institute tested negative.

Epidemiologists checked the consultation registry at the infectious disease hospital in Braila and at the general practitioner (GP) clinic in the village where the patient had been fishing, searching for patients presenting with the symptoms "fever and exanthema" between 15 July and 26 August. This led to the detection of a female patient who had been hospitalised at the infectious disease centre on 20 August and reported to the Centre for Prevention and Control of Communicable Diseases, Public Health Institute of Bucharest on 2 September. Her blood was tested for antibodies against West Nile virus and *R. conorii*. The test results were negative for IgM antibodies.

Information about the mortality in birds and horses in the area as well as results from surveillance for the presence of West Nile virus in birds and animals, performed in 2008, was requested from the local (Braila Sanitary-Veterinary Direction - SVD) and the national veterinary authorities (National Sanitary-Veterinary Authority and Food Safety) and the Diagnostic Institute for Animal Health. All veterinary institutions were also notified about the human case.

Immediate control measures on local level

Doctors at the infectious disease hospital in Braila and the village GP were informed about the case and asked to perform serum investigation for West Nile virus in patients presenting with fever associated with exanthema, without a known cause.

The administrative authorities of the two localities were also notified about the case, as they are responsible for specific control measures against mosquitoes.

Health education campaigns for the general population included messages about informing a physician in case of sickness (fever and rash) and taking protective measures (clothing, repellents) for mosquito bites and sanitary measures in and around their living space.

Risk assessment and implications for the future

A risk analysis of the current situation performed by the specialists of the Centre for Prevention and Control of Communicable Diseases (CPCCD) on 1 September concluded that Braila county is one of the counties in Romania with a risk for the occurrence of West Nile virus. Climatic conditions, temperature, humidity (rain, soil humidity, natural water reservoirs such as Danube delta) and the presence of migratory and indigenous wild birds and horses favour

the existence and multiplication of the *Culex* spp. mosquitoes. Considering this and the recent detection of a human case of West Nile virus infection several measures were proposed by the CPCCD specialists:

- In the area of Gropeni which is currently the only remaining area at risk, regular surveillance of the mosquito population will continue and samples will be sent for analysis to "Cantacuzino" Institute.
- A serum survey in the human population is needed in order to identify the infection among the population of the Gropeni area.
- The County Haematological Centres are not equipped to detect the West Nile virus in donated blood, therefore a temporary suspension for blood donation from people of the village of Gropeni was recommended until the end of October 2008.
- A decision to prolong this period/ to extend temporary suspension of blood donation might be taken on the basis of monitoring climatic conditions and mosquito population from Gropeni area.
- Serum testing of random samples from the serum deposits of the Braila Haematological Centre from blood donated in August should be undertaken to collect additional information regarding the current situation.

West Nile virus surveillance in Romania

The vector for West Nile virus present in Romania is *Culex* spp. (*molestus / pipiens*), which is active from May to October each year. Since 1997, active surveillance for West Nile virus in humans, has been performed between the months of May and October in all counties along the river Danube, including Bucharest. Furthermore, surveillance is ongoing in wild birds and horses. Humans with clinical symptoms of meningitis and clear CSF are tested for the presence of IgM antibodies against West Nile virus. Suspected and positive cases are mandatorily notifiable.[1] From the start of active surveillance in the current season only six probable meningitis cases with clear CSF have been reported, however, all were negative for West Nile virus antibodies. No systematic serosurveys have been undertaken neither from patients presenting with what might have been atypical symptoms of West Nile fever, nor from the general population in Braila county. No systematic surveillance exists regarding the presence of West Nile virus in mosquitoes.

Results from Braila county

In the last ten years there were two confirmed human cases with West Nile fever symptoms in the county of Braila, one in 1997 and the other in 2001. In both cases the examination of the CSF showed clear liquor and signs of meningitis.

Serology studies undertaken in 2007 in horses demonstrated the presence of West Nile virus infection (unpublished data, communication by SVD Braila). Braila county was among the counties included in the studies. Serum samples were taken from horses in five towns, two of them neighboring Gropeni village where the patient had gone fishing. Out of 23 serum samples taken, 13 were positive showing IgG antibodies against the West Nile virus (unpublished data). According to experts of the Braila SVD bird mortality in 2007 was not higher compared to past years.

Conclusion

Three cases of West Nile virus infection detected in Braila county in the past decade together with animal data demonstrate that there is a risk of infection in humans resulting from mosquito bites in this area. In the current case the probability that the patient had acquired the infection in the town where he resided was considered to be low because there mosquito control measures had been carried out twice in 2008. Therefore he was thought to have been infected while fishing in an area where there is a high density of mosquitoes and measures for mosquito extermination are not practised. This highlights the need for systematic vector control measures in the affected area and for education of the population regarding the necessary mechanical (such as long sleeved shirts and pants) and/or chemical protection (repellents) while fishing or pursuing other recreational or occupational activities.

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Detection of West Nile virus infection in horses, Italy, September 2008

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Six confirmed and five suspected cases of West Nile virus infection in horses have been reported in the vicinity of Ferrara in Italy. To verify the diffusion of viral circulation and to prevent the spread of disease, the regional authorities of Emilia-Romagna adopted a special plan of West Nile fever surveillance.

Detection of cases

As of 22 September 2008, 12 horses with neurological symptoms indicating the possibility of West Nile virus infection have been reported. The notifications were made in accordance with the already existing national surveillance of West Nile disease. In six of these cases the diagnosis was confirmed by laboratory analysis performed at the national reference centre (Centro di Referenza Nazionale per le Malattie Esotiche – CESME), for five the initial ELISA test was positive but the confirmation is still pending, and one tested negative.

The infected horses belong to eight different stables, seven in the province of Ferrara and one in the province of Bologna at the border with Ferrara. There are about 220 horses kept in these stables and all are to be tested for West Nile virus infection. The blood sampling and laboratory testing is currently ongoing.

West Nile virus has also been recently detected in wild birds in the area. Although no anomalous mortality has been signalled, surveillance of wild birds conducted between 19 August and 14 September in the framework of a general monitoring of the regional wild fauna resulted in detection of West Nile virus in six crows and seven magpies, all from the province of Ferrara.

To date there have been no human cases of West Nile fever reported in Italy. Active surveillance of cases of meningoencephalitis (with clear cerebrospinal fluid [CSF]) was started on 16 September and is ongoing. So far one suspected case was notified in a patient resident in the province of Bologna near the border with Ferrara. However, the results of laboratory analysis are still pending.

Control measures

The public health authorities in Emilia-Romagna are closely monitoring the situation and adapting the action plan to the evolving epidemiological situation. Currently, the following measures are in place or planned:

Veterinary surveillance

The veterinary surveillance which started on 15 September comprises passive surveillance (until 31 October) and active surveillance (until 31 December) of cases of West Nile fever in horses. It is also foreseen that samples collected from cattle in the region as part of sentinel surveillance for bluetonque disease will be tested for West Nile virus. Furthermore, a national plan for surveillance of wild birds (other than corvids) is under preparation.

Human surveillance

The surveillance of human cases ongoing since 15 September includes rapid detection and reporting of cases with neurological symptoms compatible with of West Nile disease (until 31 October), as well as active surveillance among employees of stables where cases of infection in horses have occurred, to promote the awareness on this disease, preventive measures and early detection of West Nile fever.

The case definition used includes patients >= 15 years old, with fever >= 38.5ºC and neurological symptoms: encephalitis, meningitis or Guillain-Barré syndrome or acute flaccid paralysis. Cases are classified as:

a) possible: clinical symptoms and clear CSF;
b) probable: clinical symptoms and at least one of the following laboratory criteria: presence of IgM antibodies against West Nile by ELISA; seroconversion by ELISA; fourfold increase of IgG antibodies against West Nile in two consecutive (>5 days, preferably 15-20 days) samplings by ELISA;
c) confirmed: clinical symptoms and at least one of the following laboratory criteria: isolation of West Nile virus in blood or CSF; presence of IgM antibodies in CSF (by ELISA); detection of nucleid acid specific for West Nile virus by RT PCR in blood or CSF; detection of increased levels of IgM and IgG antibodies against West Nile by ELISA confirmed by neutralisation testing.

At the moment, considering the surveillance measures adopted, as well as the example of other countries especially France [1], the Italian authorities decided not to introduce any restrictions on blood donations. However, the situation is monitored closely and should a human case be confirmed, this decision will be reconsidered.

Vector surveillance and control

In addition to surveillance, vector control measures are being implemented in the area affected, i.e. the province of Ferrara and the border zones of the provinces of Ravenna, Bologna and Modena. In these areas samples of mosquitoes (Culex spp. and Aedes spp.) are being collected; 10,000 catchments divided into pools are going to be analysed (by PCR). In addition to larvicide disinfestations in every potential breeding site, adulticide interventions are planned to be undertaken in every urban areas and on the occasion of open-air public gatherings, e.g. fairs and festivals, especially held outside the urban centres and in the vicinity of water reservoirs.

Conclusion

This event illustrates the necessity of a coordinated strategy plan combining surveillance in domestic animals, wild fauna and in humans for assessing the magnitude of the outbreak and for an efficient management.

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Increase in VTEC cases in the south of Ireland: link to private wells?

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High levels of verotoxigenic *Escherichia coli* (VTEC) have been recorded to date in 2008 in the Republic of Ireland. One hundred and forty-eight VTEC cases were notified up to the end of August 2008 (Figure 1), compared to 70-90 confirmed cases reported in the equivalent time period in 2006 and 2007. Thirty three percent of cases notified in Ireland in 2008 indicated that their usual drinking water supply was a private well.

In August, national attention was drawn to the concerns of investigators in the Health Service Executive (HSE) – South (counties Cork and Kerry) that most of the VTEC notifications over the summer months in that region had links to private wells. In the three-month period June –August 2008, twenty-two cases of VTEC were notified in HSE – South (Figure 2), out of a total of thirty notifications since the beginning of the year. The twenty-two cases comprised four sporadic cases and five family clusters. The household drinking water supply was from a private well in all but one sporadic case and in two cases who were part of a larger cluster (the remaining cases in that cluster had household exposure to a private well).

Investigators are concerned that exposure to private well drinking water was the primary risk factor for most of the June – August VTEC cases in HSE-South. All of the eight private wells involved were either on farms or in close proximity to farmland and livestock. Seven of those wells were found to be microbiologically contaminated. VTEC was detected in three of the wells.

Exceptionally heavy rainfall in Ireland this summer [1] resulted in unprecedented high water table levels, marked runoff and extensive flooding. As a result, the potential for microbiological contamination of drinking water was markedly increased. Private water supplies have been repeatedly highlighted as a concern in relation to VTEC infection in Ireland [2], [3], [4]. A recent *E. coli* O157 outbreak in Scotland emphasised the risks associated with private water supplies [5]. Increasing awareness among households with private water supplies has also been highlighted as an initiative to reduce livestock-associated risks of VTEC [6].

The Irish Health Protection Surveillance Centre has recently issued a press statement advising household owners with private wells of the importance of proper maintenance of private water supplies following increases in contamination [7]. Water authorities in Ireland have been advised of the current findings of the ongoing investigation of VTEC cases reported so far in 2008 and of associated public health concerns.

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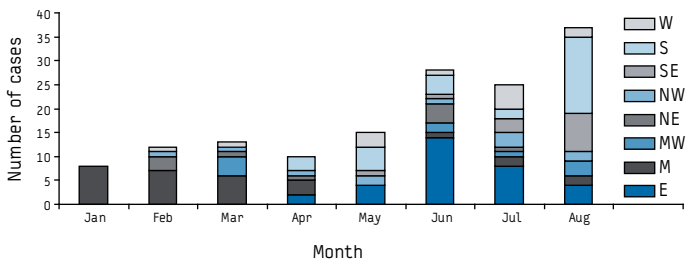
Figure 1

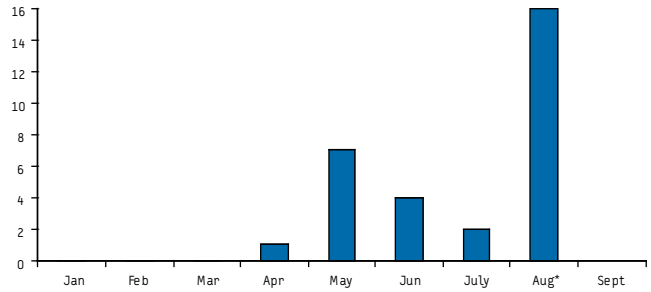
VTEC notifications in Ireland, January – August 2008, by Health Executive Service (HSE) area (n=148)



Source: Health Protection Surveillance Centre (HPSC), Ireland, September 2008 (data provisional)

Figure 2

VTEC notifications in Health Service Executive – South area (Cork and Kerry counties), January – August 2008 (n=30)



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Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) case reporting in the World Health Organization European Region in 2006

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This article presents information on HIV and AIDS case reporting systems as part of a survey on HIV/AIDS surveillance practices in the World Health Organization (WHO) European Region. A standardised questionnaire was sent to the 53 national correspondents of the European Centre for the Epidemiological Monitoring of AIDS (EuroHIV). The HIV and AIDS case reporting section of the questionnaire comprised four parts: data collection system, HIV/AIDS case definition for surveillance, variables collected, and evaluation of surveillance systems). Individual-based data collection systems for HIV case reports have been implemented in 43 of 44 countries in the WHO European Region and for AIDS case reports in all the countries. For HIV case reports, a coded identifier is used in 28 countries, and full names are used in 11 countries. The European AIDS case definition has been adopted in 35 countries (80%). Information on molecular epidemiology is available in 30 countries, and HIV drug resistance is monitored in 11 countries. HIV/AIDS case reporting systems have been evaluated for under-reporting in 17 countries and for completeness in 11 countries. This article outlines the future needs for HIV/AIDS surveillance and presents recommendations on how to improve data comparability across European countries in the WHO region.

Introduction

Originally, the focus of surveillance rested on reporting of AIDS cases, which was the main tool to monitor the epidemic trends but, with the introduction and widespread use of highly active anti-retroviral treatment (HAART), the number of AIDS diagnoses no longer reflects the underlying trends in the HIV epidemic satisfactorily. Hence, reporting of HIV diagnoses has progressively replaced AIDS case reporting as a surveillance instrument for monitoring the HIV epidemic in Europe.

Recommendations for HIV surveillance in Europe were published in 1998 based on the results of a survey that was conducted by EuroHIV among the group of experts and national coordinators from the countries of the World Health Organization (WHO) European Region [1]. The recommendations underlined the need for information regarding national reporting systems in order to facilitate international comparisons of HIV and AIDS data.

Since 1998, new treatment regimens have been introduced and the laboratory technologies have improved considerably. Therefore the detection of new patterns of resistance to antiretroviral treatments presents a number of challenges and opportunities in the context of monitoring HIV resistance in Europe.

A new survey on HIV and AIDS surveillance practices was conducted by EuroHIV in 2006 [2], which had the same aim as the original one conducted in 1998. This article presents the collected data regarding HIV and AIDS case reporting in the 53 member states of the WHO European Region

Aim and objectives of the survey

The survey on HIV and AIDS surveillance aimed to assess national surveillance systems for HIV/AIDS in order to make recommendations on HIV/AIDS surveillance across Europe.

The specific objectives of the survey as presented in this paper were:

- to determine HIV/AIDS surveillance practices across Europe, with special emphasis on HIV/AIDS case reporting and HIV/AIDS mortality surveillance,
- to develop technical recommendations and guidelines in order to improve data comparability across Europe,
- to provide baseline data needed to ascertain the feasibility of HIV/AIDS surveillance in Europe and coordinate its development in the future.

Methods

The questionnaire

The survey was conducted using a standardised questionnaire that was first tested in a pilot round among EuroHIV steering group members. The questionnaire was divided into the following four sections:

- HIV and AIDS case reporting,
- HIV testing practices,
- other surveillance practices (HIV incidence and prevalence estimates),
- mortality data.

The results of the first section of the questionnaire, on HIV and AIDS case reporting, are presented in this article. This section was made up of five sub-sections further described in the EuroHIV report [2].

Data collection and analysis

The questionnaire was sent out at the end of April 2006 to the EuroHIV national correspondents in all 53 countries in the WHO European Region. A Russian translation of the questionnaire was also available. Reminders were sent after one month and three months, and further contacts (email, fax and telephone) were made to improve the response. In December 2006, the questionnaire was also sent to WHO contact points from five countries. Data collection for the survey was completed in February 2007.

In this article, results will be presented with a particular focus on the following areas of HIV and AIDS surveillance:

- data collection system,
- HIV/AIDS case definition for surveillance,
- variables collected,
- evaluation of surveillance systems.

Results

The questionnaire was returned by 44 of the 53 countries (overall response rate of 83%): 26 of the 27 European Union (EU) countries (96%; non-respondent: Cyprus) and 18 non-EU countries (Andorra, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Georgia, Iceland, Israel, Kazakhstan, Kyrgyzstan, Norway, Republic of Moldova, Russian Federation, Serbia, Switzerland, Turkey and Ukraine)

Case reporting systems

In 2006, there was an HIV case reporting system in place in 43 of the 44 responding countries (98%), the exception being Austria where HIV surveillance was operated through a cohort study (Table 1). In 37 countries (86%), data were collected directly at the national level (no regional intermediate for data collection). Individual data were collected by 40 countries (93%). Reporting was done by both laboratories and physicians in almost two-thirds of the countries (27/43), only by laboratories in nine countries and only by physicians (either hospital-based or community-based physicians or both) in six countries.

In 2006, there was an AIDS case reporting system in all the countries (Table 1). Data were collected directly at the national level in 41 of 44 countries (93%). Data collection was case-based at national level in 42 countries. AIDS cases were reported solely by physicians in 32 (73%) countries (in 11 of which reporting was done solely by hospital physicians), solely by laboratories in one country, and by both laboratories and physicians in eight countries.

HIV and AIDS case reports were compiled in one combined database in 30 of 43 countries (70%) and, for seven additional countries where HIV and AIDS case reporting were in different databases, there was a possibility of linking between the HIV and the AIDS databases. Thus, of the 43 countries, the minority (six) were unable to link HIV and AIDS databases (Denmark, Iceland, Italy, Malta, Norway and Spain).

HIV case reporting

HIV testing algorithms

Figure 1 shows the various HIV testing algorithms for surveillance purposes that are required for the diagnosis and reporting of an HIV case in an adult, an adolescent or a child aged 18 months or older. The most commonly used confirmatory tests were immunoblot (including Western Blot; used in 34 countries), or a second enzyme immunoassay (EIA; used in 17 countries). Four countries (Armenia, Kazakhstan, Portugal and Romania) required three positive tests for the diagnosis/reporting of HIV cases, including two EIA. A single positive test, i.e. detection of nucleic acid by PCR, p24 antigen testing or viral culture, was accepted in 10 countries although the number of HIV cases detected with one of these tests represented less than 10% of the cases reported in these countries in 2005.

Case identification

Forty of the 43 countries provided information on the case identifier in order to detect duplicate reports (information not reported for Austria, Belarus, Kazakhstan and Spain): Twenty-eight countries (70%) used a coded identifier based on the patient's name or part of the name (17 countries) or did not include the patient's name (11 countries). Twelve countries (30%) used full names (Figure 2).

Description of the cases and transmission categories

Information on sex and age was collected in all countries (see Table 2); data on ethnicity or place of birth (or both) were collected

Table 1

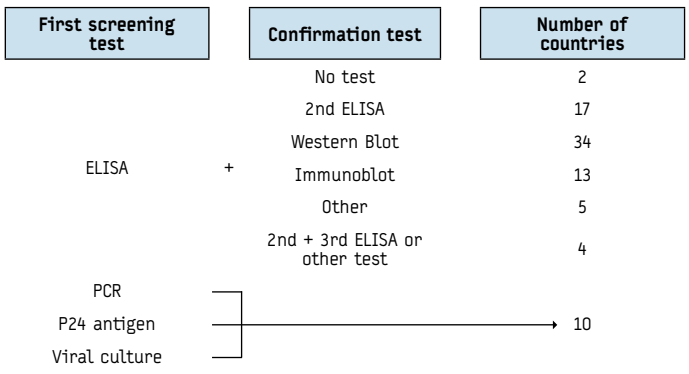
Information on data collection system, WHO European Region, 2006

	HIV		AIDS	
	%	(n/N)	%	(n/N)
Case reporting	98%	(43/44)	100%	(44/44)
National level	86%	(37/43)	93%	(41/44)
Individual data	93%	(40/43)	95%	(42/44)
Reporting by:				
Laboratories only	21%	(9/43)	2%	(1/44)
Physicians only	14%	(6/43)	73%	(32/44)
Both	63%	(27/43)	18%	(8/44)

n: number of countries with positive answer; N: number of participating countries

Figure 1

HIV testing algorithms used in the countries in the WHO European Region, 2006



in 34 countries (79%) and are planned to be collected in Bulgaria (not collected in Belarus, Estonia, Finland, Hungary, Poland, Republic of Moldova, Switzerland and Ukraine).

Information on the transmission category was collected by 40 countries, and on current drug injection status by 24 countries.

Clinical and virological characteristics

32 countries recorded the clinical stage at HIV diagnosis and four countries planned to do so in the near future (Bulgaria, Luxembourg, Republic of Moldova, Russian Federation). The definition used for clinical stage was the 2005 revised WHO clinical staging of HIV and AIDS for adults and adolescents [3] in 10 countries, the 1990 WHO clinical staging of HIV and AIDS for adults and adolescents in five countries, and the 2005 clinical staging system by the United States (US) Centers for disease control and prevention (CDC) in seven countries.

The CD4+ lymphocyte (CD4) count was documented in 21 countries and is planned to be collected in six countries.

Some countries also collected data on molecular biology parameters: 10 countries collected data on HIV type, group and sub-type, four on type and sub-type, three countries collected data on sub-type only and 17 countries on types only. The laboratory methods used to characterise the virus were serological assays (16 countries), PCR (21 countries) and hybridisation (Belarus). Both PCR and serological assays were used in nine countries (Azerbaijan, Bulgaria, Croatia, France, Georgia, Hungary, Kyrgyzstan, Portugal, Sweden).

Monitoring death among HIV-infected persons

The HIV database could be linked to vital statistics or death certificate information in 18 countries (seven EU countries). Mortality data for HIV cases were reported in the routine HIV surveillance in 29 countries (66%). Date of death was recorded in all these countries, and in 23 of them also the cause of death. In 27 countries, death was reported by physicians, and in six countries by another source of information. The information collected was "death from any cause" in 13 countries and "death due to HIV infection (HIV infection is the only diagnosis at the time of death)" in 13 other countries. Both types of information (HIV-related and non HIV-related deaths) are collected in Azerbaijan and Portugal.

AIDS case reporting

AIDS case definition

Different AIDS case definitions were used for AIDS case reporting [4]. Most of the countries in the WHO European Region (35, 80%) used the 1993 European AIDS Surveillance Case Definition [5]. Seven countries (Armenia, Belarus, Georgia, Latvia, Romania, Russian Federation and Ukraine) used the US CDC AIDS case definition [6]. Andorra and Belarus reported using the WHO 1994 case definition for AIDS surveillance in adults and adolescents.

The age cut-off for adolescent and adult AIDS surveillance case definitions varied between countries (Figure 3). In the 1993 European AIDS case definition, the age cut-off for adults and adolescents was 13 years and over. However, 17 of the 35 countries using that definition, set the age cut-off for adults and adolescents at 15 years, eight countries at 13 years (which is in accordance with the case definition proposed by the European centre for disease prevention and control (ECDC) [7]), and the 10 remaining countries used another or unknown age cut-off. In countries using the CDC or WHO case definition for AIDS, the age cut-off for adults and adolescents varied between 12 and 15 years.

Description of cases, clinical stage and transmission categories

Information on sex and age was collected in all the countries. Ethnicity or place of birth (or both) were documented in 35 countries (80%) and planned to be recorded in Bulgaria (not collected in Belarus, Estonia, Finland, Hungary, Moldova, Poland, Switzerland and Ukraine).

FIGURE 2

Case identifiers used for detecting duplicates, WHO European Region, 2006

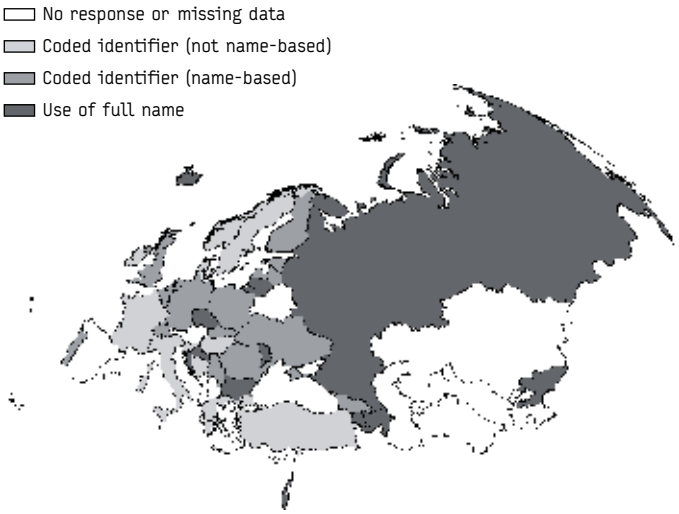


TABLE 2

Variables collected in the national HIV and AIDS case reporting systems, WHO European Region, 2006

Variables	HIV case reporting (N=43)		AIDS case reporting (N=44)	
	No. of countries	%	No. of countries	%
Sex	43	100%	44	100%
Age	43	100%	44	100%
Ethnicity and/or place of birth	34	79%	35	80%
Date of:				
HIV diagnosis	43	100%	41	93%
HIV report	40	93%	33	75%
AIDS diagnosis			42	95%
AIDS report			42	95%
Clinical stage	32	74%	32	73%
CD4 count	21	49%	26	59%
Transmission group	40	93%	42	95%
IDU status	24	56%	26	59%
ART			27	61%
ARV drug resistance	7	16%	9	20%
Mortality:				
Date of death	29	67%	42	95%
Cause of death	23	53%	33	75%

IDU: injecting drug users; ART: anti-retroviral treatment;

The CD4 count at the time of AIDS diagnosis was obtained in 26 countries (59%) and planned to be recorded in Moldova, Russian Federation and Slovakia.

The transmission category was recorded in 42 countries. Information on current drug injection status was collected by 26 countries.

Antiretroviral therapy (ART) and HIV drug resistance

The AIDS reports in 27 countries noted whether a patient was on ART at the time of AIDS diagnosis, and a further five countries (Belgium, Bulgaria, Estonia, Finland, Russian Federation) plan to start collecting this information in the near future.

Monitoring of resistance to ART was performed in nine countries among reported AIDS cases (and in seven countries among reported HIV-infected cases). Eleven additional countries plan to begin collecting this information within the next two years. The definition used for resistance was the "Stanford algorithm" in four countries, key resistance mutations defined by the International AIDS Society in four other countries, and another definition (not specified) in two countries.

Monitoring of death among AIDS cases

The AIDS database could be linked to vital statistics or death certificate information in 20 countries (nine EU countries). Mortality data on AIDS cases were reported in the routine AIDS cases surveillance system in 42 (95%) countries (all responding countries except Azerbaijan and Croatia). Date of death was recorded in all these countries and cause of death in 33 countries. AIDS death was reported by physicians in 39 countries and by another source of information in six countries. The information collected was "all causes of deaths among people living with AIDS" in 19 countries, "only deaths due to AIDS or AIDS-related illnesses" in 18 countries and "deaths from AIDS-defining illness" in two countries.

National evaluations of HIV and AIDS case surveillance systems

Over half of the countries (25 of 44, 57%) had not evaluated either their HIV or AIDS surveillance systems for under-reporting. Of the 17 countries that had done so, seven had assessed under-reporting of HIV reports only (i.e. HIV cases that are diagnosed but not reported), three reporting of AIDS only and eight reporting of both surveillance systems. The proportion of under-reporting in a country can be linked to the number of sources of information and can therefore vary widely between countries. For example, the proportion of under-reporting is low in the United Kingdom (UK) and Germany where only a few laboratories report HIV diagnosis. In France, the proportion of under-reporting is higher, but 5,000 laboratories report HIV diagnosis.

Nineteen of 44 countries (43%) had not evaluated the timeliness of either their HIV or AIDS surveillance systems (i.e. time from diagnosis to report). Of the 18 countries that had done so, three had assessed timeliness of HIV reports only, two of AIDS reports only and 13 of both surveillance systems.

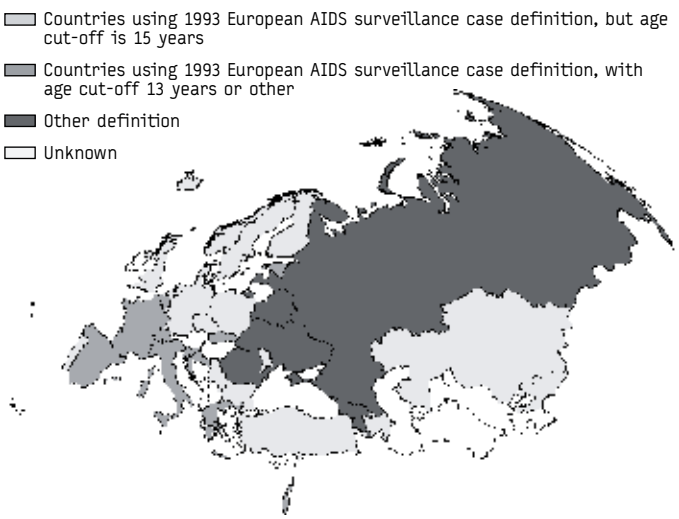
Of the 16 countries which reported the timeliness of their HIV reporting systems, all but three stated that 90% or more of HIV reports were received within six months (in Belarus, the UK and France, over 75% were received within six months). In contrast, of the 15 countries which reported the timeliness of their AIDS reporting systems, only eight stated that 90% or more of AIDS reports were received within six months, and six countries stated that 10% or more of AIDS reports were received with a delay of more than 12 months.

The validity of the HIV reporting system (e.g. comparison of the information provided on the original case report and the medical record) has been assessed in seven countries (100% in Andorra, Croatia and Czech Republic, 98% in Belarus). The validity of AIDS reporting system has also been assessed in seven countries (100% in Andorra, Croatia, Czech Republic and Republic of Moldova).

The completeness of HIV and AIDS reporting (i.e. percentage of cases with complete records on all variables) has been determined in 11 countries and varied from 23% to 100% for HIV cases and from 40% to 100% for AIDS cases. Separate percentages of completeness for the individual variables were not available.

FIGURE 3

Age cut-off for adolescent and adult AIDS case definition, WHO European Region, 2006



Discussion

In 2006, HIV and AIDS case reporting systems were in place in almost all the 53 countries in the WHO European Region. Overall, data collection is computerised and case-based in most of the countries. National coverage for HIV case reporting has not yet been achieved in two countries (Italy and Spain). In Austria, HIV case reporting was based on a national cohort of HIV-positive patients. In comparison with a previous survey on HIV reporting in Western Europe, conducted in 1999 [8], HIV case reporting systems have since been implemented in two additional countries (France and Ireland) and in the Netherlands the reporting system has become a national one. HIV reporting in Europe is based on newly diagnosed cases, except at the start of a new HIV case reporting system (a few years need to pass before the system has stabilised and data can be interpreted). Another exception is imported cases, which have been previously diagnosed in the country of origin.

AIDS surveillance data no longer reflects the underlying trends in current HIV infection satisfactorily. However, it still provides some objective indication of the number of people in the advanced stages of HIV infection. According to a survey that was conducted in 2005 [9], AIDS case reporting was considered "somewhat useful but not as much as before" in almost half (17/43) of the countries in the WHO European Region. For example, AIDS case reporting is useful to assess the number of late HIV diagnoses [10].

Linkage between HIV and AIDS individual reports, which allows for better case follow-up, is possible in most European countries (either within the same database or by linkage of databases). In a few countries with a high case load it is still not possible, mainly because different HIV and AIDS case identifiers are used for reasons of confidentiality. Linking HIV and AIDS databases could allow assessment of HIV disease progression and evaluation of modalities for HIV testing and care practices.

Fear of breach of confidentiality remains an important issue for HIV reporting. Although most of the European countries used a coded identifier to detect duplicate reports, the patient's full name is still used in 11 countries. While the use of full names needs strict and enforceable regimes of confidentiality to secure the registries, the use of unique coded identifiers depends on the reliability of the encoding system to be replicated and to identify duplicate reports [11]. Among the nine countries that had been using full names to identify HIV cases in 1998 [12], five were still using names in 2005 (Czech Republic, Israel, Lithuania, Republic of Moldova and Russian Federation) and two countries (Poland and Serbia) were using a code based on the name in 2006 (information unavailable for the two remaining countries). In contrast, HIV surveillance in the United States was name-based in 2006 in almost all the states, but not at federal level [13].

Although most countries used the 1993 European AIDS Surveillance Case Definition, some criteria need to be standardised across the European countries (e.g. the age cut-off for adults and adolescents, which was 13 years in some countries and 15 years in others). The AIDS case definition has been recently revised by the European Centre for Disease Prevention and Control (ECDC) and the age cut-off for adults has been defined as 15 years. This new case definition will be published in the near future. In parallel, in order to better monitor HIV treatment needs, the case definition for HIV surveillance has been recently revised by the WHO to include a clinical and immunological classification of HIV-related disease [3].

Of the variables included in HIV and AIDS reports at the European level, some are currently collected by more than 90% of the countries (e.g. sex, age, dates of diagnosis and report of HIV and AIDS, transmission categories) and others are not systematically collected by all the countries (e.g. ethnicity, date of death, ART at AIDS diagnosis or CD4 count at HIV diagnosis). Standardisation of variables is needed at European level, not only to understand better the epidemic but also to ensure that the countries have a minimum of data available to help design or improve interventions (e.g. HIV testing policies, monitoring of ART). Collecting information on CD4 count as well as clinical stage at HIV diagnosis is useful to monitor the proportion of cases diagnosed with advanced HIV infection, information that can be used to target efforts aimed at reducing late diagnosis. CD4 counts will be collected at European level for the first time in 2007. Several countries also monitor the molecular biology of HIV. This information is used to identify HIV strains that share the same genetic pattern, improving the characterisation of risk factors of genetic and environmental origin. This approach can also serve to understand better resistance to HIV treatment.

Information on HIV resistance was collected in only a quarter of the European countries. However, surveillance of HIV resistance is often not reported systematically; it can be based on cohort studies or networks of laboratories participating on a voluntary basis. Monitoring HIV drug resistance is useful for public health interventions or treatment monitoring [14]. While some guidelines recommend that HIV drug resistance surveillance should focus on individuals newly diagnosed with HIV in order to track transmitted resistance over time [14], other projects support genotypic resistance testing for all individuals who have not received antiretroviral drugs (recently and chronically infected) [15]. Different definitions are used to monitor HIV drug resistance, and the need to reach a consensus on the definition of drug resistance, especially for surveillance purposes, has been underlined [16].

In two-thirds of the countries, HIV and/or AIDS surveillance systems have been evaluated using one of four criteria: under-reporting, validity, completeness, timeliness. In countries where specific evaluations have been conducted, the percentage of under-reporting was higher and reporting delays longer for reporting of AIDS cases than of HIV diagnoses. In a survey conducted in 1996 [17], 32 European countries (71%) were able to provide quantitative estimates of under-reporting for AIDS cases. These estimates ranged from 0 to 25%. Completeness of HIV and AIDS reporting varied widely from one country to another (completeness of AIDS reporting has decreased in several countries, probably because clinicians no longer consider it equally important as before), and few countries have evaluated the validity of their reporting systems.

Although these four evaluation criteria were the ones most commonly used to evaluate HIV/AIDS surveillance systems, other assessment indicators (simplicity, flexibility, acceptability and representativeness) should also be used [18-20].

Conclusion and recommendations

HIV/AIDS case reporting data are crucial to support and guide public health policies for prevention and control of the HIV epidemic in the EU and the WHO European Region. Standardisation of HIV/AIDS surveillance system needs to be improved at European level in order to allow better comparability of data. The implementation of the revised European case definition for HIV/AIDS is the first step toward harmonisation and standardisation.

To achieve this goal, countries are advised by ECDC to have a surveillance system that collects individual data at a national level. Such a system should also ensure data confidentiality and respect the patients' human rights. Ideally, this surveillance system should integrate information on the three key stages of disease progression from asymptomatic HIV infection to death. For HIV diagnosis, the CD4 count at diagnosis provides valuable information for cases that present at a late stage of infection. For AIDS, information on treatment (HAART) is important to monitor access to care. For HIV/AIDS mortality, all causes of death, related to HIV or not, should be documented. Where possible, linkage between HIV/AIDS reporting systems and the mortality database is an added value. If this is not possible, other methods (e.g. surveys) can be conducted among HIV-infected persons. In addition, standard coding systems are needed to improve HIV/AIDS mortality surveillance [21].

Countries are further advised by ECDC to ensure that monitoring of HIV drug resistance is included in their current HIV surveillance system. WHO guidelines on this are available and these guidelines should be applied in the European Region [14].

The HIV epidemic is complex and its surveillance requires a multi-facetted approach, such as the development of "second generation" HIV surveillance which includes biological and behavioural data. This, as well as monitoring of HIV prevalence data, should be continued in addition to HIV case reporting.

Finally, it is advisable that the EU Member States evaluate their surveillance systems at appropriate and regular intervals as part of the data quality assurance process. A protocol for evaluation of surveillance systems would be a useful tool to strengthen HIV/AIDS surveillance in the WHO European Region.

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News

Conclusions from Swiss study questioned

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Earlier this year a Eurosurveillance news article reported on a joint statement issued by the United Nations Joint Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) regarding the importance of using condoms as a protection against HIV [1,2]. This statement came in the wake of a paper published by the Swiss Federal Commission for HIV/AIDS which suggested that subject to certain preconditions HIV-positive individuals may be able to have sexual intercourse with their seronegative partners without risk of transmitting the virus [3]. The preconditions were that the HIV-positive partner should have an undetectable blood viral load for at least 6 months, adhere to an effective antiretroviral treatment regimen and be free of other sexually transmitted diseases.

The Swiss conclusions have now been questioned by the results of a study by Australian scientists published in the Lancet [4]. Using a model-based analysis, they estimated the cumulative risk of HIV transmission from effectively treated HIV-infected patients (HIV RNA <10 copies per mL) over a prolonged period. They concluded that in a population of 10,000 serodiscordant partners over a 10-year period the expected number of seroconversions occurring if the partners had unprotected sex would correspond to a fourfold increase in incidence when compared with incidence under current rates of condom use.

A further cautionary note was sounded by Geoffrey Garnett, an epidemiologist at Imperial College London, who advocates the concurrent use of condoms and antiretrovirals, citing also concerns about the risk of spread of other sexually transmitted diseases [5].

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