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**WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR EUROPE**

MEETING OF THE PARTIES TO THE
PROTOCOL ON WATER AND HEALTH
TO THE CONVENTION ON THE PROTECTION
AND USE OF TRANSBOUNDARY
WATERCOURSES AND INTERNATIONAL
LAKES

First meeting
Geneva, 17–19 January 2007
Item 7 of the provisional agenda

SURVEILLANCE OF WATER-RELATED DISEASES

Note by the secretariat*

I. INTRODUCTION

1. One of the pillars of the Protocol on Water and Health is the establishment of surveillance, early-warning and response systems to prevent and control the outbreak of water-related diseases. In the preamble to the Protocol the Parties recognize that “surveillance of water-related disease and the establishment of early-warning systems and response systems are important aspects of the prevention, control, and reduction of water-related diseases”.

* This document was submitted on the above date to allow consultation with the Chairperson of the Working Group on Water and Health and a group of Parties and non-Parties.

2. Article 8, paragraph 1 requires Parties to “ensure that comprehensive national and/or local surveillance and early-warning systems are established, improved or maintained”, possibly in combination with similar systems created for other purposes.

3. Article 8 (3) defines the timeline as follows: “Within three years of becoming a party, each Party shall have established the surveillance and early warning system, contingency plans and response capacity referred to”.

4. Article 12 identifies numerous possibilities for joint and international cooperation, including “the establishment of joint or coordinated systems for surveillance and early-warning system, contingency plans and response capacities as part of, or to complement, the national systems maintained in accordance with Article 8” (Art 12 (c)); and “the development of integrated information systems and databases, exchange of information and sharing of technical and legal knowledge and experience” (Art 12 (e)).

5. In order to facilitate the implementation of Parties’ obligations under the Protocol with regard to establishment of surveillance systems, this document:

- (a) Reviews the international health regulations as legally binding reporting mechanisms for disease surveillance at the global level;
- (b) Reviews regional reporting obligations, particularly those pertaining to the European Union *acquis*;
- (c) Summarizes the findings of salient literature on the current quality of disease surveillance in Europe;
- (d) Recalls the priority setting of water-related diseases by different expert groups working under the Protocol;
- (e) Sums up and evaluates information currently available from WHO disease monitoring programmes against the requirements of the Protocol;
- (f) Proposes a way forward to meet the requirements of the Protocol.

II. GLOBAL HEALTH OBLIGATIONS

6. Article 2, paragraph 1 of the Protocol defines water-related diseases as follows: “Water-related disease means any significant adverse effects on human health, such as death, disability, illness or disorders, caused directly or indirectly by the condition, or changes in the quantity or quality, of any waters”.

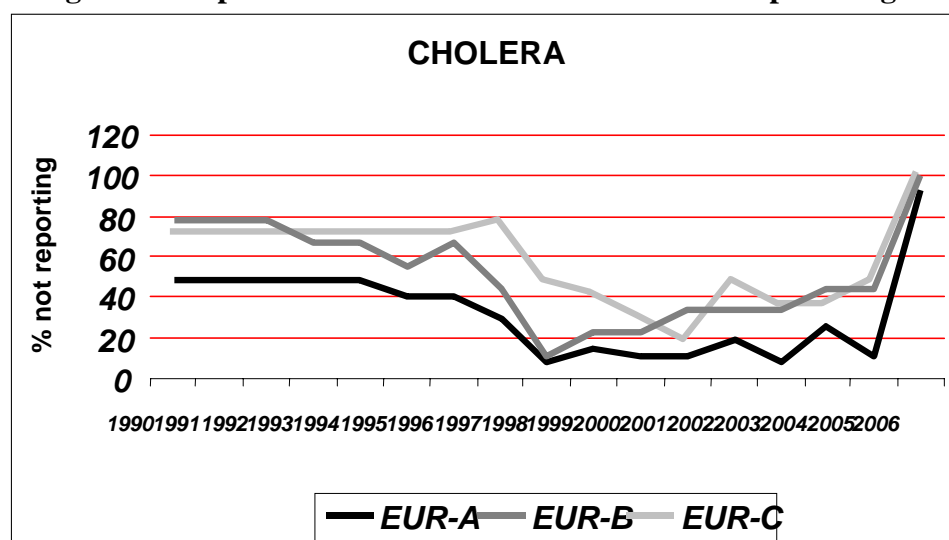
7. Such broad definition allows for activities to be developed in numerous fields, but rather hampers clear understanding of what is meant by the term “water-related disease”. A common

classification of water-related diseases¹ includes water-borne, water-washed, water-scarce and sewage-related disease. Signatories reached consensus to limit action under the Protocol to water-borne diseases, a category including diseases resulting from the ingestion of pathogenic micro-organisms (whether of protozoan, microbial or viral origin), or of chemicals affecting health through the water pathway.

8. It is important to note that cholera is the only waterborne disease subject to mandatory reporting under the international health regulations² and hence benefiting from global detection and reporting mechanisms.³ Current datasets indicate no indigenous outbreaks of cholera in any of the countries that are Parties to the Protocol or in other member States of the European Union, although imported cases are frequently detected.

9. Figure 1 shows the progress made by the member States of the WHO European Region in reporting on cholera:

Figure 1. Response rate for cholera in the WHO European Region



10. Table 1 summarizes the number of cases of cholera in the WHO European region since 1990, base year for the Millennium Declaration, and 1999, year of the signature of the Protocol.

¹ Data on the global burden of water-related diseases are taken from http://www.who.int/water_sanitation_health/publications/facts2004/en/index.html (accessed on 10 April 2006).

² The WHO International Health Regulations are available at http://www.who.int/csr/ihr/WHA58_3-en.pdf (accessed on 10 April 2006).

³ For a review of the system for reporting cholera outbreaks, see <http://www.who.int/csr/don/archive/disease/cholera/en/> (accessed on 22 June 2006).

Table 1. Cholera cases reported to WHO

Subregion	1990 – P	1999 – P
EUR-A	591	209
EUR-B	312	83
EUR-C	2693	0
Total	3596	292

III. THE SPECIFIC CASE OF EU MEMBER STATES

Legal obligations

11. Epidemiological surveillance in the European Union is based on Decision 2119/98/EC⁴ of the European Parliament and of the Council of 24 September 1998, setting up a network for the epidemiological surveillance and control of communicable diseases in the Union. This Decision refers to Article 129 of the Treaty establishing the European Community,⁵ which states:

“1. The community shall contribute towards ensuring a high level of human health protection by encouraging cooperation between the member states and, if necessary, lending support to their action. Community action shall be directed towards the prevention of diseases, in particular the major health scourges, including drug dependence, by promoting research into their causes and their transmission, as well as health information and education. *Health protection requirements shall form a constituent part of the community's other policies.* (emphasis added)

2. Member states shall, in liaison with the commission, coordinate among themselves their policies and programmes in the areas referred to in paragraph 1. The Commission may, in close contact with the member states, take any useful initiative to promote such coordination.

3. The Community and the member states shall foster cooperation with third countries and the competent international organizations in the sphere of public health.

4. In order to contribute to the achievement of the objectives referred to in this art., the council:

- acting in accordance with the procedure referred to in art. 189b, after consulting the economic and social committee and the committee of the regions, shall adopt incentive measures, excluding any harmonization of the laws and regulations of the member states;
- acting by a qualified majority on a proposal from the commission, shall adopt recommendations.”

⁴ Decision 211/98/EC is available at

http://europa.eu.int/servlet/portail/RenderServlet?search=DocNumber&lg=en&nb_docs=25&domain=Legislation&coll=&in_force=NO&an_doc=1998&nu_doc=2119&type_doc=Decision (accessed 10 April 2006).

⁵ The text of the relevant paragraph under the Treaty can be found at <http://eur-lex.europa.eu/en/treaties/dat/11992M/htm/11992M.html> (accessed 22 June 2006).

12. Article 1 of the Decision defines the aim (to set up a Community-level network to improve the prevention and control of categories of communicable diseases specified in a Decision Annex). The network is to be used for both the epidemiological surveillance of these diseases, and as early warning and response system for the prevention and control.
13. Article 9 requires Member States to designate, within six months of the entry into force of the Decision, the structures and/or authorities and to notify the Commission and the other Member States.
14. Article 14 (1) states that “the Commission shall submit regular reports evaluating the operation of the Community network to the European Parliament and the Council”
15. Article 14 (2) states that “the first report shall be submitted within three years after the entry into force of this Decision (emphasis added) [...]
16. Article 14(3) states that “the Commission shall conduct an evaluation of the Community network *every five years thereafter*, [...] and shall submit a report to the European Parliament and the Council.
17. Decision 2119/98/EC entered into force on 3 January 1999.
18. Commission Decision 2000/96/EC⁶ of 22 December 1999 on the communicable diseases to be progressively covered by the Community network under Decision 2119/98/EC of the European Parliament and of the Council (notified under document C(1999)4015) lists in Decision Annex 1 the communicable diseases and special health issues to be covered. These include *inter alia* viral hepatitis (hepatitis A), food- and water-borne diseases of environmental origin (Campylobacteriosis, cryptosporidiosis, giardiasis, infections with Enterohaemorrhagic E. coli, shigellosis...), and serious imported diseases (cholera, malaria).
19. Article 3 identifies the Health Surveillance System for Communicable Diseases within the European Public Health Information Network (Euphin-HSSSCD) as the interim technical implementation mechanism.⁷
20. The Decision 2000/96/EC took effect on 1 January 2000, and does not have specific reporting requirements attached to it.
21. Commission Decision 2002/253/EC⁸ dated 19 March 2002 provides definitions for reporting communicable diseases to the Community network under Decision 2119/98/EC⁹ of the European Parliament and of the Council.

⁶ Decision 2000/96/EC is available at http://europa.eu.int/servlet/portail/RenderServlet?search=DocNumber&lg=en&nb_docs=25&domain=Legislation&coll=&in_force=NO&an_doc=2000&nu_doc=96&type_doc=Decision (accessed 10 April 2006).

⁷ For more information on Euphin-HSSSCD see <http://ec.europa.eu/idabc/en/document/2259/16#what> (accessed 22 June 2006).

⁸ Decision 2002/253/EC is available at http://europa.eu.int/servlet/portail/RenderServlet?search=DocNumber&lg=en&nb_docs=25&domain=Legislation&coll=&in_force=NO&an_doc=2002&nu_doc=253&type_doc=Decision (accessed 22 June 2006).

22. This latter decision makes reporting mandatory for a number of diseases, including *inter alia* Campylobacteriosis, cholera, cryptosporidiosis, Enterohemorrhagic E. coli infections, giardiasis, viral hepatitis A, legionellosis, leptospirosis, listeriosis, malaria, salmonellosis (non-Typhi, non-paratyphi), shigellosis, and typhoid/paratyphoid.
23. Information on current national efforts in disease reporting in Europe is coordinated through the Inventory of Resources for Infectious Diseases (IRID).¹⁰
24. Decision 2002/253/EC applies as of 1 January 2003.
25. Notwithstanding the designation of an interim implementation mechanism, the current situation in the European Union is one whereby different networks specialize in different diseases¹¹. The basic surveillance network recently expanded,^{12,13} allowing for all but water-related viral infections.

The European Centre for Disease Control and Prevention (ECDC)

26. The mission of the European Centre for Disease Prevention and Control is defined in regulation (EC) 851/2004 of the European Parliament and the Council of 21 April 2004, establishing a European centre for disease prevention and control. The three core functions of the ECDC are scientific advice, surveillance, preparedness and response.
27. Through its surveillance function, ECDC aims to develop a European Surveillance System for public health action that introduces one notification system in Europe (EU-25 plus EEA and EFTA countries).
28. Preparedness and response functions focus on epidemiological intelligence, preparedness, and outbreak response, and development and adoption of training strategy.
29. The ECDC is currently working to create a centralized database in line with the legal requirements recalled above.

⁹ The Decision 2002/253/EC is available at http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32002D0253&model=guichett (accessed 11 April 2006).

¹⁰ Information on IRID is available from <http://iride.cineca.org/> (accessed on 10 April 2006).

¹¹ Lenglet A and Hernandez Pezzi G (2006) "Comparison of European Union Disease Surveillance Websites" *Euro Surveill* 11 (5) available from <http://www.eurosurveillance.org/em/v11n05/1105-227.asp> (accessed on 20 June 2006).

¹² Ternhag A. et al (2004) "Basic Surveillance network, a European database for surveillance data on infectious diseases" *Euro Surveill*. 2004 Jul;9(7) 19-22 available from <http://www.eurosurveillance.org/em/v09n07/0907-221.asp> (accessed on 20 June 2006).

¹³ The Basic Surveillance Network has a restricted access website, as well as one which is open to the public at <https://www.eubsn.org./BSN/> (accessed 20 June 2006).

30. During a special expert consultation (Budapest, 9–10 May 2006)¹⁴ it was agreed that a common data capture system should be used for monitoring progress in the reduction of the burden of water-related diseases, and that WHO (CISID) and ECDC should be invited to ensure that no duplication of effort would be imposed on the Parties.

IV. GENERAL ASSESSMENT OF SURVEILLANCE IN EUROPE

31. A review of the database of the Program for Monitoring Emerging Diseases (PROMED) using the keywords “drinking AND water AND disease AND Europe” by year since the signature of the Protocol in June 1999 until present (March 2006) yielded some relevant general information:

32. Older studies¹⁵ contented themselves with attempting to calculate the disease burden in the European region. The authors recognized that: “no information was provided about the nature of the surveillance systems in place in the different countries, and the number of diseases for which records were kept varied among countries”.

33. A general study¹⁶ undertaken in preparation of the signature of the Protocol reviewed surveillance systems, but found that “available data on waterborne diseases and outbreaks are often incomplete and inconsistent. Differences in recording and reporting procedures, disease classification and financial restrictions, and variations in the legal basis for reporting between countries often complicate the picture.”

34. A more recent study¹⁷ reviewed specifically the surveillance of waterborne diseases in the European Union. The authors found that “surveillance systems are inconsistent, and the variable mandatory reporting among Member States [which] allows many cases of waterborne diseases to remain unidentified. Nine countries who participated in the study reported having no legal definition for a water-related disease outbreak.”

35. Current research¹⁸ also highlights the “variation between and within countries in laboratory analysis and sampling protocols and reporting practice; these were felt to influence timeliness, sensitivity, and representativeness of surveillance based on laboratory- and clinician-based reporting. Electronic reporting, reminders to report, and direct report relay to national level were considered strengths in report-based surveillance. A need was expressed for more detailed case demographic and risk factor information to facilitate outbreak detection and investigation. Collaboration with water companies, relationships with external and internal data providers were cited as prerequisites for effective surveillance.”

¹⁴ Report available at <http://www.euro.who.int/document/e89178.pdf> (accessed on 15 October 2006).

¹⁵ Kramer M et al (2001) “Waterborne diseases in Europe 1986 – 1996” Journal of the American Water Works Association January 2001 pp 48 - 53

¹⁶ EEA/WHO (2002) Water and Health in Europe WHO Regional Publication European Series No 93 pp 109

¹⁷ Poullis D.A., Attwell R.W. and Powell S.C. (2002) “An evaluation of waterborne disease surveillance in the European Union” Reviews on Environmental Health 17 (2) page 149- 159

¹⁸ Riserbo, H.L. and Hunter, P.R. “Surveillance of waterborne diseases in European Member States: a qualitative study” personal communication.

36. The reason for this state of affairs was sought by some¹⁹ in the fact that national surveillance systems have often been shaped as outbreak-driven systems, targeted at identifying conditions that are abnormal compared to a given baseline, and not to endemic levels of disease itself.

37. Also the Signatories to the Protocol “took note of the current lack of coordination at the European level in surveillance of water-related diseases” at their second meeting (Geneva, 2–4 July 2003)²⁰ and “requested that actions leading to the integration/co-ordination of existing information mechanisms concerning surveillance and outbreak detection be included in the workplan.”

V. PRIORITY SETTING UNDER THE PROTOCOL

38. A first expert group established under the Protocol met for the first time in Bonn, Germany, from 25 to 26 October 2001. Participants were drawn from the ministries of health of Belgium, France, Germany, Hungary, the Netherlands, Sweden and Switzerland and recommended²¹ the following list of diseases:²²

- (a) Diseases of known aetiology: cholera, enterohaemorrhagic E. coli (EHEC), viral hepatitis A, bacillary dysentery/shigellosis and typhoid fever.
- (b) Diseases of unknown aetiology: severe and acute diarrhoea (identifying both bloody and colourless), dehydration, vomiting, continuous fever and bradycardia.

39. The advice of the expert group was reviewed during its second meeting (Budapest, 29–30 November 2001).²³ Twenty specialists from the ministries of health in 12 countries took part. This meeting:

- (a) Refined the definition of “priority diseases” to mean “those diseases with severe health consequences and with a high tendency for secondary spreading”. The following diseases were recognized as priority diseases: cholera, EHEC, viral hepatitis A bacillary dysentery/shigellosis, and typhoid fever.

¹⁹ Stanwell-smith, R ; Andersson Y and Levy D.A. “National Surveillance Systems” pp 37 – 38 in Hunter P.R; Waite M.; and Ronchi E Eds (2003) Drinking water and infectious disease – establishing the links CRC press

²⁰ For a report on the second meeting of the Signatories of the Protocol on Water and Health, see <http://www.euro.who.int/document/E81387.pdf>.

²¹ The report of the expert group meeting is available at <http://www.euro.who.int/document/e74636.pdf>.

²² Detailed descriptions of most of the identified water-related diseases are available at the WHO website http://www.who.int/water_sanitation_health/diseases/diseasefact/en/print.html. For descriptions of diseases not listed there, refer to the WHO (2003) Guidelines on Drinking Water WHO 3rd ed Vol. 1 WHO Geneva as follows: EHEC pp 229 – 230, shigellosis pp 240 – 241, cryptosporidiosis pp 262 – 264 and giardiasis pp 27 – 268. More detailed descriptions of the diseases are available in Hunter P. (1997) Waterborne disease – Epidemiology and ecology Wiley and Sons.

²³ The report of the expert group meeting on waterborne disease surveillance is available at: <http://www.euro.who.int/document/e74635.pdf>.

- (b) Identified “secondary diseases” as those caused by the following pathogens: Campylobacter, Cryptosporidium, Giardia Intestinalis, and Calici viruses.
- (c) Stressed the importance of sporadic outbreaks of pathogens, as well as outbreaks of infrequent acute gastro-intestinal syndrome (AGI) of undetermined aetiology.
- (d) Recalled that, contrary to common believe, diseases due to chemicals in water supplies are still endemic in many parts of the European region. Among the main elements of concern are: nitrate/nitrite, fluoride, arsenic, lead, Trihalomethanes (THM); as organoleptic concerns were mentioned: iron, manganese, colour and excess turbidity.

40. The discussion on the selection of priority water-related diseases was reopened at the political level during the fifth session of the Working Group on Water and Health (Geneva, 5–7 December 2005) but did not result in dissenting opinions.

41. It is understood that the origin of the disease cannot always be unequivocally be linked to the water pathway, and that in many cases both food and water quality may have been compromised. The impossibility to designate water as the sole exposure route should not preclude inclusion of the disease in the Protocol monitoring system.

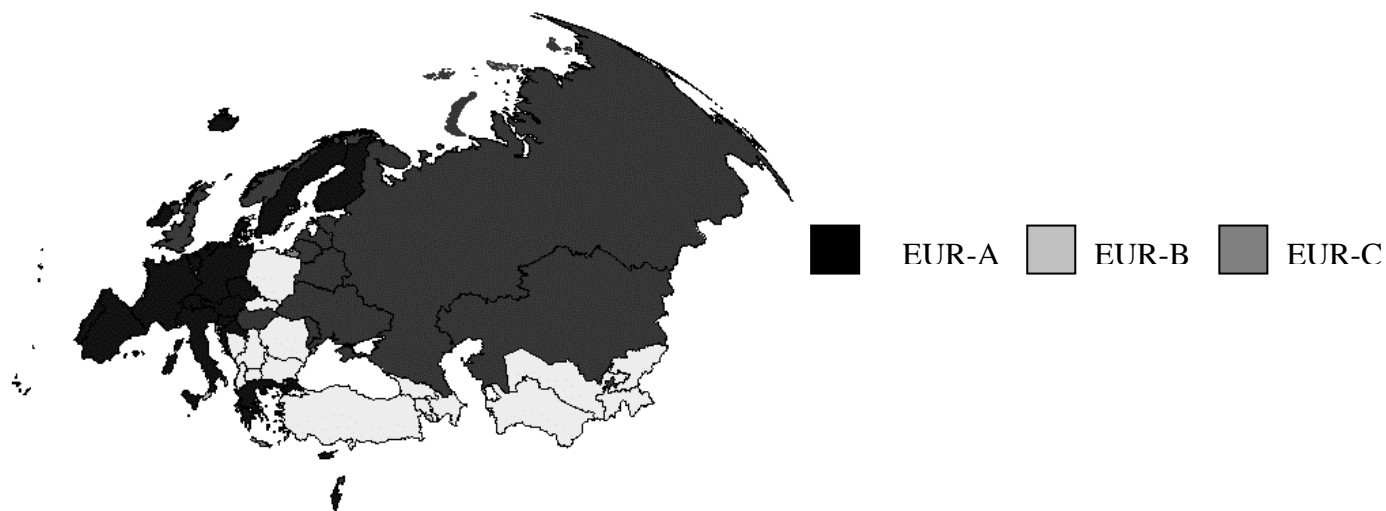
VI. CURRENT INFORMATION

42. Two types of information are covered by the current system whereby data are reported on a voluntary basis to WHO by the Member States of the WHO European region: mortality from diarrhoeal diseases in the below five age group is captured by the Health for All database (HfA),²⁴ and cases (or incidence) of the priority and secondary water-related diseases is captured by the Centralized Information System for Infectious Disease (CISID).

Based on health criteria, it is common to subdivide the WHO European Region into three subregions, identified as EUR-A, EUR-B and EUR-C graphically represented on the map in Figure 2.²⁵ The same geographic structure will be maintained in this document. In view of the important changes in the EU legislation and its implementations, some comments will also be included on the basis of political geography.

²⁴ Both HfA and CISID can be accessed from the data query homepage at http://www.euro.who.int/InformationSources/Data/20010827_1 (accessed 15 October 2006).

²⁵ The countries by subregion are (Parties in **bold underlined**, Signatories underlined) Europe A: Andorra, Austria, **Belgium**, **Croatia**, Cyprus, **Czech Republic**, Denmark, **Finland**, **France**, Germany, Greece, Iceland, Ireland, Israel, Italy, **Luxembourg**, Malta, Monaco, Netherlands, **Norway**, **Portugal**, San Marino, Slovenia, Spain, Sweden, **Switzerland**, United Kingdom
Europe B: **Albania**, Armenia, **Azerbaijan**, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, **Romania**, Serbia and Montenegro, **Slovakia**, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Uzbekistan
EUR C: Belarus, **Estonia**, **Hungary**, Kazakhstan, **Latvia**, **Lithuania**, **Moldova**, **Russian Federation**, **Ukraine**

Figure 2. European subregions - health based

Mortality

43. The WHO Health for All database²⁶ (HfA) contains data on mortality²⁷ from diarrhoeal diseases in the under-five age group in a gender-specific manner among its 600+ health indicators.

44. Reporting system: to assess the reporting efficiency, data were downloaded from the relevant WHO database, and the responses obtained per country per year counted. The finding was then compared to the total number of countries in the subregion, and expressed as a percentage. Subtraction of this percentage from 100 gave the percentage non-response rate per year in each subregion. Figures 3–5 show the reporting efficiency in the EUR-A, EUR-B and EUR-C subregions.

²⁶ Information on, and access to, the WHO Health for All database is available at http://euro.who.int/InformationSources/Data/20010827_1 (accessed 18 April 2006).

²⁷ For clarity we repeat the definition of “mortality” as the death rate, i.e. the ratio of the total number of deaths to the total population, and “morbidity” as the incidence of a disease or of all diseases in a population. Source: Anon On-line Medical Dictionary, Dept. of Medical Oncology, University of Newcastle upon Tyne available from <http://cancerweb.ncl.ac.uk/cgi-bin/omd?action=Home&query=> (accessed 25 July 2005).

Figure 3. Response rate EUR-A region SDR DD < 5 years of age

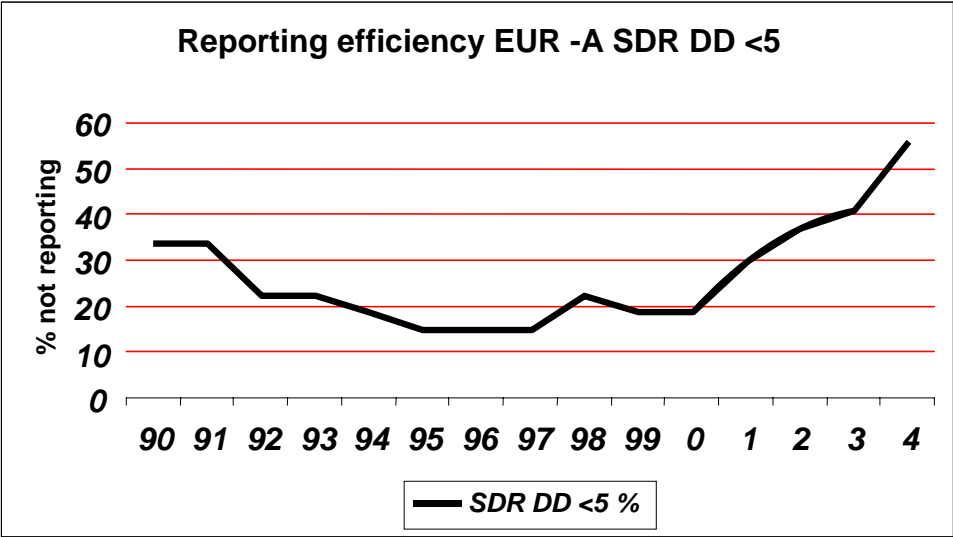


Figure 4. Reporting efficiency EUR-B SDR DD < 5 years of age

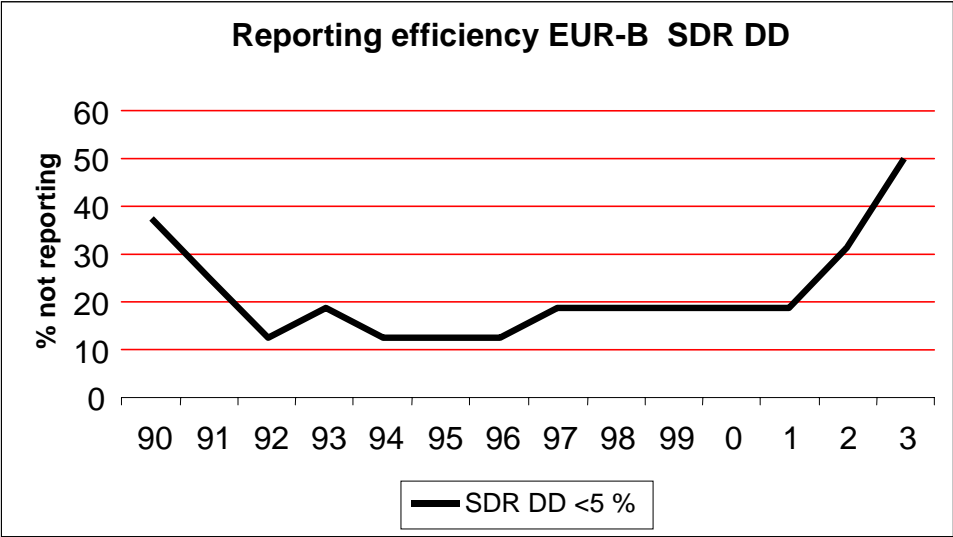
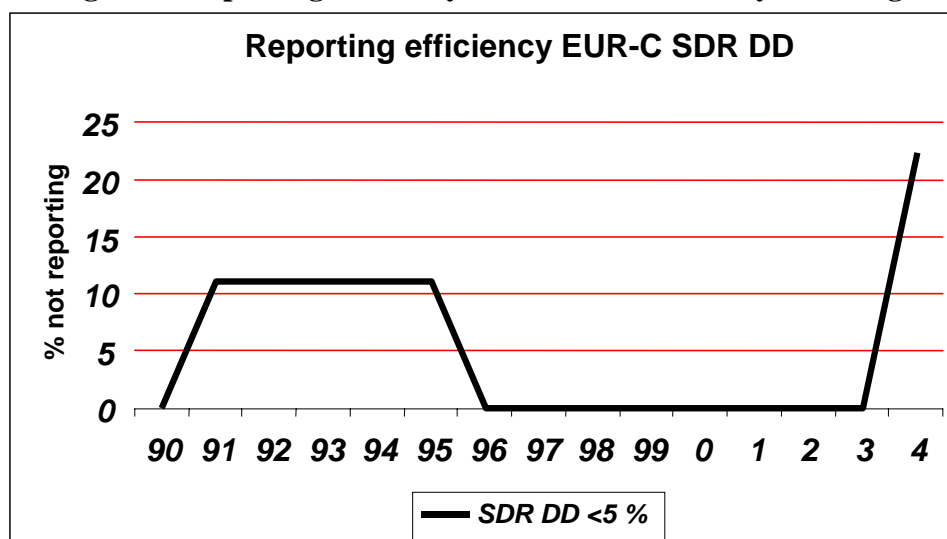


Figure 5. Reporting efficiency EUR-C SDR DD < 5 years of age

45. The majority of EU countries report within two calendar years, as do the EU accession countries. EFTA countries have only incidental reporting patterns, probably because infantile death from diarrhoeal disease is an exceptional occurrence. Problems exist in the EECCA region, where only half of the countries report within two calendar years, five do not report at all, and the remainder reports intermittently.

46. The graph also shows a serious lag period in the submission of the data to the HfA database, with two-to-three-year delays in submission not uncommon (hence the upward trend in non-reporting for the most recent years).

Mortality data

47. Table 2 below tries to estimate the total mortality for one five-year period (1995–2000) by combining the data from the HfA database with the data on population in the 0–4 year old group taken from the UN Department of Economic and Social Affairs – Population Division.²⁸ It allows a preliminary estimate of the number of children dying in the European region from diarrhoeal diseases each year. However, given the failures of the reporting system highlighted above, these figures are most likely underestimates.

Table 2. Total mortality from diarrhoeal diseases in the under-five age group

Subregion	1995	2000
EU	1,443	1,183
EFTA	20	20
EUA	1,995	1,712
EECCA	107,258	27,589
Others	3,517	1,365
TOTAL	114,233	31,869

²⁸ The population database of UNDESA can be consulted at <http://esa.un.org/unpp/>

48. From 1995 to 2000, diarrhoeal death in the below-five age group decreased by some 72%, largely due to the efforts of the EECCA countries. Nevertheless, even assuming a yearly proportional reduction, it can be reasonably estimated that between 1995 and 2000 nearly half a million children (438,306) died in the European region from diarrhoea.

Morbidity of priority water-related diseases

49. The CISID database is populated each year after WHO sends out requests to all CSR counterparts on the incidence of the previous year on nationally notifiable diseases. Submission is on the basis of responses to paper forms sent by WHO to the Member States; alternatively, documents are mailed in MS Word format, filled in and returned electronically.

50. A number of problems are recognized:

- (a) National responses are subject to national data quality control. No systemized cross-checking with targeted area surveys is currently taking place in a systematic way.
- (b) The way national data are collected varies among countries, and this is recognized as one of the main challenges to CISID (and other international voluntary databases) It may not be easy to make comparisons between countries as the quality of the surveillance systems varies among countries.
- (c) In view of the voluntary nature of the CISID programme, the possibility remains that data exist in national data repositories but are not reported to CISID. Completeness of the data set is always a major problem.
- (d) Not all countries use the same criteria to confirm cases; sometimes laboratory confirm cases only after clinical confirmation.

51. CISID is currently working to achieve harmonization of criteria in all Member States of the WHO European Region. This would make the data sets more comparable among countries.

52. CISID is also exploring possibilities for cooperation with ECDC in order to avoid duplication and apply the respective strengths of each Organization to full capacity.

Reporting efficiency

53. Figures 6, 7 and 8 show the reporting efficiency in priority diseases under the current WHO reporting system by subregion.

Figure 6. Reporting efficiency EUR-A region priority diseases

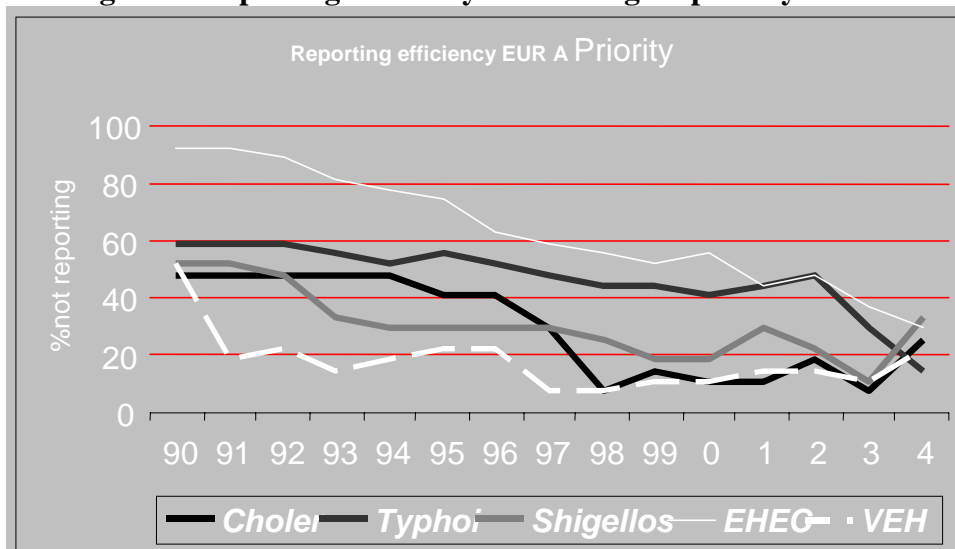


Figure 7. Reporting efficiency EUR-B priority diseases

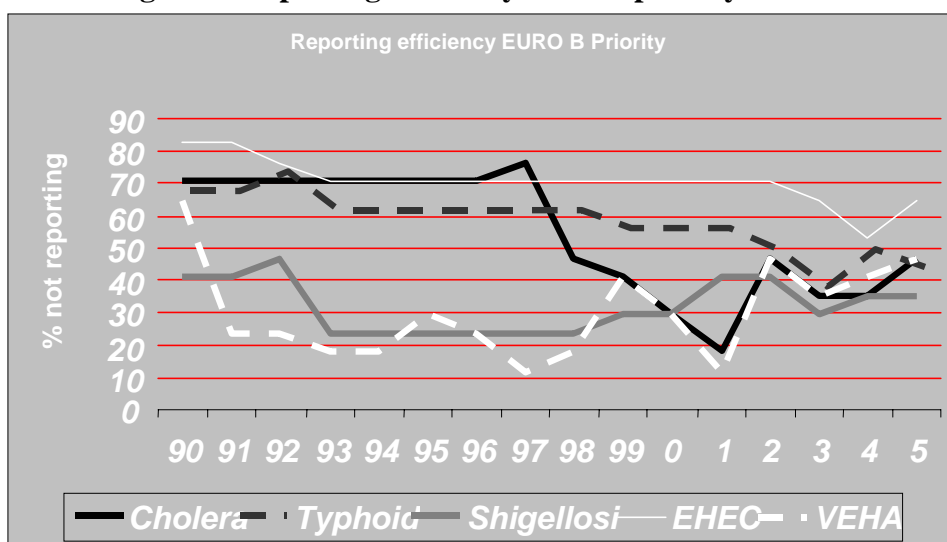
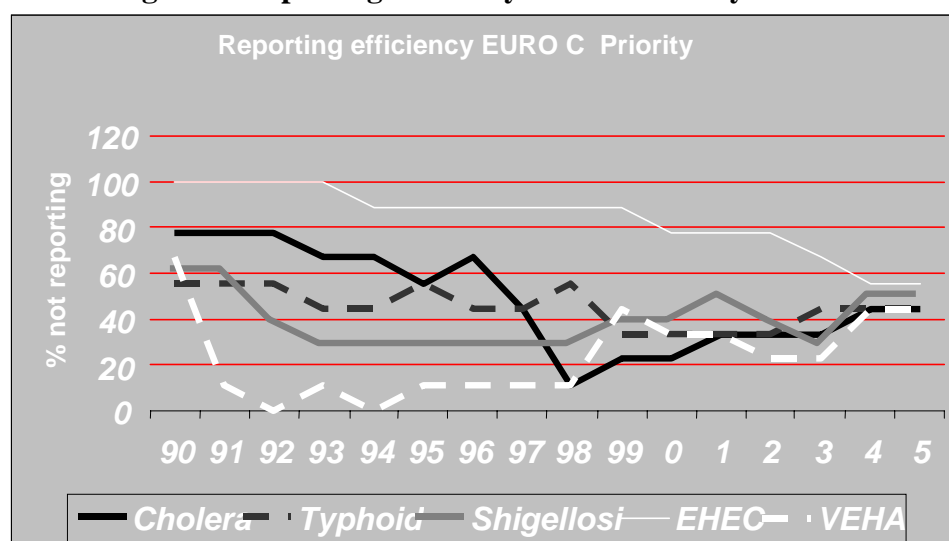


Figure 8. Reporting efficiency EUR-C Priority diseases



54. Reporting efficiency for priority diseases is highest in EUR-A, followed by EUR-C and EUR-B.

55. Within the different subregions, serious further differences in reporting capacity are evident. EU Member States demonstrate a satisfactory capacity to report on priority water-related diseases, with the vast majority providing complete reports within two calendar years. The same cannot be said about accession countries. EFTA countries have only one country reporting consistency, with the other countries submitting sporadic reports. Informal consultations revealed that these diseases are considered mainly of imported, and not endemic, nature. EU accession countries seem to suffer from problems in reporting on priority water-related diseases. EECCA countries demonstrate clear difficulties in reporting, with only few being able to report fully within two calendar years.

Burden of disease

56. Table 3 shows the number of cases of priority diseases since the base year 1990 by subregion.

Table 3. Cases of priority water-related diseases by subregion (1990–present)

	Cholera	EHEC	Shigellosis	Typhoid	VHEPA
EUR-A	591	13,793	216,621	32,479	282,350
EUR-B	312	101,658	310,695	223,872	2,046,915
EUR-C	2,693	1,488	1,465,465	912	2,815,462
TOTAL	3,596	116,939	1,992,781	257,263	5,144,727

57. Table 4 shows the number of cases of priority diseases since the signing of the Protocol in 1999.

Table 4. Cases of priority water-related diseases by subregion (1999–present)

	Cholera	EHEC	Shigellosis	Typhoid	VHEPA
EUR-A	209	11,830	53,503	7,045	62,020
EUR-B	83	39,310	50,137	77,958	332,693
EUR-C	0	1,488	91,772	500	145,911
TOTAL	292	52,628	195,412	85,503	540,624

Morbidity of secondary water-related diseases

58. Reporting efficiency: Figures 9, 10 and 11 show the reporting efficiency in priority diseases under the current WHO reporting system by subregion.

Figure 9. Reporting efficiency EUR-A for secondary water-related diseases

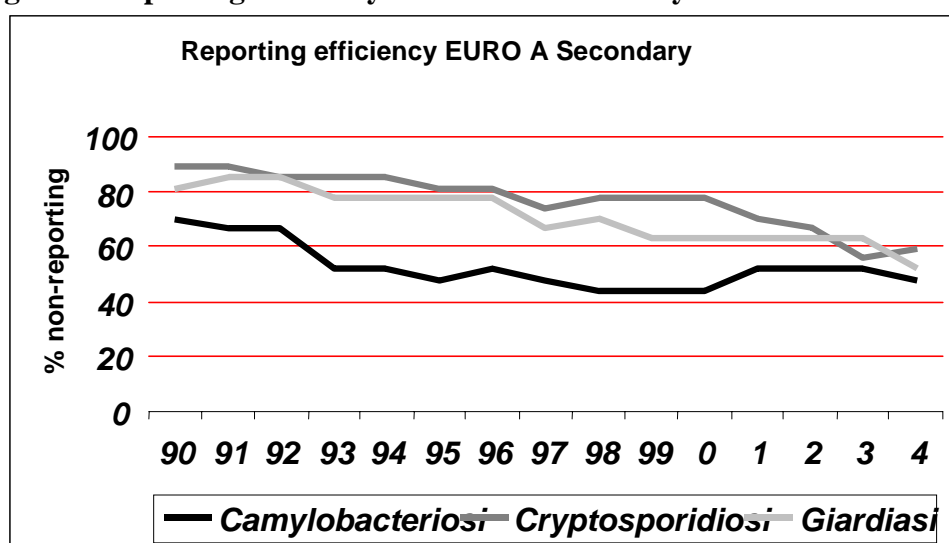


Figure 10. Reporting efficiency EUR-B secondary diseases

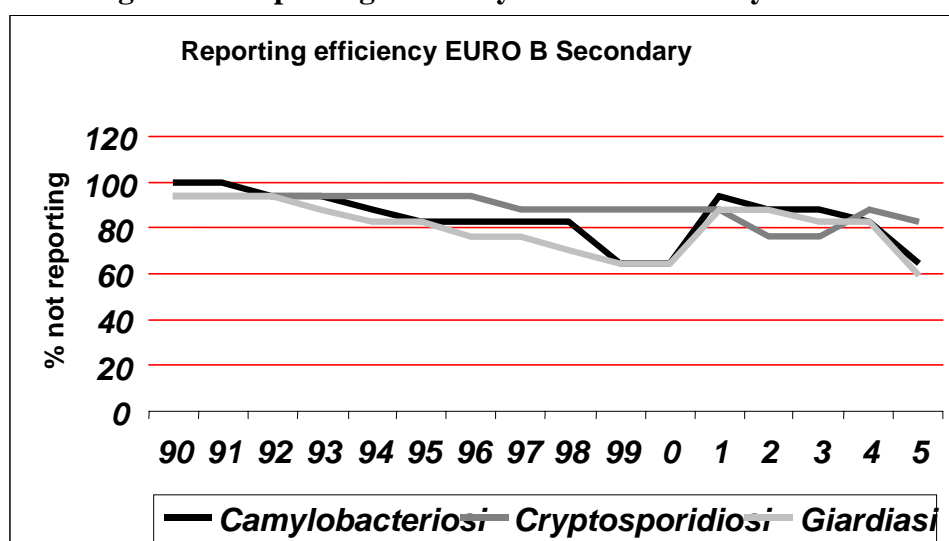
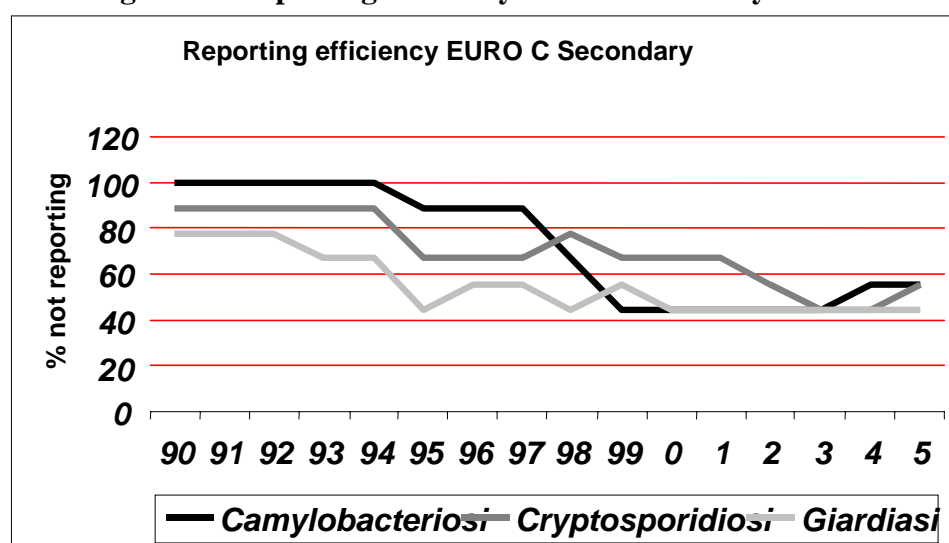


Figure 11. Reporting efficiency EUR C secondary diseases



59. Those EU Member States that reported effectively on priority diseases continue to perform well on their reporting on secondary water-related diseases, although slightly less than before. Previously noted problems of reporting in accession countries also play a role in this area. EFTA countries report sporadically. EECCA countries do not seem to have a comprehensive and consistent reporting mechanism for secondary water-related diseases.

Burden of secondary water-related diseases

60. Table 5 shows the burden of secondary water-related diseases since the base year 1990.

Table 5. Cases of secondary water-related diseases by subregion (1990–present)

Subregion	Campylobacteriosis	Cryptosporidiosis	Giardiasis
EUR-A	986,619	90,220	162,343
EUR-B	20,262	100	59,632
EUR-C	75,868	525	77,133
TOTAL	1,082,749	90,845	299,108

61. Table 6 shows the burden of secondary water-related diseases since the signing of the Protocol in 1999.

Table 6. Cases of secondary water-related diseases by subregion (1999–present)

Subregion	Campylobacteriosis	Cryptosporidiosis	Giardiasis
EUR-A	746,513	41,718	75,950
EUR-B	12,091	61	32,167
EUR-C	66,313	292	31,357
TOTAL	824,917	42,071	139,474

VI. DISCUSSION

Reporting mechanisms

62. Only one water-related disease is part of the international health regulations and therefore notifiable by all countries (cholera).

63. There is a consistency between the priority diseases selected by the expert groups under the Protocol and those identified for reporting by the recent legislation of the European Union. In view of the mandatory nature of the EU legislation and the voluntary nature of the WHO Health for All and CISID data gathering, it can be foreseen that data influx in Euphin-HSSSCD will equal and overtake the HfA and CISID data capture programmes in the European Union. It can also be foreseen that HfA and CISID will remain the prime vehicles for data capture on a subregional basis for non-EU countries. It is therefore appropriate that an agreement for data exchange between Euphin-HSSSCD and HfA CISID be concluded as soon as possible to provide one harmonized data management system to the Parties of the Protocol.

64. A number of conclusions can be drawn from the data gathered to date:

- (a) The established operation of the Health for All data capture system allows a reasonable assessment of the standardized death rate from diarrhoeal diseases in the below-five age group for the entire region.
- (b) The morbidity picture is more complex. For diseases of primary importance, EU Member States are capable of reporting in a timely and comprehensive manner. EFTA countries performed less well, possibly because priority water-related diseases in these countries are primarily seen as “imported” and may therefore fall outside the routine reporting structure of the EFTA countries. EECCA countries suffer some difficulties, with only a few being able to report fully within two calendar years. The response rate of the remaining countries is too varied to allow any meaningful conclusions.
- (c) For diseases of secondary importance, EU Member States performed well in their reporting efficiency, albeit less so than for priority diseases. EFTA countries responded well, except for cryptosporidiosis. EU accession countries and EECCA countries seem to have no comprehensive data reporting system for secondary water-related diseases.

Disease burden

65. A number of very preliminary conclusions can be drawn from the limited set of data that is currently available:

- (a) The standardized death rate in the below-five age group decreased by some 72% in the period 1995–2000, largely due to efforts of the EECCA countries. However, admitting a consistent yearly proportional reduction this still means that between

1995 and 2000 nearly half a million children died from easily preventable diseases. Furthermore, it is the male child that bears the greater mortality burden.

- (b) The reported burden of disease for priority water-related diseases stands at 874,459 cases since the year of the signature of the Protocol. However, taking into account that the reporting efficiency is typical of the order of 30%, a reasonable first estimate of the total burden of water-related diseases in the period 1999–2005 would be of the order of 2.5 million.
- (c) Similarly, the reported disease burden for secondary water-related diseases stands at 1,006,462 cases. However, noting that the response rate is barely of the order of 20%, a first reasonable assessment of the disease burden of secondary diseases would be of the order of 5 million.
- (d) The study also identified room for improvement, by for example:
 - i. Collecting data on a gender- and age-sensitive basis where technically and financially viable.
 - ii. Improving the flow-through of epidemiological information from national surveillance systems to CISID using the current data capture routine – where possible automating the data capture through electronic completion of the form.
 - iii. Urgent evaluation of under-performing the national surveillance systems in accordance with standardized procedures.²⁹ Where needed, national capabilities for surveillance (and control) should be strengthened³⁰ until national surveillance systems can, also for water-related diseases, perform at the accepted international standard.³¹
 - iv. The strengthening of national surveillance will require action in:
 - Technical issues such as the use of modern diagnostic tools. In view of the wide variation of financial capacity of national health systems, it is to be expected that the use of more advanced tools for environmental and clinical diagnosis of pathogens will be spearheaded in EFTA and possibly EU countries; the introduction of such methods in countries with financially weaker health systems will, in first instance, much depend on international cooperative efforts as foreseen under the Protocol. However, the final decision will depend on the capacity of such advanced diagnostic techniques to perform in the economic environment in which they are used.

²⁹ See for example: WHO (2001) Protocol for the Assessment of National Communicable Disease Surveillance and Response Systems – Guidelines for Assessment Teams Ref. WHO/CDS/CSR/ISR/2001.2 WHO Dept of Communicable Disease, Surveillance and Response, WHO Geneva

³⁰ See for example WHO (2003) Global consultation on strengthening national capacities for surveillance and control of communicable diseases WHO/CDS/CSR/LYO/2005.18 WHO Lyon Office for National Epidemic Preparedness and Response

³¹ WHO (1999) WHP Recommended Surveillance Standards Ref. WHO/CDS/CSR/ISR/99.2 WHO Geneva

- Legal issues such as common agreement on notifiable diseases, on case definitions, and even on the legal definition of what, exactly, constitutes a water-borne disease;
- Data recording and reporting especially for the secondary diseases.

66. Finally, it must be recognized that this is only the start of the surveillance work.

VII. COMPLEMENTARY WORK

67. It must also be remembered that this is only one aspect of surveillance requirements under the Protocol. Issues such as surveillance of diseases resulting from recreational water use, including accidents, surveillance of water-related diseases associated with extreme weather events, and specific monitoring programmes to respond to intergovernmental decisions such as those taken at the fourth Ministerial Conference on Environment and Health (Budapest, 2004) and the resulting Children's Environment and Health Action Plan for Europe remain to be addressed.

VIII. CONCLUSIONS

68. The current WHO data capture system covers the information needs of the Protocol with regard to priority and secondary diseases identified by the Working Group on Water and Health. The current data capture mechanism can therefore be maintained as the mechanism for use under the Protocol.

69. International cooperation is desired between WHO and ECDC in order to bring the respective strengths of each organization to bear within its area of competence, thereby avoiding duplication of effort both by the Parties and by the Organizations.

70. Diseases which are nationally notifiable and therefore currently included in national surveillance systems should be taken up first for the setting of targets and reporting of progress towards these targets. Diseases which are not notifiable under national law but are being monitored by national systems on a voluntary basis should be included as early as possible.

71. Parties should at least make diseases of primary importance notifiable by the time of the Second Meeting of the Parties, with the continued possibility to report national data on secondary diseases.

72. Efforts by WHO (CISID) to harmonize criteria for case definition and reporting procedures need to be supported and implemented by the Parties as soon as possible.

73. A document or set of documents needs to be developed to provide guidance to the Parties on issues such as:

- (a) Definition of standardized minimum quality requirements for both process and information output;

- (b) Compendium of surveillance tools appropriate for different socio-economic circumstances under which the national surveillance systems are operating.

74. A workplan element is needed in the 2007–2009 period on the development and implementation of an integrated strategy for surveillance of water-borne diseases, taking into account the work of WHO and ECDC.

75. A workplan element is needed in the 2007–2009 period on mutual assistance for the assessment and strengthening of national water-borne disease surveillance. This workplan element might include the following actions:

- (a) Development of surveillance guidance document(s), including translation into national languages;
- (b) Periodic regional (or subregional) seminars to share information and experiences on best practice;
- (c) Training and capacity-building, particularly for Parties who are currently reporting only sporadically or whose reporting capacity is hampered by the use of non-standardized methodologies.

76. Further work is also needed to address issues such as:

- (a) Surveillance of water-borne diseases related to other environments, i.e. recreational waters;
- (b) Specific surveillance needs, targeting children in line with the outcome of the 4th Ministerial Conference on Environment and Health.

77. In addition to the endemic level of water-related diseases, efforts need to be initiated to assess outbreak detection.
