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**Gaps in Global
Surveillance**

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Introduction

Swift, timely reporting of an infectious disease outbreak is a critical element of any bio-security system. Early warning is essential for limiting the impact of such an occurrence. Today, the accelerating spread of disease due to rapid travel and transport makes the window of opportunity to contain an outbreak so brief that daily reporting via the internet is the preferred method of surveillance.

Traditional epidemiological monitoring involves a national list of diseases that must be reported to the central health authority. A reporting system is set up for these 'notifiable diseases', resulting in the production of a periodic bulletin that catalogues the number of cases of each disease according to date and locality, sometimes accompanied by analysis. Dissemination of many of these bulletins has been hastened by electronic publication on the worldwide web.

In order to determine the extent of current coverage and the timeliness of reporting, the authors carried out a survey of online reporting in September 2002; the data were re-checked and updated in August 2003. Internet addresses were gleaned from a variety of sources, including department of health websites. The assessment was confined to publicly accessible systems: we did not review printed bulletins that are not yet online. The many countries with such bulletins should be encouraged to speed up access to their data by publishing on the internet or provided with the modest aid needed to do so.

For each website found, reports of infectious diseases were checked. Twelve infectious diseases were selected. Cholera was included because, along with plague and yellow fever, reporting of cases is required under the International Health Regulations (see below). Dengue, malaria and tuberculosis (TB) were included because they are widespread and provide a gauge of the effectiveness of the surveillance system. The others are caused by agents that present a public health problem and could potentially be used as biological weapons (BW) (see table 1).

Overview and major implications of the survey

Based on a global survey of open-source online reporting, it is evident that there are enormous gaps in terms of geographical and disease coverage and the timeliness of reporting. While not all outbreak reporting is available on the internet, any reporting system with an emphasis on speed will most likely make use of it. Although some countries have closed, internal alert systems, there are many advantages to open systems. The world's recent experience with severe acute respiratory syndrome (SARS) underlined the folly of trying to conceal a disease outbreak. With modern communications and media, the news will get out sooner or later; instead of controlling the damage, any delay may well exacerbate it. Had the SARS outbreak been reported openly at the outset, much of its spread would have been prevented and the resulting human and economic loss could have been limited.

Reporting and timeliness

Few countries report outbreaks of infectious diseases online, and most of those that do post the information too late to be useful as an alert. The accuracy of the reports and the extent to which they are complete is not known for certain.

Of the world's 193 countries, 128 have not reported outbreaks of infectious diseases online, at least not since 1999. The data of 60 bulletins posted online are many months or more out of date. By mid-August 2003, only 12 states had posted reports with data for August 2003; none report publicly on a daily basis. Among national reporting systems, only Canada's Global Public Health Intelligence Network (GPHIN) and the USA's Epi-X are updated daily, as far as we were able to determine; neither of these report publicly. Some regional reporting systems exist in certain areas, but these cover only a few specific diseases of local interest. There are four timely global reports, including GPHIN (see below), not all of which are available in the public domain.

The Americas Of 35 states in the Americas, 29 engage in online reporting, 26 carried data for 2003, and six posted reports with data for August 2003. Data from 13 Caribbean states appeared in the Caribbean Epidemiology Centre (CAREC) report, but that is issued at intervals of between one and four months and is soon out of date; the latest data for most countries in the July 2003 edition were from epidemiological week 26, which was in June 2003. The six countries for which we could not find recent online bulletins were: Dominican Republic; Haiti; Honduras; Panama; Paraguay; and Uruguay.

Europe Of 45 countries in Europe, 18 have published reports online, 14 of them with data for 2003; five had posted reports with data for August 2003.

Asia Of 60 countries in Asia, 12 have published reports online, of which seven have data for 2003; South Korea was the only one that had posted data for August 2003.

Africa Of 53 countries in Africa, six publish reports online, two of which contained data for 2003; none posted data for August 2003.

Taking the ten most populated countries of the world in order of population size:

- ! China does not publish a national online disease bulletin. Only the Special Administrative Region of Hong Kong and Taiwan, where disease patterns do not reflect those of the mainland as a whole, report on the internet.
- ! India produces a monthly 'Communicable Disease Alert', but, as of mid-August 2003, it was more than a year out of date.
- ! The US national weekly bulletin, 'Morbidity and Mortality Weekly Report', is available on the internet. A daily e-mail communication is distributed within the public health sector.
- ! The Indonesian ministry of health has a website but no detailed disease data are on it.
- ! Brazil compiles an electronic epidemiological bulletin, which is up to date within a month or so.
- ! Russia produces a monthly report, which is up to date within a month or so.
- ! Japan publishes a monthly 'Infectious Agents Surveillance Report', containing current information.
- ! We were unable to locate online disease bulletins for Pakistan, Bangladesh and Nigeria.

Disease coverage

In those countries that conduct online reporting, there was no requirement to report on many of the most important diseases—natural or man-made. This suggests that surveillance of those and most other diseases is poor in these states and probably worse in countries without online reports. When notification of a disease is not mandatory at the national level, it is not likely to be tracked or reported at all. Such omissions may also reflect a lack of clinical and/or laboratory diagnostic capabilities.

The 12 diseases listed in table 1 were selected as representative of diseases of interest. TB and malaria are major killers; periodic cholera, influenza and dengue epidemics have lower case fatality rates but make more people ill. Yellow fever, a mosquito-borne viral disease for which there is no cure, was once a major scourge outside of the tropics and still breaks out on occasion in tropical areas. Plague, although treatable, is endemic in many parts of the world. The International Health Regulations, administered by the World

Health Organisation (WHO), require that the WHO be notified within 24 hours of even one case of cholera, plague or yellow fever. Legionnaires disease, which is now prevalent wherever central air conditioning is found, claims ever more victims each year and has the potential to reach epidemic proportions unless it is recognised and treated. Every country should be on alert for at least eight of the aforementioned diseases, as well as for other diseases of regional importance.

When there is a new outbreak of an initially unknown disease, it is necessary to rule out the most likely causes before undertaking the difficult task of identifying and controlling the responsible agent. If health authorities are not prepared to do so quickly, valuable time is lost. Recent examples of this failure are the plague episode in India in 1994, the advent of West Nile encephalitis in the Western Hemisphere in 1999, and the SARS outbreak in 2003.

Anthrax, botulism, brucellosis and tularemia were the first diseases to be weaponised and produced by the USA in the mid-twentieth century, when it had a BW programme. A number of other countries have also studied these diseases, as well as cholera, dengue, influenza, malaria, plague and yellow fever (plus some others not surveyed here), for BW purposes. The objective in selecting these diseases for the survey was to determine how likely it is that cases of infection by those agents - whether of natural or BW origin - will be reported, and how quickly.

The majority of countries with online bulletins required reporting - including null reports (zero cases) - of cholera, malaria and TB, but only one-quarter demanded reports on plague and yellow fever, despite the international requirement to report on them. Fewer than 50% of the online countries required reporting of the other seven diseases listed.

Surveillance and diagnosis on the ground

Access to ample primary - clinical and laboratory - diagnostic information is the essential first step towards successful outbreak reporting. But reporting is the easy part: in most cases, there is no significant technical impediment to posting data online as soon as possible. Acquiring the necessary information on the ground is another matter. The facilities and trained clinical and laboratory personnel required are scarce in many parts of the world, particularly in those where new diseases are most likely to emerge. These are also the locations where BW agents might be tested. It is in the interest of all nations to make sure that at least every region has the necessary capabilities to monitor infectious disease outbreaks and can deploy them rapidly when necessary.

The World Health Assembly took a step forward in this respect in 2003 by giving the WHO the authority to use any information source (rather than just official reports) to identify disease outbreaks and to alert the international community to potentially serious public health threats, and to conduct on-the-spot investigations when necessary to determine the severity of the outbreak. The WHO plans to establish a standing team that is ready to respond to a crisis. An important aspect of this will be the amendment of the

International Health Regulations to include mandatory reporting of all public health emergencies of potential international concern. WHO member states should act on this at the 2004 World Health Assembly.

To make such a rule effective, however, will require financial assistance from the richer industrialised nations, since meaningful reporting will involve the construction of a global surveillance system from the ground up. Such a system, though, is still just a dream. Article X of the 1972 Biological and Toxin Weapons Convention (BWC) calls on states parties to cooperate with each other and with international organisations to prevent the spread of disease. Building a truly comprehensive global surveillance system is the most important move that they could make, to the immense benefit of every state party.

Survey data and analysis

National online reporting

Americas

The Americas is the best-served region in terms of online bulletins. Of 35 countries, 29 have produced them since 2000 (including 13 Caribbean nations covered by a single bulletin produced by CAREC) (see table 2). Bolivia had two monthly bulletins that it stopped publishing online in 2000 and 2001; Costa Rica had a weekly that has not been updated since the end of 2002; and Ecuador had an online bulletin that apparently ceased publication in 2000. Those compiled by Canada, the USA and CAREC cover a wide range of diseases; Canada and the USA report on influenza in separate publications.

Most of the reporting countries provided figures for cholera, dengue and malaria; other diseases were less widely covered, and some countries covered just two or three of the 12 diseases surveyed. Only half of the countries have columns in their bulletins for reporting plague and yellow fever (despite the WHO stipulation regarding reporting these two diseases and cholera). However, the website of the Pan-American Health Organization (PAHO) contains tables showing official 2003 figures for all 35 member states on yellow fever (not plague), plus cholera and dengue. The PAHO also publishes a monthly online 'Dengue Watch' report and a periodic TB bulletin. By July 2003, the PAHO had launched an online 'Emerging Infectious Diseases' report for the Americas, which is updated weekly, but which does not contain weekly case totals.

In regard to other diseases of potential BW concern, the following numbers of countries have columns in their reports for: anthrax (two: Argentina, USA); botulism (four: Argentina, Canada, Chile, USA); brucellosis (seven); and tularemia (one: USA).

In mid-August 2003, the bulletins of 26 of the countries of the Americas contained some data for 2003, and six carried data for the month of August 2003 (Canada, Cuba, El Salvador, Mexico, Nicaragua, USA). None was updated on a daily basis. Twelve produced 'weekly' reports, but the data in six of those referred to a seven-day period more than four weeks earlier. Bolivia, Brazil and Chile publish only monthly reports, while the CAREC report is compiled at intervals of between one and four months. The periodicity of reporting in Ecuador could not be determined, as its website was inaccessible throughout the August 2003 survey.

Europe

In Europe, 18 of 45 countries have or had online bulletins since 2000 (see table 3). England, Wales and Scotland are counted as one country because they are all part of the United Kingdom, even though Scotland reports separately (we were unable to find a bulletin for Northern Ireland). There are also a number of regional bulletins for specific diseases, such as the human immuno deficiency virus (HIV), influenza, legionellosis, Lyme disease and TB; TropMedEurop covers tropical diseases, mainly dengue, malaria and schistosomiasis. The European Union (EU) produces online weekly and monthly bulletins in several European languages, but it does not publish routine tables of case numbers.

As for the three internationally reportable diseases, just two countries (Denmark and Ireland) have columns in their reports for plague and yellow fever, and only eight for cholera.

In regard to other diseases of potential BW concern, the following numbers of countries have columns in their reports for: anthrax (five: Denmark, Georgia, Ireland, Netherlands, Russia); botulism (nine); brucellosis (nine); and tularemia (seven).

As of mid-August 2003, 14 of the 18 countries with online bulletins had compiled some information for 2003 (the exceptions being Austria, Georgia, Italy and Portugal). Eleven produced weekly bulletins, but only five reported any data for the month of August. None was updated on a daily basis. Besides a weekly epidemiological bulletin, France has established a sentinel network—Sentiweb—which reports weekly on acute diarrhoeal disease and chickenpox. Those countries that publish less frequent bulletins are Austria, Estonia, Finland (except for influenza during the season, approximately September through May, when it reports weekly), Georgia, Italy, Netherlands, Portugal and Russia.

Most European country bulletins reported a wide range of diseases, although not all of the same type. However, there are some large gaps. Of the listed diseases, Belgium reported only influenza and legionellosis; Italy reported only influenza; Georgia reported only anthrax and malaria; Sweden reported only legionellosis and TB; and England and Wales reported only cholera and malaria - fewer diseases than Scotland.

Asia

In Asia, 12 out of 60 countries have published data online since 2000 (see table 4). The bulletins of Australia, Israel and Taiwan reported a wide range of diseases, whereas Japan listed only three. Of course, the data from the Hong Kong Special Administrative Region of China are not representative of the situation on the mainland. In September 2002, the website of the South Pacific Cooperation (SPAC) organisation contained tables showing figures for several diseases in Pacific Island states in 2002, while the WHO's Western Pacific Regional Office published some data on TB levels in 2002.

As for the three internationally reportable diseases, 11 countries have columns in their

reports for cholera, and eight each for plague and yellow fever.

In regard to other diseases of potential BW concern, the following numbers of countries have columns in their reports for: anthrax (five); botulism (two: Australia and Israel); brucellosis (three: Australia, Israel, Jordan); and tularemia (none).

In mid-August 2003, only seven countries had reported any data for 2003, and the only weekly bulletins were from Israel (which apparently ceased publication in 2002) and South Korea; the latter was the only country with data for August 2003. The periodicity of reporting in Jordan could not be determined. The bulletins of Bahrain, India, Israel, Jordan and Malaysia were more than a year out of date. The Philippines produces a quarterly 'Morbidity and Mortality Report' and statistics from a National Epidemic Sentinel Surveillance (NESS) system, which is based on 314 sentinel hospitals. When we last checked, in August 2003, they were not available online.

Africa

Given the low level of internet access across Africa, it is not surprising that only six out of 53 countries have published online bulletins since 2000 (see table 5). Mozambique and Namibia had online epidemiology reports in 1997, but they have not produced them since. With the exception of South Africa, the number of diseases listed in these reports is small. Only two countries have columns in their reports for plague and yellow fever, and just five for cholera (which Egypt reports as 'summer diarrhoea'). The African Regional Office (AFRO) of the WHO publishes 'Weekly Cholera Reports' online; a monthly 'Epidemiological Report' was available on the internet in 2001. AFRO has also put four monthly sub-regional bulletins - the Central African, East African, South African and West African epidemiological blocs - on the web, detailing cases of cholera and TB.

In regard to other diseases of potential BW concern, the following numbers of countries have columns in their reports for: anthrax (one: South Africa); botulism (none); brucellosis (two: Algeria and South Africa); and tularemia (none - tularemia has never been recorded in Africa).

As of mid-August 2003, just two countries (South Africa and Uganda) had published any information for 2003. Only two states have ever produced weekly reports (Mozambique, which stopped publishing in 1997, and Uganda).

Summary of national online reporting and capabilities

Countries reporting

On cumulating the data, we found that, of the world's 193 countries, only 65 states, including the 13 Caribbean nations that share a bulletin, have, or had, online bulletins (see table 6). As noted earlier, the best-covered region is the Americas, with 83% of states engaging in online reporting, followed by Europe (40%), Asia (20%) and Africa (11%) (see table 6).

Failure to exploit online reporting capabilities

Many countries are not fully exploiting their online reporting capabilities. In the Americas, Bolivia and Ecuador have produced online bulletins in the past, so presumably they could be reactivated and updated. Brazil could revise its bulletin more frequently; the city of Rio de Janeiro publishes its dengue statistics online weekly (daily at the height of an epidemic). Brazil has recently (in 2001) started to produce a national List for Adverse Health Events (LISAS) (www.lisas.org.br), based on the ProMED (Program for Monitoring Emerging Diseases) model, covering medical products and services, in addition to outbreaks, that is updated several times a week.

In Europe, Finland publishes a monthly infectious disease bulletin. The fact that it also produces a weekly influenza bulletin, however, shows that it is capable of compiling reports on a more regular basis. Italy only provides data up to 1999, except for a periodic influenza bulletin, which suggests that it, too, is capable of more frequent reporting. At present, the Netherlands only produces a monthly report, but it is developing a listserv called Inf@ct, based on the ProMED model, to provide early warning of disease outbreaks and other health-related events. Portugal's Appropriate Alert and Response System (SARA) only has data up to 2000.

In Asia, the 12 countries with online bulletins are technologically advanced and ought to be able to produce more regular bulletins. Given that the Western Australia Epidemiology and Surveillance Program publishes a state-wide 'Notifiable Diseases Weekly Report' online, and the Australian state of New South Wales uploads a 'Public Health Bulletin' to the web on a monthly basis, the national government should be able to compile an update more frequently than once every quarter. Hong Kong, which publishes a bi-monthly bulletin in English, obviously has the capability to post information more often, and in fact posts a weekly selection of global outbreak reports on its website. Meanwhile, South Korea has set up a national early warning system called K-ProMED.

Since 2000, the US Centers for Disease Control & Prevention (CDC) has been cooperating with Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan to improve their epidemiological surveillance systems.

In Africa, South Africa's monthly Notifiable Medical Conditions bulletin monthly Surveillance Bulletin were both months out of date. Algeria, Egypt, Morocco, Mozambique, Namibia and Senegal have published online bulletins in the past, so seemingly, given the resources, they could do so again. Uganda could resume posting its 'Weekly Epidemiological Newsletter' on the web. Nigeria—Africa's most populous country—has no epidemiological bulletin and has requested assistance from AFRO to upgrade its epidemiological surveillance infrastructure; ProMED has offered to consult with Nigeria on this issue.

Frequency of reporting and timeliness

As of mid-August, only 39 of the world's 193 countries - including the grouped report for 13 Caribbean nations - had published information online for 2003, and only 12 had reported any data for August 2003 (six in the Americas, five in Europe, and one in Asia). Of the online bulletins that we identified (produced by 65 states), 42% were updated weekly (not necessarily with data for the previous week; some were delayed for a considerable amount of time).

During the West Nile virus outbreak in the USA in 2002, a website in that country was updated daily - no publicly accessible online bulletins were updated daily in 2003, however. During the avian influenza scare of 1999, the Hong Kong government maintained a web page that was updated daily, when there were some instances of transmission to humans. The Malaysian government did likewise during the Nipah Virus epidemic of 1999, and again during a hand, foot and mouth disease epidemic in 2000. It appears that, once a serious disease problem has been identified, the resources required for daily internet reporting can be found in a number of countries.

Disease coverage

Of the 12 diseases listed here, the best covered were cholera, malaria and tuberculosis, with 51, 50 and 49 countries respectively reporting online. Only 29 countries had columns in their electronic bulletins for plague and yellow fever. Notification of anthrax, botulism, brucellosis, and tularemia was required in 13, 15, 21 and eight countries respectively (see table 7).

Languages

The bulletins were posted in 20 languages, with English being the predominant one, followed by Spanish and French. Several bulletins were available in two or more languages (see table 8).

Global outbreak reporting systems

Global reporting systems utilise all available sources - conventional and unconventional - and aim to achieve comprehensive, near real-time reporting of infectious disease outbreaks. They are particularly valuable in regard to early monitoring of new and unusual events. But global reporting systems are entirely dependent on clinical surveillance and diagnosis at the national and local levels.

There are four non-military global online reporting systems:

- ! the WHO's 'Disease Outbreak News';
- ! ProMED-mail;
- ! GPHIN; and
- ! MITRE Text and Audio Processing (MiTAP).

The first two are broad-based systems, including reports from governments, non-governmental organisations (NGOs), the media and individuals, while the latter two are computer-based systems, which scan the web looking for outbreak reports in selected languages. All are updated daily or more frequently, and all seek to cover unusual events, undiagnosed diseases and other emergency situations in order to provide a global alert.

To the extent possible, these four global systems compensate for lapses in national reporting. But to be picked up in time by these systems, an outbreak has first to be recognised clinically and distinguished from familiar, oft-occurring syndromes. Otherwise, it will not be noticed until it spirals out of control - as with HIV in the 1980s, for example. These global systems depend on adequate outbreak surveillance at the national level. Some of these maintain archives, which are a valuable source of information for those wishing to analyse the causes and context of a disease outbreak. The 'Disease Outbreak News' archives of the WHO go back to 1996, while those of ProMED-mail go back to 1994. Because of contractual agreements with content providers, GPHIN only keeps information for the past 14 days.

World Health Organization

Since 1996, the WHO (www.who.int) has maintained a publicly accessible 'Disease Outbreak News' web page in English, where reports may appear at any time. These are accumulated once a week (in French and English) in the 'Weekly Epidemiological Record', which is also publicly available online (www.who.int/wer). In addition, the WHO produces a weekly 'Outbreak Verification List', which is sent by e-mail to a restricted group of national public health authorities and WHO Collaborating Centres. If the listed

outbreaks are verified nationally, they are posted on the 'Disease Outbreak News' web page (www.who.int/disease-outbreak-news). The WHO also reports weekly on outbreaks of influenza, quarterly on outbreaks of cholera, and annually on outbreaks of yellow fever. Its sources include GPHIN, ProMED-mail, WHO country and regional representatives, national ministries of health, and a number of humanitarian NGOs, such as Médecins Sans Frontières.

Global Public Health Intelligence Network

Health Canada has developed a sophisticated system for identifying health-related events around the globe (<https://gphin-rmisp.hc-sc.gc.ca/index.html>). Based on proprietary software, GPHIN - which went live in 1998 and is currently undergoing an upgrade - trawls the internet several times a day looking for media reports in English and French. Its objective is to provide early warning of disease outbreaks and other health-related matters that could affect Canadian citizens throughout the world. Its product is provided to the WHO, which uses the reports on those diseases that are of particular relevance to its programmes, such as cholera, plague, yellow fever, malaria, TB, SARS and the hemorrhagic fevers. GPHIN is not publicly accessible; the reports that it finds are posted on a secure website, while additional reports translated from Arabic, Chinese, Russian and Spanish are sent by e-mail on weekdays to stakeholders

MITRE Text and Audio Processing

A recent addition to the collection of instruments available to monitor outbreaks of infectious diseases and other global health-related events is the MiTAP prototype system (<http://mitap.sdsu.edu/>). Multiple information sources in various languages are automatically captured, filtered, translated, summarised and categorised according to disease, region, information source, person and organisation. Critical data are automatically extracted and tagged to facilitate browsing, searching and sorting. The system also allows users to submit articles for processing, to annotate existing documents, and to flag messages for others to see. MiTAP currently (2003) stores over one million articles and processes an additional 2-10,000 daily. The MITRE Corporation, a US federally funded, not-for-profit research and development organisation, has been developing the system since 2002 for the US military, but it is still in the prototype stage. A public version, based at San Diego State University in the USA, can be accessed free of charge by registering on the website shown above.

Program for Monitoring Emerging Diseases

ProMED was established in Geneva, Switzerland, in 1993, at a meeting co-sponsored by the Federation of American Scientists and the WHO (<http://www.promedmail.org>). Its

communications system, ProMED-mail, posts on the website and distributes daily by e-mail reports of emerging or unusual infectious diseases and toxic incidents from numerous sources, including the media, official and NGO documentation, and from its own subscribers, which include public health workers around the world. Experts assess all of the reports before they are uploaded. Subscription is free of charge.

Since October 1999, ProMED-mail has operated as an official programme of the International Society for Infectious Diseases (ISID), a non-profit professional body. As of August 2003, it has some 31,000 subscribers in more than 150 countries, together with thousands more who receive the information via secondary channels or who access the ProMED-mail website. All reports are translated into Japanese, and selected reports are available in Portuguese (ProMED-PORT) and Spanish (ProMED-ESP); there are plans to offer reports in Chinese and Russian also. The Oracle Corporation donates web server space and support services for ProMED-mail as a public service, at its health services branch in Reston, Virginia; the e-mail server, back-up, maintenance and connection to the internet are housed at the Harvard School of Public Health in Boston, Massachusetts. Support for ProMED-mail comes from foundations and subscriber donations.

Conclusion: relevance to the BWC

The survey of online reporting of infectious disease outbreaks shows that there are large gaps in regard to global surveillance. A comprehensive capability to monitor and report new outbreaks around the world, based on rapid clinical detection and laboratory diagnosis, should lead to earlier recognition of a problem, and hence to earlier implementation of prevention and control measures, limiting the spread of infection. This should, in turn, reduce the impact of a BW attack or accident. The reporting component is improving, with visible progress made in the past year alone. But BWC states parties need to recognise that true bio-security requires not just rules for handling pathogens and responding rapidly to outbreak reports, but also real surveillance, beginning with initial observations on the ground and reaching from there straight up into cyberspace. This will never be achieved by individual nations alone, but only by pooling global resources. Article X of the BWC points the way to international collaboration to achieve that goal.

Tables

Table 1 Diseases surveyed

Table 2 Online bulletins of the Americas

Table 3 Online bulletins of Europe

Table 4 Online bulletins of Asia

Table 5 Online bulletins of Africa

Table 6 Number of countries with bulletins by region

Table 7 Diseases listed—Global

Table 8 Intended frequency of bulletins

Table 1 Diseases surveyed

Abbreviation	Disease
Anth	Anthrax
Bot	Botulism
Bru	Brucellosis
Cho	Cholera
Den	Dengue
Flu	Influenza*
Leg	Legionnaire's Disease
Mal	Malaria
Pla	Plague
Tub	Tuberculosis
Tul	Tularemia
Yel	Yellow Fever

* Or acute respiratory infection

Table 2 Online Bulletins of the Americas

	Area	Freq.	Latest*	Anth	Bot	Bru	Cho	Den	Flu	Leg	Mal	Pla	Tub	Tul	Yel	
1	Argentina	Weekly	Jul, 2003	X	X	X	X	X	X		X		X			1
2	Bolivia	Monthly	<i>Dec, 2000</i>				X	X			X	X	X			2
3	Bolivia	Monthly	<i>Jun, 2001</i>								X					3
4	Brazil	Monthly	Jun, 2003				X	X			X		X			4
5	Canada	Weekly	Jul, 2003						X							5
6	Canada	Weekly	Aug, 2003			X		X	X	X			X		X	6
7	Canada	Monthly	Apr, 2003		X	X	X			X	X	X	X		X	7
8	Caribbean**	Variable	Jun, 2003				X	X	X		X	X	X		X	8
9	Chile	Monthly	May, 2003		X	X	X	X	X		X					9
10	Colombia	Weekly	Jul, 2003					X			X					10
11	Costa Rica	Weekly	<i>Dec, 2002</i>				X	X			X		X			11
12	Cuba	Weekly	Aug, 2003						X		X		X			12
13	Ecuador	Unknown	<i>Oct, 2000</i>			X	X	X					X			13
14	El Salvador	Weekly	Aug, 2003				X	X			X					14
15	Guatemala	Weekly	Jul, 2003				X	X			X		X			15
16	Mexico	Weekly	Aug, 2003			X	X	X	X		X		X			16
17	Nicaragua	Weekly	Aug, 2003				X	X			X					17
18	Peru	Weekly	Jul, 2003				X	X	X		X	X			X	18
19	USA	Weekly	Aug, 2003	X	X	X	X			X	X	X	X	X	X	19
20	USA	Weekly	May, 2003						X							20
21	Venezuela	Weekly	Jul, 2003			X	X	X			X				X	21

*Bulletin websites accessed mid **August 2003**

** The Caribbean Epidemiology Centre (CAREC) reports for 13 Caribbean nations plus several island dependencies

Note: online bulletins could not be found for the following countries:
Dominican Republic, Haiti, Honduras, Panama, Paraguay, Uruguay.

Table 2a Online Bulletins of the Americas

	Area	Report Name	Report URL *
1	Argentina	Boletín Semanal	http://www.direpi.vigia.org.ar/
2	Bolivia	Reportes de Epidemiologia	http://www.sns.gov.bo/bolsns/epi/epi.asp
3	Bolivia	Boletín Epidemiológico	http://www.ops.org.bo/pubperiodicas/
4	Brazil	Boletim Eletrônico Epidemiológico	http://www.funasa.gov.br/pub/pub00.htm
5	Canada	FluWatch	http://www.hc-sc.gc.ca/pphb-dgspsp/fluwatch/
6	Canada	Infectious Diseases News Brief	http://www.hc-sc.gc.ca/pphb-dgspsp/bid-bmi/dsd-dsm/nb-ab/
7	Canada	Notifiable Diseases Monthly Report	http://www.hc-sc.gc.ca/pphb-dgspsp/bid-bmi/dsd-dsm/ndmr-rmmdo/
8	Caribbean	CAREC Surveillance Report	http://www.carec.org/publications/reg-pub.html#surveil
9	Chile	Boletín El Vigía	http://epi.minsal.cl/epi/html/bolets/evigia.htm
10	Colombia	Boletín Epidemiológico	http://www.ins.gov.co/epidemiologia/cce/etv/2003/vet_2003.htm
11	Costa Rica	Rep. Vigilancia Epid. Centroamerica	http://www.netsalud.sa.cr/ms/estadist/reportes/
12	Cuba	Boletín Epidemiológico Semanal	http://www.sld.cu/instituciones/ipk/bolepid/bolepid.htm
13	Ecuador	Vigilancia Epidemiológica	http://www.msp.gov.ec/provincias/ecuador.htm
14	El Salvador	Vigilancia Epidemiológica	http://www.mspas.gob.sv/vigilancia_epid2003.htm
15	Guatemala	Semana Epidemiológica	http://www.mspas.gob.gt
16	Mexico	Boletín Epidemiológico	http://www.epi.org.mx/boletin03.php
17	Nicaragua	Boletín Epidemiológico	http://www.minsa.gob.ni/vigepi/html/boletin.htm
18	Peru	Boletín Epidemiológico	http://www.oge.sld.pe
19	USA	Morbidity and Mortality Weekly Report	http://www.cdc.gov/mmwr/
20	USA	Weekly Reports	http://www.cdc.gov/ncidod/diseases/flu/weeklychoice.htm
21	Venezuela	Alerta Epidemiológica	http://www.msds.gov.ve/msdsweb/alertas.htm

***Note:** URLs may change with time

Table 3 Online Bulletins of Europe

	Area	Freq.	Latest*	Anth	Bot	Bru	Cho	Den	Flu	Leg	Mal	Pla	Tub	Tul	Yel	
1	Austria	Monthly	May, 2002		X	X	X			X	X		X	X		1
2	Belgium	Weekly	May, 2003						X	X						2
3	Denmark	Weekly	Jun, 2003	X	X		X	X				X			X	3
4	Estonia	Monthly	Jul, 2003		X						X		X	X		4
5	Finland	Weekly**	Jun, 2003						X							5
6	Finland	Monthly	Jun, 2003						X		X		X	X		6
7	France	Weekly	May, 2003		X	X	X			X			X			7
8	France	Weekly	Jul, 2003		X	X				X			X			8
9	Georgia	Yearly***	2002	X							X					9
10	Germany	Weekly	Aug, 2003			X			X	X			X	X		10
11	Ireland	Weekly	Aug, 2003	X		X	X		X	X	X	X	X		X	11
12	Italy	Periodic	Apr, 2002						X							12
13	Netherlands	Monthly	Jul, 2003	X	X	X	X			X	X		X			13
14	Norway	Weekly	Aug, 2003		X			X		X	X		X	X		14
15	Portugal	Unknown	2000		X	X	X						X	X		15
16	Russia	Monthly	Jun, 2003	X		X			X		X		X	X		16
17	Spain	Weekly	May, 2003		X		X		X	X			X			17
18	Sweden	Weekly#	Jul, 2003							X			X			18
19	Switzerland	Weekly	Aug, 2003			X			X	X			X			19
20	UK (England+Wales)	Weekly	Aug, 2003				X				X					20
21	UK (Scotland)	Weekly	Aug, 2003		X	X	X		X	X	X		X			21

* Bulletin websites accessed mid **August 2003**

** In season (approximately September through May)

*** Graphs, no tables

Disease statistics produced monthly

Table 3a Online Bulletins of Europe

	Area	Report Name	Report URL*
1	Austria	Monatsausweis über angezeigte Fälle übertragbarer Krankheiten	http://www.bmsg.gv.at/scripts/depot3/bmsg/edit/200110230002.txt
2	Belgium	Weekly Report of acute respiratory infections and influenza	http://www.iph.fgov.be/epidemiolo/epien/index0000.htm
3	Denmark	Epinytt - EPI-NEWS	http://www.ssi.dk/sw1204.asp#516_2911
4	Estonia	Estonian Communicable Disease Bulletin	http://www.tervisekaitse.ee/tkuus.php?act=english
5	Finland	Influenza in Finland	http://www.ktl.fi/flu/flu03f.htm
6	Finland	Kansanterveyslehti	http://www.ktl.fi/kansanterveyslehti/
7	France	Weekly report/ratio of the notifiable diseases	http://www.invs.sante.fr/surveillance/index.htm
8	France	Bulletin Epidémiologique Hebdomadaire	http://www.invs.sante.fr/beh/
9	Georgia	Epidemiologiuri Biuleteni**	http://www.ncdc.ge/publications.html
10	Germany	Epidemiologischen Bulletin	http://www.rki.de/INFEKT/EPIBULL/EPI.HTM
11	Ireland	Weekly ID Report	http://www.ndsc.ie/IDStatistics/WeeklyIDReport/
12	Italy	INFLUNET	http://www.sanita.it/malinf/influnet/
13	Netherlands	Infectieziekten Bulletin	http://www.rivm.nl/
14	Norway	MSIS-Rapport	http://www.folkehelsa.no/nyhetsbrev/msis/
15	Portugal	Sistema de Alerta e Resposta Apropriada (SARA)	http://www.dgsaude.pt/docs/epid_01_06_2003.html
16	Russia	Zdorov'e naseleniya I sreda obitaniya	http://www.fcgsen.ru/21/documents/epid_01_06_2003.html
17	Spain	Boletín Epidemiológico Semanal	http://193.146.50.130/bes/bes.htm
18	Sweden	EPI-aktuellt	http://www.smittskyddsinstytutet.se/htm/epid/Epi-aktuellt/intro.htm
19	Switzerland	Déclarations des maladies infectieuses	http://www.bag.admin.ch/infreporting/bulletin/e/index.htm
20	UK (England+Wales)	Communicable Disease Report Weekly	http://www.phls.co.uk/publications/cdr/index.html
21	UK (Scotland)	Scottish Centre for Infection & Environmental Health: SCIEH Weekly Report	http://www.show.scot.nhs.uk/scieh/wrhome.html

*Note: URLs may change with time

**Graphs, no tables

Table 4 Online Bulletins of Asia

	Area	Freq.	Latest*	Anth	Bot	Bru	Cho	Den	Flu	Leg	Mal	Pla	Tub	Tul	Yel	
1	Australia	Quarterly	Jun, 2003	X	X	X	X	X	X	X	X	X	X		X	1
2	Bahrain	Yearly	2001						X		X		X		X	2
3	China (HK)**	Bi-monthly	Mar, 2003				X	X		X	X	X	X		X	3
4	India	Monthly	Jun, 2002	X			X	X	X			X				4
5	Israel	Weekly	Aug, 2002	X	X	X	X		X	X	X	X	X		X	5
6	Japan	Monthly	Jul, 2003				X	X	X							6
7	Jordan	Unknown	2000	X		X	X				X	X	X		X	7
8	Malaysia	Yearly	2001				X	X			X	X	X		X	8
9	New Zealand	Monthly	Jun, 2003				X	X	X	X	X		X			9
10	Singapore	Monthly	May, 2003				X	X		X	X	X	X		X	10
11	South Korea	Weekly	Aug, 2003				X				X					11
12	Taiwan	Monthly	Feb, 2003	X			X	X	X	X	X	X	X		X	12

* Bulletin websites accessed mid **August 2003**

** Hong Kong Special Administrative Region

Table 4a Online Bulletins of Asia

	Area	Report Name	Report URL*
1	Australia	Communicable Diseases Intelligence	http://www.cda.gov.au/pubs/cdipubs.htm
2	Bahrain	Notifiable Communicable Diseases	http://www.moh.gov.bh/statistics.asp
3	China (HK)**	Public Health & Epidemiology Bulletin	http://www.info.gov.hk/dh/diseases/index.htm
4	India	CD Alert	http://www.nicd.org/CDAlert.asp
5	Israel	Weekly Epidemiology Report	http://www.health.gov.il/units/epi/index.htm
6	Japan	Infectious Agents Surveillance Report	http://idsc.nih.go.jp/iasr/index.html
7	Jordan	Notifiable Communicable Diseases	http://www.moh.gov.jo/e_tables/i16.htm
8	Malaysia	Incidence Rates of Infectious Disease	http://webjka.dph.gov.my/survelans
9	New Zealand	Surveillance Reports	http://www.esr.cri.nz/features/surveillance/surveillance%20publications.html
10	Singapore	Epidemiological News Bulletin	http://app.moh.gov.sg/edc/cid_94.asp
11	South Korea	Communicable Disease Weekly Report	http://dis.mohw.go.kr/cdwr/cdwr.asp
12	Taiwan	Epidemiology Bulletin	http://www.cdc.gov.tw/En/ShowTopicText.ASP?TopicID=90

*Note: URLs may change with time

**Hong Kong Special Administrative Region

Table 5 Online Bulletins of Africa

	Area	Freq.	Latest*	Anth	Bot	Bru	Cho	Den	Flu	Leg	Mal	Pla	Tub	Tul	Yel	
1	Algeria	Quarterly	2001			X	X									1
2	Egypt	Yearly	2001										X			2
3	Morocco	Monthly	Dec, 2002				X				X					3
4	Senegal	Monthly	Jun, 2001				X								X	4
5	South Africa	Monthly	Dec, 2002	X		X	X		X	X	X	X	X		X	5
6	South Africa	Monthly	May, 2003						X							6
7	Uganda	Weekly	Jul, 2003**				X				X	X				7

* Bulletin websites accessed mid **August 2003**

** E-mail edition (web data ceased February 2002)

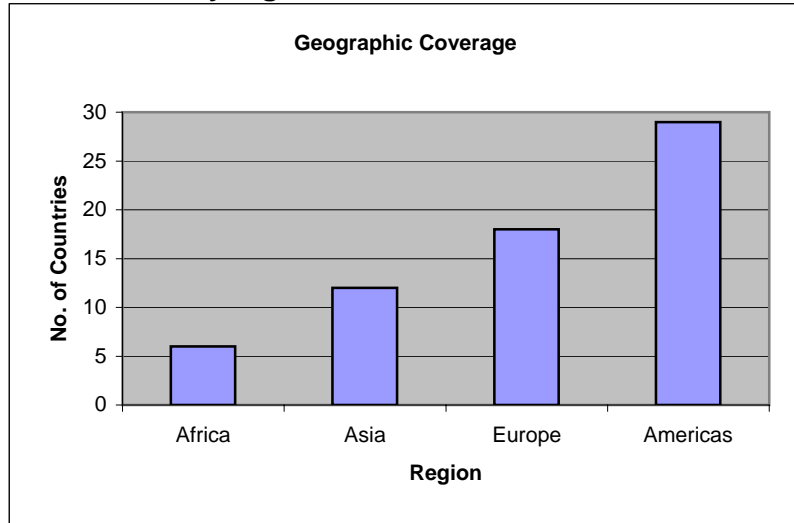
Table 5a Online Bulletins of Africa

	Area	Report Name	Report URL*
1	Algeria	Relève Epidémiologique Mensuel	http://www.ands.dz/insp/rem.html
2	Egypt	Case Management	http://208.48.48.190/STB/egypt/CaseManagement.htm
3	Morocco	Maladies sous Surveillance	http://www.sante.gov.ma/Departements/DELM/Surveillance%20Epidemiologique/DMSS/index-DDMS.htm
4	Senegal	Bulletin Epidémiologique	http://www.ised.sn/publication.htm
5	South Africa	Notifiable Medical Conditions	http://196.36.153.56/doh/facts/notify/index.html
6	South Africa	Surveillance Bulletin	http://www.niv.ac.za/survbul/current/survbulpg.asp
7	Uganda	Weekly Epidemiological Newsletter	http://www.health.go.ug/bulletin.htm

*Note: URLs may change with time

Table 6 Number of countries with bulletins by region

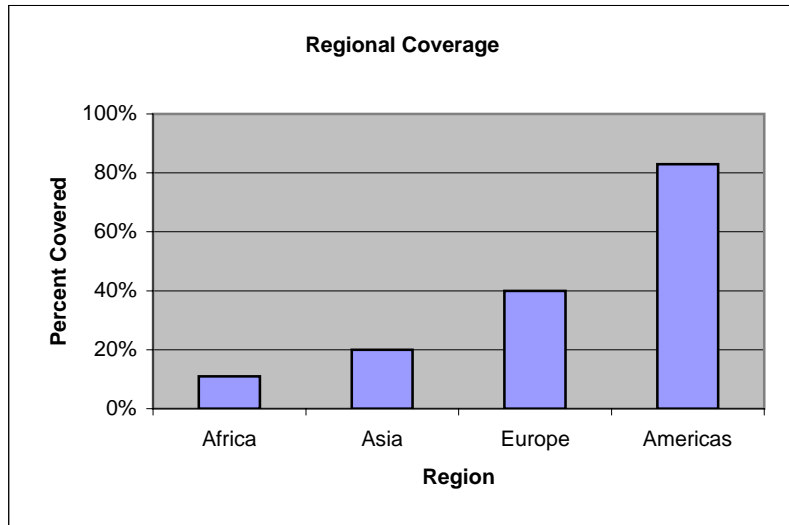
Region	Countries
Africa	6
Asia	12
Europe	18
Americas	29
Total	65



Note: The following table, chart and statistics only include one bulletin per country

Regional coverage

Region	Countries	Coverage
Africa	53	11%
Asia	60	20%
Europe	45	40%
Americas	35	83%
Total	193	33%

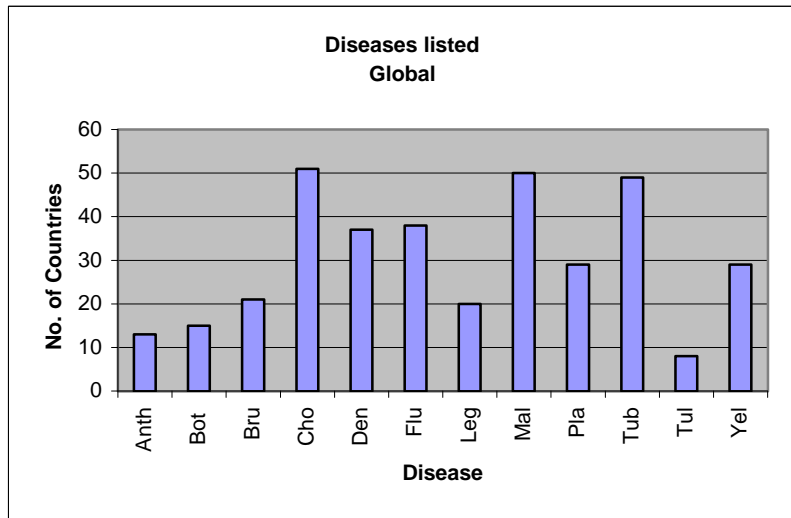


Global coverage

Number of countries covered: **65** out of **193 (33%)**

Table 7 Diseases listed - Global

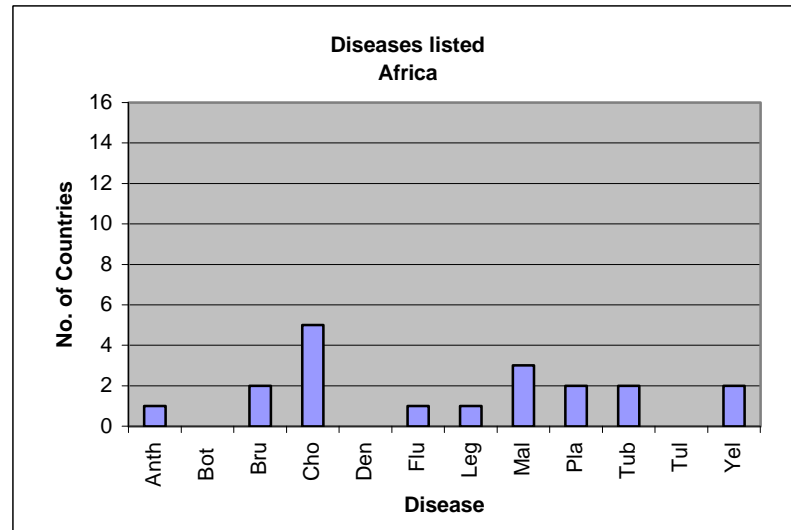
Disease	Countries
Anth	13
Bot	15
Bru	21
Cho	51
Den	37
Flu	38
Leg	20
Mal	50
Pla	29
Tub	49
Tul	8
Yel	29



Total number of countries with bulletins = 65/193

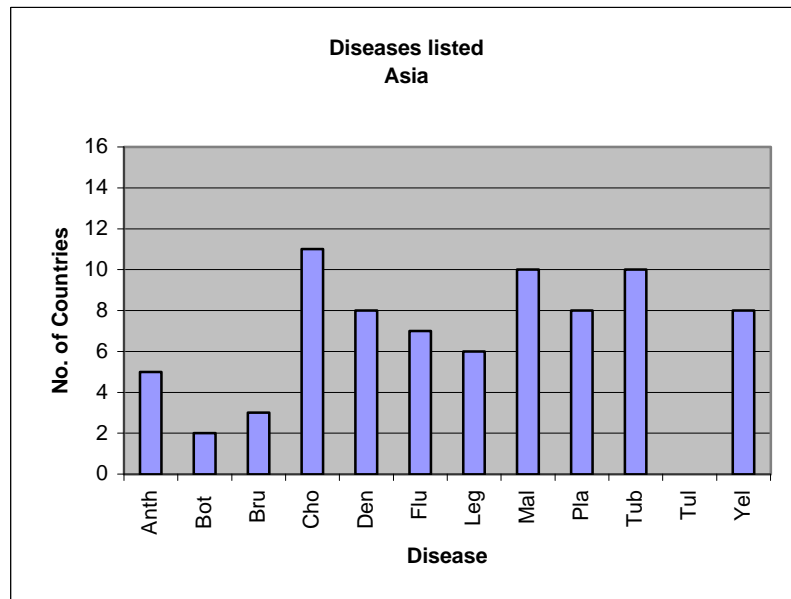
Diseases listed - Africa

Disease	Countries
Anth	1
Bot	0
Bru	2
Cho	5
Den	0
Flu	1
Leg	1
Mal	3
Pla	2
Tub	2
Tul	0
Yel	2



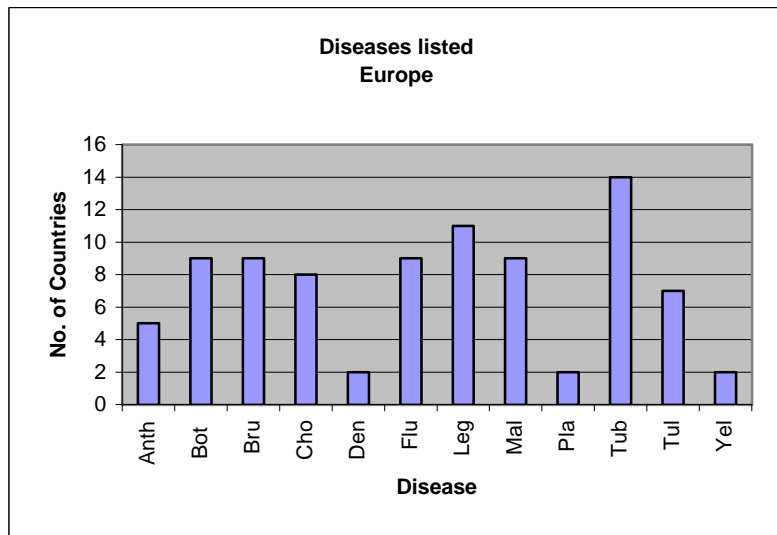
Diseases listed - Asia

Disease	Countries
Anth	5
Bot	2
Bru	3
Cho	11
Den	8
Flu	7
Leg	6
Mal	10
Pla	8
Tub	10
Tul	0
Yel	8



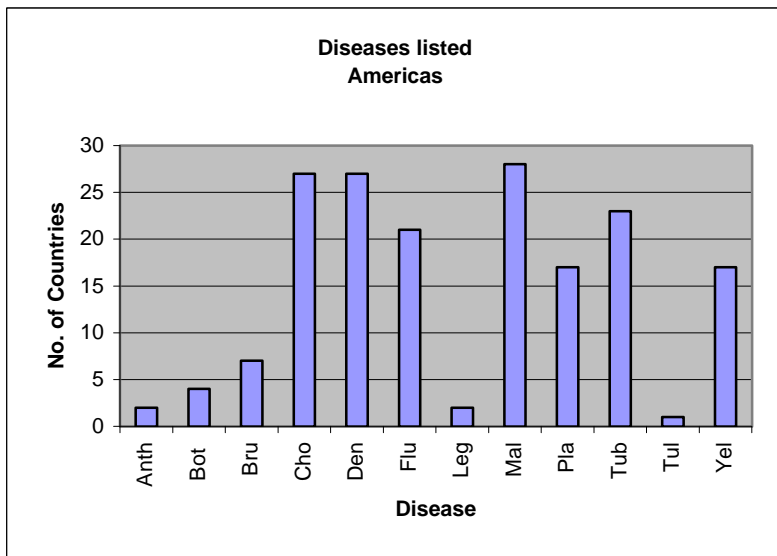
Diseases listed - Europe

Disease	Countries
Anth	5
Bot	9
Bru	9
Cho	8
Den	2
Flu	9
Leg	11
Mal	9
Pla	2
Tub	14
Tul	7
Yel	2



Diseases listed - Americas*

Disease	Countries
Anth	2
Bot	4
Bru	7
Cho	27
Den	27
Flu	21
Leg	2
Mal	28
Pla	17
Tub	23
Tul	1
Yel	17



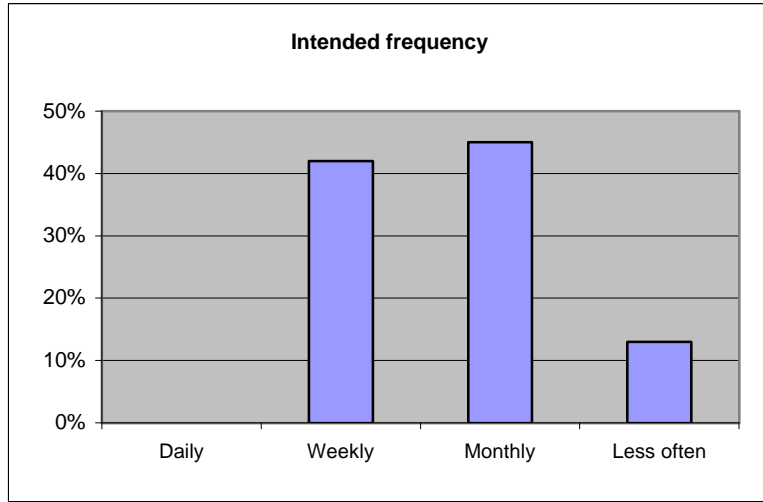
*29/35 countries reporting; number of those 29 with provision for reporting the listed diseases

Table 8 Intended frequency of national bulletins

Frequency	Percentage
Daily	0%
Weekly	42%
Monthly	45%
Less often	13%

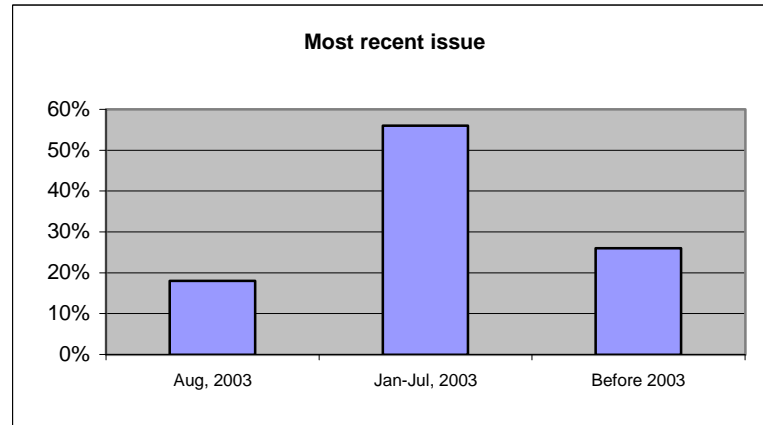
or Unknown

Total: 71 bulletins from 65 countries



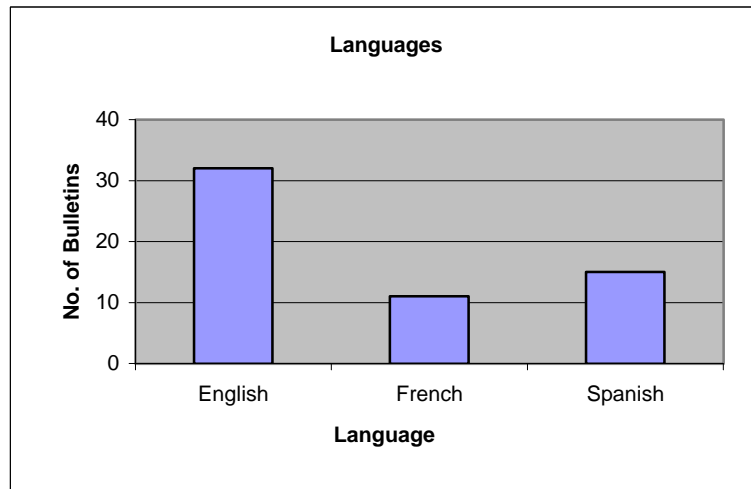
Latest issue posted Aug. 2003

Year	Percentage
Aug, 2003	18%
Jan-Jul, 2003	56%
Before 2003	26%



Languages*

Language	No. bulletins
English	32
French	11
Spanish	15



*Other languages are:
 Arabic, Chinese, Danish, Dutch,
 Estonian, Finnish, Georgian,
 German, Italian, Japanese,
 Korean, Malay, Norwegian,
 Portuguese, Russian, Swedish and **Thai**.

Total: 83 versions of 73 bulletins