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WHO Recommended Surveillance Standards

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ASD	EMC	HST
AFRO/OCP	FSF	LEP
CHD	GPV	
CTD	GTB	

and by UNAIDS

WORLD HEALTH ORGANIZATION

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Acknowledgements

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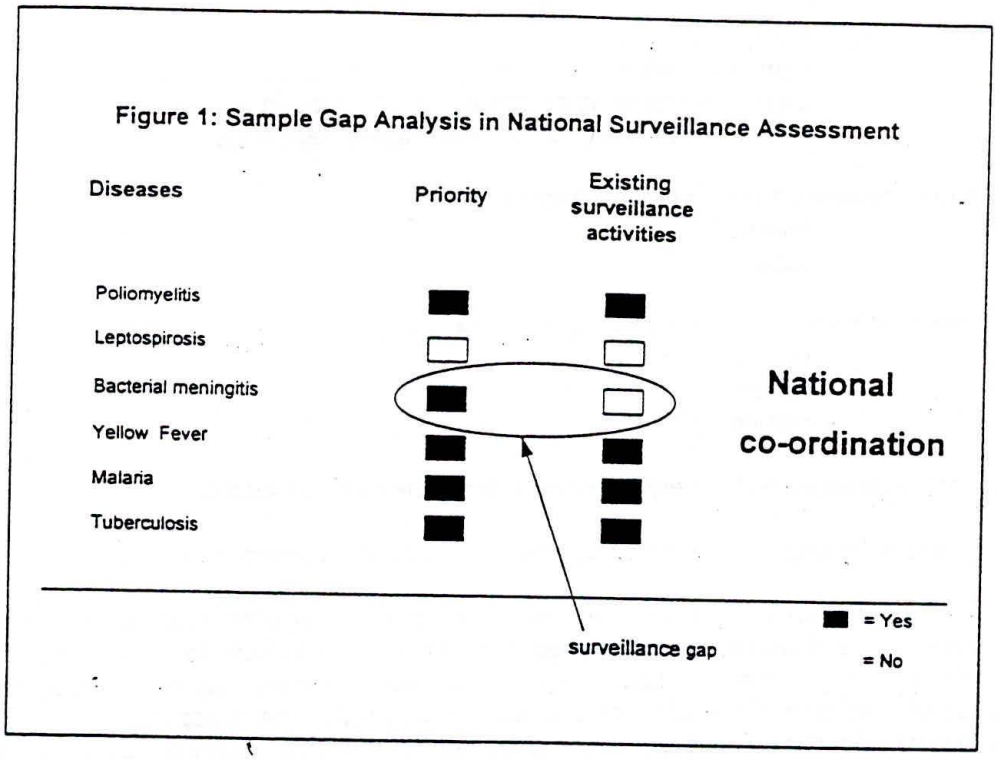
in the production of this document

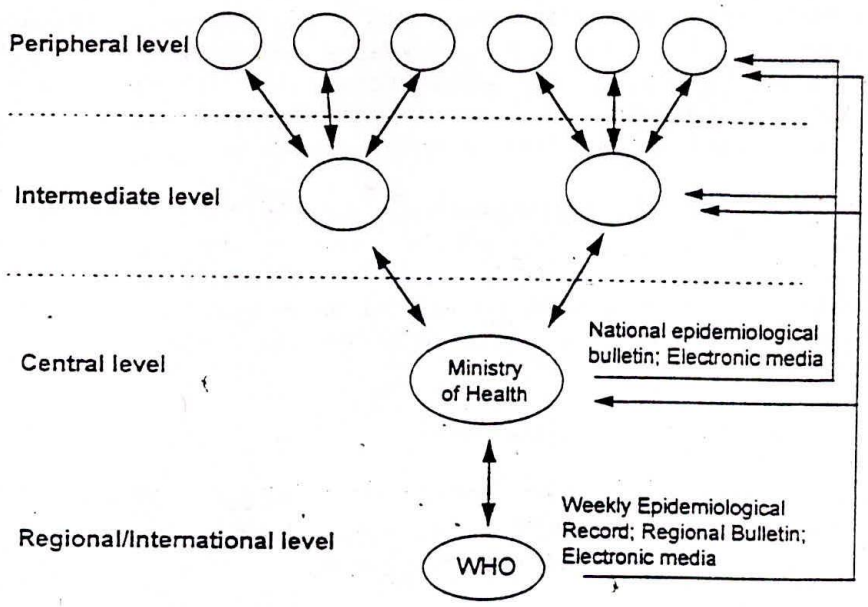
Fig 1 shows a case where Leptospirosis is not perceived as a priority and is not subject to surveillance activities. However, bacterial meningitis, which is perceived as a priority disease, is not subject to surveillance activities- and this should be remedied.



Explanatory Notes

This document attempts to identify the key activities and tasks that are associated with the surveillance of a range of communicable diseases. To avoid confusion, administrative level names (e.g. "district", "province") are not used. Instead, an attempt has been made to break down the surveillance activities into functional levels, concentrating on the various activities that would usually be carried out at each level (i.e. peripheral, intermediate, central). It is important to note that this represents only a prototype that would have to be adapted to reflect the structure and level of sophistication of existing health services. No matter what structure is decided upon, each level must have adequate resources and receive appropriate training.

Figure 2: Schema for information flow in Communicable Disease Surveillance



The peripheral level: is the first point of contact of an ill person with the health services. The patient is usually seen by a primary care physician, clinical officer or nurse. Usually, it is at this level that the first opportunity for epidemiological surveillance occurs. However, it must be remembered that this is only one of many tasks. The staff at this level are unlikely to have epidemiological training and may in fact see the recording and reporting of information on cases as administrative and unimportant. The situation is made worse by case definitions that are confusing and difficult to apply and by having an excessive number of reportable diseases.

In order to be successful, the collection of information must be simple and useful locally. To this end a limited number of easily recognisable diseases or syndromes should be decided upon. These should not normally involve extensive confirmatory procedures (unless very important) and the principle should be the reporting to intermediate level of suspected rather than confirmed disease. The method of recording should be in harmony with clinical record keeping practices and not duplicate them. It is desirable that the personnel have the opportunity and the ability to chart and tabulate their own data in order to monitor local trends. In addition the immediate reporting of a disease with epidemic potential should be followed by an equally immediate response.

Tasks at the peripheral level:

- diagnosis and case management
- reporting of cases
- simple tabulation and graphing of data

Certain conditions may be subject to *community-based surveillance*. Community-based surveillance in this context means the detection and reporting of diseases from within the community usually by local people or leaders who have received basic instruction on how to recognise certain conditions. The decision to base surveillance in the community should be based on a clearly identified needs and advantages over health care unit-based surveillance.

The role of non-governmental organizations (NGOs) working in the field, including missions' health facilities, as well as the role of the private sector, have become increasingly important in disease surveillance. These partners should then be considered in the national surveillance plan where possible.

The intermediate level is that at which data are collected from the peripheral level. The main function from the perspective of communicable disease surveillance and control is ongoing analysis of data from the periphery in order to recognise outbreaks or changes in disease trends. These analyses should be associated with responses such as investigation and intervention. The effectiveness of interventions can be monitored using the same data sources.

Countries may have two intermediate levels (e.g. district and region). This will depend on the size of the country and the structure and level of development of the health service. In many cases the professional at this level will have other tasks in the area of programme management. Therefore, it is important that the tasks be manageable and that the surveillance data be perceived as immediately useful. In some cases it may be more appropriate that the task of outbreak investigation be undertaken from the central level.

Tasks at the intermediate level:

- case management which can not be done at the peripheral level
- analysis of data from the peripheral level for:
  - epidemiological links
  - trends
  - achievement of control targets
- provision of supportive laboratory data (or laboratory diagnosis if possible)
- investigation of suspected outbreaks
- feedback of information to the peripheral level
- reporting of data and suspected/confirmed outbreaks to central level

The central level is usually at the national level where policies on infectious disease are set and where resource allocation most often occurs. The central level in some large countries may actually be at a federal level. The central level plays a key role in supporting the intermediate levels, by providing services that are not available elsewhere, such as high level epidemiological skills or laboratory facilities. The central level must also be able to deal with outbreaks of national importance in a co-ordinated fashion. In addition, overall disease trends can be analysed and resources for disease control targeted to high-risk areas. The central level must liaise with other countries and international agencies in the response to outbreaks of international significance and in the management of diseases subject to the IHR, or to agreed targets for control or elimination. The central level may have access to alternative data sources such as national reference laboratories where the identification of unusual organisms should trigger a response.

Tasks at the central level:

- overall support to, and co-ordination of, national surveillance activities
- provision of laboratory diagnosis data if not available at intermediate level (use regional or international reference laboratories if required)

- analysis of data from intermediate level for:
  - epidemiological links
  - trends
  - achievement of control targets

- support to intermediate level for outbreak control
  - case management
  - laboratory
  - epidemiology
  - education
  - logistics

- feedback to intermediate level, and possibly to the peripheral level
- report to WHO, as required (International Health Regulations, specific needs of control programmes)

Collaboration with non-medical sectors such as agriculture, veterinary medicine, and environment must be considered where appropriate (e.g. water or food-borne diseases, vector-borne diseases, human zoonoses).

Zero Reporting: Whatever the structure of the surveillance system, data on priority diseases or syndromes should move smoothly through the system triggering the appropriate responses throughout. The system should include zero reporting: each site should report for each reporting period even if that means reporting zero cases. This avoids the confusion of equating "no report" with "no cases". In addition the surveillance system must include performance indicators for reporting (e.g. completeness and timeliness):

Feedback: It is essential that feedback loops be built into the system. This may be through regular epidemiological bulletins with tables and graphs showing trends and progress towards targets and reports on the investigation and control of outbreaks.

Sample Format

Cholera

ICD 10 Code → *A001*

Disease or syndrome → *Cholera*

Case report universally required by International Health Regulations

Rationale for surveillance

RATIONALE FOR SURVEILLANCE

Cholera causes an estimation of 120 000 deaths per year and is prevalent in 80 countries. In Africa epidemics have become more frequent and case fatality rates higher. The world is currently experiencing the 7th pandemic. Refugee or displaced populations are at major risk of epidemics due to the conditions prevailing in the camps (unsafe water, poor sanitation and hygiene). Control of the disease requires appropriate surveillance with universal case reporting. Health education of population at risk and improvement of living conditions of population are essential preventive measures.

Recommended case definition

RECOMMENDED CASE DEFINITION

Clinical case definition

- In an area where the disease is not known to be present, in a patient aged 5 years or more severe dehydration or death from acute watery diarrhoea or
- In an area where there is a cholera epidemic, in a patient aged 5 years or more*, acute watery diarrhoea, with or without vomiting.

Laboratory criteria for diagnosis

Isolation of *Vibrio cholerae* 01 or 0139 from stools in any patient with diarrhoea.

Case classification

Suspected: A case that meets the clinical case definition.
Probable: Not applicable.
Confirmed: A suspected case that is laboratory-confirmed.

Note: in a cholera-treatened area, when the number of "confirmed" cases rises, shift should be made to using primarily the "suspected" case classification.

*Cholera does appear in children under 5 years , however , the inclusion of all cases of acute watery diarrhoea in the 2-4 year age group in the reporting of cholera greatly reduces the specificity of reporting. For management of cases of acute watery diarrhoea in an area where there is a cholera epidemic, cholera should be suspected in all patients.

Recommended types of surveillance

RECOMMENDED TYPES OF SURVEILLANCE

Routine surveillance (This may be integrated with surveillance of diarrhoeal diseases see acute watery diarrhoea).
Immediate case-based reporting of suspected cases from periphery to intermediate level and central level. All suspected cases and clusters should be investigated.
Aggregated data on cases should also be included in routine weekly/monthly reports from peripheral to intermediate and central level.

International: First suspected cases should be reported to WHO (mandatory).
Aggregated data on cases should be reported to WHO (mandatory).

Outbreak situations:

- During outbreak situation surveillance should be intensified with the introduction of active case finding surveillance.
- Laboratory confirmation should be performed as soon as possible
- Thereafter weekly reports of cases, ages, deaths, regions, and hospital admissions should be set up.

Recommended minimum data elements

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for investigation and reporting
Age, sex, geographical information
Hospitalisation (Y/N)
Outcome

Aggregated data for reporting
Number of cases by age, sex
Number of deaths

Recommended data analyses, presentation, reports

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Use weekly numbers, not moving averages
Case fatality rates (graphs)
Weekly/monthly plots by geographical area (distnct) and age group (GIS) (graphs)
Comparisons with same period in previous five years

Principal uses of data for decision making

PRINCIPAL USES OF DATA FOR DECISION MAKING

Detection of outbreak, estimate the incidence and case fatality rate
Appropriately timed investigations
Assess the spread and progress of the disease
Plan for treatment supplies prevention and control measures
Determine the effectiveness of control measures

Special aspects

SPECIAL ASPECTS

At least one reference laboratory in each country is recommended for species identification. Once the presence of colera in an area has been confirmed , it becomes unnecessary to confirm all subsequent cases. Monitoring of an epidemic should, however, include laboratory confirmation of a small proportion of cases on a continuing basis.

Contact information

CONTACT INFORMATION

Regional offices
See Regional Communicable Disease contacts on pages 15-20

Headquarters
WHO Division of Emerging and other communicable Diseases, Surveillance and control (EMC), 20 Avenue Appia, CH-1211 Geneva 27, Switzerland
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Communicable Disease Surveillance Activities by WHO Policy and Division

SELECTION CRITERIA	DIV/UNIT	CONTACT
Targeted for eradication (9GPW 6.1)		
- **poliomyelitis**	GPV/EPI	H. Hull
- **dracunculiasis**	CTD/DRA	Ph. Ranque
Targeted for elimination (9GPW 6.2)		
- **leprosy**	LEP	D. Daumerie
- **neonatal tetanus**	GPV/EPI	F. Gasse
- **measles**	GPV/EPI	JM. Olivé
Targeted for reduced incidence/prevalence (9GPW 6.3)		
- **malaria**	CTD/MAL	A. Rietveld
- **tuberculosis**	GTB	M. Raviglione
- **hepatitis B**	GPV/EPI	M. Kane
Targeted for reduced transmission (9GPW 6.4)		
- **AIDS/HIV**	EMC	M. Anker
	UNAIDS	B. Schwartlander
Diseases submitted to International Health Regulations		
- **yellow fever**	EMC	R. Arthur
- **cholera**	EMC	M. Neira
- **plague**	EMC	E. Tikhomirov
Other international surveillance/control programmes		
- **African trypanosomiasis**	CTD/TRY	P. Cattand
- **brucellosis**	EMC	F. Meslin
- **Chagas disease**	CTD/TRY	A. Moncayo
- **CJD & variants**	EMC	F. Meslin
	MNH/NRS	C. Bolis
- **dengue**	EMC	R. Arthur
	CTD	position vacant (vector surveillance)
- **diphtheria**	GPV/EPI	B. Melgaard
- **endemic dysenteria**	EMC	M. Neira
- **hepatitis C**	EMC	D. Lavanchy
- **influenza**	EMC	D. Lavanchy
- **leishmaniasis**	CTD/TRY	Ph. Desjeux
- **leptospirosis**	EMC	F. Meslin
- **lymphatic filariasis**	CTD/FIL	E. Ottesen
- **meningococcal meningitis** (CSM)	EMC	E. Tikhomirov
- **onchocerciasis**	AFRO/OCP	A. Daribi
- **pertussis (whooping cough)**	GPV/EPI	B. Melgaard
- **rabies**	EMC	F. Meslin
- **salmonellosis (animal)**	EMC	K. Stöhr
(foodborne)	FSF	Y. Motarjemi
- **schistosomiasis & intestinal parasites**	CTD/SIP	L. Savioli

Surveillance by syndrome or transmission route

- **antibiotic resistance**	EMC	E. Tikhomirov
	ASD	A. Gerbase
- **acute respiratory infections**	CHD	D. Robinson
- **diarrhoeal diseases**	CHD	J. Bryce
- **food-borne diseases**	FSF	Y. Motarjemi
- **health and demographic data; causes of death, life table and mortality trends**	HST/HSP	O. Frank
- **STDs**	ASD	A. Gerbase
- **other zoonoses**	EMC	F. Meslin
- **viral haemorrhagic fevers**	EMC	R. Arthur

Related and other communicable disease surveillance activities outside WHO/HQ

- **cancer registry**	IARC*	D. Parkin
- **specific regional surveillance**	AFRO	D. Barakamfitiye
	EMRO	B. Sabrizadeh
	EURO	S. Dittman
	PAHO	S. Corber
	SEARO	A. Andjaparidze
	WPRO	K. Morita

* International Agency for Research on Cancer, 150 Cours Albert Thomas, F-69372 Lyon Cedex 08
Tel. 33 (0) 4 72 73 84 82 Fax. 33(0) 472 73 85 75 E- mail:Parkin@iarc.fr

Communicable Disease Contacts in Regional Offices

1. WHO REGIONAL OFFICE FOR AFRICA (AFRO)

Member states

Algeria
Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Cape Verde
Central African Republic
Chad
Comoros
Congo
Côte d'Ivoire
Democratic Republic of the Congo
Equatorial Guinea
Eritrea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Kenya
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Mauritius
Mozambique
Namibia
Niger
Nigeria
Rwanda
Sao Tome and Principe
Senegal
Seychelles
Sierra Leone
South Africa
Swaziland
Togo
Uganda
United Republic of Tanzania
Zambia
Zimbabwe

Contacts

Dr D. Barakamfitiye, Director, Prevention and Control of Diseases (DDC), Direct telephone 1 407 953 92 29, fax 1 407 953 9413
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KOUBATIKAK@HTSD.COM at INET
NDIKUEZEA@ HTSD.COM at INET
SAMBAE@ HTSD.COM at INET

Note: Following the temporary closure of the AFRO office in Brazzaville, the above contact information may not be valid. A temporary office is available in Harare
Tel: 263 4 706 951/707 493 Fax: 263 4 705 619/702 044

If you experience any difficulties in communicating with AFRO regarding disease surveillance issues, please contact EMC at WHO, Geneva, at tel. 41 22 791 21 11 / 2661

Summary of AFRO Regional Plan for communicable disease surveillance (to be provided)

4. WHO REGIONAL OFFICE FOR EUROPE (EURO)

Member states

Albania
Andorra
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Czech Republic
Denmark
Estonia
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Malta
Monaco
Netherlands
Norway
Poland
Portugal
Republic of Moldova
Romania
Russian Federation
San Marino
Slovakia
Slovenia
Spain
Sweden
Switzerland
Tajikistan
The former Yugoslav Republic of Macedonia
Turkey
Turkmenistan
Ukraine
United Kingdom of Great Britain and Northern Ireland
Uzbekistan
Yugoslavia

Contacts

Professor S. Dittman, Coordinator, Communicable Diseases and Immunization and Vaccine Programme (CDI)
Direct telephone 00 45 39 17 13 98 or 00 45 39 17 14 15 (secretariat)
fax: 00 45 39 17 18 51 E-mail: SDI@WHO.DK

Summary of EURO Regional Plan for communicable disease surveillance (to be provided)

5. WHO REGIONAL OFFICE FOR SOUTH-EAST ASIA (SEARO)

Member states

Bangladesh	India	Nepal
Bhutan	Indonesia	Sri Lanka
Democratic People's Republic of Korea	Maldives	Thailand
	Myanmar	

Contacts

Acting Director, Integrated Control of Diseases (ICD)
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Dr A.G. Andjaparidze, Regional Adviser on Communicable Diseases (CDA)
Direct telephone: 00 91 11 331 7804 to 7823 Fax: 00 91 11 331 8412 E-mail: ANDJA@WHO.ERNET.IN
Dr Sawat Ramaboot, Regional Epidemiologist, Division of Integrated Communicable Diseases (ICD) ,
Direct telephone: 00 9111 331-7804 to 00 9111 331-7823
Fax: 00 9111 331-8412 and 00 9111 331-8607
E-mail: SAWAT@WHO.ERNET.IN

Summary of SEARO Regional Plan for communicable disease surveillance

The first priority is to achieve the eradication or elimination of diseases such as dracunculiasis (India), poliomyelitis and leprosy in the Region.

The second priority is the prevention and control of diseases, which are major public health problems in the Region, through the establishment of appropriate national and regional surveillance mechanisms.

The third priority is to undertake short-term and long-term actions to combat newly emerging diseases. Since speedy response is needed to effectively contain outbreaks, rapid response mechanisms need to be built into the surveillance system.

The following are regional strategies for the coming few years towards the prevention and control of communicable diseases:

- Strengthening epidemiological surveillance.
- Strengthening laboratory capabilities and services
- Establishment of rapid response mechanisms
- Monitoring antimicrobial resistance
- Establishment of international disease surveillance networking
- Advocacy and mobilization of international support

6. WHO REGIONAL OFFICE FOR THE WESTERN PACIFIC (WPRO)

Member states

Australia
Brunei Darussalam
Cambodia
China
Cook Islands
Fiji
Japan
Kiribati
Lao People's Democratic Republic
Malaysia
Marshall Islands
Micronesia (Federated States of)
Mongolia
Nauru
New Zealand
Niue
Palau
Papua New Guinea
Philippines
Republic of Korea
Samoa
Singapore
Solomon Islands
Tokelau*
Tonga
Tuvalu
Vanuatu
Viet Nam

* Associate Member

Contacts

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Dr Kouichi Morita, Regional Adviser in Communicable Diseases, CDS(M)
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Summary of WPRO Regional Plan for communicable disease surveillance

Poliomyelitis surveillance
Surveillance on antimicrobial resistance
STD/AIDS surveillance, including gonococcal infections
Surveillance on anti-malaria and anti-tuberculosis drug resistance

For other selected infectious diseases, annual or monthly cases are being reported to WPRO. WPRO is also developing Creutzfeldt-Jacob disease surveillance mechanisms (CJD does not exist at present in the Region) as part of global CJD surveillance.

B20-B21-B22-B23-B24

AIDS

(Acquired Immunodeficiency syndrome)

RATIONALE FOR SURVEILLANCE

AIDS is a disease targeted for reduced incidence, prevalence and transmission (WHO 9GPW, target 6.3). Control measures are based on prevention and care strategies. Surveillance is necessary to assess national needs in education, supplies, and health care and to anticipate spread in the community. Surveillance will provide epidemiological data used for national prevention and care plan and will be essential to evaluate the impact of control activities.

RECOMMENDED CASE DEFINITION

Different case definitions are used in different countries, depending on population factors (children, adults, relative occurrence of opportunistic infection) and on the laboratory infrastructure and training available. Current most used case definitions include for countries with

more sophisticated laboratory facilities

* CDC 1987 (1)
* CDC/CD4 (2)
* European (3)

limited laboratory facilities

* Abidjan/WHO (4)
* Bangui/WHO (clinical) (5)
* Caracas/PAHO (6) revised Caracas/PAHO (7)

References:

(1) MMWR Aug. 14, 1987/Vol. 36(suppl.)1-15s
(2) MMWR May 2, 1997/Vol. 46/No. RR-10
(3) Lancet, 1993;341:441 and *AIDS Surveillance in Europe*, Quarterly Report, 1993 ;number 37
(4) AIDS 1993, Vol. 7 (suppl 1)
(5) AIDS 1993, Vol. 7 (suppl 1)
(6)Epidemiological Bulletin of PAHO Vol. 10 # 4 1990
Working group on AIDS case definition pages 9-11
or
Journal of Acquired Immune Deficiency Syndrome Vol. 5 # 12 1992
" A simplified surveillance case definition of AIDS derived from empirical clinical data.
(7) AIDS 1993, Vol. 7 (suppl 1)

1.1987 CENTERS FOR DISEASE CONTROL AND PREVENTION SURVEILLANCE DEFINITION FOR AIDS

Without laboratory evidence of HIV infection (in the absence of other causes of immune suppression)

Indicator disease diagnosed definitively

Candidiasis of the oesophagus, trachea, bronchi, or lungs
Cryptococcosis, extrapulmonary
Cryptosporidiosis with diarrhoea persisting > 1 month
Cytomegalovirus diseases of an organ other than liver spleen, or lymph nodes in a patient >1 month of age
Herpes simplex virus infection causing a mucocutaneous ulcer persisting > 1 month; or bronchitis, pneumonitis, or oesophagitis for any duration in a patient > 1 month of age
Kaposi's sarcoma in a patient < 60 years of age
Lymphoma of the brain(primary) affecting a patient < 60 years of age
Mycobacterium avuim complex or *M .kansasii* disease, disseminated (at a site other than or in addition to lungs. skin, or cervical or hilar lymph nodes)
Pneumocystis carinii pneumonia
Progressive multifocal leukoencephalopathy
Toxoplasmosis of the brain in a patient > 1 month of age

With laboratory evidence of HIV infection

Indicator diseases diagnosed definitively

Coccidiomycosis, disseminated (at a site other than or in addition to lungs or cervical or hilar lymph nodes)
HIV encephalopathy
Histoplasmosis, disseminated(at a sit other than or in addition to lungs or cervical or hilar lymph nodes)
Isosporiasis with diarrhoea persisting > 1 month
Kaposi's sarcoma at any age
Lymphoma of the brain (primary) at any age
Non-Hodgkin's lymphoma
Any mycobacterial disease caused by mycobacteria other than *M. tuberculosis*, disseminated
Disease caused by *M. tuberculosis*, extrapulmonary
Salmonella (non-typhoid) septicaemia, recurrent
HIV wasting syndrome

Indicator diseases diagnosed presumptively

Candidiasis of the oesophagus
Cytomegalovirus retinitis with loss of vision
Kaposi's sarcoma
Mycobacterial disease, disseminated
Pneumocystis carinii pneumonia
Toxoplasmosis of the brain in a patient> 1 month of age

2. CONDITIONS* ADDED TO THE CENTERS FOR DISEASE CONTROL AND PREVENTION 1993 SURVEILLANCE DEFINITION FOR AIDS (WITH LABORATORY EVIDENCE OF HIV INFECTION

in addition to those in the 1987 surveillance definition:

- CD4+ T- lymphocyte count <200 x 10^6 /l (or a CD4 percentage < 14%)
- Pulmonary tuberculosis
- Cervical cancer, invasive
- Recurrent pneumonia (more than one episode within a 12-month period)

3. EUROPEAN AIDS CASE DEFINITION

Same as revised CDC definition without CD4+ T-lymphocyte count

4. REVISED CARACAS AIDS DEFINITION

Symptoms/signs/diagnosis	points assigned
Kaposi's Sarcoma	10
Disseminated/extrapulmonary/non-cavitary pulmonary tuberculosis	10
Oral candidiases/hairy leukoplakia	5
Pulmonary tuberculosis with cavitation or unspecified	5
Herpes zoster ≤ 60 years age	5
Central Nervous System dysfunction	5
Diarrhea ≥ 1 month	2
Fever(≥38°C) ≥ 1 month	2
Cachexia or > 10% weight loss	2
Asthenia ≥ 1 month	2
Persistent dermatitis	2
Anaemia, lymphopenia, and/or thrombocytopenia	2
Persistent cough or any pneumonia (except tuberculosis)	2
Lymphadenopathy ≥1 cm at ≥2 non-linguinal sites for ≥1month	2
	Required point score ≥ 10

A patient is defined as having AIDS when the cumulative points assigned for manifested conditions equal or exceed the required score, and HIV serology is positive. "Provisional cases" are defined when the required point score is achieved but HIV serology is pending. People with cancer, those receiving immunosuppressive therapies, and those in whom the above conditions are attributed to underlying conditions other than HIV infection are excluded.

5. (MODIFIED) ABIDJAN CASE DEFINITION FOR AIDS

- Body-weight loss (> 10%) or cachexia, with diarrhoea or both, intermittent or constant, for at least 1 month not known to be due to a condition unrelated to HIV infection
- Tuberculosis with the body-weight loss features given above; or disseminated (involving at least two different organs), miliary or extrapulmonary tuberculosis (which may be diagnosed presumptively)
- Kaposi's sarcoma
- Neurological impairment sufficient to prevent independent daily activities not known to be due to a condition unrelated to HIV infection (for example, trauma)

Oesophageal candidiasis (which may diagnosed presumptively based on the presence of dysphagia and oral candidiasis)

For the purpose of epidemiological surveillance, an adult (>12 years of age) is considered to have AIDS if a test for HIV antibody positive results, and one or more of the above are present.

6. BANGUI/WHO/CLINICAL

WHO clinical case definition for AIDS in adults when diagnostic resources are limited:
AIDS in an adult is defined by the existence of at least two major symptoms/signs and at least one minor symptom/sign in the absence of known causes of immunosuppression (e.g. cancer, malnutrition). The presence of generalised Kaposi sarcoma or cryptococcal meningitis is sufficient by itself for the diagnosis of AIDS.

Major signs:

- more than 10% weight loss
- chronic diarrhoea (for more than 1 month)
- prolonged fever (intermittent or constant, for more than 1 month)

Minor signs:

- persistent cough (for more than 1 month)
- generalised pruritic dermatitis
- recurrent herpes zoster
- oropharyngeal candidiasis
- chronic progressive and disseminated herpes virus infection
- generalised lymphadenopathy

Contact Regional/ National AIDS programmes for case definition in use in a specific country.

Case classification
Depends on the case definition
Please check with National AIDS programmes.

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting of aggregated data from periphery to intermediate level.
Routine quarterly reporting of aggregated data from intermediate level to central level.
Sentinel surveillance could be used when routine national surveillance is not possible.

International: report updates every 6 months in WHO

Other sources of data:

- Hospital
- Dermatologist
- STD clinics
- Tuberculosis wards
- Mortality reports and statistics
- Active case finding

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for reporting

Unique identifier, age, sex, geographical area, risk factors (e.g. blood transfusion, drug use, multiple sexual partners)

Aggregated data for reporting

Number of cases by age and sex, number of cases by risk factors (e.g. blood transfusion, drug use, multiple sexual partners)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Graphs: Number of cases by age, sex, geographical area, risk factors
Tables: Number of cases by age, sex, geographical area, risk factors
Maps: Number of cases by geographical area

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Assess the magnitude of the problem
- Identify high risk areas for further intervention
- Evaluate impact of intervention
- Plan public health measurements
- Assess impact on clinical services
- Plan health care services and supplies

SPECIAL ASPECTS

Use of HIV surveillance (see page 51) for forecasting AIDS incidence

CONTACT

Regional offices

See Regional Communicable Disease contacts on pages 15-20

Headquarters

UNAIDS/WHO Technical Working Group on Global HIV/AIDS and STD Surveillance
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Fax: (41 22) 791 4198

A22

Anthrax

(human)

RATIONALE FOR SURVEILLANCE

Anthrax is a widespread zoonosis transmitted from domestic animals (cattle, sheep, goats, buffaloes, pigs and other) to humans by direct contact or through animal products. Human anthrax is a serious problem in several countries and it has potential for explosive outbreaks especially of intestinal form. Anthrax has a serious impact on trade of animal products. The control of anthrax is based on prevention. There is an effective human vaccine. Surveillance is important to monitor the control programmes and to detect outbreaks. In most countries anthrax is a notifiable disease.

RECOMMENDED CASE DEFINITION

Clinical description

An illness with acute onset characterised by several clinical forms. These are:

(a) localised form:

- cutaneous: skin lesion evolving over 1 to 6 days from a papular through a vesicular stage, to a depressed black eschar invariably accompanied by oedema that may be mild to extensive.

(b) systemic forms:

- intestinal: abdominal distress characterised by nausea, vomiting, anorexia and followed by fever
- inhalation: brief prodrome resembling acute viral respiratory illness, followed by rapid onset of hypoxia, dyspnea and high temperature, with X-ray evidence of mediastinal widening
- meningeal: acute onset of high fever possibly with convulsions and loss of consciousness, meningeal signs and symptoms

Laboratory criteria for diagnosis

Laboratory confirmation by **one or more** of the following:

- Isolation of *Bacillus anthracis* from a clinical specimen (e.g. blood, lesions, discharges)
- Demonstration of *B. anthracis* in a clinical specimen by microscopic examination of stained smears of vesicular fluid, blood, cerebrospinal fluid, pleural fluid, stools, etc.
- Positive serology (ELISA, Western blot, toxin detection, chromatographic assay, fluorescent antibody test (FAT), PCR)

Note: It may be not possible to demonstrate *B. anthracis* in clinical specimens if the patient has been treated with antimicrobial agents.

Case classification

Suspected:	A case that is compatible with the clinical description **and** has an epidemiological link to confirmed or suspected animal cases or contaminated animal products
Probable	A suspected case that has a positive reaction to allergic skin test (in non-vaccinated individuals)
Confirmed:	A suspected case that is laboratory-confirmed

RECOMMENDED TYPES OF SURVEILLANCE

Routine surveillance, particularly among high risk groups (e.g., abattoir workers, shepherds, veterinarians).

Mandatory immediate case-based reporting by peripheral level (health care providers or laboratory) to upper level of the public health sector as well as to the appropriate level of the animal health sector. All cases must be investigated.

Routine monthly reporting of aggregated data of confirmed cases and investigation reports from intermediate level to central level.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for investigation and reporting:

Case classification by type (suspected/probable/confirmed), and by clinical form (cutaneous/intestinal/inhalation/meningeal)
Unique identifier, age, sex, geographical information, occupation
Date of onset, date of reporting
Exposure history
Outcome

Aggregated data for reporting to central level:

Number of confirmed cases by age, sex, clinical form (cutaneous/intestinal/inhalation/meningeal)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Graphs: Number of suspected/probable/confirmed cases by date
Tables: Number of suspected/probable/confirmed cases by date, age, sex, geographical area
Maps: Number of human cases by geographical area

PRINCIPAL USES OF DATA FOR DECISION MAKING

Surveillance data

- Estimate the magnitude of the problem
- Monitor the distribution and the spread of human disease
- Detect outbreaks
- Monitor and evaluate impact of prevention activities in humans

Investigation data

- Identify populations at risk
- Identify potentially contaminated products of animal origin

SPECIAL ASPECTS

The surveillance activities of both public health and animal health sector must be fully co-ordinated and integrated. Administrative arrangements between the two sectors must be established to facilitate immediate cross notification of cases/outbreaks, as well as joint case/outbreak investigations.

CONTACT

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A03

Bacillary dysentery

(caused by *Shigella dysenteriae* type 1)

RATIONALE FOR SURVEILLANCE

Since the early 1990's the emergence of strains of *Shigella dysenteriae* type 1, resistant to most antibiotics, has become a major public health concern in central and southern Africa. The high case fatality and the epidemic potential make surveillance to detect and control the outbreaks essential.

RECOMMENDED CASE DEFINITION

Clinical case definition

Diarrhoea with visible blood in the stool

Laboratory criteria for diagnosis

Isolation of *S. dysenteriae* type 1 from stools

Case classification

Suspected:	A case that meets the clinical case definition
Probable:	Not applicable
Confirmed:	A suspected case that is laboratory-confirmed

RECOMMENDED TYPES OF SURVEILLANCE

Routine weekly/monthly reporting of aggregated data on suspected cases from periphery to intermediate level (This may be integrated with surveillance of diarroeal diseases).
Routine weekly/monthly reporting of data on confirmed cases from intermediate level to central level.

Note:

- Intensified surveillance if suspected outbreak: immediate reporting to central level and WHO regional office and investigation
- Central recording of antibiotic resistance is recommended

RECOMMENDED MINIMUM DATA SET

Case-based data for reporting and investigation

Case classification (suspected/confirmed), unique identifier, age, geographical information
Treatment given(Y/N), kind of treatment
Outcome

Aggregated data for reporting

Number of cases (suspected/confirmed) by age group (under or over 5 years), number of hospitalisations, number of deaths

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Comparisons with same period in previous years
- Case fatality rates, age specific incidence rates (under or over 5 years)
- Plots of laboratory-confirmed cases by month and year
- Quarterly or annual central overview

During outbreaks

- Weekly/monthly plots by intermediate level
- Monthly surveillance summaries should be produced centrally and at WHO regional office with feedback

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Detect and monitor outbreaks and epidemics for appropriate response
- Estimate incidence, and case fatality rate
- Support plan for the distribution of medical supplies (diagnostic test, antibiotics etc.) and allocation of control teams
- Determine the effectiveness of control measures
- Provide research data in the area of means of transmission and antibiotic susceptibility of isolates (monitor antimicrobial resistance)
- Help mobilising donors to support epidemic control measures

SPECIAL ASPECTS

Countries at risk from epidemics should have routine surveillance of bloody diarrhoea. This is particularly recommended for countries of central and southern Africa.

Each country should have at least 1 **reference laboratory** in order to confirm the organism/outbreak, perform antimicrobial susceptibility testing, perform training and disseminate results.

At least 20 specimens should be collected to confirm the cause of the outbreak. Patients for culture should have bloody diarrhoea for less than 4 days, without treatment. Rectal swabs or swabs of stool passed within an hour should be placed in Cary Blair media and transported cold (refrigerated or frozen). Culture should be on Mac-Conkey XLD media.

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A23

Brucellosis

(human)

RATIONALE FOR SURVEILLANCE

Brucellosis is the most widespread zoonosis transmitted from animals (cattle, sheep, goats, pigs, camels and buffaloes) by direct contact with blood, placenta, fetuses or uterine secretions or through consumption of infected and raw animal products (especially milk and milk products). Human brucellosis due to *Brucella melitensis* has serious public health consequences in areas where sheep and goat are raised. Overall brucellosis has an important world-wide impact on human health and the animal industry. In most countries Brucellosis is a notifiable disease. Control measures are based on prevention. Surveillance is a key element for management of prevention and control programmes.

RECOMMENDED CASE DEFINITION

Clinical description:

An illness characterised by acute or insidious onset, continued, intermittent or irregular fever of variable duration, profuse sweating particularly at night, fatigue, anorexia, weight loss, headache, arthralgia and generalised aching. Local infection of organs may occur.

Laboratory criteria for diagnosis

- Isolation of *Brucella spp.* from clinical specimen **or**
- Brucella agglutination titre e.g. standard tube agglutination tests: SAT>= 160 in one or more serum specimens obtained after onset of symptoms **or**
- ELISA (IgA, IgG, IgM), 2-Mercaptoethanol test, complement fixation test, Coombs, fluorescent antibody test (FAT), and radioimmunoassay for detecting antilipopolysaccharde antibodies; and counterimmunoelectrophoresis (CIEP) for antibodies anticytosolic proteins

Case classification

Suspected:	A case that is compatible with the clinical description **and** is epidemiologically linked to suspected or confirmed animal cases or contaminated animal products
Probable:	A suspected case that has a positive Rose Bengale test
Confirmed:	A suspected or probable case that is laboratory-confirmed

RECOMMENDED TYPES OF SURVEILLANCE

Routine surveillance, particularly among high risk groups (farmers, shepherds, workers in slaughterhouses, butchers, veterinarians, laboratory personnel)

Mandatory immediate case-based reporting by health care providers or laboratory to upper level of the public health sector as well as to the appropriate level of the animal health sector. In endemic countries if case-based reporting is not feasible: immediate outbreak reporting.

All cases/outbreaks should be investigated.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for investigation and reporting

Case classification (suspected/probable/confirmed)
Unique identifier, age, sex, geographical information, race/nationality, occupation
Date of clinical onset, date of reporting
Exposure history
Outcome

Outbreak data

Number of cases by case classification (suspected/probable/confirmed), age, sex, geographical area, occupation, date of reporting

Aggregated data

Number of cases by case classification (probable/confirmed), age, sex, geographical area, occupation

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Graphs: Number of suspected/probable/confirmed cases by month
Tables: Number of suspected/probable/confirmed cases by age, sex, month, place
Maps: Number of suspected/probable/confirmed cases by place

PRINCIPAL USES OF DATA FOR DECISION MAKING

Surveillance data

- Estimate the magnitude of the problem in humans and animals
- Monitor the distribution of the disease in humans and animals
- Detect outbreaks in humans and animals
- Monitor and evaluate impact of prevention activities in humans and control measures in animals

Investigation data

- Identify populations at risk
- Identify potentially contaminated products of animal origin.
- Identify potentially infected animal sources (herds or flocks)

SPECIAL ASPECTS

The surveillance activities of both public health and animal health sector must be fully co-ordinated and integrated. Administrative arrangements between the two sectors must be established to facilitate immediate cross notification of cases/outbreaks, as well as joint case/outbreak investigations.
Surveillance and control programmes must be promoted in goat raising areas.

CONTACT INFORMATION

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A00

Cholera

Case report universally required by **International Health Regulations**

RATIONALE FOR SURVEILLANCE

Cholera causes an estimation of 120 000 deaths per year and is prevalent in 80 countries. In Africa epidemics have become more frequent and case fatality rates higher. The world is currently experiencing the 7th pandemic. Refugee or displaced populations are at major risk of epidemics due to the conditions prevailing in the camps (unsafe water, poor sanitation and hygiene). Control of the disease requires appropriate surveillance with universal case reporting. Health education of population at risk and improvement of living conditions of population are essential preventive measures.

RECOMMENDED CASE DEFINITION

Clinical case definition

- In an area where the disease is not known to be present, severe dehydration or death from acute watery diarrhoea in a patient aged 5 years or more **or**
- In an area where there is a cholera epidemic, acute watery diarrhoea, with or without vomiting in a patient aged 5 years or more*

Laboratory criteria for diagnosis

Isolation of *Vibrio cholerae* 01 or 0139 from stools in any patient with diarrhoea

Case classification

Suspected: A case that meets the clinical case definition
Probable: Not applicable
Confirmed: A suspected case that is laboratory-confirmed

Note: in a cholera-threatened area, when the number of "confirmed" cases rises, shift should be made to using primarily the "suspected "case classification.

*Cholera does appear in children under 5 years, however, the inclusion of all cases of acute watery diarrhoea in the 2-4 year age group in the reporting of cholera greatly reduces the specificity of reporting. For management of cases of acute watery diarrhoea in an area where there is a cholera epidemic, cholera should be suspected in all patients.

RECOMMENDED TYPES OF SURVEILLANCE

Routine surveillance (this may be integrated with surveillance of diarrhoeal diseases: see acute watery diarrhoea).
Immediate case-based reporting of suspected cases from periphery to intermediate level and central level. All suspected cases and clusters should be investigated.
Aggregated data on cases should also be included in routine weekly/monthly reports from peripheral to intermediate and central level.

International: The initial suspected cases should be reported to WHO (mandatory).
Aggregated data on cases should be reported to WHO (mandatory).

Outbreak situations:

- During outbreak situations surveillance should be intensified with the introduction of active case finding
- Laboratory confirmation should be performed as soon as possible
- Thereafter weekly reports of cases, ages, deaths, regions, and hospital admissions should be set up

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for investigation and reporting

Age, sex, geographical information
Hospitalisation (Y/N)
Outcome

Aggregated data for reporting

Number of cases by age, sex
Number of deaths

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Use weekly numbers, not moving averages
- Case fatality rates (graphs)
- Weekly/monthly plots by geographical area (district) and age group (GIS) (graphs)
- Comparisons with same period in previous five years

Principal uses of data for decision making

- Detect outbreaks, estimate the incidence and case fatality rate
- Appropriately timed investigations
- Assess the spread and progress of the disease
- Plan for treatment supplies prevention and control measures
- Determine the effectiveness of control measures

Special Aspects

At least one reference laboratory in each country is recommended for species identification. Once the presence of cholera in an area has been confirmed, it becomes unnecessary to confirm all subsequent cases. Monitoring of an epidemic should, however, include laboratory confirmation of a small proportion of cases on a continuing basis.

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A81.0

Creutzfeldt-Jakob Disease

(CJD)

RATIONALE FOR SURVEILLANCE:

The incidence of CJD and its variants is currently not monitored in many parts of the world. In 1996 a new variant of CJD(nvCJD) was recognised in the United Kingdom. An etiological link between nvCJD and the agent of bovine spongiform encephalopathy (BSE) was considered likely, leading to great public concern. Subsequently scientific evidence supporting a link has become available. The size of the population exposed and susceptible to this agent in the United Kingdom is not known and, in addition to uncertainties relating to the potential length and distribution of the incubation period, make a useful prediction of the future number of nvCJD cases difficult. Other populations may have also been exposed to the agent through importation of live cattle or cattle by-products from BSE-affected countries, or through the use of medicinal or cosmetic products containing bovine tissues. Global surveillance of the new variant and other forms of CJD are likely to lead to greater understanding of these diseases, including the potential causes of iatrogenic CJD and the distribution of the various hereditary forms, and will provide information towards protection against the risks of disease.

RECOMMENDED CASE DEFINITION of CJD subtypes

1. Sporadic CJD

a. *Suspected (possible) CJD*:

- Progressive dementia; **and**
- EEG atypical or not known; **and**
- Duration < 2 years; **and**

At least two out of the following four clinical features: Myoclonus, visual or cerebellar disturbance, pyramidal/extrapyramidal dysfunction, akinetic mutism

b. Probable CJD :

- Progressive dementia; **and**
- Typical EEG (1-2 Hz generalised repetitive bi/triphasic periodic complexes); **and**
- **At least two out of the following four clinical features:** Myoclonus,visual or cerebellar disturbance, pyramidal/extrapyramidal dysfunction, akinetic mutism

a. Confirmed (definite) CJD:

- Anatomopathologically confirmation; **and/or**
- Immunocytochemically confirmed prion protein (PrP) positive (Western blot); **and /or**
- Presence of scrapie associated fibrils

2. Iatrogenic CJD

- Progressive cerebellar syndrome in a recipient of human cadaver-derived pituitary hormone; **or**
- Sporadic CJD with a recognised exposure risk

3. Familial CJD

Note: For the purpose of surveillance this includes Gerstmann-Sträussler-Scheinker syndrome (GSS) and fatal familial insomnia (FFI)

- Confirmed or probable CJD **plus** confirmed or probable CJD in a first degree relative **and/or**
- neuropsychiatric disorder **plus** disease-specific PrP mutation

4. New variant CJD

Neuropathology is mandatory for the diagnosis of definite nvCJD:

- Abundant kuru-like amyloid plaques surrounded by vacuoles (clearly visible on H&E and PAS stains);
- Abundant PrP deposits on immunocytochemistry, including prominent 'pericellular'

deposition in cerebral and cerebellar cortex (especially in the molecular layer)
- Spongiform change most prominent in the basal ganglia;
- Marked thalamic astrocytosis;

The following features are characteristic of nvCJD, although not sufficient for a definite diagnosis. Other forms of CJD may share some of these features and not every case of nvCJD demonstrates all these characteristics. Validated diagnostic criteria for a clinically 'probable' or 'possible' case are not yet available,

- A psychiatric presentation with depression and/or psychosis lasting weeks or months
- Onset of progressive unsteadiness within weeks or months of presentation
- Early and persistent paraesthaesia/ dysaesthesia
- Chorea and/or myoclonus
- Late illness progression similar to classical CJD, with dementia and multifocal neurological signs
- EEG does not show 'typical' appearance and may be normal
- MRI scan shows posterior thalamic high signal on T2-and/or proton density-weighted images
- Prolonged duration
- Young age

Genetic analysis to exclude familial CJD is important and patients should have no history of exposure to a known risk factor for iatrogenic disease.

RECOMMENDED TYPES OF SURVEILLANCE

One centre should be identified at central level to carry out surveillance
All reporting should be case- based
All definite, probable and possible cases should be notified by the appropriate health care professionals (usually physicians, neurologists, psychiatrists or neuropathologists) to the centre responsible for surveillance.

Note: Death notification surveillance. Death registrations should be checked in order to identify cases not detected by routine surveillance.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for reporting:

Subtype and classification of CJD
Age, sex, country of birth, geographical information, occupation
Date of onset, date of death
Vital status (alive, dead)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Number of cases by subtype, by classification, by occupational group, by geographical area
Number of cases by year of death, by age at death
Sex ratio

Principal uses of data for decision making

- To plot the trend in incidence of CJD subtypes
- To detect clusters of cases requiring further investigation
- To identify risk factors for disease acquisition

Special aspects

None

CONTACT

Regional offices

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A90, A91

Dengue Fever (A90), *including* ***Dengue Haemorrhagic Fever*** *and* ***Dengue Shock Syndrome*** (DHF & DSS, A91)

RATIONALE FOR SURVEILLANCE

Dengue fever, including DHF and DSS, is the most significant arthropod-borne viral disease world-wide. It occurs in over 100 countries and territories and threatens the health of over 2 500 million people in tropical and subtropical regions. Dengue fever is a severe disease with high epidemic potential. An estimated 500 000 patients are hospitalised with DHF/DSS every year, 90% of whom under the age of 15. WHO aims to accelerate the final development of attenuated dengue vaccine.

RECOMMENDED CASE DEFINITION

DENGUE FEVER

Clinical description

An acute febrile illness of 2-7 days duration with **two or more** of the following manifestations: headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations, leucopenia

Laboratory criteria for diagnosis

one or more of the following:

- Isolation of the dengue virus from serum, plasma, leukocytes, or autopsy samples
- Demonstration of a fourfold or greater change in reciprocal IgG or IgM antibody titres to one or more dengue virus antigens in paired serum samples
- Demonstration of dengue virus antigen in autopsy tissue by immunohistochemistry or immunofluorescence or in serum samples by EIA
- Detection of viral genomic sequences in autopsy tissue, serum or CSF samples by polymerase chain reaction(PCR)

Case classification

Suspected: A case compatible with the clinical description

Probable: A case compatible with the clinical description with **one or more** of the following:

- supportive serology (reciprocal haemagglutination-inhibition antibody titre ≥ 1280, comparable IgG EIA titre or positive IgM antibody test in late acute or convalescent-phase serum specimen)
- occurrence at same location and time as other confirmed cases of dengue fever

Confirmed: A case compatible with the clinical description that is laboratory-confirmed

CRITERIA FOR DENGUE HAEMORRHAGIC FEVER AND DENGUE SHOCK SYNDROME

Dengue Haemorrhagic Fever:

A probable or confirmed case of Dengue

and haemorraghic tendencies evidenced by **one or more of the following**

- positive tourniquet test
- petechiae, ecchymoses or purpura
- bleeding from mucosa, gastrointestinal tract, injection sites or other sites
- haematemesis or melena

and thrombocytopenia (100 000 cells per mm^3 or less)

and evidence of plasma leakage due to increased vascular permeability, manifested by **one or more** one of the following:

- a rise in average haematocrit for age and sex ≥ 20%
- a ≥ 20% drop in haematocrit following volume replacement treatment compared to baseline
- signs of plasma leakage (pleural effusion, ascites hypoproteinaemia)

Dengue shock syndrome:
All the above criteria for DHF **plus** evidence of circulatory failure manifested by
rapid and weak pulse, and narrow pulse pressure (≤20 mm Hg)
or
hypotension for age, and cold, clammy skin and restlessness

RECOMMENDED TYPES OF SURVEILLANCE

Areas where no dengue transmission has been detected but where *Aedes aegypti* occurs
Surveillance of suspected cases with investigation of clusters of suspected cases for dengue.

Countries where disease is endemic with seasonal increases in transmission and areas where epidemic dengue occurs
Routine weekly/monthly reporting of aggregated data of suspected, probable and confirmed cases from peripheral to intermediate and central level.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at the peripheral level
Case classification (suspected/probable/confirmed), serotype, DHF/DSS present (Y/N)
Unique identifier, name of patient, age, sex, geographical information
Date of onset
Hospitalised (Y/N)
Outcome
2 week travel history

Aggregated data for reporting
Number of cases by age group
Number of confirmed (and serotype)
Number of DHF/DSS cases by age group
Number of hospitalisations and deaths

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS
Percentage of DHF/DSS cases and of hospitalisations
Case fatality

PRINCIPAL USES OF DATA FOR DECISION MAKING
- Target high risk areas for intervention
- Monitor changes in serotype and rate of DHF/DSS
- Monitor trends in endemic disease or re-emergence of disease

SPECIAL ASPECTS
Parallel to disease surveillance, vector surveillance of both larval and adult populations of *A. aegypti*

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A36

Diphtheria

RATIONALE FOR SURVEILLANCE

Diphtheria is a widespread severe infectious disease that has the potential for epidemics.
The control of diphtheria is based on the following three measures 1) primary prevention of disease by ensuring high population immunity through immunization; 2) secondary prevention of spread by the rapid investigation of close contacts, to ensure their proper treatment, 3) tertiary prevention of complications and deaths by early diagnosis and proper management. Surveillance data can be used to monitor levels of immunization coverage (Target > 90%) and disease, to predict epidemics and to monitor the impact of control programmes. Recent epidemics have highlighted the need for adequate surveillance and epidemic preparedness.

RECOMMENDED CASE DEFINITION

Clinical case definition

An illness characterised by laryngitis **or** pharyngitis **or** tonsillitis, **and**
an adherent membrane of the tonsils, pharynx and/or nose

Laboratory criteria for diagnosis

- isolation of *Corynebacterium diphtheriae* from a clinical specimen, **or**
- fourfold or greater rise in serum antibody, (but only if both serum samples were obtained before the administration of diphtheria toxoid or antitoxin)

Case classification

Suspected: Not applicable
Probable: A case that meets the clinical description
Confirmed: A probable case that is laboratory-confirmed or linked epidemiologically to a laboratory-confirmed case

Note: Asymptomatic persons with positive *C. diphtheriae* cultures (i.e. asymptomatic carriers) should not be reported as probable or confirmed diphtheria cases

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting of aggregated data of probable or confirmed cases from peripheral level to intermediate and central level.
All outbreaks should be investigated immediately and case-based data collected.
In addition in countries achieving low incidence (usually where coverage is >85-90%): immediate reporting of case-based data of probable or confirmed cases from peripheral level to intermediate and central level.

International: Aggregated data of probable or confirmed cases from national reports should be reported monthly to the WHO regional offices.

RECOMMENDED MINIMUM DATA ELEMENTS

Aggregated data for reporting:

- Number of cases
- DTP doses administered to infants

Case-based data

- Unique identifier
- Geographical information
- Date of birth
- Date of onset
- Date of first treatment
- Treatment type (antibiotic & antitoxin/antibiotic only/antitoxin only/no or other treatment/unknown)

- Laboratory result (toxigenic *C. diphtheriae* isolated/ non-toxigenic *C. diphtheriae* isolated /*C. diphtheriae* isolated, toxigenicity unknown/*C. diphtheriae* not isolated /no specimen processed /unknown)
- Total diphtheria vaccine (DPT, DT or Td) doses received
- Date of last dose
- Final classification of the case (confirmed by lab or epi-link/clinical /no lab or epi-link/discarded)
- Outcome(alive/dead /unknown)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Aggregate data:

Incidence rate by month, year, and geographic area
DTP3 coverage by year and geographic area
Completeness/timeliness of monthly reporting
Proportional morbidity (compared to other diseases of public health importance)

Case-based data: same as aggregate data plus the following:

Age-specific incidence rate
Cases by immunization status, laboratory results, treatment type
Cases treated "on time" (≤ 7 days of onset)
Case fatality rate
Proportional mortality (compared to other diseases of public health importance)

SPECIAL ASPECTS

More detailed information (e.g.coding) available at EPI

PRINCIPAL USES OF DATA FOR DECISION-MAKING

- Monitor case fatality rate, and if high, determine cause (e.g. poor case management, lack of antibiotics/anti-toxin, patients not seeking treatment in time) so that corrective action can be taken
- Determine age-specific incidence rate, geographical area, and season of diphtheria of cases to know risk groups and risk period
- Monitor incidence rate to assess impact of control efforts
- Monitor immunization coverage per geographical area to identify areas of poor programme performance
- Detect outbreaks and implement control measures
- Investigate outbreaks to understand epidemiology, determine why the outbreak occurred (e.g. vaccine failure, failure to immunise, accumulation of susceptibles, waning immunity, new toxigenic strain), and ensure proper case management

Note: In addition to surveillance, carefully designed serological studies can be used to monitor the immune status of different age groups

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B72

Dracunculiasis

(Guineaworm disease)

RATIONALE FOR SURVEILLANCE

Dracunculiasis is the subject of a global **eradication** programme (9GPW, target 6.1). Surveillance is therefore essential to identify and contain all individual cases in endemic countries as well as in countries where environmental conditions are appropriate for local transmission of the disease.

RECOMMENDED CASE DEFINITION

Clinical case definition

A case of dracunculiasis is defined as an individual exhibiting or having a history of a skin lesion with the emergence of a Guinea worm. A recent history (within one year) of a skin lesion with emergence of a Guinea worm is the only time-frame which must be used in surveillance programmes.

RECOMMENDED TYPES OF SURVEILLANCE

peripheral level: In all endemic and formerly endemic countries, **village-based** surveillance aims to detect cases while the worm is pre-emergent or at latest 24 hours after the beginning of worm emergence, even in the most remote local villages. Community-oriented case-containment interventions are being combined with surveillance to interrupt further transmission of the disease. For lack of previously trained health workers in highly remote localities and needs of health workers in newly identified endemic villages, training continues to be an important activity.

Intermediate /central level: Reports (aggregated data) are gathered from all villages to intermediate level and channelled towards the central level on a monthly basis. This is generally combined with supervision activities at all levels of the national dracunculiasis eradication programmes. When the annual incidence is close to zero, cases should be reported on a weekly or even daily basis.

International level: Reports from endemic countries are aggregated and reported to the international level on a monthly basis, and used as the basis for policy and managerial decisions by the central programmes, as well as by the external supporting agencies.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data:

Unique identifier, sex, age, geographical co-ordinates of the village involved, date of diagnosis, case isolation measures taken

Aggregated data:

For every village, number of cases by month and year

RECOMMENDED DATA ANALYSIS, PRESENTATION, REPORTS

Monthly and yearly incidences by village, geographic origin of imported cases. Analysis of the monthly and yearly changes in the distribution of infected villages. Mapping of data including the matching of endemic villages with water distribution data, using GIS software.

PRINCIPAL USES OF DATA FOR DECISION MAKING:

- Plan interventions and supervision at all levels of the programme
- Monitor progress and the need for resources of various types
- Identify variations in case-containment efficacy
- Identify technical and operational difficulties at all levels
- Identify areas needing special interventions, training and supervision
- Evaluate the impact of programme activities

SPECIAL ASPECTS

Rewards are increasingly being added, to enhance central dracunculiasis surveillance systems as the number of cases continues to decrease. Rewards increase the surveillance sensitivity.

CONTACT INFORMATION

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A98.3, A98.4

Ebola-Marburg viral diseases

RATIONALE FOR SURVEILLANCE

Ebola haemorrhagic fever (EHF) is a rare but severe disease occurring primarily in areas of African rain forest*. EHF is characterised by person-to-person transmission through close contact with patients, dead bodies or infected body fluids. EHF epidemics can be dramatically amplified in health care centres with poor hygiene standards and its potential for explosive nosocomial infection constitutes its main threat to public health. Surveillance of EHF is aimed at early detection of cases in order to avoid epidemics and the possible international spread of the disease.

RECOMMENDED CASE DEFINITION

Clinical description

EHF begins with acute fever, diarrhoea that can be bloody (referred to as "diarrhée rouge" in Francophone Africa), and vomiting. Headache, nausea, and abdominal pain are common. Conjunctival injection, dysphagia, and haemorrhagic symptoms such as epistaxis, gum haemorrhage, haematemesis, melena, purpura may further develop. Some patients may also show a maculopapular rash on the trunk. Dehydration and significant wasting occur as the disease progresses. At a later stage, there is frequent involvement of the CNS, manifested by somnolence, delirium, or coma. Case fatality rates range from 50% to 90%.

Laboratory criteria for diagnosis

Supportive:

- Positive serology (ELISA for IgG and/or IgM), **or**

Confirmatory

- Positive virus isolation (only in laboratory of biosafety level 4) **or**
- Positive skin biopsy (immunohistochemistry)
- Positive PCR

Case classification

Suspected: A case that is compatible with the clinical description.

Probable: ***in epidemic situation:***

- Any person having had contact with a clinical case and presenting with acute fever, **or**
- Any person presenting with acute fever and three of the following symptoms: headache, vomiting/nausea, loss of appetite, diarrhoea, intense fatigue, abdominal pain, general or articular pain, difficulty in swallowing, difficulty in breathing, hiccoughs, **or**
- Any unexplained death

Confirmed: Any suspected or probable case that is laboratory-confirmed

Contact: ***in epidemic situation:***

An asymptomatic person having had physical contact with a confirmed or probable case or his/her body fluids (e.g. care for patient, participation to burial ceremony, handling of potentially infected laboratory specimens), within the past 21 days

In epidemic situation and after laboratory confirmation of few initial cases, there is no need for individual laboratory confirmation and the use of only suspected or probable cases is sufficient for control purpose.

RECOMMENDED TYPES OF SURVEILLANCE

In endemic area and in the absence of epidemic:

Immediate reporting of suspected cases from the periphery to intermediate and central levels to ensure rapid investigation and laboratory confirmation.

Note: routine surveillance of EHF should be integrated with routine surveillance for other viral haemorrhagic fevers (e.g. Crimean-Congo, Lassa, Rift Valley Fever, yellow fever)

In epidemic situation:

- Intensified surveillance and active finding of all suspected and probable cases for immediate isolation, and of all contact subjects for daily medical follow-up
- The surveillance area should be monitored for a time corresponding to 2 estimated incubation periods after the date of death or hospital discharge of the last case
- A rumour registry should be established to create a systematic registration of rumours of cases reported by the population
- A single source of official information is essential to ensure coherence and avoid confusion in the public

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for reporting and investigation

Case classification (suspected/probable/confirmed)
Unique identifier, name, age, sex
Geographical information, name of head of family, name of father (if child)
Profession, place of work
Date of onset of fever, symptoms, signs
Hospitalisation including date
Death including date,
Contact with previous case including date,
Nature and date of clinical samples taken for laboratory investigation (if any)

Aggregated data for reporting

Number of cases (suspected/probable/confirmed) by age, sex
Number of deaths

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS *(in epidemic situation)*

An Epidemiological bulletin should be reported daily to local health authorities and to WHO headquarters. This bulletin should include the following information:

Cases:

- Total cumulative number of cases
- Total cumulative number of deaths
- Current number of patients
- Current number of hospitalised patients
- Date of last identified case
- Date of death or hospital discharge of the **last reported case**

Breakdown by sex and age group could also be provided.

Contacts

- Current number of contacts requiring follow up
- Current number of contacts actually under proper follow-up

Breakdown by sex and age group could also be provided

When possible, the geographic distribution of cases and contacts, as well as a simple epidemic curve, should be provided.

Case fatality rates, attack rates, and age-specific attack rates could be calculated for epidemiological assessment.

A more detailed report should be produced weekly summarising events and data and a complete report should be available at the end of the epidemic.

PRINCIPAL USES OF DATA FOR DECISION MAKING

Routine surveillance data

To detect an isolated case or an outbreak and immediately take appropriate measures to avoid an epidemic

Active case finding and contact tracing during outbreaks are essential for control an epidemic

- To identify all cases and contacts
- To assess and monitor the spread of an outbreak
- To evaluate control measures
- To provide basis for research (epidemiological data, clinical specimens)

SPECIAL ASPECTS

- Since extreme biohazard is associated with sampling, transportation and laboratory investigation, strictly applied biosafety procedures and appropriate isolation of patients are essential.
- *All known Ebola strains from Africa produce disease in humans; however, an Ebola strain from the Philippines (Reston) has infected humans without producing disease. Marburg virus infections are extremely rare. They appear to be similar to EHF and recommendations for both viral infections are the same.

CONTACT INFORMATION

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A 83.0

Japanese Encephalitis

RATIONALE FOR SURVEILLANCE

Over a large part of East Asia, Japanese encephalitis (JE) virus is the most common cause of encephalitis. This mosquito-borne encephalitis has the potential for outbreaks and can be associated with a high case fatality rate. Based on the natural transmission cycle of Japanese encephalitis, three strategies for control have been proposed: vector control, vaccination of swine and vaccination of humans. Surveillance should target these elements.

RECOMMENDED CASE DEFINITION

Clinical description

Japanese encephalitis virus infection may result in a febrile illness of variable severity associated with neurological symptoms ranging from headache to meningitis or encephalitis. The encephalitis can not be distinguished clinically from other central nervous system infections. Symptoms can include: headache, fever, meningeal signs, stupor, disorientation, coma, tremors, paresis (generalised), hypertonia, loss of co-ordination.

Laboratory criteria for diagnosis

Presumptive: Detection of an acute phase anti-viral antibody response **by one of the following:**

- Isotype-capture immunoassay to detect IgM to the virus in serum.
- A fourfold or greater rise in specific antibody in paired sera by hemagglutination-inhibition test*
- A fourfold or greater rise in specific antibody in paired sera by plaque reduction neutralisation test*

Confirmative:

Virus detection (by isolation of virus or immunocytochemistry or immunofluorescence or RT-PCR) **or** detection of an acute-phase anti-viral antibody response by Isotype-capture immunoassay to detect IgM to the virus in CSF.

*Cross-reactions to dengue and other flaviviruses must be controlled.

Note: JE infections are common and the majority are asymptomatic. JE infections may occur concurrently with other infections causing CNS symptoms and serological evidence of recent JE viral infection may not be correct in indicating JE to be the cause of the illness.

Case classification

Suspected:	A case that is compatible with the clinical description
Probable:	A suspected case with presumptive laboratory results
Confirmed:	A suspected case with confirmative laboratory results

RECOMMENDED TYPES OF SURVEILLANCE

Areas where no Japanese encephalitis transmission has been detected but where the vector is present.

Surveillance for acute CNS syndromes; investigation of clusters with fever

Countries where disease is endemic with seasonal increases in transmission and areas where epidemic Japanese encephalitis is occurring

Routine weekly/monthly reporting of aggregated data on suspected, probable and confirmed cases from peripheral to intermediate and central level

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at the peripheral level:

Case classification (suspected/probable/confirmed), unique identifier, name of patient, age, sex, geographical information, date of onset, 2 week travel history, hospitalisation (Y/N), outcome

Aggregated data for reporting:

Number of cases by age group
Number of suspected /confirmed cases
Number of hospitalisations and deaths

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Number of cases and deaths by geographic area
Number of hospitalisations
Case fatality

PRINCIPAL USES OF DATA FOR DECISION MAKING

- To target high risk areas for intervention
- To monitor changes in epidemiology and pattern of disease
- To monitor trends in endemic disease or re-emergence of disease
- To monitor vaccine efficacy

SPECIAL ASPECTS

None

CONTACT INFORMATION

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B74

Lymphatic filariasis

RATIONALE FOR SURVEILLANCE

Lymphatic filariasis remains a major cause of clinical morbidity in much of Asia, Africa, the Western Pacific and certain parts of the Americas. It is the second leading cause of permanent long-term disability. The prevalence is increasing world-wide with at least 120 million people affected at different stages of the disease. Both diethylcarbamazine (DEC) and ivermectin have been shown to be very effective in reducing microfilaraemia. Selected by the International Task Force for Disease Eradication as one of six potentially eradicable infectious diseases. WHO policy is to achieve better control and aim for disease **elimination** in human using drug combinations in mass populations complemented by vector control. Therefore surveillance is essential.

RECOMMENDED CASE DEFINITION

Clinical case definition

Hydrocoele or lymphoedema in a resident of an endemic area for which other causes of these findings have been excluded

Laboratory criteria for diagnosis

Microfilaria positive, antigen positive or biopsy positive

Case classification

Suspected	Not applicable
Probable:	A case that meets the clinical case definition
Confirmed:	A probable case that is laboratory-confirmed

RECOMMENDED TYPES OF SURVEILLANCE

There are currently three options and the choice will depend on the local situation:

- Routine monthly reporting of aggregated data on probable and confirmed cases from periphery to intermediate level and to central level **or**
- sentinel population surveys (standardised and periodically) **or**
- Active case finding through surveys of selected groups or mass surveys

International: Annual reporting from central level to WHO (only a limited number of countries)

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at peripheral level

Case classification (probable/confirmed)
Unique identifier
Geographical information (location)
Laboratory result

Aggregated data for reporting

Number of new cases
Number of laboratory-confirmed cases
Number of chronic conditions (hydrocoele or lymphoedema)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Number of cases by geographical area and by year
- Monthly and yearly incidence, point prevalence (if active case detection), by geographic origin, by sex, by parasitological diagnosis

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Estimate magnitude of the problem and define populations at risk
- Improve and focus the control activities
- Improve the management and follow-up of Filariasis infected patients
- Identify technical and operational difficulties

SPECIAL ASPECTS

None

CONTACT INFORMATION

Regional offices

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B15-B17

Acute viral hepatitis

RATIONALE FOR SURVEILLANCE

- Use aggregated data to detect outbreaks and their cause
- Use various sources, in addition to surveillance data, to determine the impact of various types of viral hepatitis in the population and prioritise them among other diseases of public health importance
- Use hepatitis B immunization coverage data to monitor progress towards control of hepatitis B

Hepatitis B is targeted by WHO for reduced incidence/prevalence (9GPW6.3)

RECOMMENDED CASE DEFINITION

Clinical description

An acute illness that includes acute jaundice, dark urine, anorexia, malaise, extreme fatigue, and right upper quadrant tenderness.
N.B. Most infections during early childhood and a variable proportion of adult infections are asymptomatic.

Laboratory criteria for diagnosis

- Hepatitis A: IgM anti-HAV positive
- Hepatitis B: HBsAg positive **or** IgM anti-HBc-positive, **and** IgM anti-HAV negative (if available)
- Hepatitis E: IgM anti-HEV positive **and** IgM anti-HAV negative, **and** HBsAg negative **or** IgM anti-HBc negative

Note:
Further testing of patients who are negative for markers of acute hepatitis A, B and E can be used to make a diagnosis of acute hepatitis C or D. Laboratory criteria for hepatitis C in patients with non-A non-B hepatitis are as follows:

- Hepatitis C: Anti-HCV positive
- Hepatitis D: only occurs as co-or superinfection of hepatitis B: HBsAg positive **or** IgM anti-HBc positive **plus** anti-HDV positive

Case classification

Suspected: A case that is compatible with the clinical description
Probable: Not applicable
Confirmed: A case that is laboratory-confirmed **or**,
for hepatitis A and E: a case that is compatible with the clinical description and occurs in a person who has an epidemiological link with a person who has laboratory-confirmed hepatitis A/ E (i.e., household or sexual contact with an infected person) during the 15-50 days before the onset of symptoms

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting of aggregated data of suspected or confirmed cases from peripheral level to intermediate and central level.
All outbreaks should be investigated immediately and confirmed serologically.

International: The aggregated data of probable or confirmed cases from national reports are reported monthly to the WHO regional offices.

RECOMMENDED MINIMUM DATA ELEMENTS

Aggregated data for reporting

Number of cases
Number of third doses of hepatitis B vaccine (HBV3) administered to infants

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS: (from multiple sources of data, in addition to surveillance data)

Number of acute viral hepatitis cases by etiologic agent, where possible
Acute viral hepatitis incidence by year, month, geographical area, and (if data exist) age group
HB immunization coverage in infants
Proportion of all cases of acute viral hepatitis, chronic liver disease, cirrhosis, and primary liver cancer that are HBV carriers or anti-HCV positive (see special aspects)

PRINCIPAL USES OF DATA FOR DECISION-MAKING

- Investigate all suspected/reported outbreaks
- Determine the specific cause of acute viral hepatitis cases (reported routinely or during outbreaks), so that corrective measures can be taken
- Determine incidence (including age-specific incidence) and prevalence of HBsAg and anti-HCV and proportion of acute viral hepatitis, chronic liver disease, cirrhosis, and primary liver cancer that are HBV or HCV carriers in order to: 1) determine the impact of the disease in the population; 2) prioritise it among other diseases of public health importance; and 3) choose the proper strategies for its control
- Monitor HB immunization coverage to measure programme performance

SPECIAL ASPECTS

Surveillance data of acute viral hepatitis from developing countries should be interpreted with caution. Differentiation of types of viral hepatitis (A to E) based on clinical diagnosis is unreliable and serologic testing is necessary for accurate diagnosis. Many developing countries do not have access to diagnostic reagents. Most infections with hepatitis A, B, C and E virus occur asymptotically (in developing countries usually among children) and will not be detected and reported to the surveillance system. Therefore, a low incidence of acute viral hepatitis should not be misinterpreted as a low prevalence of viral hepatitis infection.

The sequellae of Hepatitis B, C and D infection include chronic carrier state, chronic hepatitis, cirrhosis, and primary liver cancer. Measuring the impact of these conditions requires data collection from sources not traditionally used by infectious disease epidemiologists, including hospital discharge and mortality data and cancer registers. Special sero-prevalence surveys may be needed to measure the prevalence of HBV and HCV carriers in the general population and in special groups such as blood donors, pregnant women, military recruits, health care workers, certain patient groups (e.g. liver disease, dialysis, haemophiliacs), and ethnic sub-populations.

Assessment of coverage for HB vaccine is similar to that for other EPI vaccines. Vaccine is given to infants (and in some industrial countries to adolescents) primarily to prevent the development of the chronic liver disease and liver cancer. Because hundreds of studies have shown that the vaccine is 85% to 100% effective in preventing the carrier state, serological testing to document seroconversion in children is not necessary in most countries.

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B20-B24

HIV Infection

(Human immunodeficiency virus)

RATIONALE FOR SURVEILLANCE

The surveillance of HIV infection is the best way to forecast the future impact of AIDS patients on national health resources. It may also allow counselling, follow-up and chemoprophylaxis when appropriate at an individual level.

RECOMMENDED CASE DEFINITION

Clinical description

There is no clinical description, the diagnosis is based on laboratory criteria

Laboratory criteria for diagnosis

HIV positive serology (ELISA)

Confirmation by second serological test necessary only in settings with estimated HIV prevalence lower than 10%.

Confirmation should be a second ELISA or simple/rapid assay based on a different antigen preparation and/or different test principle

Case classification

Suspected: Not applicable
Probable: Not applicable
***Confirmed*:** A laboratory-confirmed case

Note: Except for unlinked anonymous testing, serological testing should only be done in combination with **appropriate pre- and post-counselling services**.

Western Blot is used for individual confirmation rather than general HIV survey, in countries which have the appropriate resources.

RECOMMENDED TYPES OF SURVEILLANCE

The method of preference is unlinked anonymous seroprevalence testing in sentinel sites. In order to monitor time trends, it is necessary to ensure continuity of the same sentinel surveillance sites over time, and that within sites the same sampling scheme is used over time (periodically and standardised).

For countries with very low prevalence, the sentinel sites should focus on testing of high risk groups (patients seeking treatment for STDs or for intravenous drug use, or prostitutes seeking health care treatment etc.) For countries with higher prevalence: High risk groups should continue to be monitored, and surveillance of general population groups such as pregnant women attending antenatal clinics should be carried out.

Routine yearly reporting of aggregated data of confirmed cases from each sentinel site to intermediate and unchanged to central level.

Some countries report case-based data.

Other sources of data:

- Hospital
- Dermatologist
- STD clinics
- Blood bank
- Army (data from army recruits)
- Special surveys
- Mortality reports

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for reporting:

Age, sex, location, risk factor (e.g. blood transfusion, intravenous drug use, multiple sexual partners)

Aggregated data for reporting:

On a yearly basis: number of cases tested by age, by sex, by risk factors

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Analysis of prevalence by age and sex and geographic area, rural/urban locations and population subgroups, risk factors
- Analysis of trends in prevalence over time, by age and sex and geographic area, rural/urban location and population subgroup
- Graphs and tables: Prevalence and confidence intervals, by year, age and sex, by sentinel site, population subgroup, geographic area, rural/urban location
- Maps: prevalence levels at each sentinel site

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Assess the current magnitude, and current trends of the HIV/AIDS epidemic
- Project the number of AIDS cases over the next decade
- Identify high risk population sub-groups and/or geographic areas for intervention
- Evaluate the impact of specific interventions
- Assess impact on health services, plan health and social service activities for people with HIV/AIDS
- Increase public and political awareness of the disease

SPECIAL ASPECTS

None

CONTACT

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J10, J11

Influenza

RATIONALE FOR SURVEILLANCE

Surveillance of influenza is essential for the early detection and evaluation of new variants or subtypes of influenza virus. The early detection and characterization of these viruses allows for timely annual updates of a vaccine which can prevent deaths and alleviate illness in vulnerable groups of the population.

RECOMMENDED CASE DEFINITION

Clinical case definition

A person with sudden onset of fever of >39°C, respiratory symptoms, myalgia and headache

Laboratory criteria for diagnosis

Virus isolation: recommended naso-pharyngeal smear or
direct detection of influenza viral antigen

Case classification

Suspected:	A case that meets the clinical case definition
Probable:	A case that meets the clinical case definition and is epidemiologically linked to a laboratory-confirmed case
Confirmed:	A case that meets the clinical case definition and is laboratory-confirmed

RECOMMENDED TYPES OF SURVEILLANCE

Routine weekly (at least for the epidemic period) reporting of case-based or aggregated data of

- suspected/probable/confirmed cases by sentinel practices (general practitioners)
- confirmed cases by laboratory

to central level

International: weekly aggregated data on confirmed cases from countries to WHO (FluNet) accompanied by information on extent of activity in the community.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for reporting:

Case classification (suspected/probable/confirmed)
Sub-type of virus (if known)
Unique identifier, age, geographical area
Date of onset
Vaccination status
Outcome (recovered/complications/death)

Aggregated data for reporting:

For every geographical area (country) and every week: number of cases by age groups, sub-type of virus (if known), outcome

Case-based laboratory data:

Laboratory number, specimen date (day/month), patient age (years or months), city, state or province of origin of patient, isolation system, type, subtype, isolate designation, resembles reference strain (Y/N), is further identification in progress (Y/N), forwarded to WHO collaborating centre(Y/N)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Graphs: Number of cases by week, age group, virus sub-type
Tables: Number of cases by week, age group, geographical area, virus sub-type, outcome
Maps: Number of cases by week, geographical area, country

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Rapid isolation and antigenic characterization of influenza viruses for planning the formulation of vaccine for the following season
- Early detection of influenza epidemics thus enabling the implementation of public health measures such as immunization of risk groups and planning for the possible impact on essential services
- Morbidity and mortality data to estimate the impact and costs of the outbreak and control measures such as vaccination campaigns

SPECIAL ASPECTS

The speedy provision of isolates to the WHO Collaborating Centres is crucial.
Laboratory surveillance is most specific and the cornerstone of surveillance.
Sentinel surveillance (by general practitioners) on influenza-like illness is less specific but sensitive and rapid.

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A96.2

Lassa fever

RATIONALE FOR SURVEILLANCE

This severe acute viral infection has the potential to produce epidemics, and as such surveillance mechanisms to detect outbreaks and monitor control measures are critical in affected countries.

RECOMMENDED CASE DEFINITION

Clinical description:

An illness of gradual onset with: malaise, fever, headache, sore throat, cough, nausea, vomiting, diarrhoea, myalgia, and chest pain, hearing loss, and a history of contact with excreta of rodents

Laboratory criteria for diagnosis:

- Isolation of virus (only in laboratory of biosafety level 4) from blood, urine or throat washings **or**
- Positive IgM serology or seroconversion (IgG antibody) in paired serum specimens **or**
- Demonstration of Lassa virus antigen in autopsy tissues by immunohistochemistry or in serum by ELISA
- Positive PCR from serum or autopsy tissues

Case classification:

Suspected:	A case compatible with the clinical description
Probable:	A suspected case that is epidemiological linked to a confirmed case
Confirmed:	A suspected case that is laboratory-confirmed
Contact:	A person having close personal contact with the patient (living with, caring for) or a person testing the laboratory specimens of a patient in the three weeks after the onset of the illness

RECOMMENDED TYPES OF SURVEILLANCE

Endemic situation:

Immediate reporting of case-based data of suspected, probable or confirmed cases from peripheral level to intermediate and central level.
All cases must be investigated, and contact tracing undertaken.
Routine monthly reporting of aggregated data from intermediate to central level.

Outbreak situation:

All suspected outbreaks must be reported centrally. Surveillance must be intensified with active case finding and contact tracing. Aggregated data on a daily/weekly basis to be submitted to intermediate and central level by investigation team.

Disease is endemic in Sierra Leone, Liberia, Guinea and regions of Nigeria. Outside these areas, compatible symptoms with a history of travel to or arrival from one of these countries should prompt investigation and reporting.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for reporting and investigation

Case classification (suspected/probable/confirmed)
Unique identifier, age, sex, place of residence for the three weeks before onset of illness
Date of onset
Hospitalisation
Outcome
Contact with case, contact with rodents, contacts since onset of illness

Aggregated data for reporting

Endemic situation

Number of cases (suspect/probable/confirmed) by **geographical area** and outcome
Contacts by geographical area, success of tracing and outcome

Outbreak situation

Total number of cases by village, geographical area, onset date, hospitalisation, outcome
New cases and contacts identified since last report
Total number of contacts by outcome
New contacts identified and traced since last report

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Mapping number of cases by geographical area
- Percentage of contacts followed up
- Case fatality rate

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitoring endemic disease over time
- Identification of risk groups or areas
- Identification of clusters/outbreaks
- Investigation of cases, contacts and source of infection

SPECIAL ASPECTS:

Extreme biohazard associated with sample, transport and with laboratory investigations.

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A48.1

Legionellosis (*Legionnaire disease, Legionnaires' pneumonia)*

RATIONALE FOR SURVEILLANCE

Legionnaire disease is a disease with epidemic potential and high case fatality. Surveillance is important in order to detect epidemics and to institute appropriate investigations and control measures. In addition the surveillance of sporadic disease may provide clues to disease etiology and prevention.

RECOMMENDED CASE DEFINITION

Clinical description

A illness characterised by an acute lower respiratory infection with focal signs of pneumonia on clinical examination and/or radiological evidence of pneumonia

Laboratory criteria for diagnosis

Presumptive: one or more of the following:

- Detection of specific legionella antigen in respiratory secretion or urine
- Direct fluorescent antibody (DFA) staining of the organism in respiratory secretion or lung tissue using evaluated monoclonal reagents
- A fourfold or greater rise in specific serum antibody titre to legionella species other than *Legionella pneumophila* serogroup 1, using a locally validated serological test

Confirmative: one or more of the following:

- Isolation of *Legionella* from respiratory secretions, lung tissue, pleural fluid, blood or other normally sterile fluids
- A fourfold or greater rise in specific serum antibody titre to *L.pneumophila* serogroup 1 by indirect immunofluorescence antibody test or microagglutination

Case classification

Suspected: Not applicable

Probable: A case that is compatible with the clinical description with presumptive laboratory results

Confirmed: A case that is compatible with the clinical description with confirmative laboratory results

Note: Some countries (e.g. USA, UK) now include the detection of *L. pneumophila* serogroup 1 antigen in urine as a confirmatory test

RECOMMENDED TYPES OF SURVEILLANCE

Immediate reporting of case-based data from periphery to intermediate and central level.
The identification of cases should prompt immediate investigation for risk factors and other cases. (For a rapid response, active case finding is preferred).

International: Since travel and stays in hotels are important risk factors, effective international surveillance is essential to identify and control the point source of infections. Legionella infection is usually diagnosed after the patient's return to the country of residence with the likelihood of it being considered as a sporadic, single case. A surveillance scheme as the European Working Group for Legionella Infections* (see special aspects) allows the detection of clusters of cases (≥2 cases) with the same source of transmission, as case notifications from different European countries are collected in the same database.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for investigation and reporting:

Unique identifier, name, age, sex, geographical information, date of onset, outcome
Underlying risk factors (e.g. immunocompromised patient, AIDS)
Exposure risk factors (hospitalisations, hotels, or other accommodation and travel history during the two weeks before the onset)
Laboratory data (specimen type, date collected, *Legionella spp.* isolated)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Review data regularly to look for clusters of cases in time, place or person (this should be undertaken at all levels) .
- Incidence of infection by month, geographical area, age group, risk factors, exposure factors

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Detect clusters/outbreaks
- Identify high risk areas and exposures
- Monitor impact of environmental control measures

SPECIAL ASPECTS

- Two currently recognised, distinct clinicoepidemiologic manifestations: "Legionnaires' disease" (pneumonic form) and "Pontiac fever"(non-pneumonic form). Both are characterised initially by anorexia, vomiting, myalgia and headache, followed within a day by rising fevers and chills. In the pneumonic form non-productive cough, abdominal pain/diarrhoea, confusion/delirium are common. It is not possible, clinically, to distinguish Legionella pneumonia from other pneumonia. Suspicion, however, should be raised in any pneumonia connected with epidemiological information (e.g., recent travelling, hospitalisation, gatherings, immunosuppression). In addition, age (> 40), sex (M), smoking, alcohol consumption have been shown to be risk factors. The reservoir of Legionella spp. is probably primarily aqueous (e.g., hot water systems, air-conditioning, cooling towers and evaporative condensers). Pontiac fever is not associated with pneumonia. It is thought to represent a reaction to inhaled antigen, rather than to bacteria.
- Environmental surveillance for Legionella in water sources can be undertaken usually as part of registration and licensing procedures. In the absence of these measure environmental surveillance should be at least undertaken for known sources of outbreaks to ensure that the organism is eradicated.
- * European Working Group or Legionella Infections
  PHLS Communicable Disease Surveillance Centre
  61 Colindale Avenue, London NW9 SEQ
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B55.1, B55.2

Cutaneous leishmaniasis

RATIONALE FOR SURVEILLANCE

Cutaneous leishmaniasis (CL) is endemic in 72 countries. The yearly incidence is estimated at 1 500 000 cases. The disease has several clinical forms: localised CL, diffuse CL (DCL),the most difficult to treat, and mucocutaneous leishmaniasis (MCL) which is the most severe form as it produces disfiguring lesions and mutilations of the face. In CL anthroponotic foci, where man is believed to be the sole reservoir, epidemics are linked to human migrations from rural to poor suburban areas; In zoonotic foci, where mammals are reservoirs, epidemics are related to environmental changes and movement of non-immune people to rural areas.
In establishing disease impact and monitoring efforts towards disease control and detecting epidemics, surveillance is essential.

RECOMMENDED CASE DEFINITION

Clinical description

Appearance of one or more lesions on uncovered parts of the body. The face, neck, arms and legs are the most common sites. At the site of inoculation a nodule appears, enlarges and becomes an indolent ulcer. The sore remains in this stage for a variable time, before healing, and leaving a depressed scar. In some individuals, certain strains can disseminate and cause mucosal lesions. These sequelae involve nasopharyngeal tissues and can be very disfiguring.

Laboratory criteria for diagnosis

- positive parasitology (stained smear or culture from the lesion)
- only for MCL: positive serology (IFA, ELISA)

Case classification

WHO operational definition:

A case of CL is a person showing clinical signs (skin or muco-cutaneous lesions) with parasitological confirmation of the diagnosis (positive smear or culture) and/or, for MCL only, serological diagnosis

RECOMMENDED TYPES OF SURVEILLANCE

At peripheral level individual patient records should be retained for investigation and case management.
Routine monthly reporting of aggregated data of cases from periphery to intermediate and central level.

International: annual reporting from central level to WHO (limited number of countries).

Active case finding through surveys of selected groups or mass surveys (standardised and periodically) are an alternative to estimate the prevalence of CL.

RECOMMENDED MINIMUM DATA ELEMENTS

Individual patient records at peripheral level:

Identification data:	Unique identifier, age, sex, geographical information, past travels, duration at residence
Leishmaniasis data:	clinical features, date of diagnosis, serological (for MCL only) and parasitological diagnosis, *Leishmania* species, treatment outcome

Aggregated data for reporting:

Number of cases by age, sex, type of diagnosis

RECOMMENDED DATA ANALYSIS, PRESENTATION, REPORTS

Tables: Incidences by geographical area, by age, by sex, by type of diagnosis, by month /year
Point prevalence (if active case detection).

Maps: Incidence by village

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Evaluate the real extent of the problem and the main populations at risk
- Improve and focus the control activities
- Improve the management and follow-up of CL /DCL and MCL patients (WHO guidelines)
- Identify technical and operational difficulties
- Evaluate impact of control interventions
- Anticipate epidemics

SPECIAL ASPECTS

CL tends to be grossly underestimated as most of the official data are obtained through passive case detection only. Other factors which lead to misdiagnosis or non-diagnosis are: wide scatter of foci, limited access to medical facilities, scarcity of diagnostic facilities and limited or irregular availability of first-line drugs

CONTACT INFORMATION:

Regional offices :

See Regional Communicable Disease contacts on the pages 15-20

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Leishmania/HIV co-infections

RATIONALE FOR SURVEILLANCE:

Leishmania/HIV co-infections have already been reported from 22 countries. The overlap of visceral leishmaniasis (VL) and AIDS is on the increase due to the spread of the AIDS pandemic in rural areas and that of VL in suburban areas. In southern Europe 25% - 70 % of adult VL cases are related to HIV infection and 1.5 - 9 % of AIDS cases suffer from newly acquired or reactivated VL

RECOMMENDED CASE DEFINITION

WHO operational definition:

A case of co-infection is a HIV positive person showing clinical signs of leishmaniasis (visceral or cutaneous) with parasitological confirmation of the diagnosis

RECOMMENDED TYPES OF SURVEILLANCE

Sentinel surveillance by hospital and/or laboratories

At peripheral level, hospitals and laboratories, members of the network of surveillance (from 10 countries at the time of writing) maintain individual patient records. They use guidelines for diagnosis and a standardised case report form recently computerised.

Routine aggregated or case-based data of all cases reported every six months from peripheral level or central level to WHO

World-wide information collected, processed and rediffused (twice per year) by the central registry set up at WHO (CTD/TRY)

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for individual patient record at peripheral level and for reporting:

Identification data: Unique identifier, age, sex, geographical information, travel history, duration at residence;

Leishmaniasis data: Date of diagnosis, serological and parasitological diagnosis, *Leishmania* species, clinical features; HIV data: date of diagnosis, serology, CD4/mm^3, risk groups, AIDS-defining diseases; treatment outcome.

Aggregated data:

Number of cases by age, sex, type of diagnosis, risk group

RECOMMENDED DATA ANALYSIS, PRESENTATION, REPORTS

Geographic distribution, sex distribution, age distribution, risk groups, main risk groups by country, date of HIV diagnosis, date of Leishmaniasis diagnosis, correlation between leishmaniasis and HIV diagnosis, immunological parameters, parasitological diagnosis, clinical diagnosis stage, clinical features and AIDS-defining diseases

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Evaluate the real extent of the problem and the main population at risk
- Improve the management and follow-up of co-infected patients by the use of the guidelines
- Identify technical and operational difficulties faced by the network of institutions
- Evaluate impact of intervention

SPECIAL ASPECTS

A network helps

- to improve the reliability of data collection by the use of the standardised case report form
- to improve the co-ordination between the institutions
- to improve the active medical surveillance of the main population at risk

CONTACT INFORMATION
Regional offices :
See Regional Communicable Disease contacts on pages 15-20

Headquarters:
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B55.0

Visceral leishmaniasis

RATIONALE FOR SURVEILLANCE:
Visceral leishmaniasis (VL) is endemic in 61 countries. The yearly incidence is estimated at 500 000 cases. It is the most severe form of leishmaniasis as it can be fatal in the absence of treatment Deadly epidemic frequently occur in VL anthroponotic foci of Bangladesh, India, Nepal and Sudan, where man is believed to be the sole reservoir. In establishing disease impact and monitor efforts towards disease control and detecting epidemics, surveillance is essential.

RECOMMENDED CASE DEFINITION

Clinical description

An illness with prolonged irregular fever, splenomegaly and weight loss as its main symptoms

Laboratory criteria for diagnosis

- positive parasitology (stained smears from bone marrow, spleen, liver, lymph node, blood or culture of the organism from a biopsy or aspirated material)
- positive serology (IFA, ELISA)

Case classification

WHO operational definition:

A VL case is a person showing clinical signs (mainly prolonged irregular fever, splenomegaly and weight loss) with serological (at geographical area level) and /or parasitological confirmation (when feasible at central level) of the diagnosis. In endemic malarious areas, VL should be suspected when fever lasts for more than two weeks and no response has been achieved with anti-malaria drugs (assuming drug-resistant malaria has also been considered)

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting of aggregated data from periphery to intermediate and central level.

International: annual reporting from central level to WHO (only a limited number of countries)

Active case finding through surveys of selected groups or mass surveys (standardised and periodically) are an alternative to estimate the prevalence of VL.

RECOMMENDED MINIMUM DATA ELEMENTS

Individual patient records at peripheral level:

Identification data:	Unique identifier, age, sex, geographical information, past travels, duration
at	residence
Leishmaniasis data:	Clinical features, date of diagnosis, serological and parasitological diagnosis, *Leishmania* species, treatment outcome

Aggregated data for reporting:

Number of cases by age, sex, type of diagnosis

RECOMMENDED DATA ANALYSIS, PRESENTATION, REPORTS

Tables: Incidences by geographical area, by age, by sex, by type of diagnosis, by risk group, by clinical features, by month /year
point prevalence (if active case detection)

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Evaluate the real extent of the problem and the main populations at risk
- Improve and focus the control activities
- Identify technical and operational difficulties.
- Evaluate impact of control interventions
- Anticipate epidemics

SPECIAL ASPECTS

VL tends to be largely underreported as most of the official data are obtained through passive case detection only. The number of people exposed to infection or infected without any symptoms is much more important than the number of detected VL cases.

CONTACT INFORMATION

Regional offices :

See Regional Communicable Disease contacts on pages 15-20

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A30

Leprosy

(Hansen Disease)

RATIONALE FOR SURVEILLANCE

Leprosy continues to affect a large number of people. In 1995 there were an estimated 1.8 million cases in the world. Control of the disease recently improved with the introduction of Multidrug therapy. WHO has targeted the disease for **elimination** (<1 case / 10 000 population) by the year 2000 through a focused flexible approach (9GPW 6.2). This includes making MDT available to all communities and areas, appropriate and good quality diagnosis and treatment with evaluation through epidemiological surveillance and programme monitoring.

RECOMMENDED CASE DEFINITION

Clinical description

The clinical manifestations of the disease vary in a continuous spectrum between the two polar forms, lepromateus and tuberculoid leprosy.

In lepromateus leprosy (multibacillary), nodules, papules, macules and diffuse infiltrations are bilateral symmetrical and usually numerous and extensive; involvement of the nasal mucosa may lead to crusting, obstructed breathing and epistaxis; ocular involvement leads to iritis and keratitis.

In tuberculoid leprosy (paucibacillary), skin lesions are single or few, sharply demarcated, anaesthetic or hypesthestic, and bilateral asymmetrical, peripheral nerve involvement tends to be severe.

Borderline leprosy has features of both polar forms and is more labile.

Indeterminate leprosy is manifested by a hypopigmented maculae with ill-defined borders, and if untreated, may progress to tuberculoid, borderline or lepromatous disease.

Laboratory criteria for confirmation

Acid-fast bacilli in skin smears (made by the scrape-incision method)

In the paucibacillary form the bacilli may be so few that they are not demonstrable

Case classification

WHO operational definition: a person showing clinical signs of leprosy with or without bacteriological confirmation of the diagnosis and requiring chemotherapy. (This definition excludes individuals cured of the infection but having residual disabilities due to leprosy)

Classification (Microbiological).

Paucibacillary (PB). Includes smear-negative indeterminate, tuberculoid and borderline tuberculoid cases

Multibacillary (MB): Includes all smear-positive cases

Classification (Clinical):

Paucibacillary: **<= 5 patches or lesions on the skin**

Multi bacillary: **> 5 patches**

RECOMMENDED TYPES OF SURVEILLANCE

Individual patient records at peripheral level for investigation and case-management

Routine monthly reporting of aggregated data of all cases from periphery to intermediate level and from intermediate to central level.

International: Quarterly and annual reporting of aggregated data from central level to WHO.

RECOMMENDED MINIMUM DATA ELEMENTS

Individual patient records

Unique identifier, name, sex, age, geographical information, disability grade, laboratory examination, disease classification (MB or PB see case definition), date treatment commenced, treatment outcome (disability, cured, dropout), contacts

Aggregated data for reporting

For endemic countries:

- Number of cases by new /old/ disabled
- Number of WHO grade 2 among new cases
- Number of children <=15 years
- Number of multi bacillary patients among new patients
- Number of patients cured with MDT
- Treatment coverage
- Number of patients discharged

Multidrug treatment (MDT) indicators(see special aspects)

MDT supply indicators: For MB adult cases, MB child cases, PB adult cases, PB child cases:

- Number of patients under treatment
- Number of patient months
- Number of Blister Packs used
- Blister Pack Utilisation (%)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Point prevalence, annual detection, treatment coverage, number of patients released from registers, number of cases registered for chemotherapy at the end of the year divided by the population in which the cases have occurred

Graphs: Prevalence by year, incidence by year, number of patients on MDT by year, number of patients cured on MDT by year

Maps: Number of registered cases, number of new cases, type of treatment, MDT coverage all by geographical area

Tables: Prevalence, new case detection, percentage of children, percentage of disabled, percentage Multi bacillary, number cured with MDT

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Assess the magnitude of the problem
- Identify variations in case-detection
- Evaluate the policy of elimination of Leprosy
- Plan the distribution of drugs
- Identify technical and operational difficulties faced by the programme
- Identify high risk areas for further targeting intervention
- Evaluate impact of intervention

SPECIAL ASPECTS

- Leprosy tends to be underreported. Additional reports may come from special projects, institutions or hospitals. These methods should be used with caution.
- The use of Multi Drug Treatment (MDT) as a supply indicator may be useful as a surrogate for prevalence of disease.

CONTACT

Regional offices :

See Regional Communicable Disease contacts on pages 15-20

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A27

Leptospirosis

RATIONALE FOR SURVEILLANCE

Leptospirosis is a zoonosis with a world-wide distribution. It occurs most frequently in countries with a humid subtropical or tropical climate, often seasonally, often linked to certain occupations, sometimes in outbreaks. A wide variety of feral and domestic animal species may serve as sources of infection with one of the many Leptospira serovars. The infection is transmitted to humans by direct contact with (the urine of) infected animals or a urine-contaminated environment, mainly surface waters, soil and plants. The course of the disease in humans ranges from mild to lethal. Leptospirosis is probably overlooked and underreported in many countries due to the difficult clinical diagnosis and the lack of diagnostic laboratory services. Surveillance provides the basis for intervention strategies in human or veterinary public health.

RECOMMENDED CASE DEFINITION

Clinical description

An acute febrile illness with headache, myalgia and prostration associated with any of the following symptoms:

- conjunctival suffusion
- meningeal irritation
- an-/oliguria and/or proteinuria
- jaundice
- haemorrhages (from the intestines, lung bleeding is notorious in some areas)
- cardiac arrhythmia or failure
- skin rash

and a history of exposure to infected animals or an environment contaminated with animal urine.
Other common symptoms: nausea, vomiting, abdominal pain, diarrhoea, arthralgia

Laboratory criteria for diagnosis

- Isolation (and typing). from blood or other clinical materials by culture of pathogenic leptospires
- Positive serology preferably by the Microscopic Agglutination Test (MAT) using a panel of Leptospira strains for antigens that, ideally, is representative of the locally occurring strains

Case classification

Suspected: A case that is compatible with the clinical description
Probable: Not applicable
Confirmed: A suspect case that is confirmed in a competent laboratory

Note: Leptospirosis is difficult to diagnose clinically in areas where diseases with symptoms similar to those of leptospirosis occur frequently.

RECOMMENDED TYPES OF SURVEILLANCE

Immediate case-based reporting of suspected or confirmed cases from peripheral level (hospital /general practitioner/laboratory) to intermediate level. All cases should be investigated.
Routine reporting of aggregated data of confirmed cases from intermediate to central level.

International: The International Leptospirosis Society collects world-wide data on occurrence of leptospirosis

Comment:
Hospital based surveillance may give information on mainly severe cases of leptospirosis.
Serosurveillance may give information on whether leptospiral infections occur or not in certain areas or populations.

RECOMMENDED MINIMUM DATA ELEMENTS.

Individual patient record for reporting and investigation

Age, sex, geographical information, occupation
Clinical symptoms (morbidity, mortality)
Hospitalisation (Y/N)
History and place of exposure (animal contact, environment)
Microbiological and serological data
Date of diagnosis
Rainfall, flooding

Aggregated data for reporting

Number of cases
Number of hospitalisations
Number of deaths
Number of cases by type (causative serovar/serogroup) of leptospirosis

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Number of cases by age, sex, occupation, area, date of onset, causative serovars/serogroups, (presumptive) infection source, transmission conditions (graphs, tables, maps).
Frequency distribution of signs and symptoms by case and causative serovar (tables).
Reports of outbreaks, reports of preventive measures, surveillance of the human population and populations of feral and domestic animals.

PRINCIPAL USES OF DATA FOR DECISION MAKING:

- Assess the magnitude of the problem in different areas and risk groups/areas/conditions
- Identify outbreaks
- Identify animal sources of infection
- Monitor for emergence of leptospirosis in new areas and new risk (occupational) groups
- Design rational control or prevention methods.
- Identify new serovars and their distribution
- Inform on locally occurring serovars for a representative panel in the MAT

SPECIAL ASPECTS

Serology by MAT may provide presumptive information on causative serogroups.
Attempts should be made at isolation of leptospires and isolates should be typed to assess locally circulating serovars.
Questioning the patient may provide clues to infection source and transmission conditions.
Animal serology may give presumptive information on serogroup status of the infection;
Isolation followed by typing gives definite information on serovar.

CONTACT

Regional offices

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B50-54

Malaria

RATIONALE FOR SURVEILLANCE

Malaria is the first most prevalent tropical disease with a high morbidity and mortality and high economical and social impact. *The Global Strategy for Malaria Control* is mentioned in the 9GPW. Its elements include: to provide early diagnosis and treatment; to plan and implement selective and sustainable preventive measures, including vector control; to detect early, contain and prevent epidemics. Therefore surveillance is essential.

RECOMMENDED CASE DEFINITION

applies to endemic areas and to people exposed to malaria (e.g., history of visit to endemic area)

In all countries malaria must primarily be defined in association with clinical disease symptoms. The case definition for malaria cannot be uniform throughout the world: it will vary according to how malaria is perceived in a given country, local patterns of transmission, and disease consequences. Each national malaria control programme must adapt the definition and introduce additional indicators to make it more applicable to local epidemiology and control targets. The suggested case definitions are deliberately broad.

Clinical description

Signs and symptoms vary, most patients experience fever. Common associated symptoms include headache, back pain, chills, sweats, myalgia, nausea, vomiting, diarrhoea, and cough. Untreated *Plasmodium falciparum* infection can lead to coma, generalised convulsions, hyperparasitaemia, normocytic anaemia, fluid, electrolyte, and acid-base disturbances, renal failure, hypoglycaemia, hyperpyrexia, malarial haemoglobinuria, circulatory collapse and shock, spontaneous bleeding (disseminated intravascular coagulation), pulmonary oedema, and death.

Laboratory criteria for diagnosis

Demonstration of malaria parasites in blood films

Case classification

uncomplicated malaria: A person showing signs and symptoms of malaria, with or without microscopic confirmation, who requires antimalarial treatment.

severe malaria: A patient who requires hospitalisation for a febrile disease and is treated for severe malaria. The diagnosis should preferably be confirmed microscopically.

Some Health Services (HS) record malaria patients as "suspected malaria" until the microscopic diagnosis is available, after which the patient becomes "confirmed malaria". These HS should take care to avoid double counting, and record the confirmed cases as a *subset* of the suspected cases.

suspected malaria death: Death of a patient suffering from suspected severe malaria (*i.e.*, without microscopic confirmation)

confirmed malaria death: Death of a patient suffering from microscopically confirmed severe malaria

"Suspected malaria death" and "confirmed malaria death" are mutually exclusive categories.

malaria treatment failure: A patient with uncomplicated malaria without any clear symptoms suggesting another concomitant disease who has taken a correct dosage of antimalarial treatment, and who presents with clinical deterioration or recurrence of symptoms within 14 days of the start of treatment, in combination with an asexual parasitaemia

RECOMMENDED TYPES OF SURVEILLANCE

- Routine monthly reporting of aggregated data of uncomplicated malaria, severe malaria, suspected and confirmed malaria deaths, treatment failures from peripheral level to intermediate and central level.
- Surveys built into the supervision and retraining process. Topics include the availability and use of anti-malarial drugs. Every three months aggregated data are forwarded from the peripheral level to the intermediate and central level.
- Special surveys and "sentinel site" monitoring. Topics include drug utilisation studies of malaria cases treated at home and in the private sector; assessment of therapeutic efficacy of antimalarial drugs; estimating malaria-associated deaths in the community
- Timely recognition of malaria epidemic and notification at all times.

Note: The primary purpose of surveillance is to guide malaria control activities at the level where data are collected. In addition, regularly completed forms provide an important numeric picture of trends in malaria incidence and mortality in the various units that diagnose and treat malaria.

RECOMMENDED MINIMUM DATA ELEMENTS

Note: According to epidemiological circumstances, different segments of the population may be affected by malaria. Knowledge of the age groups, sex and pregnancy status of patients is vital information. All malaria data should be reported by age group (A) and sex (S), with a separate category for pregnant women (P)

Case-based data:

From peripheral level without microscopy

- uncomplicated malaria: A/S/P
- severe malaria: A/S/P, referral (Y/N)
- suspected malaria death: A/S/P
- presumptive malaria treatment failure *: A/S/P, treatment taken

*patients who do not respond to a full treatment with the first line drug and therefore need an alternative antimalarial drug

From peripheral level with laboratory facility same as peripheral level without microscopy **plus**

- type of malaria (*falciparum, ovale, malariae, vivax*)
- confirmed malaria death: A/S/P

Aggregated data for reporting

From peripheral level without laboratory facility:

- number of cases of uncomplicated malaria, severe malaria, malaria treatment failures(by treatment taken). by A/S/P,
- suspected malaria mortality, by A/S/P

From peripheral level with laboratory facility same as peripheral level without microscopy **plus**

- type of malaria
- confirmed malaria mortality by A/S/P

B50-54

Malaria

RATIONALE FOR SURVEILLANCE

Malaria is the first most prevalent tropical disease with a high morbidity and mortality and high economical and social impact. *The Global Strategy for Malaria Control* is mentioned in the 9GPW. Its elements include: to provide early diagnosis and treatment; to plan and implement selective and sustainable preventive measures, including vector control; to detect early, contain and prevent epidemics. Therefore surveillance is essential.

RECOMMENDED CASE DEFINITION

applies to endemic areas and to people exposed to malaria (e.g., history of visit to endemic area)

In all countries malaria must primarily be defined in association with clinical disease symptoms. The case definition for malaria cannot be uniform throughout the world: it will vary according to how malaria is perceived in a given country, local patterns of transmission, and disease consequences. Each national malaria control programme must adapt the definition and introduce additional indicators to make it more applicable to local epidemiology and control targets. The suggested case definitions are deliberately broad.

Clinical description

Signs and symptoms vary, most patients experience fever. Common associated symptoms include headache, back pain, chills, sweats, myalgia, nausea, vomiting, diarrhoea, and cough. Untreated *Plasmodium falciparum* infection can lead to coma, generalised convulsions, hyperparasitaemia, normocytic anaemia, fluid, electrolyte, and acid-base disturbances, renal failure, hypoglycaemia, hyperpyrexia, malarial haemoglobinuria, circulatory collapse and shock, spontaneous bleeding (disseminated intravascular coagulation), pulmonary oedema, and death.

Laboratory criteria for diagnosis

Demonstration of malaria parasites in blood films

Case classification

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severe malaria: A patient who requires hospitalisation for a febrile disease and is treated for severe malaria. The diagnosis should preferably be confirmed microscopically.

Some Health Services (HS) record malaria patients as "suspected malaria" until the microscopic diagnosis is available, after which the patient becomes "confirmed malaria". These HS should take care to avoid double counting, and record the confirmed cases as a *subset* of the suspected cases.

suspected malaria death: Death of a patient suffering from suspected severe malaria (*i.e.*, without microscopic confirmation)

confirmed malaria death: Death of a patient suffering from microscopically confirmed severe malaria

"Suspected malaria death" and "confirmed malaria death" are mutually exclusive categories.

malaria treatment failure: A patient with uncomplicated malaria without any clear symptoms suggesting another concomitant disease who has taken a correct dosage of antimalarial treatment, and who presents with clinical deterioration or recurrence of symptoms within 14 days of the start of treatment, in combination with an asexual parasitaemia

RECOMMENDED TYPES OF SURVEILLANCE

- Routine monthly reporting of aggregated data of uncomplicated malaria, severe malaria, suspected and confirmed malaria deaths, treatment failures from peripheral level to intermediate and central level.
- Surveys built into the supervision and retraining process. Topics include the availability and use of anti-malarial drugs. Every three months aggregated data are forwarded from the peripheral level to the intermediate and central level.
- Special surveys and "sentinel site" monitoring. Topics include drug utilisation studies of malaria cases treated at home and in the private sector; assessment of therapeutic efficacy of antimalarial drugs; estimating malaria-associated deaths in the community
- Timely recognition of malaria epidemic and notification at all times.

Note: The primary purpose of surveillance is to guide malaria control activities at the level where data are collected. In addition, regularly completed forms provide an important numeric picture of trends in malaria incidence and mortality in the various units that diagnose and treat malaria.

RECOMMENDED MINIMUM DATA ELEMENTS

Note: According to epidemiological circumstances, different segments of the population may be affected by malaria. Knowledge of the age groups, sex and pregnancy status of patients is vital information. All malaria data should be reported by age group (A) and sex (S), with a separate category for pregnant women (P)

Case-based data:

From peripheral level without microscopy

- uncomplicated malaria: A/S/P
- severe malaria: A/S/P, referral (Y/N)
- suspected malaria death: A/S/P
- presumptive malaria treatment failure *: A/S/P, treatment taken

*patients who do not respond to a full treatment with the first line drug and therefore need an alternative antimalarial drug

From peripheral level with laboratory facility same as peripheral level without microscopy **plus**

- type of malaria (*falciparum, ovale, malariae, vivax*)
- confirmed malaria death: A/S/P

Aggregated data for reporting

From peripheral level without laboratory facility:

- number of cases of uncomplicated malaria, severe malaria, malaria treatment failures(by treatment taken). by A/S/P,
- suspected malaria mortality, by A/S/P

From peripheral level with laboratory facility same as peripheral level without microscopy **plus**

- type of malaria
- confirmed malaria mortality by A/S/P

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Disease trends and patterns are the principal concern of malaria control programmes.

Reports:	Monthly reports of aggregated data to the next level, by geographical area (district)
Graphs:	Time trends for the different geographical areas. An elevation of cases over two standard deviations as compared to averaged data from previous "normal" years of transmission may indicate an epidemic
Maps:	Presence/absence of malaria cases; reporting completeness and timeliness
Line list:	Peripheral and intermediate levels that sent no monthly report or untimely reports

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Identify high risk groups and problem areas (e.g., districts where therapeutic efficacy studies must urgently be carried out)
- Evaluate impact of control measures
- Adjust and target control measures
- Guide allocation of resources and training efforts

SPECIAL ASPECTS

Many cases may be treated at home or by private practitioners. It is a challenge for malaria control to incorporate home treatment and private practitioners in surveillance and control.

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B05

Measles

RATIONALE FOR SURVEILLANCE

Measles is targeted for **elimination** (9GPW 6.2). Surveillance for measles should evolve with each phase of measles control. Countries in the "measles control" phase are endemic and should concentrate on raising routine measles immunization coverage and focusing extra immunization efforts in areas with high measles morbidity. Countries in the more advanced "measles outbreak prevention phase" are achieving high routine measles coverage and low incidence with periodic outbreaks. Surveillance in these countries should be used to predict potential outbreaks and identify risk outbreak. Countries in the most advanced "measles elimination phase" in which the objective is to completely interrupt measles transmission require very intensive case-based surveillance to detect, investigate, and confirm every suspect measles case in the community.

RECOMMENDED CASE DEFINITION

Clinical case definition

Any person with:

- fever, **and**
- maculopapular (i.e. non-vesicular) rash, **and**
- cough, coryza (i.e. runny nose) or conjunctivitis (i.e. red eyes).

or Any person in whom a clinician suspects measles infection

Laboratory criteria for diagnosis

- At least a four-fold increase in antibody titre **or** isolation of measles virus **or**
- Presence of measles-specific IgM antibodies

Case classification

Clinically confirmed: A case that meets the clinical case definition

Probable: Not applicable

Laboratory-confirmed A case that meets the clinical case definition and that is laboratory confirmed or linked epidemiological to a laboratory-confirmed case

RECOMMENDED TYPE(S) OF SURVEILLANCE

Control phase: When measles is endemic, routine monthly reporting of aggregated data of clinical cases from peripheral to intermediate and central level. Only outbreaks (not each case) should be investigated.

International: routine monthly reporting of aggregated data specifying geographical area and month of onset from central level to WHO regional offices.

Outbreak prevention phase: When low incidence is achieved with periodic outbreaks due to accumulation of susceptibles, routine monthly reporting of aggregated data of clinical cases from peripheral to intermediate and central level. All suspected outbreaks should be investigated immediately and case-based data collected. Suspected epidemics should be confirmed by conducting serology on the first few cases only.

International: routine monthly reporting of aggregated data of clinical cases specifying geographical area, month of onset, age group and immunization status

Elimination phase: Case-based surveillance should be conducted and every case reported and investigated immediately from peripheral level to intermediate level, and also included in the weekly reporting system. Laboratory specimens should be collected on every case.

RECOMMENDED MINIMUM DATA ELEMENTS

Control phase (aggregated data):

- Number of cases
- Number of measles vaccine doses administered to infants

Outbreak prevention phase ((aggregated data): Same as control phase, plus

- Cases by age group and immunization status

Elimination phase (case-based data):

- Unique identifier, geographical area, date of birth
- Date of rash onset, notification, case investigation, specimen collection
- Number of measles vaccine doses received
- Source of infection identified (yes/no/unknown)
- Results of serology (positive/negative/no specimens processed/unknown)
- Final classification (clinically confirmed/confirmed by laboratory/confirmed by epi-link/discarded)

In every phase: completeness/timeliness of weekly measles reporting must be monitored

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

For control phase

- Incidence rate by month, year, and geographic area
- Measles vaccine coverage by year and geographic area
- Completeness/timeliness of monthly reporting
- Proportional morbidity (compared to other diseases of public health importance)

For outbreak prevention phase: same as control phase plus the following:

- Age-specific incidence rate
- Cases by age group and immunization status

For measles elimination: same as outbreak prevention phase plus the following:

Performance indicators	*Target*
% of weekly reports received	80%
% of cases* notified ≤ 7 days of rash onset	80%
% of cases* investigated ≤ 48 hours of notification	80%
% of cases* with adequate specimen**and lab results	80%
% of confirmed cases with source of infection identified	80%

* all cases that meet the clinical case definition

** adequate specimen is one blood specimen collected within 3-28 days of rash onset

PRINCIPAL USES OF DATA FOR DECISION-MAKING

Control phase: Monitor incidence and coverage to monitor progress (decreasing incidence and increasing coverage), and to identify areas at high risk or with poor performance.

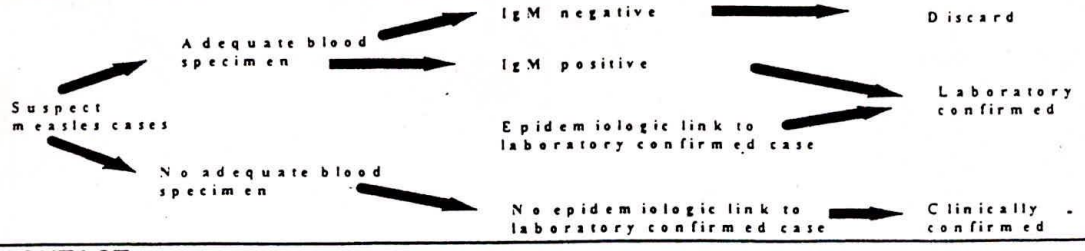
Outbreak prevention phase: Describe the changing epidemiology of measles in terms of age and inter-epidemic period. Identify high-risk populations. Determine when the next outbreak may occur due to a build-up of susceptibles and accelerate activities beforehand.

Elimination phase: Determine where measles virus is circulating or may circulate (i.e. high risk) and the performance of the surveillance system (e.g. reaction time for notification, and specimen collection) to detect virus circulation or potential importation.

During any phase: Detect and investigate outbreaks to ensure proper case management. Determine why the outbreak occurred (failure to vaccinate, vaccine failure, accumulation of susceptibles).

SPECIAL ASPECTS REQUIRING EXPLANATION

Final classification of measles cases (elimination phase)



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A39

Meningococcal disease

(Meningococcal infection A39
Meningococcal meningitis A39.0; Meningococcemia A39.4)

RATIONALE FOR SURVEILLANCE

Meningococcal disease occurs sporadically and in epidemics of meningococcal meningitis- the majority of cases in children under 5 years. Meningococcal meningitis is the only form of meningitis to cause epidemics. Case fatality is between 5%-15%. While sub-Saharan Africa is most affected, epidemic meningococcal disease can affect any country. Vaccines are available for two serogroups only, A and C, and should be considered in entire populations. WHO policy is control and containment of epidemics, early warning of and appropriate response to outbreaks. Surveillance is needed to measure and detect epidemics and establish the impact of both epidemic and non-epidemic disease.

RECOMMENDED CASE DEFINITION

Clinical case definition

An illness with sudden onset of fever (>38.5 °C rectal or 38.0 °C axillary)

and one of the following

- neck stiffness
- altered consciousness
- other meningeal sign

or petechial or purpural rash

In patients <1 year of age meningitis is suspected when fever is accompanied by a bulging fontanelle

Laboratory criteria for diagnosis

positive CSF antigen detection **or** positive culture

Case classification

Suspected: A case that meets the clinical case definition.

Probable: A suspected case as defined above:
and turbid CSF (with or without positive Gram stain)
or ongoing epidemic and epidemiological link to a confirmed case

Confirmed A suspected **or** probable case with laboratory confirmation.

RECOMMENDED TYPES OF SURVEILLANCE

At peripheral level individual patient records should be maintained (particularly because of contact tracing).
Immediate reporting of all suspected or probable cases from peripheral level to intermediate level. All cases should be investigated. Follow-up data on organism identified and patient outcome should be sought by the intermediate level.
Routine weekly/monthly reporting of aggregated or case-based data from intermediate to central level.

A parallel surveillance using reference laboratories for meningococcal diseases may provide detailed microbiological data on serogroup and genotype on a central basis; These are very useful for epidemiological analysis.

Note 1: In countries with poor surveillance infrastructure two approaches to clinical surveillance can be integrated. A limited amount of data can be reported from all health sites (e.g. new cases and deaths by week), more extensive data can be reported from selected referral health centres.

Note 2: Surveillance of vaccine coverage may be undertaken in areas of mass vaccination or where vaccination for meningococcal disease is part of routine vaccination.

RECOMMENDED MINIMUM DATA ELEMENTS

CLINICAL SURVEILLANCE:

Case-based data for individual patient records and for reporting:

Case classification (suspected/probable/confirmed), unique identifier, age, sex, geographical information, date of onset, date of consultation, vaccination status, treatment received, history of contact with a case, close contacts

Aggregated data for reporting:

Cases by case classification (suspected/probable/confirmed), age group, week, geographical area, and outcome

LABORATORY SURVEILLANCE

Isolate-based data for reporting:

Unique identifier, age, sex, date of onset, date of specimen, specimen type, serogroup genotype

Aggregated data for reporting:

Cases by agegroup, specimentype, serogroup, genotype

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Incidence by week, month, geographical area and age group
- Use of incidence data to set epidemic thresholds by comparison of weekly incidence rate and the incidence rates during the same period in 3-5 previous non-epidemic years.
- Incidence by serogroup and genotype (if available)
- Vaccine coverage (if available)

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Detect and control epidemics of meningococcal disease as early as possible, especially in areas such as developing countries where epidemic meningitis raises particular difficulties
- Strengthen the capacity for emergency response to epidemics of meningococcal disease.
- Mobilise immunization activities
- Monitor immunization coverage by geographical area to monitor progress and identify areas of poor performance
- Monitor impact of vaccination on disease incidence and vaccine efficacy during epidemics

SPECIAL ASPECTS

Deciding when an epidemic is occurring

In hyperendemic areas: 15 cases per 100 000 per week averaged over 2 consecutive weeks Once epidemic disease is detected in a given area a lower value (e.g., 5 cases/100 000 per week) should be used as a threshold in contiguous areas.

In other situations: a 3 to 4-fold increase in cases compared with a similar time period in previous years, or a doubling of cases from one week to the next for a period of 3 weeks.

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A87

Viral meningitis

RATIONALE FOR SURVEILLANCE

Viral meningitis occurs sporadically and also as epidemic disease. While mortality rates are generally low, infection can cause high levels of morbidity and potential long term sequelae in those affected (mostly children). The early detection of epidemics through epidemiological surveillance allows for identification of the causal agent and the institution of targeted control measures and effective case management.

RECOMMENDED CASE DEFINITION:

Clinical case definition

A case with fever >=38°C **and one or more** of the following:

- neck stiffness
- severe unexplained headache
- neck pain **and two or more** of the following: photophobia
  nausea
  vomiting
  abdominal pain
  pharyngitis with exudates

For **children less than two years of age** a case is defined as a case with fever>=38.3°C **and one or more** of the following

- irritability
- bulging fontanelle

Laboratory criteria for confirmation

The specific virus confirmed on cell culture

Case classification

Suspected: A case that meets the clinical case definition

Probable: A suspected case with one or more of the following

- Normal CSF glucose and normal or mild increase in CSF protein (>50mg/dl), moderate increase CSF cells (<500/mm^3) and lymphocyte predominance (>50%)
- CSF Positive for viral genomic sequences using PCR (Polymerase Chain Reaction)
- Epidemiological link to a confirmed case

Confirmed: A suspected **or** probable case with laboratory confirmation

RECOMMENDED TYPES OF SURVEILLANCE

At peripheral level individual patient records should be maintained.

Immediate reporting of all suspected or probable cases from peripheral level to intermediate level and central level.

All cases should be investigated. Follow-up data on organism identified and patient outcome should be sought by the intermediate and central level.

Routine weekly reporting of aggregated or case-based data from intermediate to central level.

A parallel surveillance using reference laboratories for viral diseases may provide more detailed virological data on specific causal agents on a national basis which are very useful for epidemiological analysis.

RECOMMENDED MINIMUM DATA ELEMENTS

CLINICAL SURVEILLANCE:

Case-based data for individual patient record and for reporting:
Case classification (suspect/probable/confirmed), unique identifier, age, sex, geographical information, date of onset, date of consultation, treatment received

Aggregated data for reporting:
Cases by case classification (suspect/probable/confirmed), age group, week, geographical area, and outcome

LABORATORY SURVEILLANCE

Isolate-based data for reporting:
Unique identifier, age, sex, date of onset, date of specimen, specimen type, organism identified

Aggregated data for reporting:
Cases by agegroup, specimen type, organism identified

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Incidence by week, month, geographical area, age group, outcome.

PRINCIPAL USES OF DATA FOR DECISION MAKING

- To detect and control epidemics of viral meningitis as early as possible
- To strengthen the capacity for emergency response to epidemics of viral meningitis

SPECIAL ASPECTS:

None

CONTACT

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A33

Neonatal tetanus

RATIONALE FOR SURVEILLANCE

Targeted by WHO for **elimination** (9GPW). High tetanus toxoid (TT) coverage of pregnant women, clean delivery, identification, and implementation of corrective action in high risk areas (i.e. immunization of childbearing-age women) are the three primary strategies towards this goal. Epidemiological surveillance is particularly useful in the identification of high risk areas and to monitor impact of interventions.

RECOMMENDED CASE DEFINITION

Clinical case definition and case classification

Suspected case: Any neonatal death between 3-28 days of age in which the cause of death is unknown; or any neonate reported as having suffered from neonatal tetanus between 3-28 days of age and not investigated.

Confirmed case: Any neonate with a normal ability to suck and cry during the first two days of life, and who between 3 and 28 days of age cannot suck normally, and becomes stiff or has convulsions (i.e. jerking of the muscles) or both. (Hospital reported NT cases are considered confirmed)

The diagnosis is entirely clinical and does not depend upon bacteriological confirmation.

RECOMMENDED TYPES OF SURVEILLANCE

The number of confirmed NT cases should be included in routine monthly surveillance reports of all countries and should be reported as a separate item from other (non-neonatal) tetanus. Zero reporting should be required at all levels.

Active surveillance in major health facilities on a regular basis (at least once annually).

In "low risk" geographical areas (i.e. NT incidence<1/1000 live births and surveillance is functional), all suspect cases should be investigated to confirm and identify the cause.

Community surveillance in "silent" areas (i.e. where routine reporting is not functional but where, based on other indicators, neonatal tetanus could be a problem).

RECOMMENDED MINIMUM DATA ELEMENTS

Aggregate data for reporting

- Number of cases
- Doses of TT administered to pregnant or child-bearing aged women (depending on national policy) or % of newborns protected at birth (PAB)
- Completeness / timeliness of monthly reports

Case-based data, individual patient records for investigation

- Unique identifier, geographical information, date of birth, age (in days) at onset, sex of baby
- Parity (number of deliveries including the current delivery or pregnancy)
- Date of case investigation
- Location/type of birth (institution, home with trained attendant, home with untrained attendant, home without attendant, other)
- Tetanus immunization status of mother when she gave birth (up-to-date, not up-to-date, unimmunized)
- Final classification (confirmed, suspected, discarded)
- Mother of case given subsequent protective TT dose within 3 months of report
- Supplemental immunization conducted within same locality as the case

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

For aggregated data(i.e. routine monthly reporting)

- Incidence rate per 1000 live births by geographic area, month, and year
- TT2+ (or PAB) by year and geographic area
- Completeness/timeliness of monthly reporting
- Geographic areas considered at high risk for NT compared to those where corrective actions were taken

For case based data (i.e. from case investigations only) same as for aggregate data plus the following:

- Confirmed NT cases by delivery type, sex, TT2+ status of the mother
- % of confirmed cases for which the mother subsequently received a protective TT dose

PRINCIPAL USES OF DATA FOR DECISION-MAKING/ACTION

- Monitor progress towards achieving and sustaining high routine TT2+(or PAB) coverage in all geographical areas
- Monitor progress towards eliminating NT in every geographical area
- Investigate suspect NT cases in areas not considered at risk for NT to confirm and determine cause
- Identify high risk geographical areas and conduct 3 rounds of supplemental TT immunization in those high risk geographical areas
- Periodically validate sensitivity of NT reporting by comparing number of reported cases with cases identified through active surveillance

SPECIAL ASPECTS

"% Protected at birth (PAB)" is an alternative method of determining coverage (particularly where TT2+ is unreliable). To monitor PAB, health workers record during DTP1 visits whether the infant was protected at birth by the mother's TT status and/or delivery status(clean/unclean). % PAB is then estimated as: number of infants protected/number of live births. If the child was unprotected, the mother should receive a dose of tetanus toxoid during the same visit and should be followed up with a subsequent TT dose if needed for protection.

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B73

Onchocerciasis

(River-blindness)

RATIONALE FOR SURVEILLANCE

Onchocerciasis is endemic in 34 countries of Africa, the Arabian peninsula and the Americas. Outstanding success at controlling the disease in West Africa was achieved through the strategy of larviciding for vector control to interrupt transmission. The development of a safe, effective drug, ivermectin, has let to a new global strategy for controlling onchocerciasis based on yearly administration of ivermectin to affected populations. The first step is to map the endemicity of onchocerciasis in known or potentially endemic areas. The second step is to develop cost-effective an sustainable methods for ivermectin delivery, focusing on methods involving community treatment. Once onchocerciasis is under control, the risk of recrudescence has to be reduced to a minimum. Therefore the participating countries, during the phasing-out period 1998-2002 in west Africa, will ensure that the detection and control of recrudescence of onchocerciasis are routinely integrated within and have become a routine function of the national multi-disease surveillance and control services.

RECOMMENDED CASE DEFINITION

Clinical case definition

In an endemic area, a person with fibrous nodules in subcutaneous tissues

Laboratory criteria for confirmation

one or more of the following

- Presence of microfilariae in skin snips taken from the iliac crest
- Presence of adult worms in excised nodules
- Presence of typical ocular manifestations, slit-lamp observations of microfilariae in the cornea anterior chamber or vitreous body

Case classification

Suspected:	A case that meets the clinical case definition
Probable:	Not applicable
Confirmed:	A suspected case that is laboratory-confirmed

RECOMMENDED TYPES OF SURVEILLANCE

In the onchocerciasis-freed zones:

Surveillance in sentinel villages:

To detect recrudescence of infection, 260 villages in onchocerciasis-freed zones have been maintained under periodic surveillance (every 3 years). They are sentinel villages located near former productive larval breeding sites and with high prevalence rates prior to beginning of control activities.

Routine surveillance:

All suspected cases should be investigated locally and routine reporting of aggregated data from peripheral level to intermediate and central level. This is not yet fully effective in all of the countries due to insufficient training of health workers. *Migration investigation*: In the event that a positive case is detected during the epidemiological surveillance a migration investigation is systematically carried out in order to identify the origin of infection and take appropriate action.

In the onchocerciasis endemic zones:

Active case finding (skin snips, ophthalmologic examination, DEC patch test) through surveys. Distribution of the disease can be assessed through rapid epidemiological mapping (REMO) technique recently developed.

RECOMMENDED MINIMUM DATA ELEMENTS

Individual patient record at peripheral level:

Age, sex, place of infection, treatment (Y/N), date treatment with Ivermectin commenced, reason of non treatment (non compliance)

Aggregated data for reporting:

Prevalence and incidence by age, sex and geographical area
Number of cases treated
Number of cases not treated because of pregnancy, breast feeding, defaulter

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Graphs: Number of cases by year, geographical area, age group
Tables: Number of cases by year, geographical area, age group
Maps: Number of cases by geographical area, use of geographical information system (GIS)

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Elimination of onchocerciasis as a disease of public health and socio-economic importance
- Prevention of recrudescence of infection in the onchocerciasis-freed zones
- Assess effectiveness of intervention.

SPECIAL ASPECTS

New diagnostic tests, such as DEC (Di-ethylcarbamazine citrate) patch tests may become suitable for use in the field

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A37.0

Pertussis

(Whooping cough)

RATIONALE FOR SURVEILLANCE

Pertussis is a major cause of childhood morbidity and mortality. Every year nearly 5 million children suffer from broncho-pneumonia as a result of pertussis infection and 50 000 develop long-term neurological sequelae. Case fatality in developing countries can reach 15%. High routine coverage with effective vaccine is the mainstay of prevention. Surveillance data on the disease can monitor the impact of vaccination on disease incidence and identify high risk areas.

RECOMMENDED CASE DEFINITION

Clinical case definition

A person with a cough lasting at least 2 weeks **with one of the following**

- paroxysms (i.e. fits) of coughing,
- inspiratory "whoop",
- post-tussive vomiting (i.e. vomiting immediately after coughing),

and without other apparent cause.

Laboratory criteria for diagnosis

- isolation of *Bordetella pertussis, **or***
- presence of IgG or IgA directed toward pertussis toxin (PT) or filamentous hemagglutinin antigen (FHA).

Case classification

Suspected: A case that meets the clinical case definition

Confirmed: A suspected case that is laboratory-confirmed or linked epidemiological to a laboratory-confirmed case

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting of aggregated data of suspected and confirmed cases from peripheral level to intermediate and central level. All outbreaks should be investigated immediately and laboratory-confirmed. During an outbreak, case-based data should be collected

Case-based surveillance may be considered in countries with low pertussis incidence (usually where coverage is >80%).

International: Aggregated data of clinical (suspected)l and confirmed cases should be included in routine monthly surveillance reports of all countries to WHO regional offices.

RECOMMENDED MINIMUM DATA ELEMENTS

Aggregated data for reporting

Number of cases
Number of third doses of diphteria-pertussis-tetanus vaccine (DTP3) administered to infants
Completeness/timeliness of monthly reports

Case-based data for investigation and reporting

Unique identifier, geographical information, date of birth, date of onset, total pertussis vaccine doses, classification (confirmed/suspected/discarded), outcome (alive/dead/unknown)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Aggregated data

- Incidence rate by month, year, and geographic area
- DTP3 coverage by year and geographic area
- Completeness/timeliness of monthly reporting
- Proportional morbidity (compared to other diseases of public health importance)

Case-based data same as aggregated data plus the following:

- Age-specific incidence rate
- Immunization status of cases
- Case fatality rate

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Investigate outbreaks to understand epidemiology of pertussis in the country, why the outbreak occurred (e.g. failure to immunise, vaccine failure, accumulation of susceptibles/waning immunity), and to ensure proper case management
- Monitor case fatality rate. If high, determine cause (e.g. poor case management, lack of antibiotics/supportive care, patients not seeking treatment in time)
- Determine age-specific incidence rate, and incidence rate by geographical area to know risk groups
- Monitor incidence rate to assess impact of control efforts

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A20

Plague

(human)

Case report universally required by **International Health Regulations**

RATIONALE FOR SURVEILLANCE

Disease endemic in many countries and often has epidemic potential. Surveillance of human and animal disease is important to predict and detect epidemics and to monitor control measures. Case report universally required by **International Health Regulations.**

RECOMMENDED CASE DEFINITION

Clinical description

Plague is transmitted to humans by fleas or by direct exposure to infected tissues or respiratory droplets. The disease is characterised by

Rapid onset of fever, chills, headache, severe malaise, prostration **with**
for Bubonic form: extreme painful swelling of lymph nodes (buboes)
for Pneumonic form: cough with blood -stained sputum, chest pain, difficult breathing

Laboratory criteria for diagnosis

- Cultural isolation of *Yersinia pestis* from buboes, blood, CSF or sputum **or**
- Passive hemagglutination test (PHA test) demonstrating four fold change in antibody titre, specific for F1 antigen of *Y. pestis* (HI test) in paired sera

Case classification

Suspected: A case compatible with the clinical description
May or may not be supported by laboratory finding of Gram stain negative bipolar coccobaccili in clinical material (bubo aspirate, sputum, tissue, blood)

Probable: A suspected case **with**

- Positive FA test for *Y. pestis* in clinical specimen **or**
- PHA test, with antibody titre of >= 1:10, specific for the F1 antigen of *Y.pestis* as determined by HI.

or

- Epidemiological link with a confirmed case.

Confirmed: A suspected or probable case that is laboratory-confirmed

RECOMMENDED TYPES OF SURVEILLANCE

In all situations: Immediate case-based reporting of suspected cases from peripheral level to intermediate and central level. Laboratory based reporting of all confirmed cases should pertain in all situations

During an outbreak: Intensified surveillance: active case finding and contact tracing should be undertaken in order that treatment can be initiated in cases and contacts as well as targeting environmental measures and community education
A daily report of the number of cases and contacts as well as their treatment status and vital status should be produced. A weekly report should summarize the outbreak situation and summarize control measures taken and those planned to interrupt the outbreak.

International: Mandatory reporting of all suspected and confirmed cases within 24 hours to WHO.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at peripheral level for investigation and reporting:

Case classification (suspected/probable/confirmed), unique identifier, name, geographical information, age, sex, clinical syndrome, history of contact with rodents, presence of flea bites, household or face to face contacts for previous seven days, names and geographical information of contacts

Case-based data at central and regional level:

Case classification(suspected/probable/confirmed)
Unique identifier, age, sex, geographical area, number of contacts identified, number of contacts treated

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Cases by week/month, geographical area, age, sex

PRINCIPAL USES OF DATA FOR DECISION MAKING

- To detect trend in sporadic and endemic disease patterns
- To identify high risk areas
- To give early warning of outbreak
- To detect clusters of cases and outbreaks
- To confirm the impact of control measures and the end of an outbreak

SPECIAL ASPECTS:

epizootic surveillance:

- Periodic surveys of rodent populations and plague activity in these populations alerts public health authorities to increased human plague risks, thus allowing prevention and control measures to be implemented before human cases occur.
- Serological surveillance of wild carnivore and outdoor-ranging dog and cat populations is recommended in areas surrounding the endemic ones.
- Ports close to endemic areas should be placed under surveillance and demanding periodic sanitation to prevent rodent population to increase.

Countries with endemic areas must have a risk assessment polioy for every new development work that could change local ecology (e.g. roads, dams, agriculture)

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A36

Poliomyelitis

RATIONALE FOR SURVEILLANCE

Targeted for **eradication** (9GPW 6.1). Highly sensitive surveillance for acute flaccid paralysis (AFP), including immediate case investigation; specimen collection is critical to detect wild poliovirus circulating in every infected geographical area with the ultimate objective of polio eradication.

RECOMMENDED CASE DEFINITION

Clinical case definition

Any child under fifteen years of age with acute, flaccid paralysis[1] or any person with paralytic illness at any age when polio is suspected

Case classification

Suspected case: A case that meets the clinical case definition

Confirmed case: See diagram in section "special aspects requiring explanation"

[1] Including Guillain Barré syndrome

RECOMMENDED TYPES OF SURVEILLANCE

Aggregated data of AFP cases should be included in routine monthly surveillance reports.
Zero reporting should be required at all levels.
All outbreaks should be investigated immediately.
AFP cases (possible polio cases) should be reported immediately, investigated within 48 hours (case-based data), and stool specimens collected within 14 days of paralysis onset.
Active surveillance should be implemented in selected hospitals.

RECOMMENDED MINIMUM DATA ELEMENTS

Aggregate data:

- Number of third doses of oral polio vaccine (OPV3) administered to infants
- Number of AFP cases

Case based data (to be linked to specimen-based data for analysis),

- Unique identifier, geographical area name, province name, date of birth, date of paralysis, date of notification, date of case investigation
- Total polio vaccine doses received, fever at onset of paralysis(yes/no/unknown), progression of paralysis within 4 days(yes/no/unknown), asymmetric paralysis(yes/no/unknown), date of 60-day follow-up exam, findings at 60-day follow-up(residual weakness/no residual weakness/lost to follow-up/death before follow-up)
- Final classification(confirmed/compatible/discarded/vaccine-associated)

Specimen-based data (to be linked to case-based data for analysis)

- Unique identifier, specimen number(first specimen/second specimen/unknown)
- Date of paralysis onset, date of last OPV, date of stool specimen collection, date stool specimen sent to lab, date specimen received in lab
- Condition of stool(good/poor/unknown)
- Date final culture results sent from lab, date intra-typic differentiation results sent from lab to EPI.

Results Polio isolated? Polio type 2 isolated? Polio type 3 isolated?
Specify result: wild/Sabin/ pending intra-typic differentiation/mixture of wild & Sabin P(1/2/3)/no P(1/2/3)isolated/specimen not processed
Non-polio enterovirus (NPEV) isolated? (yes/no NPEV isolated/specimen not processed)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Aggregate data:

- Cases by month, year, and geographic area
- OPV3 coverage by year and geographic area
- Completeness/timeliness of monthly reporting

Case-based data: same as aggregate data plus the following:

- Confirmed cases by age group, immunization status, geographic area, month and year
- Confirmed cases from which wild poliovirus was isolated
- Cases with wild poliovirus by geographic area
- Compatible cases by geographic area
- All suspect cases by final classification
- Non-polio enterovirus isolation rate

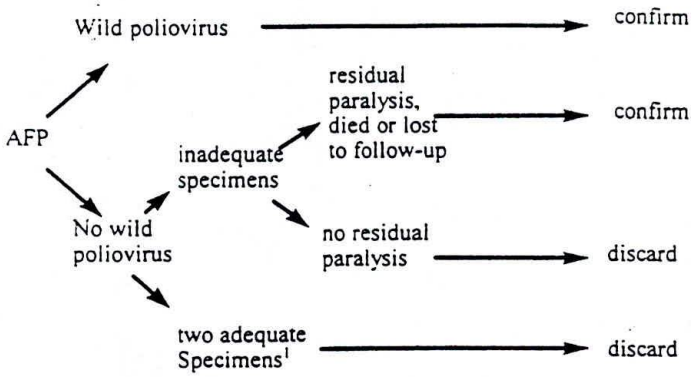
Performance indicators of surveillance quality	***target***
• % of all expected monthly reports that were received	≥ 90%
• Annualised non-polio AFP rate per 100 000 children <=15 years	≥ 1/100 000
• % of AFP cases investigated within 48 hours	≥ 80%
• % of AFP cases with 2 adequate stool specimens collected ≥ 24 hours apart and ≤ 14 days of onset	≥ 80%
• % of specimens arriving at the laboratory in "good" condition	≥ 80%
• % of specimens arriving at a WHO-accredited laboratory within 3 days	≥ 80%
• % of laboratory results sent within 28 days of specimen receipt	≥ 80%

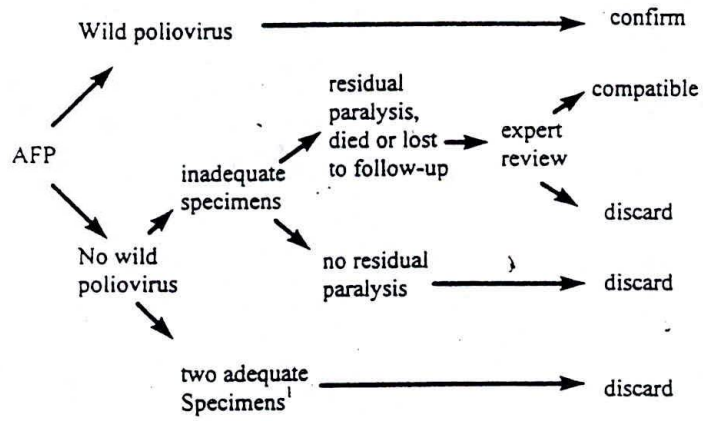
PRINCIPAL USES OF DATA FOR DECISION-MAKING

- Track wild poliovirus circulation
- Classify cases as confirmed, polio compatible or discarded (see special aspects)
- Monitor routine coverage in all geographical areas and focus efforts in low performing geographical areas
- Identify high risk areas for planning mopping up immunization
- Monitor seasonality to determine low season of poliovirus transmission for NIDs planning
- Monitor performance of surveillance using standard indicators and focus efforts in low performing areas
- Provide evidence for polio-free certification

SPECIAL ASPECTS REQUIRING EXPLANATION:

The following two scheme should be used to classify AFP cases. A country should use the first scheme until their surveillance performance meets the following three criteria: 1) a non-polio AFP rate of at least 1/100 000 children under 15 years of age; 2) two adequate specimens[1] collected from at least 60% of detected AFP cases; 3) all specimens processed in a WHO-accredited laboratory.





[1] "Adequate specimens" means two specimens collected 24-48 hours apart and within 14 days of onset of paralysis. The specimen arriving at the laboratory must be of adequate volume (approximately 8-10 grams) and in "good condition". "Good condition" = no leakage, no desiccation, appropriate documentation (i.e. laboratory request form) and evidence that the reverse cold chain was maintained (based on presence of ice or temperature indicator).

[2] "compatible" cases indicate surveillance failures and should be monitored for clustering in space and time

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A82

Rabies

RATIONALE FOR SURVEILLANCE

Rabies is present on all continents and is endemic in most African and Asian countries. It is a fatal zoonotic viral disease which is transmitted to humans through contacts (mainly bites and scratches) with infected animals both domestic and wild. Over 40 000 human deaths are estimated to occur each year world-wide most of them in the developing world, mainly in Asian countries. An estimated 10 million people receive post exposure treatments each year after being exposed to rabies suspected animals.

WHO promotes human rabies prevention by well-targeted post exposure treatment and increased availability of modern rabies vaccine as well as disease elimination by mass vaccination of dogs and other animal reservoir species. Surveillance of both human and animal rabies is essential to rapidly detect high risk areas and outbreaks and to monitor the use of vaccine.

RECOMMENDED CASE DEFINITION

Clinical description

An acute neurological syndrome (encephalitis) dominated by forms of hyperactivity (furious rabies) or paralytic syndromes (dumb rabies) that progresses towards coma and death usually by respiratory failure within 7 to 10 days after the first symptom if no intensive care are instituted. Bite or scratch from a suspected animal can usually be traced back in the patient medical history. The incubation period may vary from days to years but usually falls between 30 to 90 days.

Laboratory criteria for diagnosis

one or more of the following

- Detection by fluorescent antibody (FA) on brain tissue (collected post mortem)
- Detection by FA on skin or corneal smear (collected ante mortem)
- FA positive after inoculation of brain tissue, saliva or CSF in cell culture, mice or suckling mice
- Detectable rabies-neutralising antibody titre in CSF of an unvaccinated person
- Identification of viral antigens by PCR on fixed tissue collected post mortem or in a clinical specimen (brain tissue or skin, cornea or saliva)

Case classification

HUMAN RABIES:

Suspected: A case that is compatible with the clinical description

Probable: A suspected case with an history of contact with a suspected rabid animal

Confirmed: A suspected case that is laboratory-confirmed

HUMAN EXPOSURE TO RABIES:

Possibly exposed: A person who had a close contact (usually a bite or scratch) with a rabies susceptible animal in/or originating from a rabies infected area

Exposed: A person who had a close contact (usually a bite or scratch) with a laboratory-confirmed rabid animal.

RECOMMENDED TYPES OF SURVEILLANCE

SURVEILLANCE IN HUMAN POPULATION:

Surveillance of human exposure to rabies: At peripheral level especially in rabies infected area, reports of patients with a history of animal contact (usually a bite/scratch) should be immediately investigated and when required they should be treated as an emergency. Case-based and aggregated data must be sent regularly from peripheral to intermediate and central level.

Surveillance of cases of human rabies: Immediate reporting of suspected and confirmed cases from peripheral level (by diagnosing physician and laboratory) to intermediate and central level. Rapid exchange of information with services in charge of animal rabies surveillance and control is required.

Epidemiological investigation of outbreaks: Investigation of every rabies foci, identifying sources of infection as will as humans and animals exposed or possibly exposed.

SURVEILLANCE IN ANIMAL POPULATION (EPIZOOTIC CONTROL): Immediate submission of brain specimen of suspected animal for laboratory diagnosis when human exposure occurs. Suspected domestic animals at the origin of human exposure which cannot be killed, should be kept in observation for 10 days. Surveillance of animal rabies and similar conditions in wild and domestic species most likely to be reservoirs of disease, must be undertaken in countries where the disease is endemic or has the potential to be reintroduced. The surveillance is laboratory based. Rapid exchange of information between services in charge of human and animal rabies surveillance and control is required.

RECOMMENDED MINIMUM DATA ELEMENTS

HUMAN RABIES EXPOSURE

case-based data: Unique identifier, name, age, geographical information, date(s) of bite/scratch, geographical information (location) of biting episode(s), category of exposure, local wound treatment, vaccination history, previous serum treatment, treatment, outcome; details of biting animal, vaccination history, outcome

aggregate data: Exposures by geographical information on biting episode, biting animal, outcome in the animal and human

HUMAN RABIES DEATHS SURVEILLANCE:

Unique identifier, name, age, geographical information, date of onset of symptoms, date(s) of bite/scratch, geographical information (location) of biting episode(s), site of bite on the body, nature of bite, local wound treatment, vaccination history, previous serum treatment, hospital, treatment details, outcome, details of biting animal, samples taken, sample results

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Number of human rabies deaths and rabies cases in animals (by species) by dates of presentation.
Human exposures by location and dates of biting/scratch episode, by animal species at the origin of exposure and by outcome in human and in animal populations.
Cases by geographical area (e.g. district) and dates of biting/scratch episode, type of animal, occupation and outcome.

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Detect outbreaks in endemic areas and new cases in rabies-free area
- Determine high-risk areas for intervention
- Rationalise the use of vaccine and immunoglobulin
- Evaluate effectiveness of intervention at the level of the animal reservoir and exposed human population

SPECIAL ASPECTS

Intersectoral co-operation between medical and veterinary services as will as community involvement and participation are needed for targeted response and control in animal reservoir.

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A02.0

Salmonellosis

RATIONALE FOR SURVEILLANCE

Salmonellosis has emerged as one the greatest causes of foodborne disease. The detection and control of outbreaks associated with this organism is complicated by the fact that there are over 2 200 serotypes of Salmonella sp., several of which have multiple phage types. Laboratory-based surveillance of salmonellosis with definitive typing and antibiograms allows for the rapid identification of clusters of cases. Investigations can then concentrate on case with the "epidemic" strain leading to better identification of risk factors and implicated food items. Utilisation of molecular methods can lead to even more accurate identification of "epidemic" strains.

RECOMMENDED CASE DEFINITION

Laboratory criteria for confirmation

Isolation of Salmonella sp. from the stool or blood of a patient

Case classification

Confirmed: A case in whom laboratory investigation confirms the presence of Salmonella species

An outbreak: An incident in which two or more persons experience a similar illness after what is thought to have been a common exposure (ingestion of the same food or after ingestion of water of the same source)

An outbreak of salmonellosis: An outbreak where two or more cases are epidemiologically linked (e.g. place, time, food product)

RECOMMENDED TYPES OF SURVEILLANCE

National: The surveillance of salmonellosis is a laboratory based exercise. However the samples examined by laboratories must be generated from cases presenting at health centres, private practitioners and hospitals. To this end practitioners must be aware of the importance of requesting examination of stool specimens for public health purposes, especially in cases where food or water borne transmission is suspected.

Surveillance of salmonellosis should be based on a network of laboratories that routinely report data on isolation of Salmonella sp. to more central levels. In addition, isolates of Salmonella sp. may be sent to a reference laboratory for more definitive typing. At more central levels, definitive typing data can be analysed on a broader geographical basis allowing for the detection of outbreaks that may not otherwise be detected.

All suspected outbreaks of salmonellosis should be reported to the central level and investigated. A minimum data set should be collected on each outbreak at intermediate and central level. This should be done after the outbreak investigation and should include key variables describing the nature and extent of the outbreak.

Note: The laboratory network for surveillance of salmonellosis should be as wide and complete as possible. The concentration of facilities for definitive typing in reference laboratories is useful in order to maintain quality. However, care must be taken in relying on the samples processed in such laboratories as they may not always be representative in terms of clinical spectrum or geography.

International: All major foodborne disease outbreaks, particularly those implicating a commercial product, should be reported to the Food Safety Unit, global databank on foodborne disease outbreaks (under development), and regional programmes for surveillance of foodborne diseases.

ENTER-NET **(previously SALM-NET)** is an international network of where information on laboratory isolations of salmonellosis and *Escherichia coli* O157 is shared between countries in the network on much the same basis as within countries. This allows for the detection of outbreaks of international significance and the early warning of countries about contaminated products etc.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data from laboratory

Unique identifier, age, sex, geographical information
Date of onset, date of specimen
Specimen type, organism(s) identified

Aggregated data from laboratory

Number of cases by *Salmonella sp.*, geographical area and age group

Outbreaks aggregated data:

Specific salmonella species and phage type identified
Number of people at risk/ill/hospitalised/dead
Geographical information, outbreak setting (e.g. restaurant, hospital, school)
Date of first and last case
Food or constituent implicated and evidence for implication (e.g. epi study, isolation in food)
Factors contributing to the outbreak (e.g. inadequate storage, inadequate heating, cross-contamination, infected food handler, environmental factors)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Surveillance data

Frequent review of laboratory data looking for clusters of case in time, place or person. All suspected clusters should be investigated to establish whether an outbreak has occurred
Incidence of laboratory identifications by week, geographical area, organism, age group and sex (map incidence by geographical area if possible)

Outbreak investigation data

Incidence of outbreaks by species, phage type, month, geographical area, setting of outbreak, attack-rate, duration of outbreak, foods implicated and factors contributing to the outbreak

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Determine the magnitude of the public health problem
- Timely detection of clusters/outbreaks
- Track trends in salmonellosis over time
- Identify high-risk food, high-risk food practices and high-risk populations for specific pathogens.
- Identify emergence of new species and phage types
- Guide the formation of food policy and monitor the impact of control measures
- Risk assessment and standard setting

SPECIAL ASPECTS

Human surveillance should be linked with food safety and control authorities.

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B65

Schistosomiasis

RATIONALE FOR SURVEILLANCE:

Schistosomiasis is the second most prevalent tropical disease (following malaria) and a leading cause of severe morbidity in large parts of Africa, Asia and South America. 600 million are at risk; 200 million are infected, of whom 20 million are severely ill.

The main goal for WHO is to control the disease, to reduce and even eliminate (in some countries) the risk of schistosomiasis through strong surveillance and control programmes.

There are different clinical diseases: Urinary Schistosomiasis (due to *S. haematobium*) and intestinal schistosomiasis (due *to S. mansoni, S. japonicum, S. intercalatum, S. mekongi*).

RECOMMENDED CASE DEFINITION:

URINARY SCHISTOSOMIASIS:

Case definition and classification

endemic area

Suspected:	Not applicable
Probable:	Not applicable
Confirmed:	A person with visible haematuria **or** with positive reagent strip for haematuria **or** with eggs of *S. haematobium* in urine (microscope)

non-endemic area

Suspected:	A person with visible haematuria or with positive reagent strip for haematuria
Probable:	Not applicable
Confirmed:	A person with eggs of *S. haematobium* in urine (microscope)

INTESTINAL SCHISTOSOMIASIS

Case definition and classification

endemic area

Suspected:	A person with hepatosplenomegaly
Probable:	Not applicable
Confirmed:	A person with eggs of *S. mansoni* or *S. japonicum* in stools (microscope)

non-endemic area

Suspected:	Not applicable
Probable:	Not applicable
Confirmed:	A person with eggs of *S. mansoni* or *S. japonicum* in stools (microscope).

RECOMMENDED TYPES OF SURVEILLANCE:

Surveillance of schistosomiasis should be incorporated in the primary health care system.

For low-prevalence zones and where eradication is targeted:

Routine monthly reporting of aggregated suspected or confirmed cases from peripheral level to intermediate and central level.

International: Yearly reporting from central level to WHO

For endemic zones:

If no integration of surveillance is possible in the primary health care system: Ad hoc surveys to evaluate the prevalence of infection in the community. Children of school age have been identified as a appropriate group for investigation (a good indicator of prevalence in the general population).

Yearly reporting of aggregated data from peripheral level to intermediate and central level.

Note

- Data from general health statistics often underestimate the prevalence but may nevertheless indicate a prevalence comparatively high in a particular area.
- The surveillance has to take into account the distribution of the disease in geographical foci. Adjacent areas may have very different prevalence.

RECOMMENDED MINIMUM DATA ELEMENTS:

FOR LOW-PREVALENCE ZONES AND WHERE ERADICATION IS TARGETED:

individual patient record for investigation:

Identification number, age, place of infection, date of diagnosis, village
Number of eggs per gram of stools/per ml of urine

aggregated data:

Number of cases by age group and village and month
Number of cases with >50 eggs/10 ml of urine and /or visual haematuria for *S. haematobium*
Number of cases with >800 eggs/g of stools for S. *mansoni* or *japonicum*

FOR ENDEMIC ZONES:

aggregated data:

Number of cases by agegroup and village
Number of cases with >50 eggs/10 ml of urine and/or visual haematuria for *S. haematobium*
Number of cases with >800 eggs/g of stools for *S. mansoni* or *japonicum*

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS:

- Incidence (if passive finding) monthly and yearly by agegroup and village
- Point prevalence (if active finding)
- Mapping

PRINCIPAL USES OF DATA FOR DECISION MAKING:

- Assess the magnitude of the problem
- Plan drug distribution: select cost effective strategy for chemotherapy (Universal-Targeted-Selective)
- Evaluate the need for snail control
- Evaluate the need for improved water supply and sanitation
- Evaluate the need for health education activities
- Evaluate impact of intervention

SPECIAL ASPECTS

- Diagnosis: The quantitative diagnostic methods(Kato-Katz technique for intestinal forms, urine filtration for *S. haematobium*) are very important in surveillance; They indicate the public health relevance of the infection.
- Collection of data immediately relevant to management decision (e.g., treatment frequency and resource allocation) should be encouraged.
- Intersectoral efforts, emphasising school education, safe water supply and sanitation, environmental management and community participation, are important.
- Rectal biopsy usually not used for surveillance purpose.

CONTACT

Regional offices

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Note

- Data from general health statistics often underestimate the prevalence but may nevertheless indicate a prevalence comparatively high in a particular area.
- The surveillance has to take into account the distribution of the disease in geographical foci. Adjacent areas may have very different prevalence.

RECOMMENDED MINIMUM DATA ELEMENTS:

FOR LOW-PREVALENCE ZONES AND WHERE ERADICATION IS TARGETED:

individual patient record for investigation:

Identification number, age, place of infection, date of diagnosis, village
Number of eggs per gram of stools/per ml of urine

aggregated data:

Number of cases by age group and village and month
Number of cases with >50 eggs/10 ml of urine and /or visual haematuria for *S. haematobium*
Number of cases with >800 eggs/g of stools for S. *mansoni* or *japonicum*

FOR ENDEMIC ZONES:

aggregated data:

Number of cases by agegroup and village
Number of cases with >50 eggs/10 ml of urine and/or visual haematuria for *S. haematobium*
Number of cases with >800 eggs/g of stools for *S. mansoni* or *japonicum*

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS:

- Incidence (if passive finding) monthly and yearly by agegroup and village
- Point prevalence (if active finding)
- Mapping

PRINCIPAL USES OF DATA FOR DECISION MAKING:

- Assess the magnitude of the problem
- Plan drug distribution: select cost effective strategy for chemotherapy (Universal-Targeted-Selective)
- Evaluate the need for snail control
- Evaluate the need for improved water supply and sanitation
- Evaluate the need for health education activities
- Evaluate impact of intervention

SPECIAL ASPECTS

- Diagnosis: The quantitative diagnostic methods(Kato-Katz technique for intestinal forms, urine filtration for *S. haematobium*) are very important in surveillance; They indicate the public health relevance of the infection.
- Collection of data immediately relevant to management decision (e.g., treatment frequency and resource allocation) should be encouraged.
- Intersectoral efforts, emphasising school education, safe water supply and sanitation, environmental management and community participation, are important.
- Rectal biopsy usually not used for surveillance purpose.

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A 75.3

Scrub typhus

(Tsutsugamushi disease)

RATIONALE FOR SURVEILLANCE

Scrub Typhus (Tsutsugamushi disease) is an acute infectious disease that is emerging and re-emerging in Southeast Asia and the south-western Pacific region. This disease can have a case fatality up to 30 %, if untreated. Scrub Typhus is probably one of the most underdiagnosed and underreported febrile illness requiring hospitalisation in the region. Epidemics occur when susceptibles are brought into endemic areas(e.g. military operations). In some countries (e.g. Japan) it is a notified disease.

Surveillance is essential in order to understand better the epidemiology of the disease and to detect outbreaks. In addition training in diagnostic techniques will be necessary.

RECOMMENDED CASE DEFINITION

Clinical description

A disease with primary a "punched out" skin ulcer (eschar)*, followed by acute onset fever after several days, along with headache, profuse sweating, conjunctival injection and lymphadenopathy. Dull maculo-papular rash** in the trunk extends to the extremities which appears in few days. Cough is also common. Sensitivity to tetracycline's derivatives is a basis also for notification.

Laboratory criteria for diagnosis

Isolation of *Rickettsia tsutsugamushi* by inoculation of patient blood in white mice (preferably treated with cyclophosphamide at 0.2 mg/g ip or im on days 1,2 and 4 after inoculation)

Serology: Detection of specific IgM at 1:32 dilution or higher by Immunoperoxidase (IP) or at 1:10 or higher by Indirect Immunofluorescence (IF)

Case classification

Suspected: A case that is compatible with the clinical description

Confirmed: A suspected case with laboratory confirmation

Note: Serological tests are complicated by the antigenic differences of various strains of the causal rickettsia.

*Eschar is absent in re-infection at heavily infested areas.

** The rash on the sunburned skin is often overlooked in the tropics.

RECOMMENDED TYPES OF SURVEILLANCE

Immediate case-based reporting of all suspected cases from the peripheral level to the intermediate and central level. All suspected cases and outbreaks must be confirmed. A parallel laboratory surveillance system reports all confirmed cases to central level.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data to report

Case classification (suspected/confirmed)
Unique identifier, age, sex, geographical information
Date of report
Hospitalisation (Y/N)
Outcome

Aggregated data to report

Number of cases by case classification, age, sex, geographical information, date of report
Number of hospitalisations
Number of deaths

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS:

Graphs: Number of cases by date of report
Tables: Number of cases by age, geographical area
Maps: Number of cases by geographical area
Case fatality

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Detect outbreaks
- Monitor trends in endemic disease
- Monitor changes in epidemiology and pattern of disease

SPECIAL ASPECTS

The distribution of *R. tsutsugamushi* extends north to Japan, Russia, and the Primorske Karai region in the Russian Far East, South to northern Australia and the western Pacific islands, and west to Afghanistan, Pakistan, and in areas neighbouring the former USSR.
Human *R. tsutsugamushi* occurs widely in these regions, but not everywhere.
Scrub Typhus is probably one of the most underdiagnosed and underreported febrile illness requiring hospitalisation in the region. The absence of definitive signs and symptoms combined with a general dependence upon serological tests, made the differentiation of scrub typhus from other common febrile diseases such as murine typhus, typhoid fever and leptospirosis quite difficult.

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A50-52

Syphilis

RATIONALE FOR SURVEILLANCE

Having dropped after the introduction of Penicillin treatment in 1946, syphilis re-emerged in the end of the sixties remaining at high incidence levels in developing countries. Also developed countries are now experiencing outbreaks and economies in transition are experiencing wide recrudescence.

Syphilis prevalence in pregnant women provides information about latent and symptomatic syphilis in this group, minimising the problems associated with reporting of STD syndromes, subject to influence of health care seeking behaviour and can be considered an approximation of syphilis prevalence in the general population.

This information will be utilised for assessment, policy making, planning and evaluation of STD management activities.

RECOMMENDED CASE DEFINITION

A person with a confirmed positive serology for syphilis (Rapid Plasma Reagin (RPR) or VDRL confirmed by TPHA or FTA- ABs)

RECOMMENDED TYPES OF SURVEILLANCE

Laboratory-based surveillance through screening of pregnant women
Routine reporting from antenatal (AN) clinics and sentinel sites of AN clinics
Active case finding from prevalence surveys in pregnancy

Only confirmed cases should be reported to intermediate and central level by
- routine case-based or aggregate reporting
- routine periodic surveillance reports

RECOMMENDED MINIMUM DATA ELEMENTS

Aggregate data

Number of cases of positive serology for syphilis by age group/month/geographical area
Number of cases of congenital syphilis by age group, gravida, years, geographical area

Performance indicators

False positive rate sentinel site by number tested by TPHA /FT-AB

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Cases/incidence by geographical area, age, parity - table format see example SSS manual WHO.
Comparisons with age group and geographical area in previous years - line graph.
Rate of congenital syphilis by geographical area by year - line graph.
Annual surveillance summaries should be produced nationally and regionally and fed back.

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Document syphilis prevalence by screening pregnant women as a surrogate for general population
- Monitor trends in disease incidence
- Advocate Syphilis control, and interventions
- To identify high risk areas for further targeting intervention

SPECIAL ASPECTS:

- The prevalence rate varies between 3-19 % in pregnant women in developing countries (associated with spontaneous abortion and stillbirth and congenital syphilis (one third infants). Because the primary lesion is often painless and secondary syphilis is usually not diagnosed, women are mainly identified by serological screening. Therefore it is recommended that syphilis surveillance is best performed in pregnant women.
- In order to screen all pregnant women as per national policy guidelines women should attend early for antenatal care, clinic staff should take blood and send it to lab, lab staff should report results to clinic, women should attend for next visit and receive results and clinic staff are supposed to treat and provide health education.
- Syphilis in cases of genital ulcer should be reported separately in countries with access to laboratory facilities.

CONTACT

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B56-0, B56-1

African trypanosomiasis

(Sleeping sickness)

RATIONALE FOR SURVEILLANCE

The leading principle for sleeping sickness control is the reduction of human reservoir through treatment of infected individuals and the reduction of man-fly contact through adapted vector control. An intercountry approach for surveillance/control activities is essential and supported by WHO. The objective of surveillance is the precise identification and proper epidemiological assessment of all endemic foci.

RECOMMENDED CASE DEFINITION

Clinical description

In the early stages, a painful chancre*, which originates as a papule and then evolves into a nodule may be found at the primary tsetse fly bite site. There may be fever, intense headache, insomnia, painless lymphadenopathy, anaemia, local oedema and rash. In the later stage, there is cachexia, somnolence and CNS signs. It may run a protracted course of several years in the case of *Trypanosoma brucei gambiense*(B56-0). In case of *T. b. rhodesiense*(B56-1), the disease has a rapid and acute evolution. Both diseases are always fatal without treatment.

Laboratory criteria for diagnosis

Presumptive: serological: Card agglutination trypanosomiasis test (CATT) for *T.b. gambiense* only or immunofluorescent assay (IFA) for *T.b. rhodesiense* mainly and possibly for *T.b. gambiense*

Confirmative: parasitological: detection(microscopy) of trypanosomes in blood, lymph nodes aspirates or CSF

Case classification

Suspected: A case that is compatible with the clinical description or is exposed to the risk**

Probable: A case with a positive serology with or without clinical symptoms

Confirmed: A case with positive parasitology with or without clinical symptoms***

*The painful chancre is very rare in *T. b. gambiense*

** In many cases, in the early stage or even in the early part of the late stage of the disease there are no clinical signs or symptoms which can be associated with the disease. Suspicion is then based on local risk of contracting the disease and disease historical background in the area.

***Confirmed positive healthy carriers are a major public health risk, they are a reservoir of parasites, they disseminate the disease. They must be treated as soon as possible.

RECOMMENDED TYPES OF SURVEILLANCE

- The surveillance system will use a village-based definition using 4 classes:
  - village of unknown epidemiological status
  - suspected village
  - endemic village
  - disease-free village
- In the context of control programmes, surveillance provides valuable village-based data, with the precise geographic location of each village using global positioning system (GPS). Data are analysed, using geographical information systems (GIS).
- In areas not covered by control activities, surveillance provides valuable case-based information. Results of serological surveys based on micro-CATT will be indicators of endemicity
- Information collected at village level, are aggregated at intermediate/central level and reported to WHO

RECOMMENDED MINIMUM DATA ELEMENTS

village-based data: In addition to number of parasitologically confirmed cases (presence of trypanosome demonstrated), and number of probable cases (suspected cases with positive serology)

the system should include information on

- strategy used
- village geographic co-ordinates (latitude, longitude)
- name
- administrative levels
- village type
- population at last census/date of last census, estimated population
- school (levels)
- health infrastructures (type, activities)
- protected source of water

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS:

Mapping: at intermediate and central level: map of villages and their endemic status

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Knowledge of endemic and suspected areas to direct control activities
- Epidemiological monitoring of endemic foci
- Assessing impact of control programmes

SPECIAL ASPECTS

- Use of Global Positioning System (GPS) to define village geographic co-ordinates
- Sensitivity of parasitological techniques is low and depends on lab facilities and personnel skills

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B57

American trypanosomiasis

(Chagas disease)

RATIONALE FOR SURVEILLANCE

- Targeted by WHO for **elimination** by the year 2000 . It affects 17 countries with over 100 million individuals at risk of infection and 16-18 million infected
- Chagas disease is still prevalent in the northern part of South America (the Andean Region) and in Central America where it poses a threat to almost 25 million of people and there are 5 to 6 million persons infected
- Potentially fatal and non treatable, a third of those infected become incapacitated due to cardiac damage
- Infection can also be acquired through blood transfusion.
- The infection can be effectively eliminated through interruption of vector transmission and systematic screening of blood donors. Elimination has been very successful in some countries of the Southern Cone of South America (Argentina, Brazil, Bolivia, Chile, Paraguay and Uruguay.)
- Surveillance is necessary to monitor prevention and control measures

RECOMMENDED CASE DEFINITION

ACUTE STAGE

Clinical description

The main clinical signs are mainly fever, malaise, hepatosplenomegaly and lymphadenopathy in the acute phase. Many patients present without clinical signs. An inflammatory response at the site of infection (chagoma) may last up to 8 weeks

Laboratory criteria for diagnosis

- Positive parasitology (direct, xenodiagnosis, blood culture) **and /or**
- Positive serology for *T. cruzi* antibodies (IgM)
  (indirect haemagglutination test (IHA), indirect immunoflourescent antibody test (IFAT), direct agglutination test (DA) and ELISA)

Case classification

Suspected: Not applicable

Probable: In endemic areas: a person having unexplained fever, hepatosplenomegaly and a "chagoma " (inflammation at site of infection)

Confirmed: A clinically compatible case that is laboratory-confirmed

INDETERMINATE STAGE: Positive serology for *T. cruzi* antibodies
CONGENITAL: Hepatosplenomegaly with positive xenodiagnosis in a new-born in endemic areas
BLOOD DONOR: Positive serology for Chagas

RECOMMENDED TYPES OF SURVEILLANCE

In endemic areas, sentinel surveillance may be the only feasible method at present.
Where possible, routine surveillance of American trypanosomiasis should be integrated in primary health services. At peripheral level individual patient records should be maintained. Routine monthly reporting of aggregated data from peripheral level to intermediate level. Routine biannual reporting of aggregated data to central level.
All blood donations should be screened locally.
Serological surveys (standardised and periodically) are used for surveillance and control.

RECOMMENDED MINIMUM DATA ELEMENTS

CLINICAL SURVEILLANCE

Individual patient records

Unique identifier, name, age, sex, geographical information. laboratory results

Aggregated data for reporting:

Number of cases identified from transfusion donors
Number of cases by age/ sex/ means of diagnosis
Number of cases with positive serology
(Number of houses or communities subject to vector control annually)

LABORATORY SURVEILLANCE

Isolate-based data for reporting (see WHO technical report series 811 page 78)

Scientific name of organism, clinical form, organ or tissue, geographical information(patient location), date of isolation, name laboratory, laboratory number of isolate, identification methods used, results

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Graphs: Number of cases by geographical area, month, and means of diagnosis

Maps: Number of cases by geographical area

(Vector control activities / geographical area/ prevalence of disease)

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitor disease prevalence and measure the impact of disease
- Monitor control and elimination programme
- Target resources for prevention

SPECIAL ASPECTS

- Control has until now depended on vertical programmes. Monitoring and surveillance have been conducted during specific surveys. To integrate the control programme into PHC requires a network of laboratory services with different facilities at different levels for diagnosis.
- Because of variation in specificity of the tests cut off points should be defined locally using standard serum panel, provided by the reference laboratories of the intercontinental network for standardised serology in Brazil and Argentina.
- A national laboratory network should be established in each of the countries in which Chagas disease is endemic.

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A15-A19

Tuberculosis

RATIONALE FOR SURVEILLANCE

The overall objective of tuberculosis control is to reduce morbidity, mortality and transmission of the disease until it no longer poses a threat to public health. To achieve this objective, in 1991 the World Health Assembly endorsed the following targets for global TB control: to treat successfully 85% of the detected new smear-positive cases and to detect 70% of them by the year 2000.

The magnitude of the global TB problem is enormous. About one third of the world's population is infected by *Mycobacterium tuberculosis*. World-wide some 3.3 million cases are notified every year. However, according to various estimates, between 7 and 8.8 million cases might occur, 95% of which in developing countries. Projections into the next century suggest that the impact of TB will further increase if no adequate control is established immediately in all countries.

Surveillance of TB serves the purpose of enabling an accurate picture to be obtained of the course of the TB epidemic in a community over time and permitting timely intervention if the trend observed deviates from what is expected.

RECOMMENDED CASE DEFINITIONS

Pulmonary tuberculosis, smear positive (PTB+):

- TB in a patient with at least two initial sputum smear examinations (direct smear microscopy) positive for Acid Fast Bacilli (AFB), or
- TB in a patient with one sputum examination positive for AFB and radiographic abnormalities consistent with active pulmonary TB as determined by the treating medical officer, or
- TB in a patient with one sputum specimen positive for AFB and at least one sputum that is culture positive for AFB

Pulmonary TB, smear negative (PTB-):

TB in a patient with symptoms suggestive of TB and having one of the following:

- two sets (taken 2 weeks apart) of at least 2 sputum specimens negative for AFB; radiographic abnormalities consistent with pulmonary TB and a lack of clinical response despite one week of a broad-spectrum antibiotic; a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
- severely ill; at least 2 sputum specimens negative for AFB; radiographic abnormalities consistent with extensive pulmonary TB (interstitial or miliary) ; a decision by a physician to treat with a full curative course of anti-TB chemotherapy; or
- a patient whose initial sputum smears were negative, who had sputum sent for culture initially, and whose subsequent sputum culture result is positive

Extra-pulmonary TB:

- TB of organs other than lungs: TB of pleura, lymph nodes, abdomen, genito-urinary tract, skin, joints and bones, TB meningitis, etc.
- Diagnosis should be based on one culture positive specimen from an extra-pulmonary site, or histological or strong clinical evidence consistent with active extra-pulmonary TB, followed by a decision by a medical officer to treat with a full course of anti-TB therapy
- Any patient diagnosed with both pulmonary and extra-pulmonary TB should be classified as a case of pulmonary TB

New case: A patient who has never had treatment for TB or took anti-TB drugs for less than four weeks

Relapse case: A patient previously treated for TB and declared cured by a medical officer after one full course of chemotherapy, but who reports back to the health service bacteriological positive

RECOMMENDED TYPES OF SURVEILLANCE:

Quarterly reports on case notifications and on cohort analysis of treatment outcomes (at peripheral intermediate, and central level).

RECOMMENDED MINIMUM DATA ELEMENTS

Case notifications by category:

- Number of new pulmonary sputum smear positive cases
- Number of pulmonary relapse cases
- Number of new pulmonary sputum smear negative cases
- Number of new extra-pulmonary cases
- Number of new pulmonary sputum smear positive cases by age and gender (suggested age groups: 0-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65+ years)

Treatment results for new sputum smear positive cases:

(usually calculated as % out of all new sputum smear positive cases registered during the same period of time)

- Number of cases who converted to negative after initial phase of treatment
- Number of cases cured (i.e., completed treatment and at least two negative sputum smear result during the continuation phase of treatment of which one was at end of treatment)
- Number of cases who, after smear conversion at the end of initial phase of treatment, completed treatment, but without smear results at end of treatment
- Number of cases who died (regardless of cause)
- Number of cases who failed treatment (i.e., became again or remained smear positive five months or later after starting treatment)
- Number of cases who interrupted treatment/defaulted (i.e., patient who did not collect drugs for two months or more after registration)
- Number of cases who were transferred out (i.e., patient transferred to another reporting unit and whose results are not known)

RECOMMENDED DATA ANALYSIS, PRESENTATION, REPORTS

Analysis of geographical area (district) quarterly reports:

- ***Treatment success rate:*** proportion of cases which were cured plus completed treatment out of cases registered during the same period of time
- ***Quality of diagnostic services:*** proportion of new sputum smear positives out of all pulmonary cases

Presentation and reports:

Graphs:

- Case notification rates over several years by geographical area, regions, and total country
- Case notification rates (new sputum smear positives) by age and sex
- Case detection rate: proportion of TB cases occurring in the country which were detected by the national TB control programme out of those estimated to have occurred

Tables:

Describe quarterly reports by case finding and treatment outcomes

PRINCIPAL USES OF DATA FOR DECISION-MAKING

- At local level: it ensures that appropriate treatment services are offered, contact tracing is carried out, local outbreaks are recognised, and local epidemiology is monitored.
- At national level: it allows monitoring of the epidemiology of the disease in the country and of the performance of treatment programmes (an NTP's ability to detect TB cases, to diagnose sputum positive cases, to successfully treat TB cases), and planning for programme activities (e.g. securing drug supply, lab supply, etc.).
- At international level: it permits to examine trends over time and make inter-country comparisons with the aim of co-ordinating control efforts.

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A95

Yellow fever

Case report universally required by **International Health Regulations**

RATIONALE FOR SURVEILLANCE

This mosquito-borne virus disease occurs in tropical regions of Africa and South America and is maintained by sylvatic transmission of virus involving forest-dwelling mosquitoes and monkeys. Transmission to humans may occur in forest transition zones and may subsequently enter an urban cycle through *Aedes aegypti*. Many cities are now threatened with major epidemics as yellow fever is undergoing a major resurgence especially in the African region. Strategies for yellow fever control include control of *A. aegypti* in urban centres, infant immunization, vaccination campaigns, outbreak prevention, epidemic detection and control. Surveillance data allows for monitoring disease incidence, prediction and early detection of outbreaks and monitoring of control measures. Case report is universally required by **International Health Regulations**

RECOMMENDED CASE DEFINITION

Clinical description

An illness characterized by acute onset of fever followed by jaundice within 2 weeks of onset of first symptoms.

Laboratory criteria for diagnosis

- Isolation of yellow fever virus, **or**
- Presence of yellow fever specific IgM or a four-fold or greater rise in serum IgG levels in paired sera (acute and convalescent) **or**
- Positive post-mortem liver histopathology **or**
- Detection of yellow fever antigen in tissues by immunohistochemistry **or**
- Detection of yellow fever virus genomic sequences in blood or organs, by PCR

Case classification

Suspected:	A case that is compatible with the clinical description
Probable:	Not applicable
Confirmed:	A suspected case that is laboratory-confirmed (national reference lab) or epidemiologically linked to a confirmed case or outbreak

RECOMMENDED TYPES OF SURVEILLANCE:

Immediate reporting of suspected cases from peripheral to intermediate and central level.
All suspected cases and outbreaks must be investigated immediately and laboratory-confirmed. Case-based surveillance must be implemented in countries identified by WHO as high risk for yellow fever. Specimens must be collected to confirm an epidemic as rapidly as possible. Priority is placed on collecting specimens from new or neighbouring areas (other than the area where the epidemic is already confirmed).

Routine weekly/monthly reporting of aggregated data on suspected and confirmed cases from peripheral to intermediate and central level.

International: Mandatory reporting of all suspected and confirmed cases within 24 hours to WHO.

RECOMMENDED MINIMUM DATA ELEMENTS:

Aggregated data for reporting

- Number of cases
- Doses of YF vaccine administered to infants, by geographical area
- Completeness / timeliness of monthly reports

Case-based data for reporting and investigation

- Unique identifier, geographical area, date of birth, date of onset, date of investigation
- Ever received a dose of yellow fever vaccine (yes/no/unknown)
- Date acute blood specimen received in laboratory
- Date convalescent blood specimen received in laboratory (if applicable)
- Date histopathology specimen collected
- Depending on which laboratory tests used:
  - IgM results (positive/ negative/ no specimen processed/ unknown)
  - Virus isolation results (positive/ negative/ no specimen processed/ unknown)
  - IgG (4-fold rise) results (positive/ negative/ no specimen processed/ unknown)
  - Liver histopathology (positive/ negative/ no specimen processed/ unknown)
- Date IgM results first sent, date virus isolation results first sent
- Date IgG results first sent, date histopathology report first sent
- Final classification (confirmed/ suspected/discarded)
- Final outcome (alive/ dead/ unknown)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS:

Aggregate data

- Incidence rate by month, year, and geographic area
- Yellow fever vaccine coverage by year and geographic area
- Completeness/timeliness of monthly reporting

Case-based data same as aggregate data plus the following:

- Confirmed cases by age group, immunization status, geographic area, month and year
- Case fatality rate
- Final classification of all suspected cases

Performance indicators of surveillance quality	***target***
Completeness of monthly reporting	≥ 90%
Percent of all suspect cases for which specimens were collected	≥ 50%[1]
If IgM test is done: Laboratory results sent ≤ 3 days of receipt of acute blood specimen	≥ 80%
If virus isolation is done: results sent ≤ 21 days of receipt of acute blood specimen	≥ 80%
If IgG test is done: results sent ≤ 3 days of receipt of convalescent blood specimen	≥ 80%

[1] This is the target during non-outbreak periods. Once an outbreak is confirmed, the priority is to detect and laboratory-confirm outbreaks in neighbouring areas.

PRINCIPAL USES OF DATA FOR DECISION-MAKING

- Investigate suspect cases and collect laboratory specimens to confirm an outbreak and mobilise emergency immunization activities
- Monitor YF vaccine coverage by geographic region to monitor progress and identify areas of poor performance so corrective actions can be taken

SPECIAL ASPECTS

The following 33 countries are at risk for yellow fever epidemics in **Africa**: Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Democratic Republic of Congo (formerly Zaire), Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Kenya, Mali, Mauritania, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Uganda.

The following 10 countries are at risk for yellow fever in **South America**: Bolivia, Brazil, Colombia, Ecuador, Guyana, French Guiana, Panama, Peru, Surinam, Venezuela.

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Acute lower respiratory tract infections (aLRTI) and Pneumonia

RATIONALE FOR SURVEILLANCE

Acute lower respiratory infections, of which pneumonia is the most deadly, kills more than 4 million people a year. The majority of these deaths are among children < 5 years, and ARI are the leading cause of death in that age group. ARI are a major impact on health services and household income, accounting for up to 50% of visits by children to health facilities, and are the condition for which antibiotics are often prescribed and misused world wide. The WHO strategy is to reduce severe morbidity and mortality through integrated case management of children at primary level in collaboration with other agencies and governments. Surveillance is necessary to monitor disease trends and control programmes including essential drug use.

RECOMMENDED CASE DEFINITION

Clinical case definition and classification

PNEUMONIA

Symptoms Cough or difficult breathing **and**

Signs: breathing faster than 50/min for child 2-12 months
breathing faster than 40/min for child 1-5 years
and No chest indrawing, stridor or danger signs

SEVERE PNEUMONIA

Symptoms : Cough or difficult breathing + any danger sign or chest indrawing or stridor in a calm child.

Danger Signs:

For child 2 months to 5 years
Not able to drink or breast feed, vomits everything, convulsion, lethargic or unconscious

For child under 2 months
stopped feeding well, convulsions, lethargy or unconscious, wheezing, fever or low body temperature

Note: Chest indrawing + recurrent wheeze = asthma, probably not pneumonia

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly aggregated reporting from peripheral level to intermediate and central level.
Community surveys/Sentinel surveillance to complement routine data and for evaluation of control programme activities.
Sentinel surveillance reporting monthly to intermediate and central level.
Quarterly reporting of community/household surveys from peripheral to central level.

RECOMMENDED MINIMUM DATA ELEMENTS

Aggregated data for reporting

Number of cases by age, severity, geographical area, treatment(Y/N), hospitalisation (Y/N), outcome

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Cases/incidence by month, geographical area, age, sex.
Comparisons with same month, age group and geographical area in previous years.
Seasonal and secular data best presented as line graphs.
Annual surveillance summaries should be produced nationally and regionally and fed back. Annual overview is helpful in trying to identify areas of concern and set priorities.

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitor trends in disease incidence
- Monitor treatment guidelines
- Support essential drugs supply
- Detect peaks in incidence
- Identify high risk areas for further targeting intervention

SPECIAL ASPECTS

ARI is part of the integrated case management approach to child health. The syndromic approach is recommended as the most effective way to report on cases. However from the perspective of surveillance of diseases this approach has not been proven. Multiple diagnoses are frequently made in children. The integrated case management approach may therefore present difficulties for single disease surveillance.

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Acute watery diarrhoea (childhood)

RATIONALE FOR SURVEILLANCE

One of the major causes of morbidity and mortality in young children, diarrhoeal diseases caused more than 3 million deaths in 1995 (80% in children under 5 years). About half of these deaths are due to acute watery diarrhoea. Contaminated food is now thought to be responsible for over two thirds of cases. WHO supports regional initiatives in co-ordinating activities aimed at improved preparedness and response to outbreaks of cholera and dysentery. The WHO strategy is to reduce incidence and fatality through integrated case management in children at primary level in collaboration with other agencies and governments.

RECOMMENDED CASE DEFINITION

Clinical case definition

Acute watery diarrhoea (passage of 3 or more loose or watery stools in the past 24 hours) with or without dehydration

Laboratory criteria for diagnosis

Laboratory culture of stools may be used to confirm possible outbreaks of specific diarrhoea, but is not necessary for case definition

Case classification

Not applicable

RECOMMENDED TYPES OF SURVEILLANCE

Patient records should be maintained at peripheral level.
Routine monthly reporting of aggregated data from peripheral level to intermediate and central level.
Community surveys/Sentinel surveillance to complement routine data and for evaluation of control programme activities.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at peripheral level

Unique identifier, age, sex, geographical area
Date of onset
Outcome

Aggregated data for reporting

Number of cases under 5 years by geographical area
Number of deaths under 5 years by geographical area

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Number of cases by month, geographical area, agegroup
- Comparisons with same month and geographical area in previous years
- Seasonal and secular data best presented as line graphs
- Monthly surveillance summaries should be produced nationally and regionally and fed back. A quarterly or annual overview is helpful in trying to identify areas of concern and set priorities

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitor trends in disease incidence
- Detect possible outbreak at the local level
- Identify high risk areas for further targeting of intervention

SPECIAL ASPECTS

Diarrhoeal diseases are part of the integrated case management approach to child health. The syndromic approach is recommended as the most effective way to report on cases. However from the perspective of surveillance of diseases this approach has to be proven. Multiple diagnoses are frequently made in children. This with integrated case management approach may present difficulties with single disease surveillance.

Dehydration is a useful indicator of acute diarrhoea, and a sudden increase in dehydration in 2 to 5 year old should raise suspicious of a possible cholera outbreak.
The clinical case definition for cholera is:

- In an area where the disease is not known to be present, in a patient aged 5 years or more severe dehydration or death from acute watery diarrhoea **or**
- In an area where there is a cholera epidemic, in a patient aged 5 years or more, acute watery diarrhoea, with or without vomiting.

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Acute bloody diarrhoea (children under 5)

RATIONALE FOR SURVEILLANCE

Bloody diarrhoea in children is usually a sign of invasive enteric infection that carries a substantial risk of serious morbidity and death especially in developing countries. Shigella is most frequently isolated from the stools of affected children. WHO's policy through the Child Health and Development division is to promote an integrated affordable approach to the management of the sick child. The primary objective is to reduce morbidity and mortality.

RECOMMENDED CASE DEFINITION

Clinical case definition

Acute diarrhoea with visible blood in the stool

Laboratory criteria for diagnosis

Laboratory culture of stools may be used to confirm possible outbreaks of specific diarrhoea, but is not necessary for case definition

Case classification

Not applicable

RECOMMENDED TYPES OF SURVEILLANCE

Patient records should be maintained at peripheral level.
Routine monthly reporting of aggregated data from peripheral level to intermediate and central level.
Community surveys/Sentinel surveillance to complement routine data and for evaluation of control programme activities

Note: Laboratories involved in diagnosis of *Shigella dysenteriae* type 1 should report confirmed cases including zero reporting.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at peripheral level

Unique identifier, age, sex, geographical area
Date onset, date treatment
Treatment given (Y/N), kind of treatment
Hospitalised(Y/N)
Outcome

Aggregated data for reporting

Number of cases < 5 years by geographical area
Number of deaths < 5 years by geographical area

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Number of cases by month, geographical area, age group
- Comparisons with same month and geographical area in previous years
- Seasonal and secular data (best presented as line graphs)
- Monthly surveillance summaries should be produced nationally and regionally and fed back
- A quarterly or annual overview is helpful in trying to identify areas of concern and set priorities

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitor trends in disease incidence
- Identify high risk areas for further targeting of intervention

SPECIAL ASPECTS

A national reference laboratory is needed to confirm outbreaks of *S. dysenteriae* type 1 where suspected. The syndromic approach, while important in the case management in the primary care setting may not lend itself to surveillance of specific diseases.

CONTACT

Regional offices

See Regional Communicable Disease contacts on pages 15-20

Headquarters

Child Health Division (CHD),
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Sexually transmitted diseases
(Genital ulcer syndrome)

RATIONALE FOR SURVEILLANCE:

The morbidity attributable to STD, relative to that caused by other infectious diseases, has continued to increase throughout this century. STD's now rank among the five most important causes of years of healthy productive life lost in developing countries. Sexually transmitted diseases (including HIV/AIDS) are seen more often as disease syndromes. WHO's approach to the control STD's revolves around integrated primary health care at an early stage.
We use a syndromic definition, which can be used to monitor the incidence of a number of conditions: Chancroid (*Haemophilus ducreyi*), Herpes simplex, Syphilis (*Treponema pallidum*), Lymphogranuloma venereum, *Chlamydia trachomatis*, Donovanosis.

RECOMMENDED CASE DEFINITION

Clinical case definition

Genital ulcer pain on penis or scrotum in men and on labia, vagina or cervix in women with or without inguinal adenopathy

Laboratory criteria for confirmation

Laboratory confirmation of organism if possible but this is not necessary for the case definition

Case classification

Not applicable

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting from sentinel sites on aggregated or case-based data to intermediate level.
Annual reports from sentinel sites to central level.
In some countries surveillance for genital ulcer relies on specific surveys.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for reporting

- Unique identifier, age, sex, geographical area
- Date of onset
- Laboratory results

Aggregated data for reporting

- Number of cases by agegroup, geographical area

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Syndromic cases/incidence by month, geographical area, agegroup, sex, laboratory results
- Comparisons with same month, age group and geographical area in previous years
- An annual overview is helpful in trying to identify areas of concern and to set priorities

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Surrogate indicator for incidence of chancroid and primary syphilis
- Estimate importance of genital ulcer in men and women - frequency and distribution of disease
- Monitor trends over time
- Define resources, supplies for service, prevention and control measures
- Raise awareness in policy makers and communities
- Identify high risk areas for further targeting intervention
- Define and monitor effective diagnostic and therapeutic procedures
- Monitor and improve existing programme keeping it relevant and effective

SPECIAL ASPECTS

None

CONTACT

Regional offices :

See Regional Communicable Disease contacts on pages 15-20

Headquarters:

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Fax: (41) (22) 791 4834 attn ASD

Sexually transmitted diseases
(Urethral discharge syndrome)

RATIONALE FOR SURVEILLANCE

The morbidity attributable to STD, relative to that caused by other infectious diseases, has continued to increase throughout this century. STD's now rank among the five most important causes of years of healthy productive life lost in developing countries. Sexually transmitted diseases (including HIV/AIDS) are seen more often as disease syndromes. WHO's approach to the control STD's revolves around integrated primary health care at an early stage.
We use a syndromic definition, which can be used to monitor the incidence of a number of conditions mainly gonococcal and non-gonococcal urethritis

RECOMMENDED CASE DEFINITION

Clinical case definition
Urethral discharge in men with or without dysuria

Laboratory criteria for diagnosis
Laboratory confirmation of organism if possible but this is not necessary for the case definition (Gram stain to look for intracellular dipplococci).

Case classification
Not applicable

Note : Gonorrhoea and Chlamydia are the main causes of urethritis among male clinic attenders in most developing countries. Although gonococcal urethritis tends to be more purulent and non-gonococcal urethritis more mucoid these signs are not discriminatory in field conditions.

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting from sentinel sites of aggregated data to intermediate level.
Annual reports from sentinel sites to central level.
In come countries surveillance for urethral discharge relies on specific site surveys (STD clinics).

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for local record

Unique identifier, age, sex, geographical area
Date of onset
Laboratory results

Aggregated data for reporting

Number of cases by age group, geographical area
Number of cases treated

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Syndromic cases/incidence by month, geographical area, agegroup, sex, laboratory results.
Comparisons with same month, age group, laboratory results and geographical area in previous years
An annual overview is helpful in trying to identify areas of concern and to set priorities.
Secular data best presented as line graphs.

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitor trends in disease incidence
- Identify high risk areas for further targeting intervention

SPECIAL ASPECTS

Culture of *N. gonorrhoeae* is not essential for diagnosis and clinical management.
Treat all cases for gonorrhoea and non gonococcal urethritis (NGU) or do gram stain: if no intracellular dipplococci treat for NGU

CONTACT:

Regional offices :

See Regional Communicable Disease contacts on pages 15-20

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Fax: (41) (22) 791 4834 attn ASD

Sexually transmitted diseases
(Vaginal discharge syndrome)

RATIONALE FOR SURVEILLANCE

The morbidity attributable to STD, relative to that caused by other infectious diseases, has continued to increase throughout this century. STD's now rank among the five most important causes of years of healthy productive life lost in developing countries. Sexually transmitted diseases (including HIV/AIDS) are seen more often as disease syndromes. WHO's approach to the control STD's revolves around integrated primary health care at an early stage.

RECOMMENDED CASE DEFINITION

Clinical case definition and recommended case definition WHO

Abnormal vaginal discharge (amount, colour and odour) with or without lower abdominal pain or specific symptoms or specific risk factor (without speculum)

Laboratory criteria for diagnosis

Laboratory confirmation of organism if possible but this is not necessary for the case definition. (organism isolation)

Case classification

Not applicable.

RECOMMENDED TYPES OF SURVEILLANCE

Routine monthly reporting from sentinel sites of aggregated data to intermediate level.
Annual reports from sentinel sites to central level.
In come countries surveillance for vaginal discharge relies on specific site surveys (STD clinics) and on community surveys.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data for local records and contact tracing

Unique identifier, age, sex, geographical area
Date of onset
Treatment (Y/N)
Risk factors
Contacts

Aggregated data for reporting

Number of cases treated for vaginitis
Number of cases by agegroup, laboratory diagnosis, severity (PID or no PID), geographical area.

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

- Number of cases by month, geographical area, agegroup, sex
- Comparisons with same month, age group and geographical area in previous years
- Monthly surveillance summaries should be produced nationally and regionally and fed back
- A quarterly or annual overview is helpful in trying to identify areas of concern and set priorities

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitor trends in disease incidence
- Identify high risk areas for further targeting intervention

SPECIAL ASPECTS

Risk factors are region/country specific and are not universal.

CONTACT

Regional offices :

See Regional Communicable Disease contacts on pages 15-20

Headquarters:

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Fax: (41) (22) 791 4834 attn ASD

No specific ICD-10 code

Antimicrobial resistance

RATIONALE FOR SURVEILLANCE

Antimicrobial resistance has increased dramatically in the last decade adversely affecting control of many important diseases including Shigella dysentery, pneumonia, TB, and malaria. Antimicrobial resistance leads to prolonged morbidity, increased case fatality and lengthens duration of epidemics. Surveillance is necessary for national and international co-ordination and collaboration in issues relating to antimicrobial use and resistance and drug development.

RECOMMENDED DEFINITION

Microbial isolate that is resistant to one or more antimicrobial agents on standard susceptibility tests (*e.g.* disk diffusion, minimal inhibitory concentration determination)

RECOMMENDED TYPES OF SURVEILLANCE

Peripheral level

Every hospital should have a surveillance system for antimicrobial resistance. This should involve collaboration between microbiologists, clinicians, pharmacists, and infection control personnel.

Intermediate/Central level

- At minimum reporting from sentinel sites should occur
- Surveillance should be geographically and demographically representative
- Routine laboratory-based reporting (this may include comprehensive reporting of aggregate statistics as well as case-based reporting from sentinel sites)
- Reporting should be at least once a year
- Collection and confirmation of new or unusual resistance phenotypes should also be performed by reference authorities

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at peripheral level and sentinel sites

Unique identifier, age, sex
Hospitalised (Y/N)
Specimen type, specimen date, organism, microbial susceptibility test results

Aggregated data for reporting

Distribution by type (resistant intermediate, susceptible)
Number tested for each organism by antibiotic

Aggregate statistics should address important local and national antimicrobial resistance problems. Statistics for many important pathogens should be reported separately for hospitalised and non-hospitalised cases, as well as by age group.

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

At peripheral level

Daily review for unusual or important results
Weekly-to-monthly review of organism frequencies and resistance profiles for outbreaks
Quarterly review of data for monitoring resistance trends and review of hospital usage policy

At intermediate and central level

Aggregate data

- Quarterly review of data for monitoring of resistance trends by organism, antibiotic, geographic, and demographic parameters.

- Quarterly review of resistance results for possible errors in laboratory performance

Case-based data

Same analyses as for aggregate statistics, as well as more detailed analyses on test performance, mechanisms of resistance, and strain epidemiology

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Monitor the changing trends and issues in antimicrobial resistance
- Aid the development of antimicrobial usage and infection control policies
- Monitor the impact of antimicrobial usage and infection control policies
- Guide the establishment of priorities for the development of new antimicrobial agents
- Aid research activities in the development of new antimicrobial agents
- Monitor outcome of treatment

SPECIAL ASPECTS

National Quality Assurance Programmes improve test performance by laboratories in the provision of reliable results to clinicians

Local and national uses of antimicrobial resistance data can be greatly enhanced by the use of specialised software, such as WHONET, available free of charge from the WHO

CONTACT

Regional offices:

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No specific ICD-10 code

Anti-tuberculosis drug resistance

RATIONALE FOR SURVEILLANCE

Resistance of the tubercle bacilli to antimycobacterial agents is an increasing problem world-wide. The true magnitude of the problem has not been adequately surveyed. Drug-resistant TB, particularly multi-drug resistant TB (MDR-TB) is a major potential threat to TB control because only a few drugs are effective and available against *Mycobacterium tuberculosis*, especially in low-income countries.

RECOMMENDED CASE DEFINITION

Anti-TB drug resistance occurs when a bacterial isolate is resistant to one or more antimicrobial agents on internationally recommended methods for susceptibility tests (e.g. the economic variant of the proportion method, using Löwenstein-Jensen medium). The absolute concentration, resistance ratio, and other standardised methods may be used.

Primary drug resistance is defined as the presence of resistant strains of *M. tuberculosis* in a patient who, in response to direct questioning, denies having had any prior anti-TB treatment or where , in countries were adequate documentation exists, no documented evidence of such a history is found.

Acquired drug resistance is defined as the presence of resistant strains of *M. tuberculosis* in a patient who, in response to direct questioning, admits having had prior anti-TB treatment or where , in countries were adequate documentation exists, documented evidence of such a history is found.

RECOMMENDED TYPES OF SURVEILLANCE

Three main principles must be followed:

1. Use of a data collection system (based on standard registers) for **all** TB patients, designed in such a way that new patients are distinguished from those previously treated. National TB Programmes using the WHO TB control strategy adopt a recording and reporting system which allows this kind of differentiation.

2. Use of laboratory methods internationally recommended for susceptibility testing. A country should have no more than one national reference laboratory (NRL) to which diagnostic centres send the sputum (with the exception of very large countries). The NRL should be linked to an international laboratory by strain exchange to ensure quality control.

3. Adequate sampling strategies which ensure the representativeness of the country or area to be surveyed.

In general, countries can choose between routine surveillance and ad hoc surveys at regular intervals (3-5 years) according to the availability of resources, logistics, and operational considerations.

RECOMMENDED MINIMUM DATA ELEMENTS

Peripheral level (diagnostic centres)

Patient identifier, age, sex, specimen date, history of previous treatment, other data (nationality HIV) Only sputum smear positive patients should be enrolled

National Reference Laboratory

Anti-TB drug susceptibility test results

Central

Data from the diagnostic centres and from the NRL should be matched and analysed by a co-ordinating team

RECOMMENDED DATA ANALYSIS, PRESENTATION, REPORTS

Peripheral level(diagnostic centres)

The data should be tabulated at regular intervals by the diagnostic centres and the NRL, using standard forms or be extracted from routine registers.

Central level

Based on the information provided by the diagnostic centres, the national co-ordinating team must make regular reports to the heads of the NTP and the reference laboratory.

Data must be analysed, whenever feasible, by computer (WHO developed a software based on EPI Info).

Analysis must be done on a yearly basis for routine surveillance or at the end of ad hoc surveys.

Data must be aggregated by level of resistance to each single drug and each single combination of drugs as well as between primary and acquired resistance.

Stratification of data by age, gender, etc. and trend analysis may be done when necessary.

PRINCIPAL USES OF DATA FOR DECISION-MAKING

- Monitor levels and trends of anti-TB drug resistance prevalence as an indicator of the effectiveness of TB control efforts
- Identify outbreaks of multi-drug resistance in certain settings
- Provide feedback to those regions or areas which participated in region-representative surveys
- Under special circumstances, review the policy of TB case management

SPECIAL ASPECTS

National quality assurance programmes to assure that the performance of each NRL is being monitored by an international laboratory network.

Reporting to WHO for international comparison of performance.

WHO set up a global network of supra-national reference laboratories (SRL) which are responsible for quality control in various countries. In addition, they exchange strains amongst themselves. This quality assurance allows for the international comparison of survey results.

WHO produced a simple software programme based on EPI Info for entering and analysing data from surveys. It can produce summary tables with the prevalence of drug resistance for each drug, analysed from different perspectives.

CONTACT

Regional Offices

See Regional Communicable Disease contacts on pages 15-20

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Foodborne diseases

RATIONALE FOR SURVEILLANCE

A foodborne disease is a disease, usually either infectious or toxic in nature, caused by agents that enter the body trough ingestion of food or drinking-water. In addition to diseases mentioned in the manual (e.g. salmonellosis, cholera, shigellosis, hepatitis A...) surveillance of other foodborne diseases could be carried out. The surveillance helps to determine the magnitude and trend of foodborne diseases and to monitor and evaluate food safety.
Surveillance is also needed for early detection and control of outbreaks, and identification of risk factors, as well as planning and evaluation of interventions.

RECOMMENDED CASE DEFINITION

Clinical case definition

The clinical case definition varies with the specific disease

Laboratory criteria for confirmation

Isolation of pathogen

Case classification

Suspected:	A case that meets the clinical case definition of a specific foodborne disease
Probable:	Not applicable
Confirmed:	A suspected case in whom laboratory investigation confirms the presence of one or more foodborne pathogens in a clinical specimen
Outbreak:	An incident in which two or more persons experience a similar illness after what is thought to have been a common exposure (ingestion of the same food or ingestion of water of the same source)

RECOMMENDED TYPES OF SURVEILLANCE

Parallel systems of surveillance may be used, depending on specific surveillance objectives

- Routine immediate reporting of case-based data on suspected cases form peripheral level to intermediate level (notifications). Routine weekly reporting of aggregated data on suspected and confirmed cases from peripheral to intermediate and central level
- Routine weekly case-based or aggregated reporting from laboratories on confirmed cases to intermediate and central level
- Sentinel surveillance (utilising reporting physicians or laboratories)
- Community studies

Sentinel surveillance or community studies can provide more detailed epidemiological and microbiological information. These systems may give a better picture of the true incidence and impact of disease in a defined population. However they are likely to miss outbreaks and as such do not represent a valid approach to outbreak detection.

All outbreaks should be investigated and notified to the intermediate and central level.

International: All major foodborne disease outbreaks, particularly those implicating a commercial product, should be reported to the Programme of Food Safety and Food Aid, WHO (Global databank on foodborne diseases (notified cases); global databank on foodborne disease outbreaks (under development), and regional programmes for surveillance of foodborne diseases).

Note : A minimum data set should be collected on each outbreak at intermediate and central level. This should be done after the outbreak investigation and should include key variables describing the nature and extent of the outbreak.

RECOMMENDED MINIMUM DATA ELEMENTS

Case-based data at peripheral level

Case classification (suspected/confirmed)
Unique identifier, age, sex, geographical information
Date of onset, diagnosis, travel history
Suspected food, where purchased, prepared, consumed

Aggregated data for reporting

Number of cases by age group, sex, geographical area, week.

Case-based data from laboratory

Unique identifier, age, sex, geographical information
Date of onset, date of specimen
Specimen type, organism(s) identified.

Aggregated data from laboratory

Number of cases by age group and sex, by geographical area, by week, by organism.

Outbreaks aggregated data:

Number of people at risk/ill/hospitalised/dead
Geographical information, outbreak setting (e.g. restaurant, hospital, school)
Date of first and last case
Food or constituent implicated, causal agent
Contributing factors (e.g. storage, heating, cross-contamination, food handler, environment)

RECOMMENDED DATA ANALYSES, PRESENTATION, REPORTS

Surveillance data

Frequent review of clinical and laboratory data looking for clusters of cases in time, place or person. All suspected clusters should be investigated to establish whether an outbreak has occurred

Incidence of disease notifications and laboratory identifications by week, geographical area, organism, age group and sex (map incidence by geographical area if possible)

Outbreak investigation data

Incidence of outbreaks by month, geographical area, setting of outbreak, causal agent, attack rate, duration of outbreak, foods implicated and factors contributing to the outbreak.

PRINCIPAL USES OF DATA FOR DECISION MAKING

- Determine the magnitude of the public health problem
- Detect clusters/outbreaks on time
- Track trends in foodborne disease over time
- Identify high-risk food, high-risk food practices and high-risk populations for specific pathogens.
- Identify emergence of new pathogens
- Guide the formation of food policy and monitor the impact of control measures
- Assess risk and set standards
- Provide information to enable the formulation of health education in food safety

See also "Surveillance of foodborne diseases: What are the options" Food safety unit WHO

SPECIAL ASPECTS

Human surveillance should be linked with food safety and control authorities.
Some diseases (e.g. salmonellosis) have a specific surveillance system which requires reference laboratories for detailed serotyping.

CONTACT

Regional offices

See Regional Communicable disease contacts on pages 15-20

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ANNEX 1

Surveillance Definitions

Active case-finding The dynamic identification of the occurrence of a disease or health event under surveillance. (e.g. house visits by community workers to identify cases of tuberculosis).

Active surveillance Routine surveillance where reports are sought dynamically from participants in the surveillance system on a regular basis (e.g. telephoning each participant monthly to ask about new cases).

Aggregate surveillance The surveillance of a disease or health event by collecting summary data on groups of cases (e.g. in many general practice surveillance schemes clinicians are asked to report the number of cases of a specified diseases seen over a period of time)

Attack rate The proportion of those exposed to an infectious agent who become (clinically) ill.

Case A person who meets the case definition.

Case definition A set of diagnostic criteria that must be fulfilled to be regarded as a case of a particular disease. Case definitions can be based on clinical criteria, laboratory criteria or a combination of the two.

Case classification Gradations in the likelihood of being a case (e.g. suspected/probable/confirmed). This is particularly useful where early reporting of cases is important (e.g. Ebola haemorrhagic fever) and where there are difficulties in making definite diagnoses (e.g. specialised laboratory tests required).

Case-based surveillance The surveillance of a disease by collecting specific data on each case (e.g. collecting details on each case of Acute Flaccid Paralysis in polio surveillance)

Case fatality rate The proportion of people who die as a proportion of all cases. This will vary depending on the case definition used.

Cluster The occurrence of an unusual number of cases in person, place or time.

Community surveillance Surveillance where the starting point is a health event occurring in the community and reported by a community worker or actively sought by investigators. This may be particularly useful during an outbreak and where syndromic case definitions can be used. (the active identification of community cases of Ebola virus infection in Kikwit was an example of this type of surveillance)

Comprehensive surveillance The surveillance of a specified disease or health event in the whole population at risk for that event. (e.g. AFP surveillance)

Contact An individual who has had contact with a case in a way that is considered to have cause significant exposure and therefore risk of infection.

Due dates The dates by which reports from a specified period should be received by the each level of a surveillance system. (used to calculate timeliness)

Endemic The constant presence of a disease within a given geographic area or population group.

Enhanced surveillance The collection of additional data on cases reported under routine surveillance. The routine surveillance is a starting point for more specific data collection on a given health event. This information may be sought from the reporter, the case, the laboratory or from another surveillance data set.

Epidemic The occurrence of cases of an illness clearly in excess of expectancy. This is often referred to as an outbreak (more neutral).

Epidemiological case definition The definition of a case used for reporting to the surveillance system. The definition may be clinical, laboratory or both. It may relate to a specified disease (e.g. measles, yellow fever) or may identify a syndrome (e.g. meningitis, AFP)

Exception flagging (reporting) system an automated system of data analysis which calculates thresholds for unusual events or exceptions.

Exposure Someone who has met with an infectious agent in a way that we from experience know may cause disease has been exposed.

Feedback The regular process of sending analyses and surveillance reports on the surveillance data back through all levels of the surveillance system so that all participants can be informed of trends and performance.

Health event Any event relating to the health of an individual (e.g. the occurrence of a specific disease or syndrome, the administration of a vaccine or an admission to hospital)

Hospital surveillance Surveillance where the staring point for a report is the admission of a patient to hospital with a particular disease or syndrome.

Incidence The number of persons who fall ill with a certain disease during a defined time period

Infectious Disease An illness due to a specific infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal, or reservoir to a susceptible host, either directly or indirectly through an intermediate plant or animal host. vector, o r inanimate environment.

Intensified surveillance The upgrading from a passive to an active surveillance system for a specified reason and period (usually because of an outbreak). It must be noted that the system becomes more sensitive and secular trends may need to be interpreted carefully.

Laboratory surveillance Surveillance where the starting point is the identification or isolation of a particular organism in a laboratory. (e.g. surveillance of salmonellosis)

Mandatory surveillance A surveillance where participants must report to the system. Notifiable diseases are one example of a mandatory system where reporting is by law. Another may occur where for example a heath authority requires all public laboratories to report specified diseases. This is usually not be law but is linked to their contractual duties.

Notifiable disease A disease that must be reported to the authorities by law or ministerial decree.

Outbreak The occurrence of two or more linked cases of an communicable disease

Passive surveillance Routine surveillance where reports are awaited and no attempt make actively seek reports from the participants in the system.

Primary care surveillance Surveillance where the staring point for a report is a new consultation for a particular disease or syndrome with a primary care physician or health worker at a clinic.

Performance indicators Specific agreed measurements of how participants are functioning within the surveillance system. These indicators may measure both the process of reporting (e.g. completeness, timeliness) action taken in response to surveillance information (e.g. % cases investigated) and the impact of surveillance and control measures on the disease or syndrome in question (e.g. % of outbreaks detected by the system, % drop in cases over a specified time period).

Periodicity The presence of a repeating pattern of excess cases. The repeater can be in years, months or weeks.

Prevalence The number of persons who have a disease at a specific time

Reporting completeness Proportion of all expected reports that were actually received (usually

stated as "% completeness as of a certain date").

Reporting timeliness Proportion of all expected reports that were received by a certain due date.

Reporting system The specific process by which diseases or health events are reported. This will depend on the importance of the disease and the type of surveillance

Routine surveillance The regular systematic collection of specified data in order to monitor a disease or health event.

Sentinel surveillance The surveillance of a specified health event in only sample of the population at risk using a sample of possible reporting sites. The sample should be representative of the total population at risk.

Serosurveillance The surveillance of an infectious disease by measuring disease specific antibodies in a population or sub-population

Surveillance The systematic collection, collation and analysis of data and the dissemination of information to those who need to know in order that action may be taken.

Surveillance report A regular publication with specific information on the disease under surveillance. It should contain updates of standard tables and graphs as well as information on outbreaks etc. In addition it may contain information on the performance of participants using agreed performance indicators.

Surveillance sensitivity The ability of a surveillance system to detect an outbreak. (The proportion of all outbreaks that could have been detected by the system)

Surveillance predictive value The likelihood that an "outbreak" detected by a surveillance system is truly an outbreak

Survey An investigation in which information is systematically collected. It is usually carried out in a sample of a defined population group and in a defined time period. Unlike surveillance it is not ongoing though it may be repeated. If repeated regularly surveys can form the basis of a surveillance system.

Unusual event The occurrence of a disease or health in excess of the expectation. This expectation is a either a static or dynamic threshold set by the system

Zero reporting The reporting of zero cases when no cases have been detected by the participant. This allows the next level of the system to be sure that the participant has not sent data that has been lost or has forgotten to report.

EPI INFO

WHAT
Epi Info is a series of microcomputer programmes for word processing, data management and epidemiologic analysis, designed for public health professionals. Epi Info is easy to use, but also offers programming languages for both data input and analysis so that permanent health information systems can be developed.

EPI INFO SOFTWARE CONTAINS
Epi Info: this allows rapid set-up of new entry forms and data files, easily customized data entry, and many data management and analysis techniques.
Epi Map: this displays counts or rates on geographic maps supplied or drawn on the screen. Colours, shading dots, or noncontiguous cartograms can be used to show any type of numeric data related to map.
DoEpi: this is a series of educational studies and computer exercises designed to teach both epidemiology and the use of Epi Info. An instructor's module is included.
SSS1: this provides functions for Box Jenkins Time Series analysis, "Figure 1" MMWR graphs, robust trend analysis, and comparison of surveillance data form two sources.

WEBSITES
You can download all the programmes from the Website

CDC Epidemiologic Software (English)
URL (USA): http://www.cdc.gov/epo/epi/software.htm

WHO Homepage WHOSIS (English)
Switzerland: ftp://ftp.unaids.org/inet/ftp/epi/index.html

Epi Info Manuals from Brixton Books UK (English
URL (UK) http:/mkn.co.uk/help/extra/people/Brixton_ Books

EpiConcept (French)
URL (France): http.//www.epiconcept.fr/epiinfo.html

USD, Inc. (English)
URL (USA): http://www.usd-inc.com/phi.html

Epi Info Brazilian Homepage (Portugees)
URL (Brazil): http://www.lampada.uerj.br/epiinfo.html

Epi Info Swedish Homepage (Swedish)
URL (Sweden): http://www.umu.se/socialmedicin/epi/info.htm

Epi Info Norvegian Homepage (Norvegian)
URL (Norway):http://www.gruk.no/epi-info/

Epi Info German Homepage (German)
URL (Germany): http://www.shuttle.de/lga

Epi Info Usergroup BeNeLux (Dutch)
URL (The Netherlands): http://www.inter.NL.net/hcc/Koomen.Em/epinl.html

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