
IMPROVING ROUTINE SYSTEMS

FOR SURVEILLANCE OF

INFECTIOUS DISEASES

INCLUDING EPI TARGET DISEASES:

GUIDELINES FOR NATIONAL PROGRAMME MANAGERS



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on Immunization



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INTRODUCTION

The World Health Assembly has endorsed the World Summit for Children goals for immunization as follows:

- Maintenance of a high level of immunization coverage (at least 90% of children under one year of age by the year 2000) against diphtheria, pertussis, tetanus, measles, poliomyelitis, tuberculosis and against tetanus for women of childbearing age;
- By 1995, reduction by 95% of measles deaths and reduction by 90% of measles cases compared to pre-immunization levels as a major step towards the global eradication of measles in the longer run;
- Elimination of neonatal tetanus by 1995; and
- Global eradication of poliomyelitis by the year 2000.

To achieve these goals there must be disease surveillance systems that enable managers to collect data about the occurrence of these diseases; report, compile and analyse data; and take corrective and preventive actions.

New or parallel systems are not needed to meet EPI goals: in most cases, improvement of existing routine systems for surveillance of infectious diseases will be enough. However, if the EPI goals are to be met on time, problems such as failure of facilities to report, failure to report on time or to report accurately, and failure of managers to use the data that are reported, must be corrected.

These guidelines are intended to provide practical, step-by-step instructions for managers at the national level on how to assess and improve disease surveillance systems for EPI purposes. Since the primary responsibility for disease surveillance may not be in the hands of the national immunization programme manager but located elsewhere in the Ministry of Health, other managers may also have an interest in these guidelines. Workshops on disease surveillance for officers from all relevant units will help develop a common understanding of the characteristics of an effective disease surveillance system and of their own system's specific needs for improvement. These guidelines could serve as a reference tool for such workshops.

Steps One through Five below describe how to include measles, neonatal tetanus, and poliomyelitis as reportable diseases within the country's existing surveillance system, how to ensure timeliness and completeness of reporting, and how to organize and manage the system. Step Six examines other surveillance activities that can be used to obtain supplementary information on disease occurrence. When the existing system is fully operational, the Final Step will provide guidance on how to make it more efficient by evaluating and revising the list of reportable diseases.

STEP ONE: Get acquainted with the purposes of routine disease surveillance

A good routine disease surveillance system¹ can accomplish the following objectives:

1. Enable managers to:
 - determine whether their disease control strategies are effective;
 - identify problems in immunization service delivery;
 - identify high risk areas and population groups;
 - demonstrate the impact of immunization services at the health centre, district, and central level.
2. Increase the motivation of health workers at all levels by giving them feedback on how their data are being used to improve immunization services and the health of children.
3. Help sustain or increase national and external support by showing the effectiveness of immunizations in reducing morbidity and mortality.

The objectives that you set for your disease surveillance system may differ from those suggested above but in any case should direct health workers to collect information that leads to concrete action.

¹ A routine disease surveillance system is one in which, in principle, all health facilities (including health centres, private practitioners, and hospitals) regularly submit information to their district offices on the number of cases of the reportable diseases. The district offices in turn report to a higher level. Sentinel systems are addressed in Step Six on supplementary sources of data.

STEP TWO: Decide what characteristics your routine disease surveillance system must have to serve the purposes described in Step One

For a disease surveillance system to achieve the objectives set out in STEP ONE and contribute to EPI disease reduction, elimination, and eradication goals, it must have two characteristics:

1. *Measles, neonatal tetanus, and poliomyelitis* must be reportable.
2. Reporting must be *timely and complete*.

As immunization coverage reaches high levels (80% and higher) and the incidence of each target disease decreases, other characteristics become important:

3. Health facilities must have the capability to report cases of certain diseases *immediately* to a designated office, and the designated office must have the capability to respond immediately with case investigations, intensive surveillance, and control or containment measures. For example, in many countries all suspected cases of poliomyelitis (i.e. all cases of acute flaccid paralysis, especially in children under five (5) years of age) must be reported immediately so that prompt action can be taken. Cases reported immediately should be included in monthly or weekly routine surveillance reports.
4. *Reporting* must be *accurate*. The less frequently the disease occurs, the more important is the identification of each suspected case of the disease. Every case identified must be properly reported.
5. *Diagnosis* must be *accurate*. All health workers must know and meticulously apply the standard case definition of each reportable disease.
6. The disease surveillance system must be *organized* and *managed* in such a way that disease incidence information flows routinely from health facilities to the national level. This can be achieved by assigning a focal person on each level to collect and report data, setting deadlines for submission of reports, tracking down tardy reports, and other measures described throughout this guide.

STEP THREE: Assess your routine disease surveillance system with respect to the characteristics identified in Step Two

Once you have set objectives and decided what characteristics your system should have, you must assess your system to see how it "measures up".

Your knowledge of your disease surveillance system may tell you what condition it is in without conducting the assessments suggested below. If you already know that your system does not have the required characteristics, save time and resources and begin making improvements without going through the assessment step.

The assessment methods described here can be used later for monitoring your improved system.

Ask the following five questions about your system:

1. **Are measles, neonatal tetanus, and poliomyelitis included among the reportable diseases?**

In many countries, measles, polio, and tetanus are reported, but *neonatal tetanus (NT)* (tetanus in infants in the first month of life), is not. Since neonatal tetanus is the disease targeted for elimination, it must be distinguished from other cases of tetanus.

2. **Is reporting timely and complete?**

Reporting is *complete* when reports from all of the health facilities that are supposed to report are received at the district level and when reports from all districts are received at the central level. Reporting is *timely* when reports are received by a set date or within a set period of time. (See STEP FOUR, substep 4.2 for a discussion on what the period should be.)

To assess both the timeliness and completeness (or timeliness/completeness) of reporting in your surveillance system, compute the *percentage* of reports that are received *on time* at the district and central levels. To do this, select a sample of districts representing different parts of the country. Include at least one urban area in the sample.

If due dates or time periods have been set and managers routinely record the date on which reports are received, select one month in each quarter of the previous year (for example, February, May, August, and November) and examine the report receipt records for those months in the above sample. Compare the number of reports received on time to the number expected. You should have 100%!

On the other hand, if no due dates have been set or if health workers don't know them, you have identified a problem that must be resolved. (See STEP FOUR, substep 4.2). In the absence of known due dates, you can obtain a rough estimate of timeliness and completeness by counting the number of reports for one month that are received before the end of the next one.

You have identified yet another problem if no-one at the district level records the receipt of each report. (For a solution, see STEP FOUR, substep 4.6.) In this case, ask the managers in your sample of districts to record the receipt of reports over the next month or two. (Have them use the Report Receipt Record form in Annex A if no other form is available.) At the end of the test period, compare the number of reports received on time to the number expected.

Use the same method at the central level to examine the timeliness/completeness of reporting from the districts.

3. Does the immediate reporting work?

If you require that certain diseases be reported as soon as they are detected, you can assess the extent to which this occurs by calculating the percentage of suspect cases recorded in the patient register that were reported within 24 hours after detection by a health worker.

Since the purpose of immediate reporting is to take immediate action, you should also assess the percentage of reported suspect cases for which investigations were begun within 48 hours of detection.

If most of the immediately reportable cases are reported within 24 hours and are investigated within 48 hours, your immediate reporting and response system is very good.

4. Is reporting accurate?

Reporting is *accurate* when *all* cases of reportable diseases diagnosed at participating health facilities are reported.

You may assess reporting accuracy by a record review, i.e., by comparing the number of cases reported to the number shown in patient registers. First, select a sample of participating health facilities that are typical of different areas of the country, including urban areas.

Select the latest month for which reports were received from the health facility. Compare the number of cases of one or two of the reportable diseases, for example measles and polio, that were recorded in the patient register with the number reported for the month.

If the numbers are the same, you may judge the health facility's reporting accuracy to be good.

5. **Is the diagnosis of reportable diseases accurate?**

The investigation of reporting accuracy in question 4 above will not tell you whether *diagnosis* of the reported diseases is accurate.

You can assess diagnostic accuracy during supervisory visits by asking health workers what the standard case definitions are. You can also describe hypothetical or real cases and ask health workers what their diagnoses would be or observe health workers when they are making diagnoses.

After assessing your disease surveillance system, either based on your own knowledge or by conducting the assessments suggested above, turn to STEP FOUR which will help you to make changes in your existing system and monitor its operation.

STEP FOUR: Improve your disease surveillance system to enable it to serve EPI purposes

You can now begin to improve your system based on the results of the assessment described in STEP THREE. Your first priority should be to include the three EPI target diseases (measles, neonatal tetanus, and polio) in the reporting system and to ensure reporting timeliness and completeness. The improvements required to do this are described in Substeps 4.1 through 4.6 below.

After you have made the first priority improvements, you can begin to work on other aspects of your system, such as initiating immediate reporting of selected diseases and improving reporting and diagnostic accuracy. These are described in Substeps 4.7 through 4.11.

4.1 Decide who should participate in the disease surveillance system and who is responsible for which activities at each level

If you have not already done so, your first step is to specify which health facilities will participate in your disease surveillance system and how information will flow from them up to the national level. Health facilities that should be expected to report routinely include health centres, MCH clinics, children's hospitals, private practitioners, well-baby clinics and polio rehabilitation centres.

All health centres should participate, although some countries may still rely on sentinel sites instead until they establish routine disease surveillance capabilities. District and/or regional health offices should be involved in the system, as should an office at the national level.

Consider the following in assigning specific responsibilities at each level:

- a. **Health facility responsibilities**
 - Keep records of cases in the patient register
 - Analyse records to detect trends or possible outbreaks
 - Investigate all cases of NT and take appropriate action²
 - Report to the district level within the required time period.

² See *Guidelines for Investigating Suspected Cases of Neonatal Tetanus*. Also see Annex B for a sample NT case investigation form.

b. District responsibilities

- Receive disease surveillance reports from health facilities, and record date of receipt
- Analyse health facility reports to detect trends or possible outbreaks
- Identify high risk areas or population groups within the district
- Take action, e.g., conduct a case or outbreak investigation and initiate supplemental immunization activities
- Report to the next level in the surveillance chain within the required time period
- Give feedback to health facility staff
- Follow up on reporting defaulters
- Conduct supervisory visits
- Identify needs for health worker training.

c. Central level responsibilities

- Receive disease surveillance reports from mid-level (district or regional) staff and record date of receipt
- Analyse reports to detect trends and possible outbreaks
- Identify districts at high risk for measles, neonatal tetanus, or polio
- Take action in response to reports
- Decide whether to change immunization strategies, procedures, or policies
- Follow up on reporting defaulters
- Conduct supervisory visits
- Give feedback to staff
- Identify needs for training
- Report to WHO.

4.2 **Decide *when* routine reports should be submitted and set due dates**

If you have not yet done so, decide when routine disease surveillance reports should be submitted by each level in the system and set due dates.

Monthly or weekly. For most countries, monthly reporting is sufficient.

Due dates. Set a reasonable time by which monthly reports must be submitted from each level, i.e., health facilities and districts (and regions if they are included in the system). The deadline for health facilities' monthly reports should be no more than thirty (30) days from the end of the reporting period.

In most situations, eight weeks should be enough time for monthly reports to be processed from the facility to the central level.

Remember that the older the data, the less meaning they will have and the less effective will be the response.

4.3 **Make sure that measles, neonatal tetanus, and polio are included in your list of reportable diseases**

Measles, neonatal tetanus, and polio must be included in your disease surveillance system for EPI purposes. If one of these diseases, most commonly neonatal tetanus, is not on your list, do not change existing reporting forms at this time but tell health workers to add the missing disease in handwriting. It is essential to report neonatal tetanus separately from tetanus.

4.4 **Decide what should be reported and how to report it**

Decide what should be reported. *Keep your requirements to a minimum.* You need very little data to identify problems and take action.

Monthly (or weekly) reports need to provide only *the number of cases of each reportable disease*. No more needs to be reported. If additional information is desired, it can be obtained from other sources, such as outbreak investigations, surveys, and special studies. (When reporting on the three EPI target diseases is timely and complete, you may add a requirement that facilities report the number of cases by age groups, e.g. less than one year, 1-4 years, 5 years and above).

Reports from district to higher levels should contain the total number of cases of each disease in the district and the number of facilities reporting.

Zero reporting. If no cases of a reportable disease have been diagnosed, facilities must report that fact with a zero (0). If the space is left blank, report recipients will not know what the lack of data means.

If no case of *any* of the reportable diseases is detected during a reporting period, a report must be submitted with a zero showing for each disease. This will tell managers at the next level that a complete report has been submitted by the health facility or district. If every reporting unit does the same, there will be no gaps in the data.

In some countries, no cases of neonatal tetanus or polio have been reported for several years. In such countries, the health authorities should assess whether the routine reporting of zero cases should stop and be replaced by reporting and responding to any suspected case as a national emergency.

Deaths. The number of deaths caused by reportable diseases should not be included in regular reports. Reporting both cases and deaths complicates the process without providing information that cannot be obtained elsewhere in better quality, such as case and outbreak investigations and community-based disease surveys.

Monthly Surveillance Report Form. A standard disease surveillance report form should be used throughout the system. That form should provide managers with the information they need without adding unnecessarily to the reporting burdens of health workers.

Do not replace old forms or introduce new ones. The process of revising existing forms and then familiarizing health workers with them is time-consuming, so you should limit changes to the minimum needed to meet the immediate goal of reporting cases of measles, neonatal tetanus, and polio. More extensive revisions may be considered later. See THE FINAL STEP.

If you do not have a report form for health facilities' use, see Annex D for an example. The form in the annex includes a request for information on trends in disease incidence and actions taken. This information helps managers decide what action they should take.

District- and central-level managers will need similar forms for compiling data from the lower level and for reporting upwards.

4.5 Introduce standard, official case definitions for *newly reportable EPI target diseases*

A standard, official case definition is needed for each reportable disease in a disease surveillance system. If you add neonatal tetanus to your list of reportable diseases, for example, you must provide health workers with a definition. (See Annex G.)

Write the definitions so that they are understandable to the most peripheral health worker. Send them to all health workers, give them training in how to apply the definitions, and monitor their use through supervision.

4.6 Design a monitoring system for timeliness and completeness of reporting

When you have decided who will participate in the system, when reports will be submitted, and what will be reported, you must develop the capability for monitoring the timeliness and completeness of reporting.

The single, most effective indicator for reporting effectiveness is a combination of timeliness and completeness. This is measured by the number of reports received on time compared to the number expected and must be measured immediately after the due date for the reporting month. Timeliness of reporting is important because response must be timely if it is to have any effect.

However, in many countries, the number of cases reported on a timely basis is incomplete because not all units have reported. The compilation of the reports that have been received on time may be labeled "incomplete" or "provisional"; and, as late reports are received, the number of cases will be updated.

A report receipt record is an excellent monitoring tool that can help you keep track of both timeliness and completeness. If you use it routinely to record the dates on which reports are received, you can assess reporting effectiveness at a glance. You can measure how many (and which) reporting units have submitted reports for a given month and how many (and which) have been on time. (See Annex A for an example of a report receipt form for district managers. This can easily be adapted for regional and central levels.)

Reporting timeliness and completeness to other levels. Along with the number of cases detected (or zero cases), timeliness and completeness information should be reported to the next level to help managers evaluate the quality of the data that is being sent. For example, when a district reports to the central office that two cases of neonatal tetanus have been detected in the month, the central level must also be told how many facilities have reported. Two cases from 100% of the facilities is quite different from two cases from only 50%.

For this reason, monthly disease surveillance reports from districts and upwards should include a notation on the number of units expected to report and the number of reports received on time. In addition to the number of cases reported for the month, the report should also give the cumulative number of cases reported since the beginning of the year including cases from late reports for previous months. This will provide managers with a complete picture of disease incidence in the reporting unit. (See Annex E.)

The *percentage* of health facilities reporting on time for the specified period should accompany the national report of disease incidence given to WHO.

Reporting follow-up. Contact report defaulters and ask them for overdue reports and the timely submission of reports in the future. Such follow-up will help convince participating facilities of the importance of disease surveillance and will also identify needs for additional training or more intensive supervision.

4.7 Design a system for the immediate reporting of specific diseases

To make any of the EPI diseases that are targeted for reduction, elimination, or eradication *immediately reportable*, the health sector should have the capability and the resources to initiate an investigation as soon as a case is reported and, if needed, to take action to control or contain an outbreak.

In some countries with high polio immunization coverage (e.g. 80% or higher) and with enough resources to respond to reports of the suspected disease, any case of acute flaccid paralysis (AFP) in a patient below the age of 5 years must be immediately reported. Usually, reports must be made within 24 hours of detection of a suspected case and case investigations begun within 48 hours. These are followed by intensified surveillance and supplementary immunization activities.

Cases of AFP and other diseases that are reported immediately should be included in the monthly (or weekly) surveillance report.

4.8 Monitor reporting accuracy

The patient register kept in every health centre is the major source of information for determining the number of cases occurring in an area. For disease surveillance reporting and other purposes, the register should include the reason for each visit, i.e. the suspected diagnosis of an ill patient.

If your health facilities do not use patient registers, you should introduce them. (See Annex H for an example.)

If your registers do not include a space for health workers to record the reason for the patient's visit, ask them to begin writing down the reasons wherever there is space in the register. Then the register can become the basis for assessing reporting accuracy, as described in STEP THREE, Question 4.

4.9 Monitor diagnostic accuracy

Examine the case definitions of all three EPI target diseases that are included in your surveillance system. Make sure that they are written in such a way as to be understood by health workers at the most peripheral level. If definitions are not standard throughout the country, you must issue them. Standardizing definitions will increase diagnostic accuracy and consistency of data reported by health facilities. Adopting a definition officially will help ensure that the definition will be used.

Once you have official standard case definitions in place, district supervisors can monitor the accuracy of health workers' diagnoses during supervisory visits.

4.10 Plan supervisory visits

If you are changing your surveillance system to serve EPI purposes, you should identify the effects of those changes on health workers at all levels and make a plan for preparing them for their new responsibilities.

In addition to any training that might be necessary, district supervisors should intensify the supervision of health workers for at least six months after improvements have been initiated.

In their visits, supervisors can confirm that health workers:

- understand the role of disease surveillance in controlling specific diseases;
- prepare accurate reports and send them in a timely manner;
- apply official standard case definitions correctly;
- conduct case investigations correctly and take action to prevent further cases;
- use surveillance data appropriately to identify trends in disease incidence and to plan actions.

To find out whether health workers' diagnoses are accurate, district supervisors should check whether they know and use the standard official case definitions. They should find out whether health workers are using their disease incidence data to identify problem areas and plan solutions.

4.11 Provide feedback on disease incidence

For staff at all levels, feedback at regular intervals is an important part of a functioning disease surveillance system.

The central office should provide the following information to every district and health facility on a regular (quarterly or monthly) basis:

- Number of cases of each reportable disease, by month and cumulatively, by district;
- Number of districts and number of health facilities reporting on time for the month compared to the number expected to report. Consider naming defaulting districts and facilities;
- Overall assessment of reporting timeliness and completeness;
- Discussion of common problems and recommended actions.

These surveillance summaries should be distributed whether reporting has been complete or not. When data are missing, the reports can be labelled "provisional" and updated as new data are received.

4.12 Motivate your staff to do effective surveillance

In addition to providing supervision and feedback, you can motivate health workers in the following ways:

- Make sure that you look in their patient registers during supervisory visits and discuss issues with them;
- Have monthly meetings with health workers at district and regional levels to discuss progress, problems, and plans;
- Train health workers "on the spot" whenever you see a problem. Also, assess shared training needs and organize sessions to meet them;
- When close to a goal of eradication or elimination, consider giving rewards for detecting cases.

4.13 Make sure that you have logistical support to carry out surveillance

Logistical support is of major importance in all EPI activities. Determine what transport, supplies, and other material that you need for surveillance and for responding to reports of suspect cases, and make sure that your support needs can be met.

STEP FIVE: Evaluate your improved disease surveillance system

When the improvements in your disease surveillance system are implemented and have become routine, the system should be evaluated every year to determine whether:

1. Objectives (STEP TWO) are being met.
2. Surveillance data are being used as the basis for action.
3. Improved surveillance has had an impact.

1. **Objectives.** To measure the extent to which objectives are being met, use the methods described in STEP THREE.
2. **Use of data.** To measure the extent to which surveillance data have been used as the basis for action, review a sample of routine disease surveillance reports and determine whether they include trend analysis and a description of the action taken. Additional information about actions taken as a result of disease surveillance data can be collected through interviews with staff and from records such as case investigations and reports of outbreak control activities.
3. **Impact.** Improving your disease surveillance system can have an impact on the reporting of disease incidence and on disease incidence itself.

With respect to *reporting*, you can measure whether more facilities are reporting on time now than before the improvements were made.

To measure the impact on *disease incidence*, you can compare the numbers of cases reported before the improvements to the numbers reported afterwards. At the beginning the numbers will rise because of better reporting, but eventually you will see a decline if surveillance information has been followed by disease control efforts. A decrease in cases can be attributed, at least partly, to improved disease surveillance if you are using this as the basis for corrective action.

STEP SIX: Use supplementary sources of data on disease occurrence

At least three other activities may serve as supplementary sources of data on disease occurrence: outbreak investigation, sentinel surveillance, and community-level disease surveillance.

6.1 Outbreak Investigation

Outbreak investigation is an action triggered by the report of a suspected case or cases of a reportable disease. One of its purposes is to identify suspect cases in addition to the ones reported.

Suspicion of an outbreak may arise as a result of the routine disease surveillance system or may come from other sources, such as rumours among the population or newspaper reports. Constant monitoring of these outside sources is a responsibility of disease surveillance managers.

During an outbreak, health workers carry out intensive surveillance activities, often going from house to house in a defined area to identify unreported cases.

The outbreak investigation itself will provide information that will help in planning immediate control measures. In addition, you can obtain information on morbidity and mortality, age distribution of cases, immunization status of cases, attack rates among immunized and non-immunized individuals, and behavioural risk factors for disease or death. This information, not available through the routine system, is useful in planning future prevention activities.

For details on how to conduct outbreak investigations and to respond to outbreaks, see *Training for Mid-level Managers: Disease Surveillance; Responding to a Polio Outbreak: Case Investigation, Surveillance and Control: A Managers' Checklist;* and *Guidelines for Investigating Suspected Cases of Neonatal Tetanus*. A list of references is given on page 27.

6.2 Sentinel Surveillance

A sentinel surveillance system is one in which specific health facilities are selected to report on the cases they see. Sentinel sites may be used as an alternative until a routine system can be fully established or can supplement a routine system when data of a particular kind are otherwise not available.

When sentinel sites are used as *alternatives* to routine systems, to the extent possible they should be representative of all health facilities in the country. Sentinel sites must be able and willing to keep records and make regular reports.

For rare diseases and for diseases that occur in certain areas or population groups, e.g. neonatal tetanus and cholera, sentinel surveillance alone is usually inadequate.

On the other hand, hospitals, rehabilitation centres or health facilities serving population groups that are at special risk for certain diseases, such as polio, may *supplement* data from routine sites.

Sentinel sites are usually not representative of the entire country, so the data that they provide are limited in use. However, they can usually provide more information on cases (e.g. age groups and immunization status), than health centres in a routine system and have value for that reason. Because of their completeness of reporting, sentinel sites may also more accurately detect real disease trends, at least in the areas in which they are located. See Annex F for an example of the kind of data that might be reported by a sentinel site.

6.3 Community Level Surveillance

In any surveillance system, routine or sentinel, if health workers do not see a case of a reportable disease, the case will not be reported. The only way that such cases can be brought into the system is to involve the community. As diseases that are targeted for reduction, elimination, or eradication become rare, it is even more important to involve the community in surveillance.

Community health workers, healers, traditional birth attendants and community leaders should know what the reportable diseases are and how to recognize them. Encourage them to watch for these diseases among people in their community. They should urge people to seek care and should report suspected cases to the local health facility. Posters, disease recognition cards and community meetings will help alert the public to the problems. Bringing key members of the community in to a health facility to see actual cases may also contribute to their understanding.

When health workers are doing outreach immunization activities and mobile clinics, parents bringing their children for immunization should be asked whether cases of measles, neonatal tetanus, polio, or other diseases of public health importance (e.g. pertussis, meningitis, cholera) have occurred in their areas.

Effective response to case notification by a community member may be the best incentive for community participation in disease surveillance. Addressing community priorities for service delivery in addition to "professional needs" for data is also central.

Formal recognition of community involvement, through ceremonies, small gifts or other incentives are additional ways to encourage communities to become active participants in the country's disease surveillance system.

THE FINAL STEP: Streamline your disease surveillance system

Collecting data that do not give rise to corrective action is at best a waste of time. At worst, it can discourage health workers from reporting any cases of any diseases, and, as a result, reportable but unreported diseases continue their uncontrolled occurrence. This section, **THE FINAL STEP**, examines ways that you can reduce the amount of surveillance data collected.

If you wish to revise your system so that only *preventable* diseases are included, follow the steps below to determine whether to delete any of the diseases that are now on your list or add any new ones.

1. Set an objective for streamlining your disease surveillance system

To successfully streamline your routine disease surveillance system, your objective should be to include *only the infectious diseases of public health importance that can be prevented*, so that disease surveillance remains a tool for the prevention of disease.

In practical terms this means to delete from your disease surveillance system any disease that you cannot do anything about, either because there is no possibility for prevention and control or because no control programme is in operation for otherwise controllable diseases.

2. Decide what the criteria should be for making a disease reportable

To keep a disease in your routine surveillance system or to add one, make sure that it meets the following criteria:

- You can respond to a few cases, or even one case, of that disease with an investigation followed by the necessary containment measures;
- The disease is the subject of a specific disease reduction programme for which a reduction, elimination, or eradication target has been set;
- A case definition for the disease can be written that is understandable and applicable by health workers at the peripheral level. If it is impossible to write a clear, operational definition, the disease should not be considered a reportable disease.

3. Revise the list of reportable diseases

Maintain on your list of reportable diseases only those that meet the above criteria. Drop all other diseases, i.e. those for which you cannot prepare a standard case definition and those that you cannot prevent, either because of the nature of the disease or because you do not have the resources to respond.

If you are in doubt about whether or not to include a disease on your list of reportable diseases, leave it out.

Although some diseases will no longer be included in your routine system, this does not mean that you have no interest in them. If you need information on how one of these diseases is affecting the population, you may collect such data through special studies. For example, you can review a selected sample of patient registers annually to find out whether a disease is occurring or you can conduct community-based disease surveys.

4. Consider setting up disease surveillance capabilities for special purposes

If you cannot write a usable case definition or if a disease cannot be diagnosed without special equipment but the disease is of public health importance and has the potential of being controlled or prevented, consider developing a special capability for reporting that disease. You might ask facilities that have special equipment (e.g., X-ray machines) or skills (e.g. laboratory technicians) to report cases of such a disease. These facilities can provide reports on tuberculosis, hepatitis B, yellow fever, or typhoid fever, for example, that peripheral health centre staff typically would not be able to diagnose.

REMEMBER

DO NOT INCLUDE ANY DISEASE THAT CAN NOT BE PREVENTED, AND DO NOT ASK FOR ANY DATA THAT WILL NOT BE USED.

IF YOU FOLLOW THESE SUGGESTIONS, YOU SHOULD HAVE A SURVEILLANCE SYSTEM THAT MEETS YOUR OBJECTIVES AND THAT USES YOUR RESOURCES PRODUCTIVELY.

REFERENCES

1. *Guidelines for Investigating Suspected Cases of Neonatal Tetanus*, WHO/EPI, 1993.
 2. *Responding to a Suspected Polio Outbreak: Case Investigation, Surveillance and Control: A Managers' Checklist*, WHO/EPI, 1991.
 3. *Training for Mid-level Managers: Disease Surveillance*, WHO/EPI, 1991.
 4. Expanded Programme on Immunization, Global Advisory Group, *An Integrated Approach to High Coverage, Control of Measles, Elimination of Neonatal Tetanus and Eradication of Poliomyelitis*, 1992.
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LIST OF ANNEXES

- Annex A: Report Receipt Record
- Annex B: Case Investigation Form - Neonatal Tetanus
- Annex C: Case Investigation Form - Poliomyelitis
- Annex D: Monthly Surveillance Report - Health Facility
- Annex E: Monthly Surveillance Report - District
- Annex F: Monthly Surveillance Report - Sentinel Site
- Annex G: EPI Standard Case Definitions for Disease Surveillance Purposes
- Annex H: Patient Register

ANNEX A

Report Receipt Record

Reporting Sites	J	F	M	A	A	J	J	A	S	O	N	D
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												
13.												
No. reporting												
No. reporting on time												

Post a chart like this on the wall, and use it to record the dates on which you receive disease surveillance reports. By maintaining this chart you can tell which units (health facilities or districts) are reporting and which are reporting on time.

ANNEX B

Case Investigation Form — Neonatal Tetanus

Province: _____ Village: _____ Health centre: _____
 Date case reported: _____ Reported by: _____
 Date of investigation: _____
 Household address of case: _____
 Name and job title of investigator: _____

A. CASE INFORMATION

Family name: _____ Given name: _____
 Date of birth: _____ Sex: Male/Female
 How long has the mother been resident in the area? _____
 Ethnic group (if applicable): _____

B. IMMUNIZATION STATUS OF MOTHER AND ANTENATAL CARE

Was the mother immunized against Tetanus? Yes/No
 If yes, number of doses _____ date of last dose _____
 Did you see an immunization record? Yes/No
 Did the mother receive antenatal care? Yes/No
 If yes, location and dates: _____
 Did the mother visit a health facility for reasons other than antenatal care during
 this pregnancy? Yes/No
 If yes, give the reason for visit and dates: _____

C. BIRTH OF INFANT

Where was the baby born? Hospital/Home/Other _____
 If delivery was in an institution, give the name and address of the institution:

 Was the delivery attended by: doctor/ traditional birth attendant/
 nurse/ midwife/ other _____
 If attended by a traditional birth attendant, give the name and address:

 Describe how the cord was cut and with what type of equipment: _____
 Describe how the cord stump was treated or dressed: _____

D. SYMPTOMS

Date of onset of illness: _____

Did the child suck and cry normally for the first two days of life? Yes/No

If no, describe: _____

Did the child later have a problem with sucking? Yes/No

If yes, describe: _____

Was the child stiff later? Yes/No

Did the child later have convulsions? Yes/No/Unknown

Other complications? _____

E. TREATMENT/OUTCOME

Was the patient cared for in a health facility? Yes/No

If yes, where? _____

Was the patient seen by a health worker? Yes/No

If yes, give diagnosis: _____

Did the patient die? Yes/No

If yes, give date and details: _____

Comments: _____

F. TO BE ANSWERED BY HEALTH FACILITY STAFF:

Is this a case of neonatal tetanus? Yes/No

If yes, could this case have been prevented? Yes/No

If yes, describe: _____

What actions should be taken to prevent similar cases in the future? _____

ANNEX C

Case Investigation Form — Poliomyelitis

Poliomyelitis Case Investigation Form

Country: _____ Year: _____

SOURCE OF REPORT:

Date reported: _____ Person reporting case: _____
 Name and address of institution: _____
 Telephone number: _____

CASE IDENTIFICATION:

Name: _____ Sex: _____
 Date of birth: _____ Age at onset of symptoms: _____
 Present address: _____
 Village/city: _____ District/county: _____ State/Province: _____
 Permanent address: _____
 Village/city: _____ District/county: _____ State/Province: _____
 Mother's name: _____ Father's name: _____

HOSPITALIZATION:

Hospitalized? yes ___ no ___ Name of Hospital: _____ Medical record no.: _____
 Date Hospitalized: ___/___/___ Address: _____

SIGNS AND SYMPTOMS:

Date of onset of symptoms: ___/___/___

	yes	no	unk	yes	no	unk	yes	no	unk	
fever	___	___	___	headache	___	___	sore throat	___	___	___
constipation	___	___	___	nausea	___	___	irritability	___	___	___
coryza	___	___	___	stiff neck	___	___	vomiting	___	___	___
muscle pains	___	___	___	weakness	___	___	rigidness	___	___	___
diarrhea	___	___	___							

Date of onset of paralysis/paresthesia: ___/___/___

Fever present at onset of paralysis: yes ___ no ___ If yes ___ degrees

	yes	no	unk
paralysis	___	___	___
flaccid	___	___	___
asymmetrical	___	___	___
sudden onset	___	___	___
sensation loss	___	___	___

SITE OF PARALYSIS:

left leg	___	respiratory muscles	___
left arm	___	face	___
right leg	___	other cranial nerves	___
right arm	___		

SITE OF PARAESTHESIA:

Kernig or Brudzinski sign?	yes ___ no ___ unk ___	left leg	___	right leg	___
Babinski?	yes ___ no ___ unk ___	left arm	___	right arm	___

ANNEX C, cont.

IMMUNIZATION HISTORY:

Usual Immunization Clinic: _____

				imm. card		date of immunization
	yes	no	unk	yes	no	day /month/year
OPV zero	___	___	___	___	___	___/___/___
OPV 1	___	___	___	___	___	___/___/___
OPV 2	___	___	___	___	___	___/___/___
OPV 3	___	___	___	___	___	___/___/___
OPV 4	___	___	___	___	___	___/___/___

PRELIMINARY CLINICAL CLASSIFICATION:

Discarded Case: ___ Probable Case: ___ If not polio, give final diagnosis and comments below.
 Date: ___/___/___
 Comments:

TRAVEL AND CONTACT HISTORY:

Indicate all places outside present village/city (including other countries) visited by the patient 28 days prior to onset of paralysis/paresthesia.

Location	Person(s) visited	Date visited
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___

Did the case come in direct contact with another household or close contact who was immunized within 75 days before paralysis/paresthesia? yes ___ no ___ unk ___

Name	Address	Date Immunized
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___
_____	_____	___/___/___ to ___/___/___

LABORATORY DATA:

Name of laboratory: _____

Address: _____ Country: _____

Virus Isolation studies:

	date collected from patient	date sent to lab	date of lab result	polio virus isolated			other (specify)
				type 1	type 2	type 3	
Faeces/Swab 1	___/___/___	___/___/___	___/___/___	___	___	___	___
Faeces/Swab 1	___/___/___	___/___/___	___/___/___	___	___	___	___
Other	___/___/___	___/___/___	___/___/___	___	___	___	___

Serologic studies:

	date collected from patient	date sent to lab	date of lab result	neutralization titer			other (specify)
				type 1	type 2	type 3	
Blood sample:							
S1	___/___/___	___/___/___	___/___/___	___	___	___	___
S2	___/___/___	___/___/___	___/___/___	___	___	___	___
S3	___/___/___	___/___/___	___/___/___	___	___	___	___

Interpretation: _____

CSF (Cerebrospinal Fluid):

date	red cells	white cells	% lymphocytes	glucose	protein
___/___/___	_____	_____	_____	_____	_____
___/___/___	_____	_____	_____	_____	_____
___/___/___	_____	_____	_____	_____	_____

Poliovirus strain characterization results:

Poliovirus type	Strain characterization method	Results
_____	_____	_____
_____	_____	_____
_____	_____	_____

Other results and/or comments: _____

Autopsy? yes ___ no ___ **Pathology laboratory:** _____

material	date collected	date sent	date of result	histopathology result (attach report)
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

ANNEX C, cont.

CASE FOLLOW-UP:

Was case seen 60 days after onset of paralysis? yes ___ date ___/___/___ no ___
If no, why not? _____

Paralysis:

Paralysis present at 60 days or later? yes ___ no ___

If yes, check site of paralysis:

left leg ___ respiratory muscles ___
left arm ___ face ___
right leg ___ other cranial nerves ___
right arm ___

Disability:

cannot walk ___ walks with assistance ___
limps ___ walks normally ___ other _____

Did case die? yes ___ date ___/___/___ no ___ If yes, give details: _____

Report of neurologist:

(attach if available, including electrodiagnostic results)

Summary of neurologist's report, including final diagnosis: _____

Date ___/___/___ Name of reporting physician _____ Neurologist? yes ___ no ___

CONTROL MEASURES

(Include the date started, number of households searched, number of OPV doses given in children less than 5 years of age, date completed)

FINAL DIAGNOSIS:

Discarded: _____ Specify diagnosis _____

Confirmed: _____

Check all which apply:

- | | |
|---|---|
| <input type="checkbox"/> Laboratory confirmed - virus | <input type="checkbox"/> Death after compatible illness |
| <input type="checkbox"/> Laboratory confirmed - serology | <input type="checkbox"/> Epidemiologic linkage |
| <input type="checkbox"/> Laboratory confirmed - virus and serology | <input type="checkbox"/> No follow-up |
| <input type="checkbox"/> Residual paralysis after 60 days | <input type="checkbox"/> Vaccine associated |
| <input type="checkbox"/> Wild virus indigenous _____ Imported _____ | |

Observations: _____

SIGNATURE:

Name of investigator _____
Signature _____
Title _____
Place of Work _____
Date ____/____/____

Name of Surveillance Coordinator _____
Signature _____
Title _____
Place of Work _____
Date ____/____/____

ANNEX D

Monthly Surveillance Report — Health Facility

Health facility: _____ Dates: from _____ to _____

Disease	Tally cases of disease	Total number of cases
Poliomyelitis		
Diphtheria		
Pertussis		
Neonatal Tetanus*		
Tetanus > 1 month		
Measles		
Tuberculosis		

What are the possible explanations for increased/decreased number of cases, compared to last month?*

Actions taken and/or recommendations:**

Signature: _____ Date: _____

* Refers to children less than one month of age.

** Attach additional sheets if necessary.

ANNEX E

Monthly Surveillance Report — District

District: _____

Month: _____

Year: _____

1. Number of health facilities in the district: _____

2. Number of health facility reports received on time: _____

	Measles	Neonatal Tetanus	Polio
Number of Cases			
Number of facilities that reported			
Number of cases investigated			
Cumulative number of cases since the beginning of year			

Observations:

Monthly Surveillance Report — Sentinel Site

Health facility: _____ Dates: from: _____ to _____

Disease	Age group and immunization status of cases										Total cases	
	Less than 1 year old					1-4 years of age						5 or more years of age*
	Not immunized	1 dose	2 doses	3 doses	Not known	Not immunized	1 dose	2 doses	3 doses	Not known		
Poliomyelitis**												
Diphtheria												
Pertussis												
Tetanus > 1 month												
Neonatal tetanus**												
Measles												
Tuberculosis												

What are possible explanations for the increased or decreased number of cases?

Actions taken and/or recommendations:

Signature: _____ Date: _____

* Record all cases 5 or more years of age, irrespective of immunization status.
 ** OPV Zero doses are not counted.
 *** Refers to children less than one month of age. Record the mother's Tetanus Toxoid immunization status. Please make a note if the mother has received more than 3 doses of TT.

ANNEX G

EPI Standard Case Definitions for Disease Surveillance Purposes

Measles

Standard case definition: History of a generalized blotchy rash *and* history of fever *and* history of any one of the following: cough, coryza, conjunctivitis.

Lay definition: Fever *and* rash *and* any one of the following: cough, or runny nose, or red eyes.

Neonatal Tetanus

Standard case definition: History of normal suck and cry for the first two days of life *and* history of onset of illness between 3 and 28 days of age *and* history of inability to suck followed by stiffness or convulsions or both, *and* often death.

Lay definition: Normal suck and cry first two days of life *and* onset of illness between 3 and 28 days of life *and* inability to suck followed by stiffness or jerking of the muscles or both.

Poliomyelitis

Standard case definition: Any patient with acute flaccid paralysis, including any child less than five years of age diagnosed to have Guillain Barre syndrome, for which no other cause can be identified.

Lay definition: A sudden onset of paralysis without injury.

Diphtheria

Standard case definition: Acute pharyngitis, acute nasopharyngitis, or acute laryngitis, with a pseudomembrane.

Lay definition: Sore throat with gray patch or patches in the throat.

Pertussis

Standard case definition: History of severe cough *and* history of any one of the following: cough persisting two or more weeks, fits of coughing, or cough followed by vomiting.

ANNEX G, cont.

Lay definition: Repeated and violent coughing *and* any one of the following: cough lasting two or more weeks, fits of coughing, cough followed by vomiting, or, in older infants and children "whoop" sound.

Tuberculosis

Standard case definition: An ill child with a history of contact with a suspect or confirmed case of pulmonary tuberculosis. Or any child who does not return to normal health after measles or whooping cough; who is losing weight, coughing, and wheezing and does not respond to antibiotic therapy for acute respiratory disease; who has abdominal swelling with a hard painless mass and free fluid; who has painful swelling in a group of superficial lymph nodes; who has any bone or joint lesion of slow onset; or who has signs suggesting meningitis or disease in the central nervous system.

Lay definition: An ill child who has been in contact with someone who has tuberculosis. Or any ill child with one of the following: Does not turn to normal after measles or whooping cough *or* Loses weight, coughs, and wheezes and does not respond to treatment with antibiotics.

Tetanus

Standard case definition: The patient has:

1. A stiff jaw and has trouble opening his mouth or swallowing;
2. Painful stiffness of the neck and abdominal muscles, and perhaps other muscles;
3. A clear mind; and
4. A wound, often infected, or history of a wound within the past few weeks.

In severe cases, the patient may appear to be smiling (risus sardonicus) with raised eyebrows. His back and neck may be arched, arms bent with fists clenched at the chest, and legs extended. Noise, light, or touching the person may trigger convulsions.

Lay definition: Injury or ear infection followed by difficulty in opening the mouth, *or* jerking of the mouth, *or* stiffness of the neck or body.

ANNEX H

Patient Register

Month: JanuaryYear: 1990

Date of visit	Name and address	Age	Reason for visit	Repeat visit?	Services provided	Was patient immunized with all required doses? (e.g., all 3 doses of DPT or OPV)
2	Maria Falcon, Tomara	4 months	immunization		DPT2/OPV2	
2	Malikul Somtha, Tomara	10 months	measles		paracetamol + talcum powder	no
2	Alaba Idris, Tomara	2 years	dyentery		ORS and antibiotics	
2	Halida Akrona, Bakul	7 months	malaria		chloroquine 1 DPT3/OPV3	
2	Teresa Garcia, Bakul	6 months	polio		referred to district hospital	no

* This column is completed only for patients with a vaccine-preventable disease, and only concerns the vaccine that is supposed to prevent the disease. The child must have been given the vaccine at least two weeks before the onset of disease to be considered "immunized". If the disease is Neonatal Tetanus, record the mother's immunization status for Tetanus Toxoid.