
Principles of Disease Surveillance

Source: World Health Organization

Public health **surveillance**

A method to monitor occurrences of public health problems.

Surveillance

Surveillance is the ***ongoing systematic*** collection, collation, analysis and interpretation of data; and the dissemination of information to those who need to know in order that **action** may be taken

Indicator-Based Surveillance

IBS is the systematic (regular) collection, monitoring and interpretation of structured data, which contribute to early warning.

Data collection:

- usually passive

Sources of information:

- mainly healthcare-based immediately reporting unusual disease pattern and grouped under “case-based surveillance”.
- non-(human) health sources

Data:

- structured, organized, and regular
- represent individual or aggregated cases,
- disease-specific or syndromic,
- come from exhaustive or sentinel systems

Interpretation:

- comparison with baseline values or thresholds defined in advance
- determine unusual disease patterns

Event-based Surveillance

EBS is the organized and rapid capture of information about events that are a potential risk to public health.

Data:

- Rumors
- Other ad-hoc reports transmitted through formal and informal, including:
 - Events related to the occurrence of disease in humans
 - Events related to potential exposure for humans (i.e. diseases/deaths in animals, contaminated food products/water, and environmental hazards)

IBS and EBS

- **Sensitive and timely surveillance system can trigger early warning and rapid response to minimize the effect of a potential outbreak.**
- **Both IBS and EBS are essential components of a disease surveillance system.**
- **Trade-off between sensitivity and false warning**

Rationale for Disease Surveillance

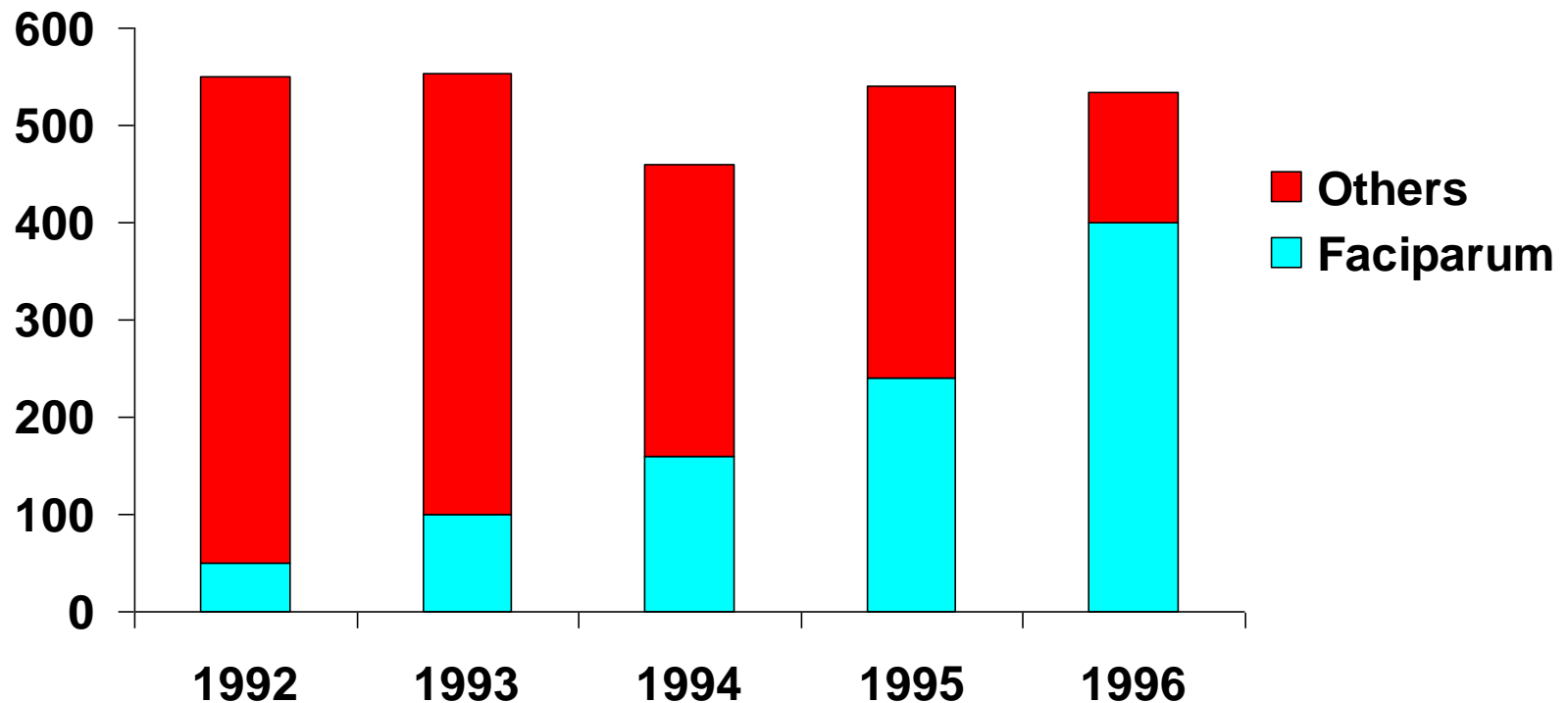
- **The disease is of public health importance**
- **Caution!**
 - **Is it worth the effort (money, human resources)?**
 - **Are relevant data easily available?**
 - **Can action be taken?**

Objectives of surveillance

- **Monitoring trends and estimate magnitude of health problem**
- **Epidemic (outbreak) detection and prediction**
- **Monitor progress towards a control objective**
- **Monitor programme performance**
- **Estimate future disease impact**
- **Evaluating an intervention**
- **Understand characteristics of health events**
 - **Distribution and spread**
 - **Natural history**
- **Facilitate planning**

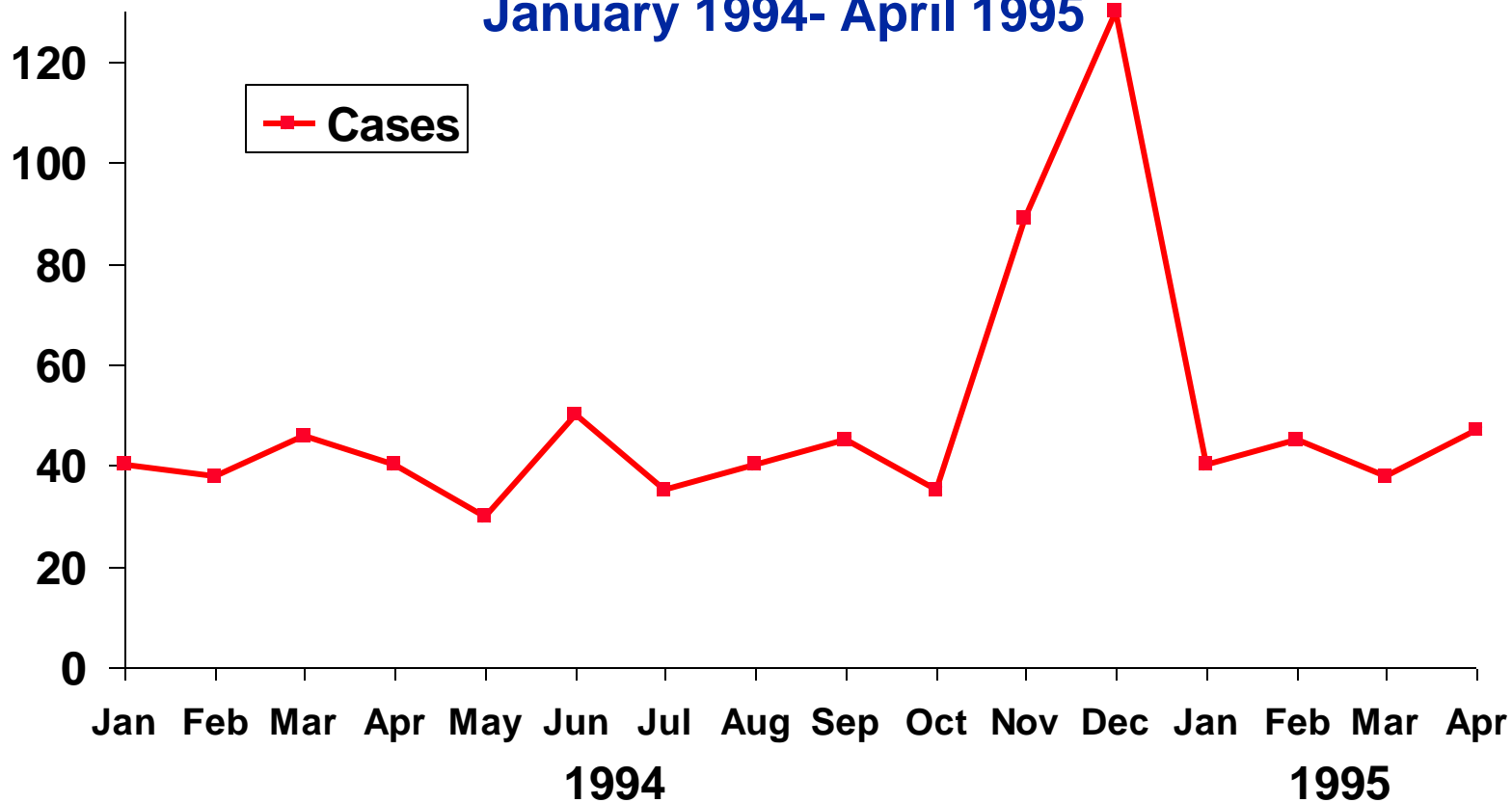
Objective: To monitor the trend of laboratory confirmed malaria and proportion due to *P. falciparum*

Cases of malaria in a region, 1992-1996



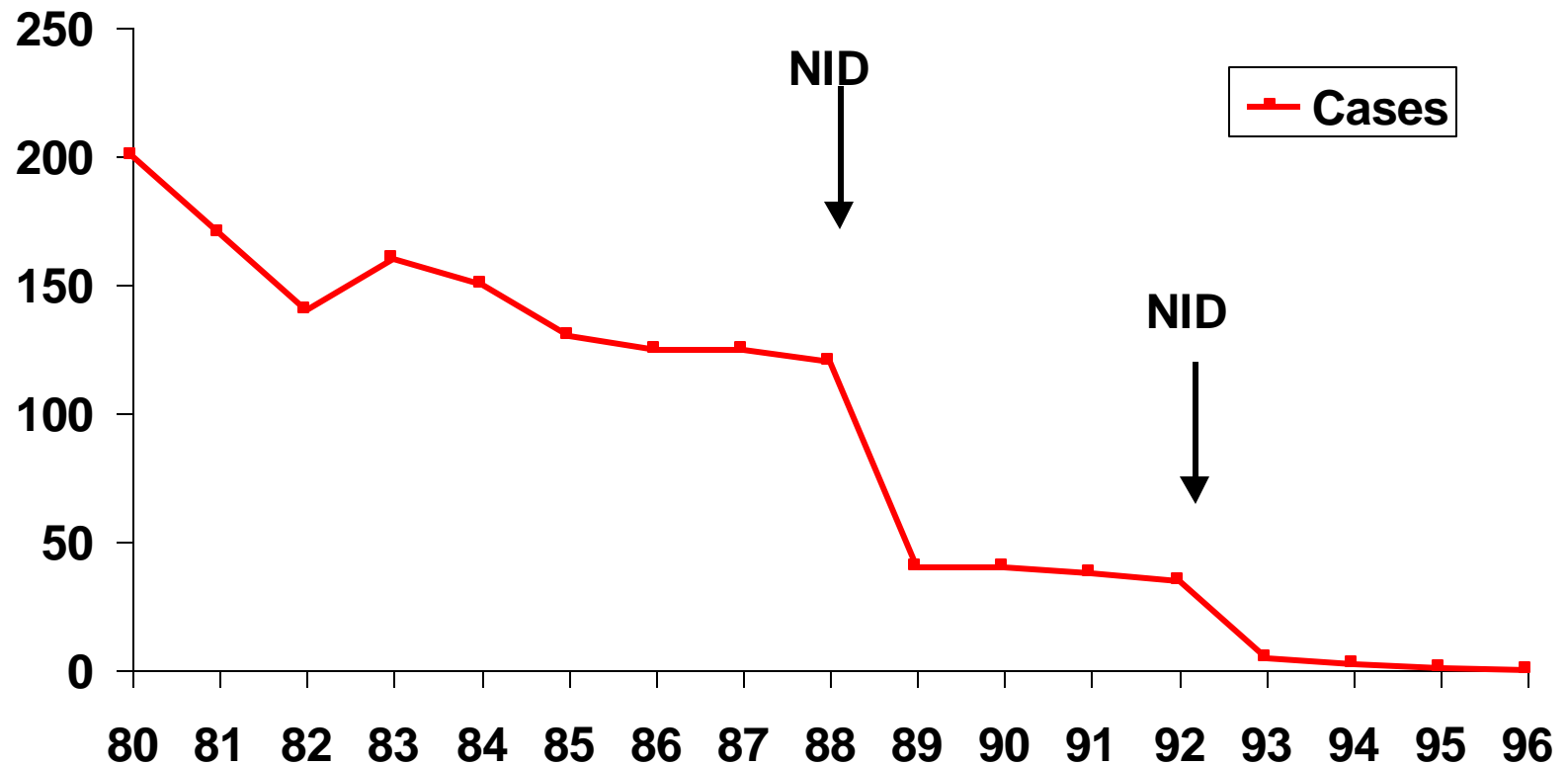
Objective: To detect outbreaks of dysentery by monitoring number of blood diarrhoea cases

Cases of acute bloody diarrhoea in a rural district by month, January 1994- April 1995



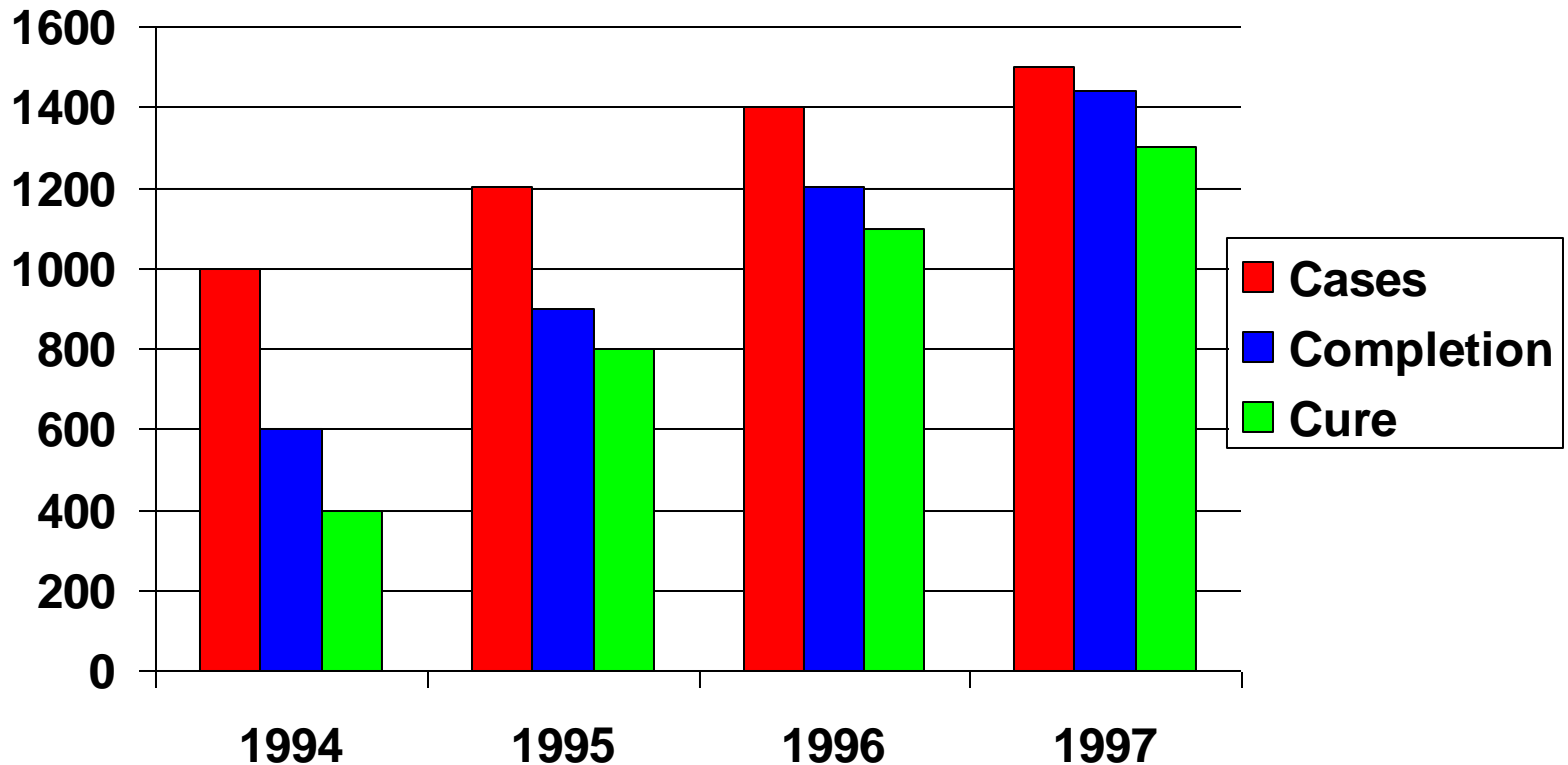
Objective: To monitor progress towards polio eradication by monitoring the incidence of poliomyelitis where wild poliovirus is isolated in children under 14 years

Cases of poliomyelitis where wild poliovirus was isolated in children in a rural district, 1980-1996



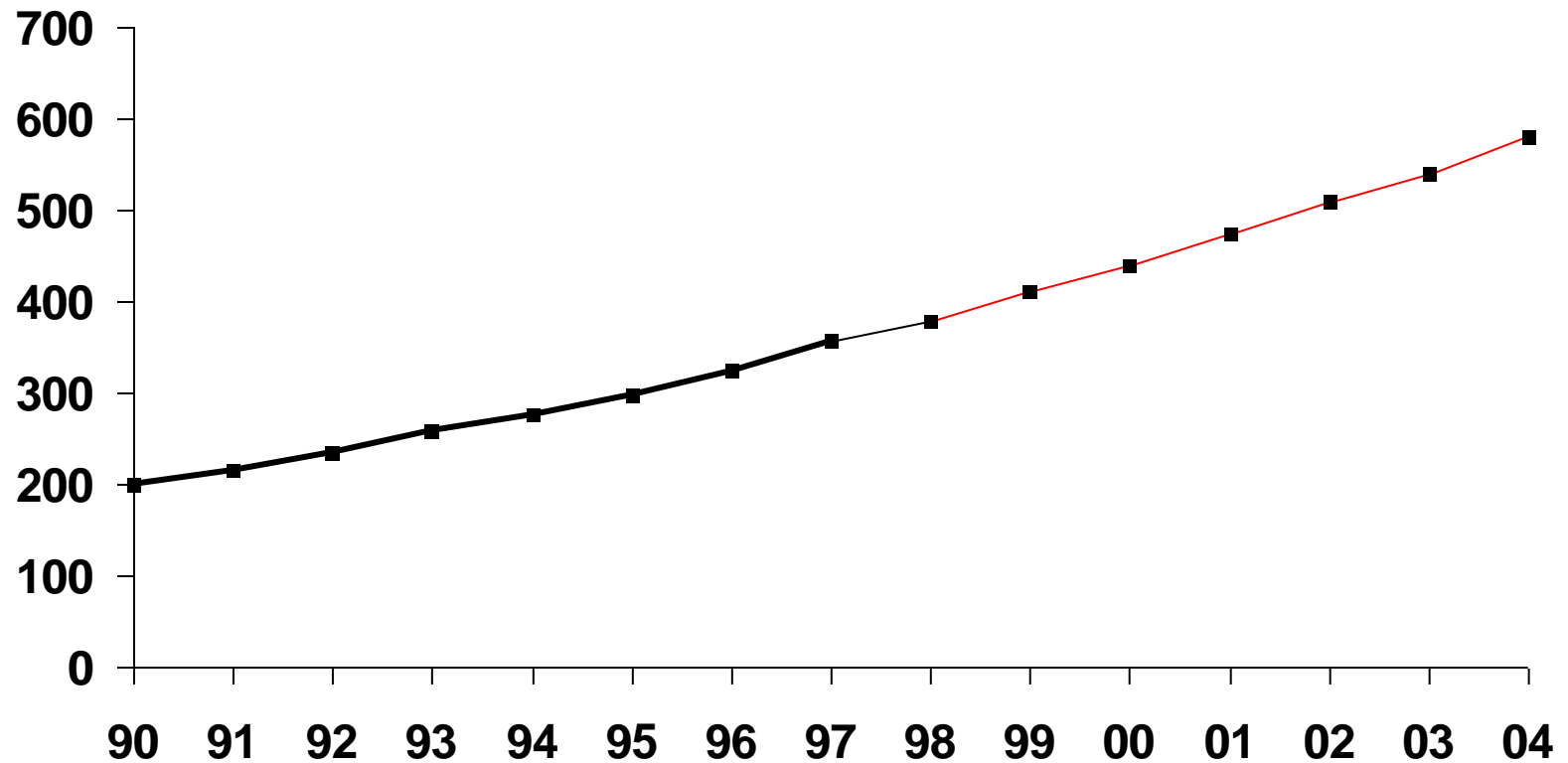
Objective: To monitor the ability of a TB programme to ensure treatment completion and cure

Treatment completion and cure in TB cases, 1994-1997



Objective: To predict future trends of AIDS for health service planning

Cases of AIDS in a city district, 1990-2004



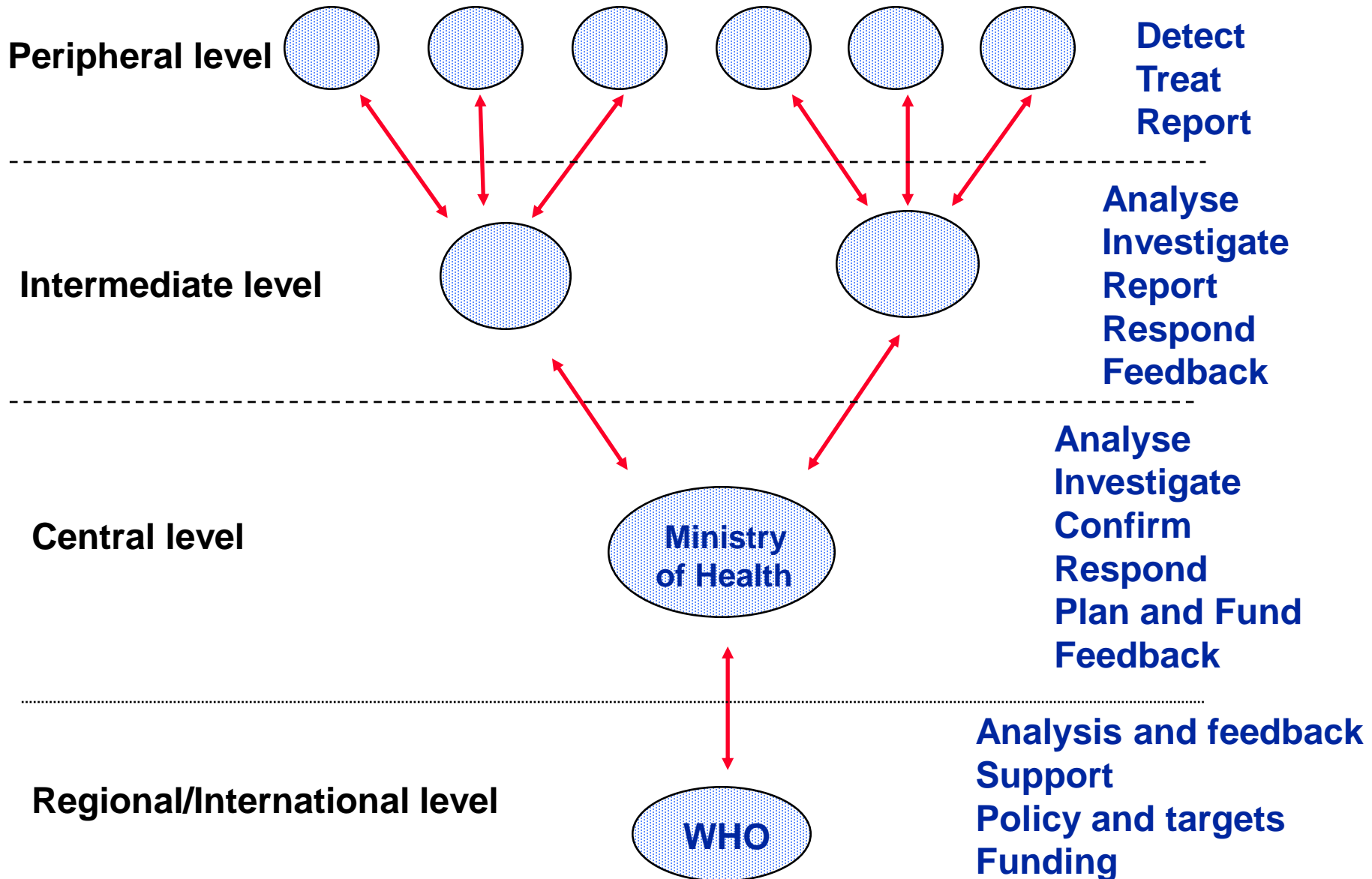
Dissemination mechanism

- **Directly to all who need to know**
- **Press release to the public**
- **Reports, bulletins**
- **Others**

Assure use of analysis and interpretation

- **Control measures**
 - rapid response
 - case management
 - prevention programme (immunisation)
- **Planning/ policy making**
 - epidemic preparedness
 - policy modification
 - prediction and future planning
- **Feedback to the system**

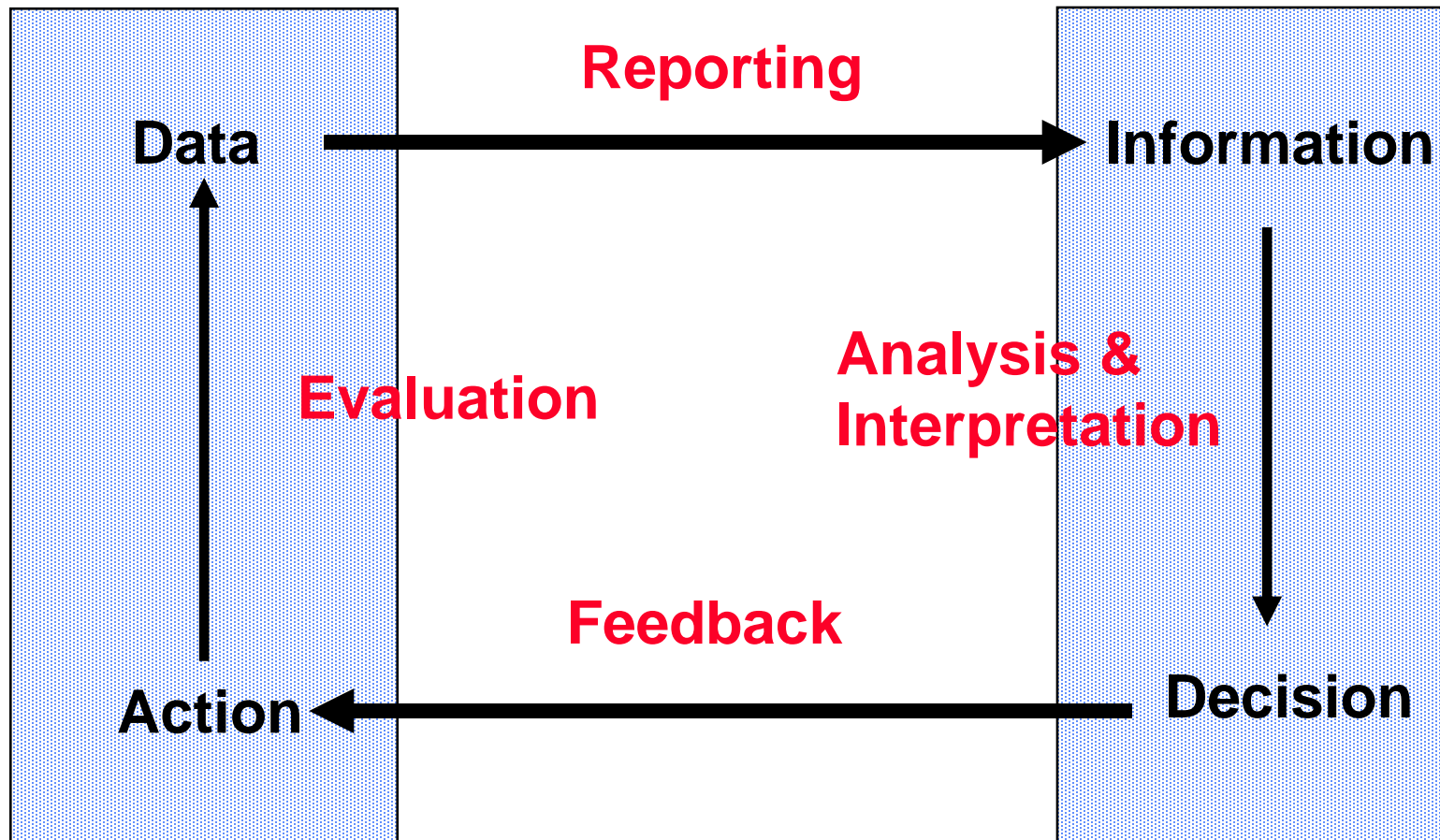
Surveillance: Tasks

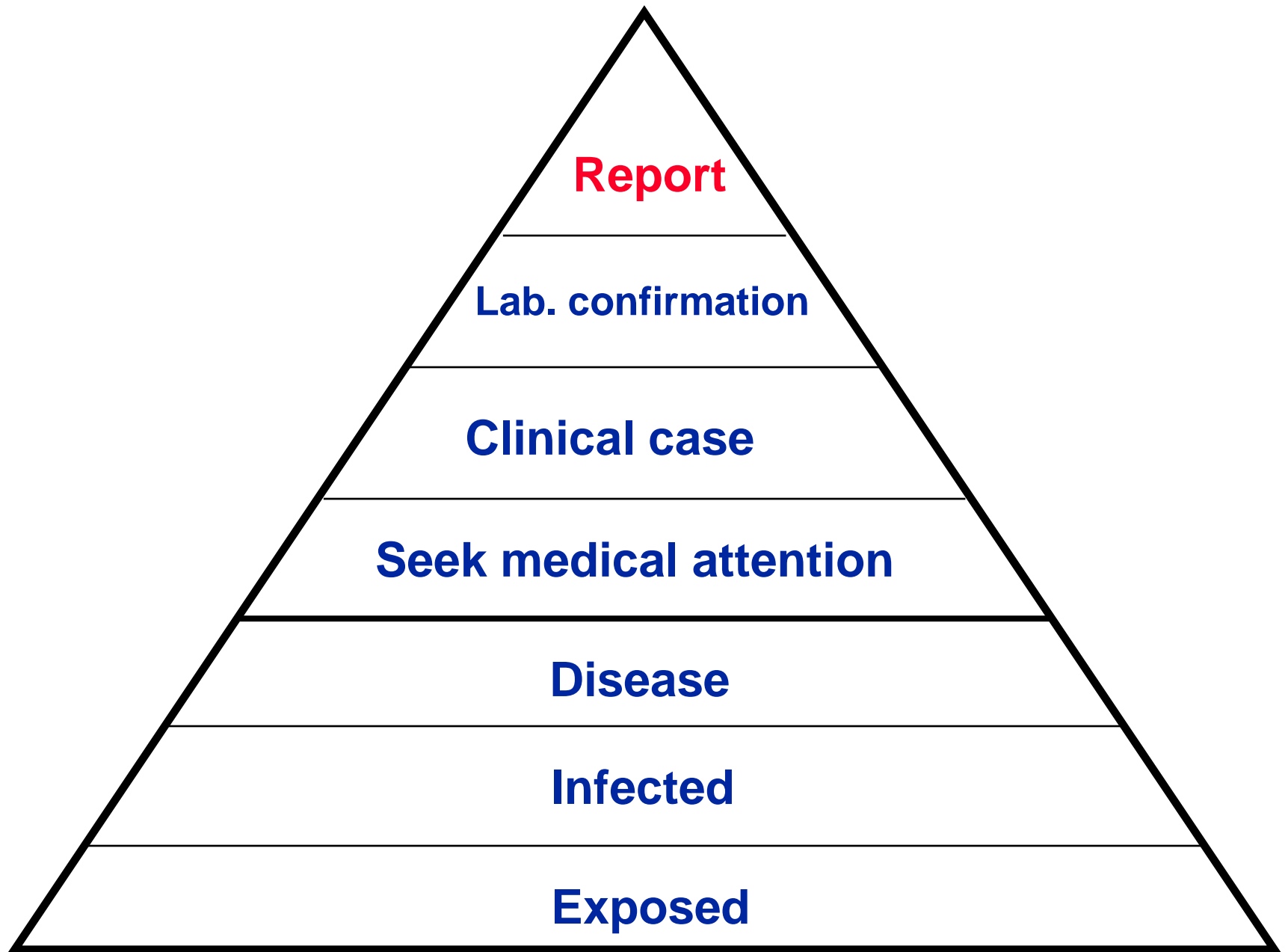


Surveillance: General Principle

Health Care System

Public Health Authority





Report

Lab. confirmation

Clinical case

Seek medical attention

Disease

Infected

Exposed

**What is the difference
between recording/reporting
and surveillance?**



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7.23.03