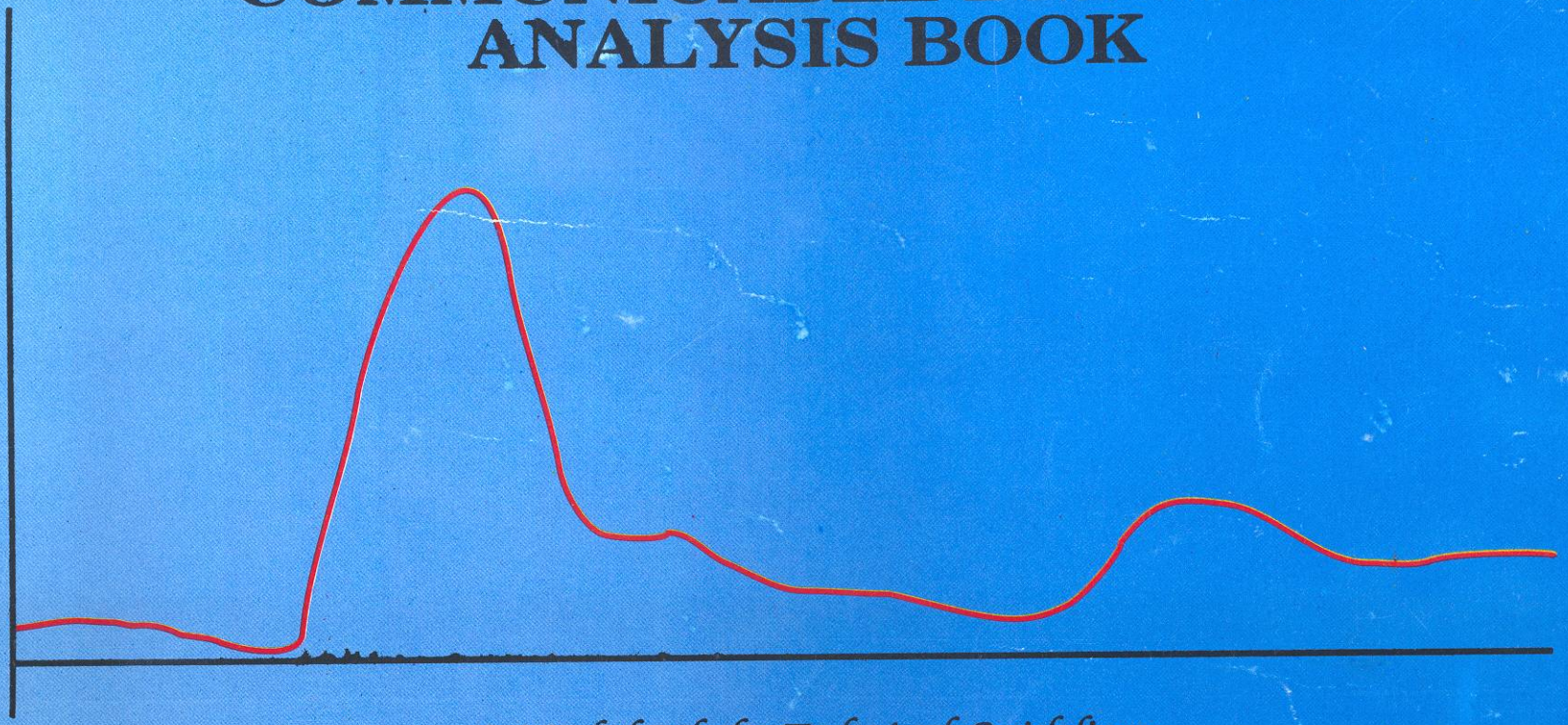
COMMUNICABLE DISEASES ANALYSIS BOOK



A Module of the Technical Guidelines

for

Integrated Disease Surveillance

and

Response in Ghana

2005

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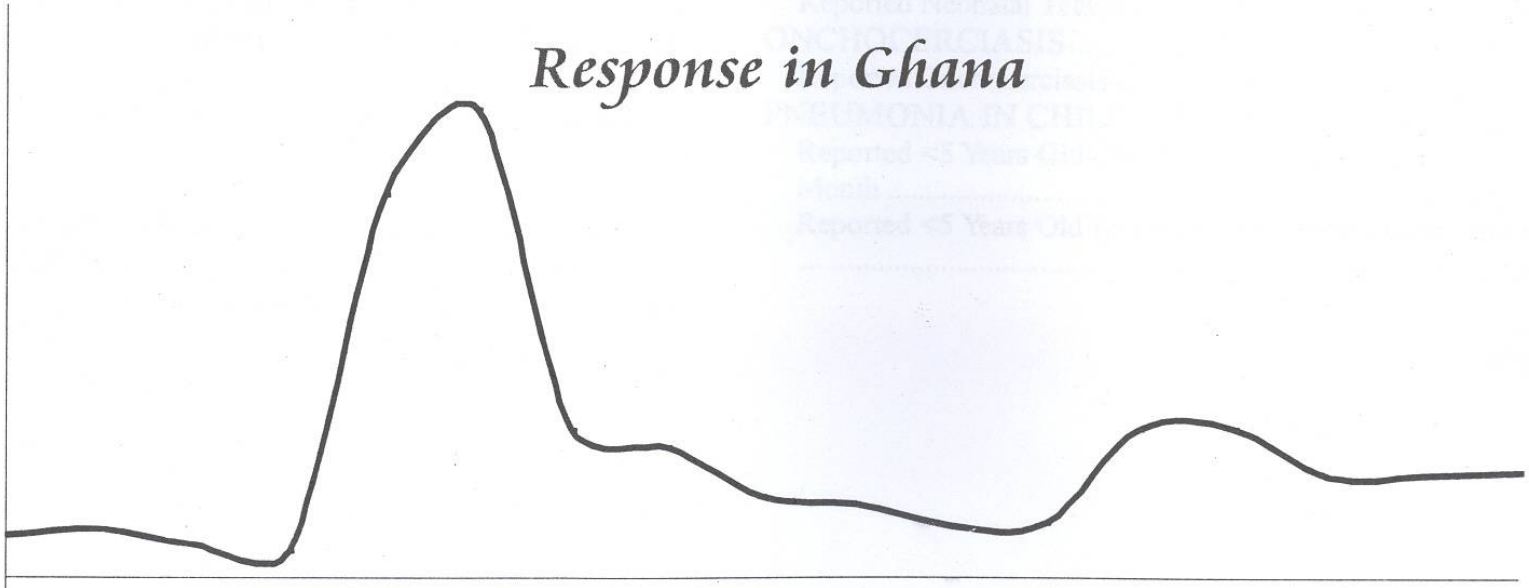

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FOREWORD

As part of efforts to improve surveillance data analysis at all levels, the Communicable Diseases Analysis Book (COMDAB) has been produced to guide health providers especially those at the district level in trend analysis of surveillance data.
This module has been adapted from the "District Analysis Book" produced by the World Health Organization (WHO).

There is an introduction to routine and special analysis and interpretation of data and public health actions needed for specific communicable diseases. For each disease condition there is an instruction and description of surveillance goals, case definitions, description of a confirmed case, analysis by person, place and time and public health action needed. Graph sheet is provided for plotting cases and deaths of each disease condition by month for a three year period.

We are grateful to all those who took part in the adaptation process and all who contributed to the production of this analysis book, especially the World Health Organization which produced the original document and the United States Agency for International Development (USAID) funded-projects of the Partners for Health Reform plus (PHR*plus*) and the Quality Health Project (QHP) which provided financial support for the adaptation process and printing of the initial copies of the analysis book.

It is hoped that health workers will find this analysis book useful and will provide feedback for the improvement of future editions.

It is our wish that the analysis book will contribute to overall improvement in the surveillance system in Ghana.

ACKNOWLEDGEMENTS

We are grateful to the Ghana Health Service, the United States Agency for International Development (USAID) funded-projects of the Partners for Health Reform plus and the Quality Health Partners for the support in adaptation and printing of this module.

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The contributions of the following team members to the final adaptation of this module are gratefully acknowledged.

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Finally we wish to express our appreciation to all those who contributed in diverse ways to the production of the analysis book.

HOW TO USE THIS BOOK

In order to use the Communicable Diseases Analysis Book correctly it will be necessary to have the **"Monthly Communicable Disease Surveillance Report Form"** and/or quarterly disease reporting forms (Refer to the appropriate forms in the annexes), accurately completed for the current reporting period.

At the sub-district level this will mean collecting and reporting the data from all the health facilities (Private and Public). At the district level it is important to note **that the monthly and quarterly reports must represent data from all health facilities in the district** before analysis can be carried out. Failure to report on all facilities in the district will make the analysis of month-to-month disease trends erroneous and misleading. Districts must make every effort to **ensure that all facilities in the district report in a timely fashion and are complete and accurate**.

Districts should work closely with sub-districts and facilities to identify and overcome any obstacles or difficulties which prevent timely and complete reporting of disease data by the facility. This is essential if the disease surveillance system is to provide the information necessary to allow for the timely and effective response to epidemics and other threats to the health of the community.

It is **necessary to have the current month or quarter's reports complete and available** in order to keep this Communicable Disease Analysis Book up to date and conduct meaningful analysis of disease trends. This book will guide you through the use of data from the **"**Monthly Communicable Disease Surveillance Report Form" and/or quarterly reports for specific diseases in order to carry out required and important analysis

INTRODUCTION TO DATA ANALYSIS

Health facilities and district teams should routinely:

- **Analyze** the routine summary data for priority diseases that are reported to the district.
- **Record** the summary totals for each priority disease on a table
- **Plot** the total on the line graph.
- **Observe** trends on the line graph to see if they are increasing, decreasing or staying the same.
- **Interpret** the trends.
- **Take** appropriate action (refer to the Technical Guidelines for Integrated Disease Surveillance and Response in Ghana for appropriate disease control and response actions).
- **Document** actions taken on the appropriate monthly reporting forms and keep copies for verification.

Each month or quarter:

1. Using the data recorded on the **"Weekly Surveillance Report Form", "Monthly Communicable Disease Surveillance Report Form", Quarterly Tuberculosis, Leprosy and Buruli Ulcer BU02 Forms",** analyze the inpatient and outpatient data for each disease separately. At the health facility level, data should be tracked and analyzed using data from that facility. **District level should ensure that data from all facilities/sub-districts in their district are available and included** in the monthly analysis. In-patients are more likely to have severe disease, and the diagnosis is often more accurate. Many disease control programs have objectives to reduce severe cases and deaths. Thus, information from analysis of inpatient data is more accurate for evaluating whether the disease control measures are working.
2. Review the updated graphs and tables and make sure they are complete and up-to-date
3. Compare the current information for each priority disease with previous months, seasons, or years.
4. Decide if:
   - The number of cases and deaths for each disease is the same, higher or lower than in previous months, seasons, or years. The case fatality rate is the same, higher or lower than in previous months, seasons or years.
   - An action threshold has been reached that requires immediate action and response. Refer to the Technical Guidelines for Integrated Disease Surveillance and Response in Ghana for disease-specific action thresholds.
5. Consider non-disease reasons for any increase or decrease in the data. For example, is the increase or decrease due to:
   - A new health facility or hospital that has been opened in the catchment area resulting in a change in referral patterns
   - New clinicians in the area are using different diagnostic criteria or case definitions
   - Data recording errors
   - A change in the number of health facilities reporting information.
   - A seasonal variation
   - A change in screening or treatment programmes that account for an increase in the number of people seeking care
   - A recent immigration or emigration or increase in refugee population
   - A change in the quality of services being offered at the health facility. For example, drugs are readily available, patient queues are shorter, health workers are more helpful.
6. Refer to disease-specific considerations to interpret any increase or decrease in the data. Also refer to the Technical Guidelines for Integrated Disease Surveillance and Response in Ghana.

SPECIAL ANALYSES

Introduction

There are some conditions for which monthly trend analysis may not be sufficient or appropriate, especially epidemic prone diseases. Special analysis is required during outbreaks. Some of the disease outbreaks for which the special analysis will be required are Bacillary dysentery, Cholera, Measles, Meningitis, Yellow Fever and Viral Haemorrhagic Fevers.

Analysis by Time, Place and Person

The following analysis should be undertaken during all disease outbreaks:

Time: During outbreaks, plot cases and deaths either daily or weekly. Construct an epidemic curve with arrows showing important landmarks or actions taken in investigating or controlling the outbreak. These landmarks should include date of onset of the index case, the date index case was seen at the health facility (if appropriate), the date outbreak was laboratory confirmed (where necessary) and the date appropriate intervention began.

Place: Cases are plotted on spot maps to show evolution of the outbreak.

Person: Cases should also be analysed by age and other person analysis variables e.g. sex, vaccination status and occupation etc, depending on the type of disease. Case fatality rate should be calculated where applicable.

Public Health Action

Investigate each suspected case with collection of appropriate laboratory specimen to confirm the outbreak using case-based form. If a cluster of cases occur take 5 to 10 specimens only to confirm the outbreak (Also refer to the Technical Guidelines for Integrated Disease Surveillance and Response in Ghana).

- If the outbreak is confirmed report cases using line list form
- Take appropriate disease control measures to control the outbreak
- Report suspected cases monthly.
- Write a report to describe the outbreak and update it from time to time to describe the evolution of the outbreak.
- Write a final outbreak report at most two weeks after the outbreak has been declared over.
- Evaluate the outbreak

Other Special Analyses

Some of the disease conditions targeted for eradication such as poliomyelitis (Polio) require special analysis focusing on monitoring the programme indicators making sure that the minimum targets have been met

Poliomyelitis (Polio)

- Analyze the proportion of AFP stool specimen collected within 14 days of the onset of paralysis (Target ≥80%)
- Calculate the non-polio AFP Rate (the number of AFP cases discarded as not being due to polio per 100,000 children <15 yrs in the geographic area (Target ≥1.0)

ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS)

Introduction

Acquired Immunodeficiency Syndrome (AIDS) is an infection of human lymphocytes (types of white blood cells) and other organs. It is caused by a retrovirus, the human immunodeficiency virus (HIV). The virus is transmitted from human to human through sexual intercourse, needle injections, transfusions, transplacental or transvaginal routes, breast milk or other direct contact with infected human bodily fluids.

The current HIV sero prevalence rate is ….based on the year 2004 sentinel site results.

Surveillance goal

- Monitor the impact of HIV/AIDS interventions in trends of incidence and prevalence of HIV infections, AIDS and STIs through sentinel sites, surveys and special studies (according to guidelines for second generation surveillance of HIV/AIDS)
- Estimate the burden of HIV/AIDS in the district using available information from HIV sentinel populations so that each new AIDS case is counted.

Case definition

Ghana uses the Modified Bangui Classification for AIDS as follows:

Adults

At least two (2) major signs or symptoms plus at least one (1) minor sign or symptom together with a POSITIVE HIV antibody test
OR
Three (3) major signs plus an additional requirement that these must be in the absence of immuno-suppression and chronic malnutrition

Children

Same conditions as for adults plus the absence of immuno-suppression and chronic malnutrition
{**Major Signs:** More than 10% weight loss; chronic diarrhoea for more than one month; and prolonged fever (intermittent or constant) for more than one month}
{**Minor Signs:** Persistent cough for more than one month; generalised pruritic dermatitis; recurrent herpes zoster; oropharyngeal candidiasis; chronic progressive and disseminated herpes virus infection and generalised lymphadenopathy}

HIV

A positive ELISA for confirming HIV and a rapid test for confirming the positive results are sufficient for an epidemiological case definition for HIV.

Analysis by Time Place and Person

Time: Count new AIDS cases and report monthly. Trends in AIDS cases will reflect trends in HIV infections from the previous 5 to 10 years since the interval from infection-to-AIDS ranges from 5 to 10 years.

Place: Plot data on map by place of residence.

Person: Analyse by number of cases confirmed with serology. Trends in AIDS cases by age group and risk factors can be done at selected sentinel sites in the district.

To understand the current HIV infection and HIV risk factor situation and trends in the district, other types of surveillance should be implemented, for example:

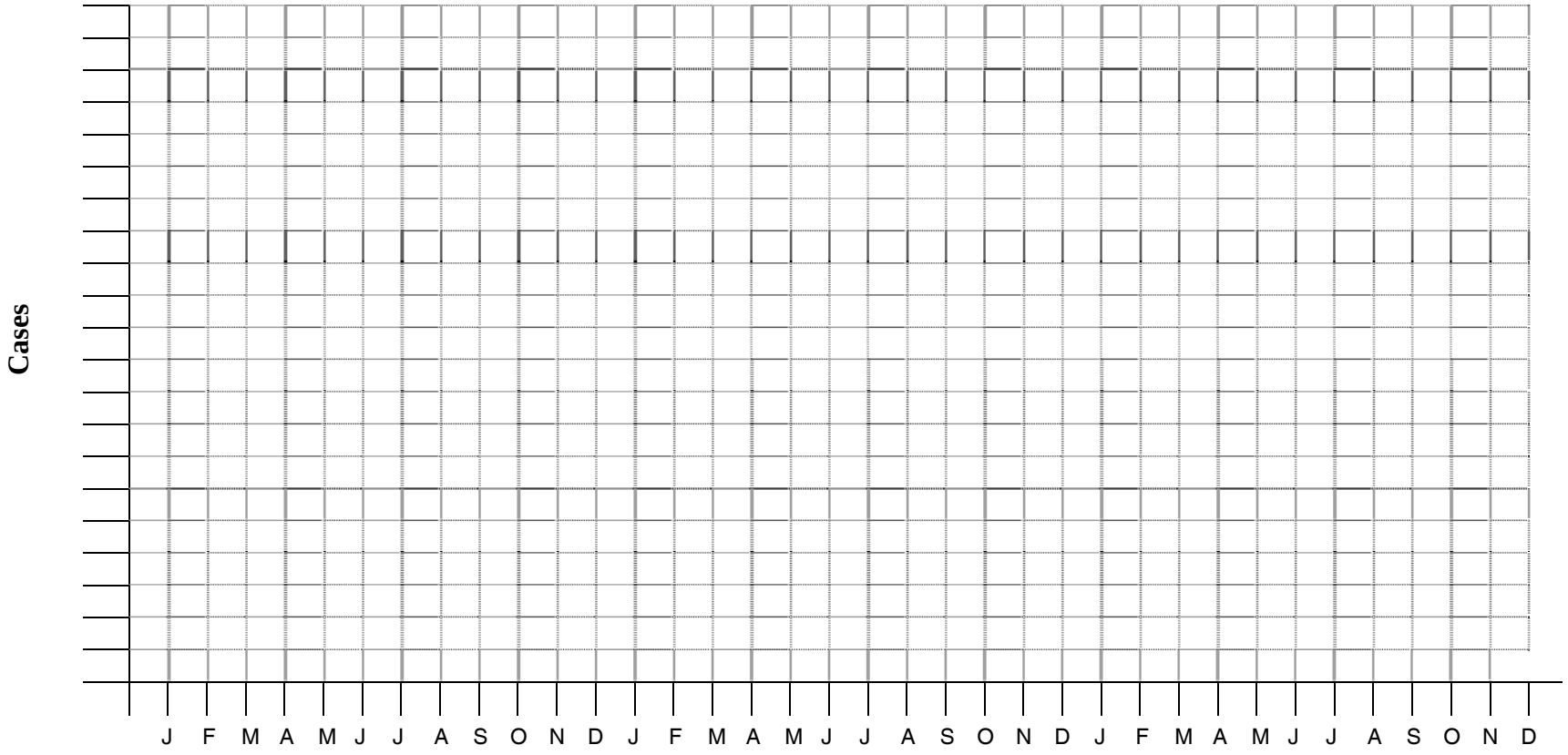
- Unlinked anonymous HIV sero-prevalence at sentinel sites (for example, antenatal clinics)
- Trends in new smear-positive TB patients 15-24 years old
- Trends in clinically-diagnosed and lab-diagnosed sexually
- transmitted infections

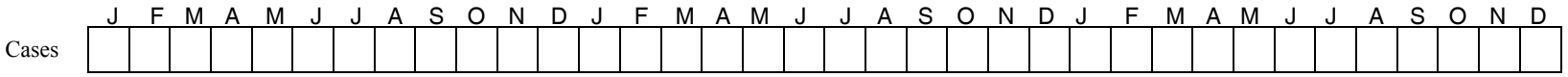
Public health action

- Treatment of individual cases with antiretroviral therapy is not yet widely available in Ghana. Rapid diagnosis and treatment of AIDS-related opportunistic infections may prolong life expectancy but this has not been widely evaluated in developing countries.
- Monitor local STI and opportunistic infections, including TB, as possible cofactor for HIV.
- Improve percentage of suspected AIDS cases confirmed via serology.
- Monitor use of condoms by commercial sex workers.
- Provide voluntary counseling and testing services at district and sub-district levels.
- Promote condom use, especially among high-risk individuals.
- Treat STIs, especially syphilis and chancroid diseases, as well as other ulcerative processes.
- Mobilise non-paid blood donors and promote appropriate use of blood.
- Promote good infection control practices within health facilities in the district.
- Educate HIV/AIDS patients and their sexual partners to refrain from donating blood, tissues, semen or breast milk.

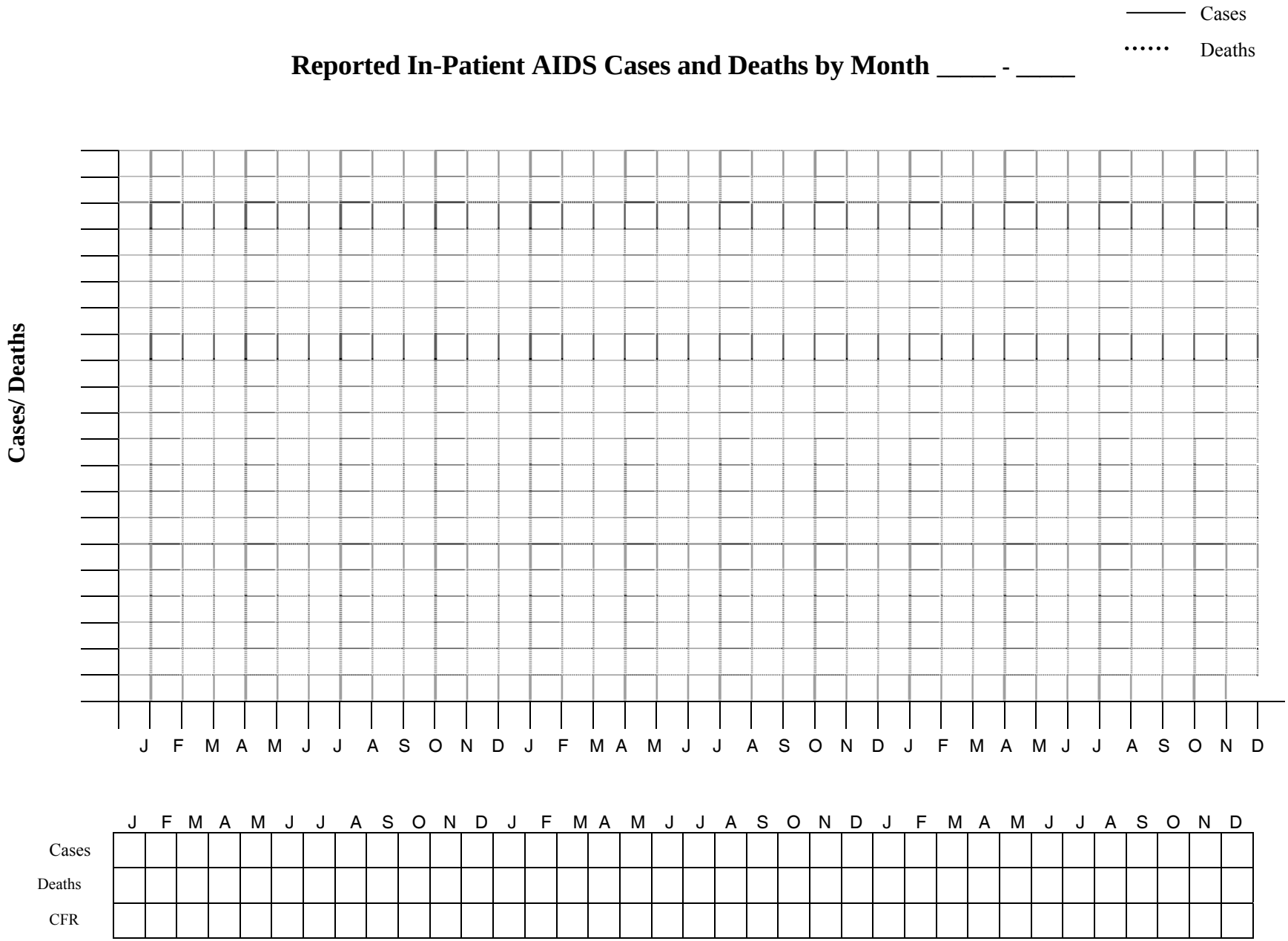
Reported Outpatient AIDS Cases by Month _____ - _____

____ Cases





Reported In-Patient AIDS Cases and Deaths by Month ____ - ____



BURULI ULCER

Introduction

Buruli ulcer is a chronic debilitating skin disease caused by micro Bacterium ulcerans. It is endemic in over 30 countries worldwide. Disabilities due to the disease are common and severe. Complications of the disease include contracture deformities, amputation of limbs, loss of eyes, loss of nose etc.
The disease is more severe in impoverished rural communities. About 70% of Buruli ulcer cases are children under 15 years of age. Mortality due to the disease is low but with a high morbidity rate.

In Ghana a national survey conducted in 1999 found 6000 active cases and showed that it was endemic in all the ten (10) regions of the country. Prolonged hospitalization of the patients who are mostly children disrupts their education. Most adult patients who are farmers are unable to farm.

Surveillance goal

The purpose for surveillance of Buruli ulcer is for early detection and response to leading causes of illness and disability.

Analysis by Time, Place, and Person

Time: Graph quarterly cases by month.
Place: Maps showing distribution of cases by community, district and region.
Person: Age and sex distribution of the cases.

The following output indicators are needed on quarterly basis

- Number of cases
- Proportion of various forms of the disease
- Proportion of cases confirmed
- Ratio of nodules to ulcers
- Proportion of patients presenting with disabilities
- Proportion of patients with sequelae after treatment
- Recurrence rate

Interpretation

The factors that can contribute to low number of cases include:

- Poor surveillance system
- Inadequate resources.
- Improved Health education.
- Improved environmental condition.
- Poor knowledge of disease

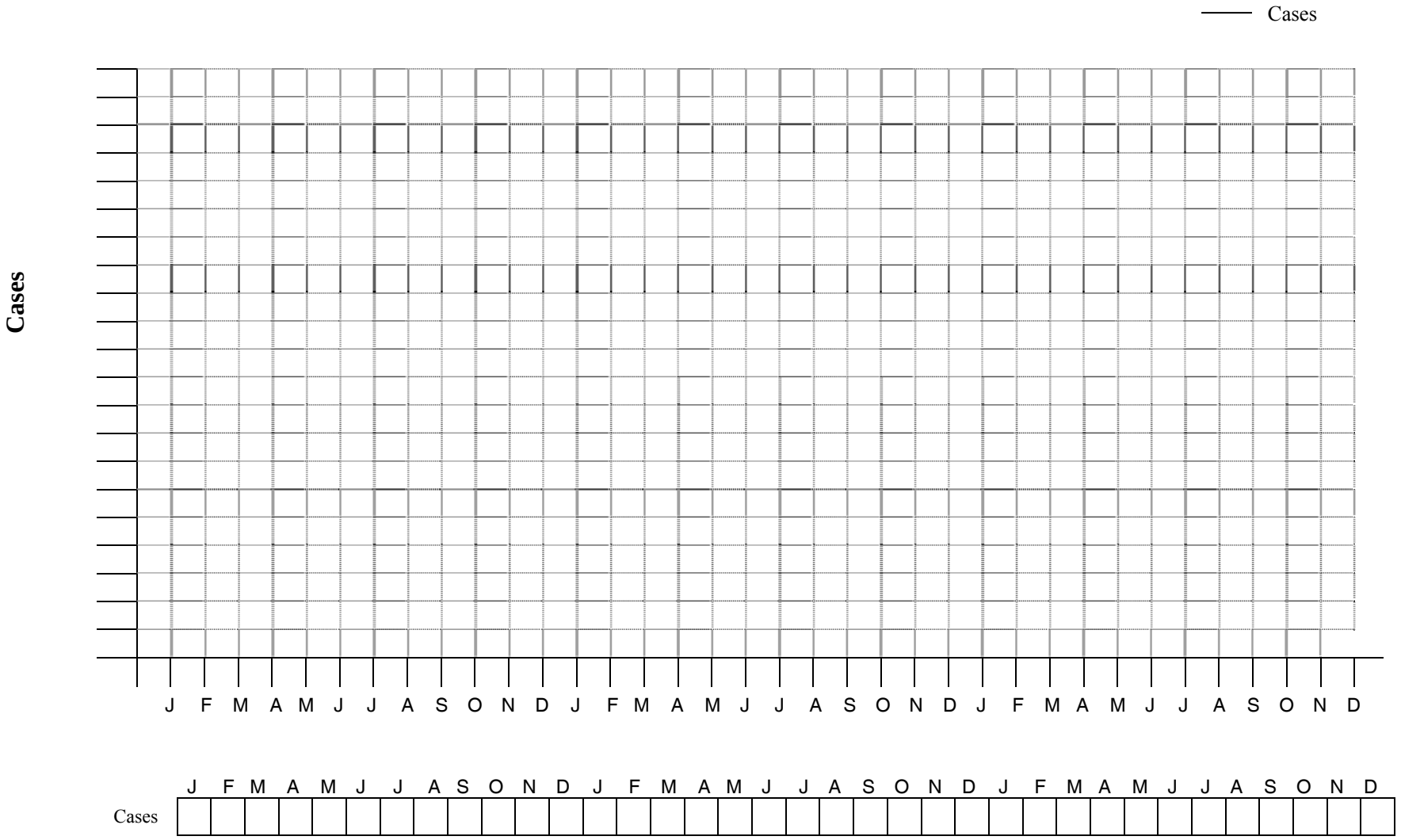
The factors that can contribute to high number of cases include:

- Effective surveillance system for case detection.
- High poverty rate in the community.
- Poor personal hygiene
- Poor environmental condition.
- Poor health education

Public Health action

- Strengthen the surveillance system for early case detection
- Train and motivate Community Based Surveillance Volunteers (CBSV) in the communities to detect and report cases
- Manage cases effectively
- Rehabilitate and reintegrate treated Buruli ulcer patients into the society
- Improve nutritional status of the patients
- Step up research on mode of transmission

Reported Buruli Ulcer Cases by Month _____ - ____



CHOLERA

Introduction

Acute illness with profuse watery diarrhoea caused by Vibrio cholerae serogroups O1 or O139. The disease is transmitted mainly through eating or drinking contaminated food or water; that is, cholera is spread through the fecal-oral route. The incubation period is from a few hours to 5 days, usually in the range from 2 to 3 days.

Cholera may cause severe dehydration in only a few hours. The case fatality rate (CFR) may exceed 50% in untreated patients with severe dehydration. If patients present at the health facility and correct treatment is received, the CFR is usually less than 1%.

Risk factors:

- Eating or drinking of contaminated foods such as uncooked seafood or shellfish from estuarine waters,
- Lack of continuous access to safe water and food supplies,
- Attending large gatherings of people including ceremonies such as weddings or funerals,
- Contact with persons who died of cholera.

Other enteric diseases may cause watery diarrhoea, especially in children less than 5 years of age.

In Ghana, 517 cholera cases were recorded in 2004 with 18 deaths (CFR 3.5%).

Surveillance Goal

- Detect and respond promptly and appropriately to cases and outbreaks of watery diarrhoea promptly.
- Immediately report cases and deaths using case-based forms or linelist.
- Investigate and respond to suspected cases within 48 hours.

Case definition

Suspected case:

Any person aged 5 years or more with severe dehydration or death from acute watery Diarrhoea (rice water stool).

If there is a cholera epidemic, a suspected case is a person of age 5 years or more with acute watery diarrhoea, with or without vomiting.

Confirmed case:

A suspected case in which *Vibrio cholerae* O1 or O139 has been isolated in the stool.

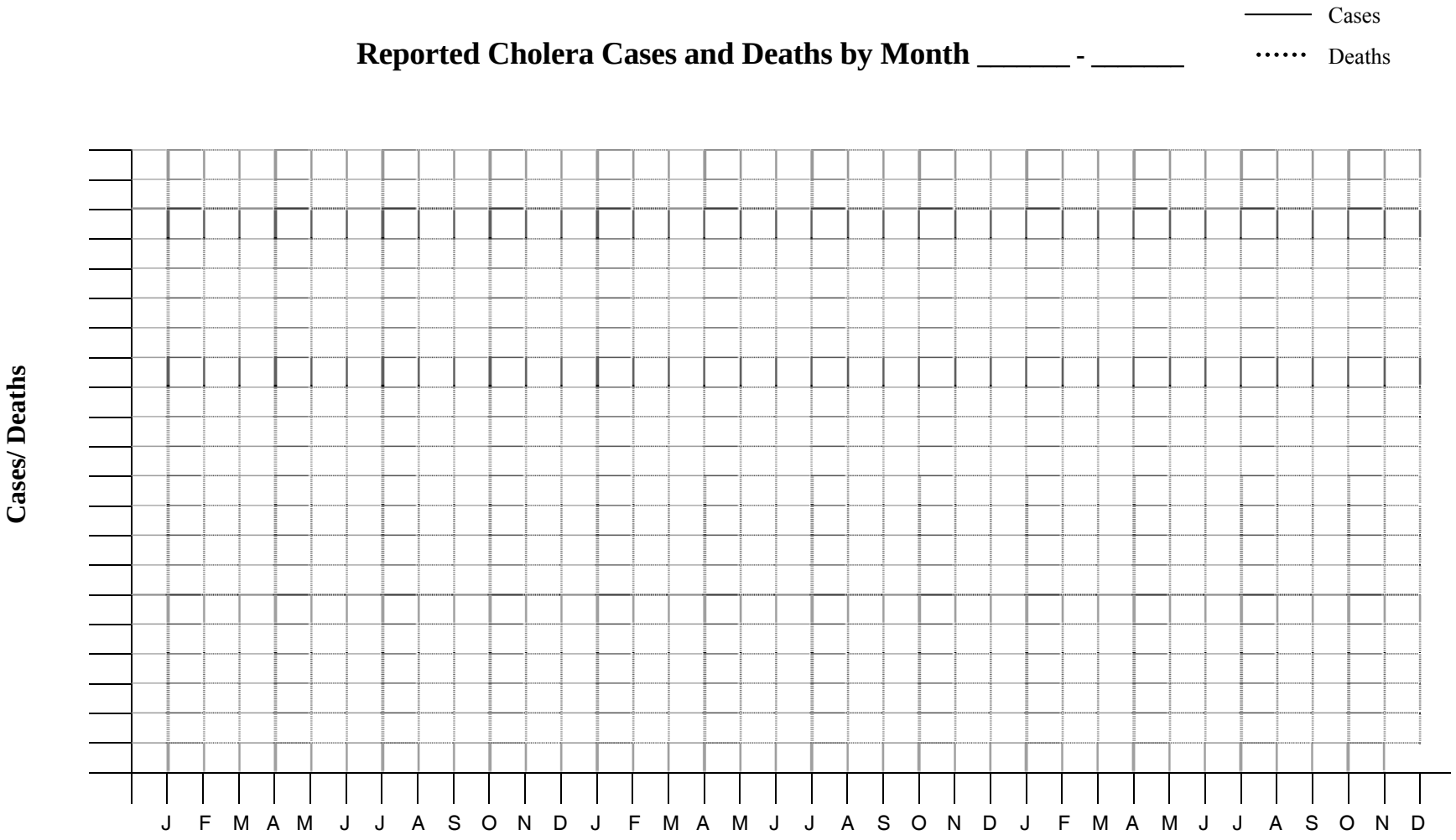
Analysis by Time Person and Place

Time: Graph monthly cases and deaths and draw epidemic curve during outbreaks.
Place: Plot the location of cases by community or village.
Person: Analyse by age and sex distribution and risk factors.

Public health action

- Promote safe preparation of food especially sea foods, fruits and vegetables.
- Promote safe disposal of human waste.
- Promote assess to safe water.
- Strengthen management and treatment of cases.
- Establish treatment centres in locality where cases occur.
- Treat patients on site instead of referral.
- Treat patients according to standard treatment guidelines.

Reported Cholera Cases and Deaths by Month _____ - _____



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Cases																																				
Deaths																																				
CFR																																				

DIARRHOEA IN CHILDREN UNDER FIVE

Introduction

Diarrhoea with dehydration in children less than 5 years of age is due to infections of the gastrointestinal tract caused by viruses, which are transmitted through eating contaminated food or water, or through fecal-oral spread.

Diarrhoea can kill up to 5% of all children <5 years old and is often responsible for 20 to 25% of all child deaths. Diarrhoeal diseases represent the second leading cause of death among children less than 5 years of age in many African countries, with more than 3 million deaths per year. Different epidemiological patterns (for example, seasonality) are observed for different pathogens.

The Ghana Health Service (GHS) advocates that each district team use the Integrated Management of Childhood Illnesses (IMCI) strategy to reduce morbidity and mortality of childhood diarrhoea.

Surveillance goal

- Detect diarrhoea outbreaks promptly.
- Monitor anti-microbial sensitivity and resistance during outbreaks of bacterial origin
- Ensure appropriate management of cases.

Case definition

Suspected case:

Passage of 3 or more loose or watery stools in the past 24 hours with or without dehydration (restlessness, irritability, sunken eyes, thirst, skin pinch goes back very slowly).

Confirmed case:

Suspected case confirmed with stool culture for a known enteric pathogen.

Analysis by Time, Place, and Person

When good community and health facility IMCI components are in place, trends in <5years diarrhoea with dehydration cases should decline.

Time: Draw a graph showing cases and deaths to compare with same period in previous years. Prepare graphs for diarrhoea with some dehydration and for diarrhoea with severe dehydration. Draw an epidemic curve when outbreaks are detected.
Place: Plot location of places by community.
Person: Report monthly totals by level of dehydration

Public health action and target

Health facilities in all districts should follow the (IMCI) guidelines. The main programme elements are:

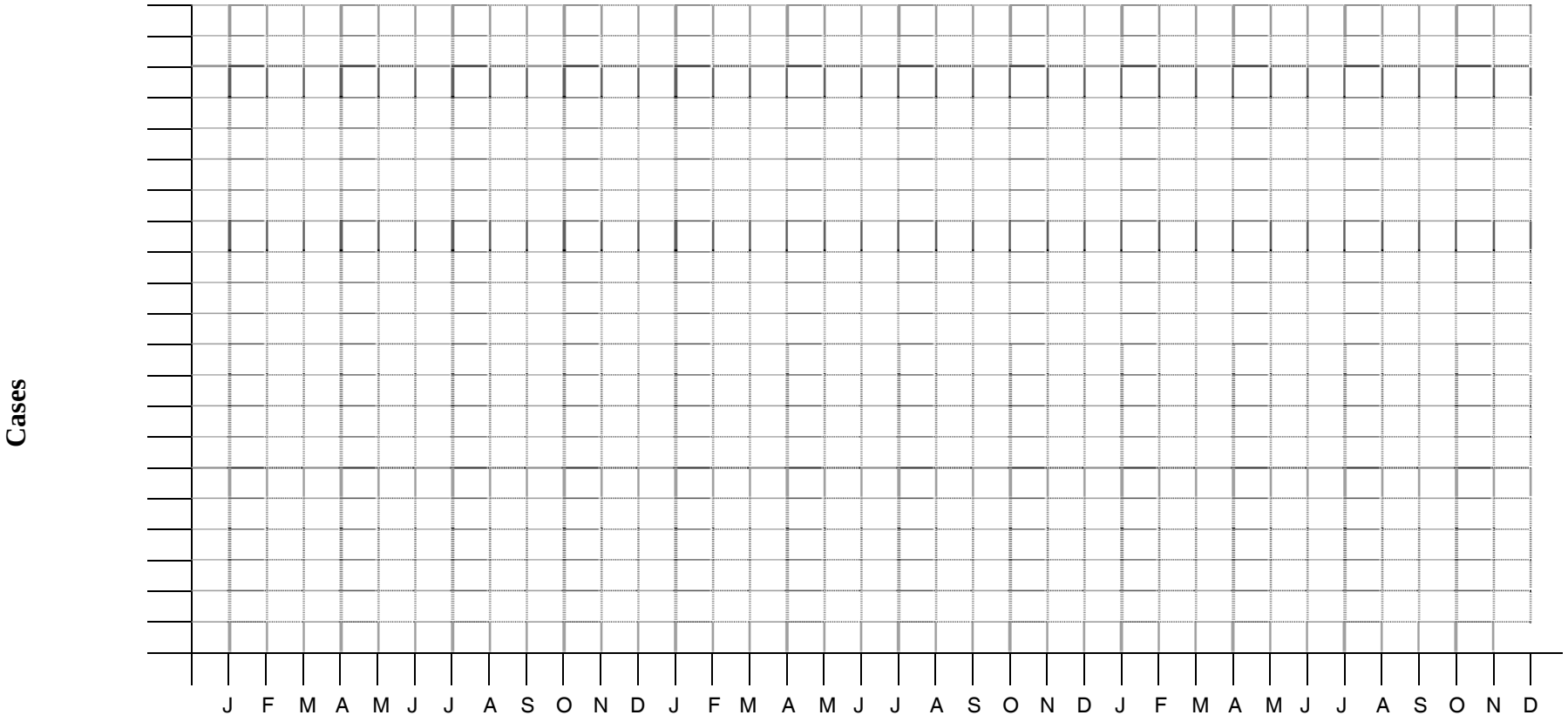
- Education of parents and communities about prompt prevention of dehydration in children with Diarrhoea by giving home fluidsEducation of parents and communities about the danger signs that prompt referral to health facilities
- Education of communities about prevention of Diarrhoea through clean food and water
- Effective treatment of children with dehydration at health facilities

Diarrhoea with severe dehydration should decline by at least 50% if there are good community and health facility components of IMCI. In-patient diarrhoea cases should decline by at least 50% if there are good community and health facility components. Diarrhoea deaths should decline if there are good health facility and community IMCI components, including good management of persistent diarrhoea, adequate breastfeeding, and child food and water sanitation. Trends in in-patient diarrhoea deaths may show less reduction since approximately 50% of diarrhoea deaths are related to persistent diarrhoea.

Reported Diarrhoea Cases in <5 Years Old by Month ____ - _____

—— Some dehydration

•••••• Severe dehydration



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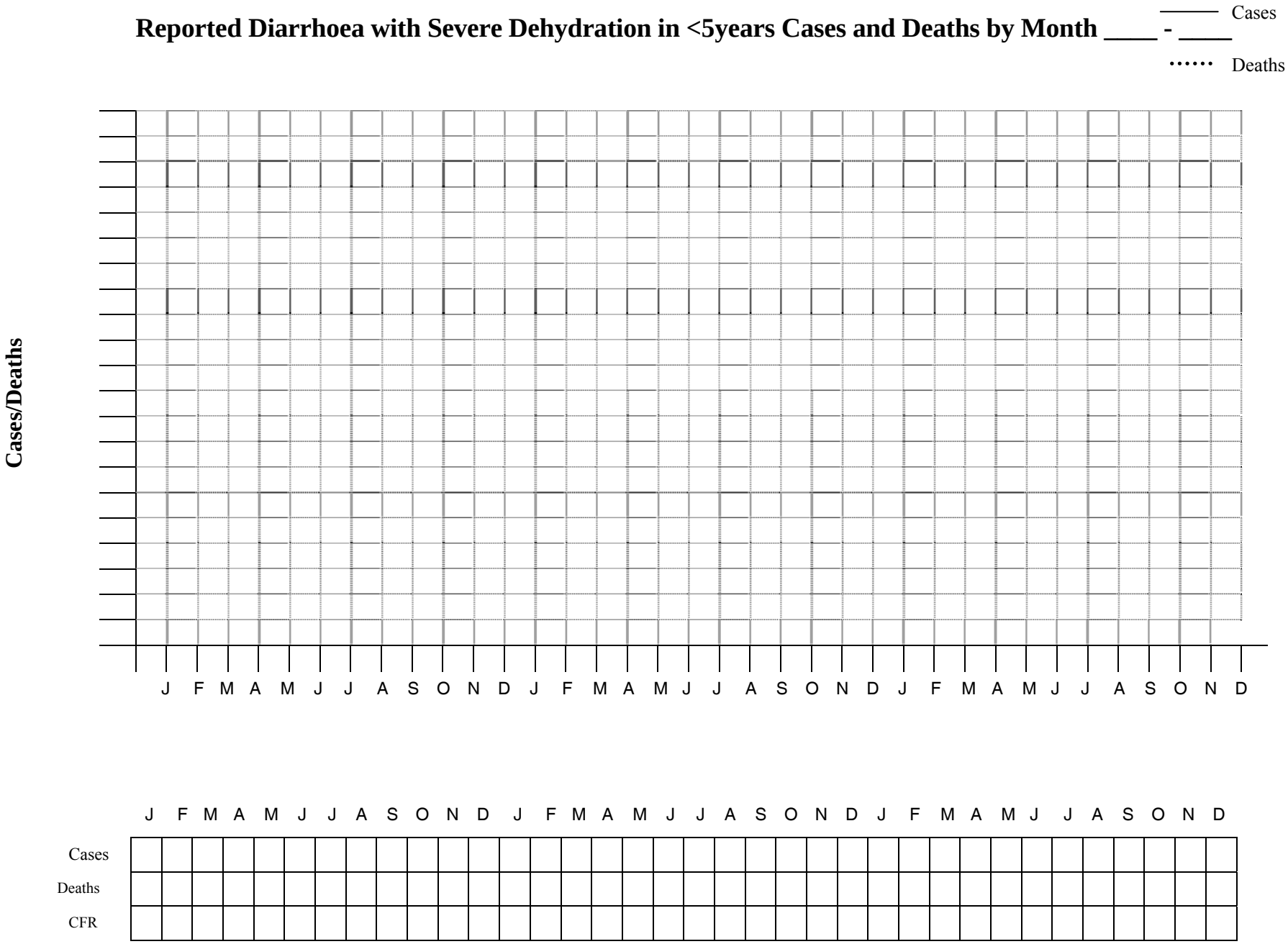
Some dehydration Cases																																				
Severe dehydration Cases																																				
Total Diarrhoea with dehydration Cases																																				

Reported Diarrhoea with Severe Dehydration in <5years Cases and Deaths by Month ____ - ____



DIARRHOEA WITH BLOOD

Introduction

Shigella dysenteriae is the most common cause of enteric infections and is transmitted from person-to-person through fecal-oral spread. Large-scale outbreaks may be caused by Shigella dysenteriae type 1 (SD1), with up to 30% of populations infected. The case fatality rate may approach 20% among young children and elderly persons with severe dehydration.

Surveillance goal

- To detect *Shigella dysenteriae* type 1 outbreaks promptly and perform antibiotic resistance testing quickly to determine the appropriate antibiotic to use to effectively treat patients

Trends in diarrhoea with blood cases and especially deaths are used as the basis for detecting outbreaks due to *Shigella dysenteriae* type 1 (SD1). If an increase in diarrhoea with blood cases or deaths occurs, lab analysis of stool specimens is used to determine if the increase is truly due to SD1.

Case definition

Suspected case: A person with diarrhoea with visible blood in stool.

Confirmed case: Suspected case with stool culture positive for *Shigella dysenteriae*

Analysis by Time, Place, and Person

Time: Draw graph showing monthly trends in cases and deaths. Prepare an epidemic curve for outbreak cases.

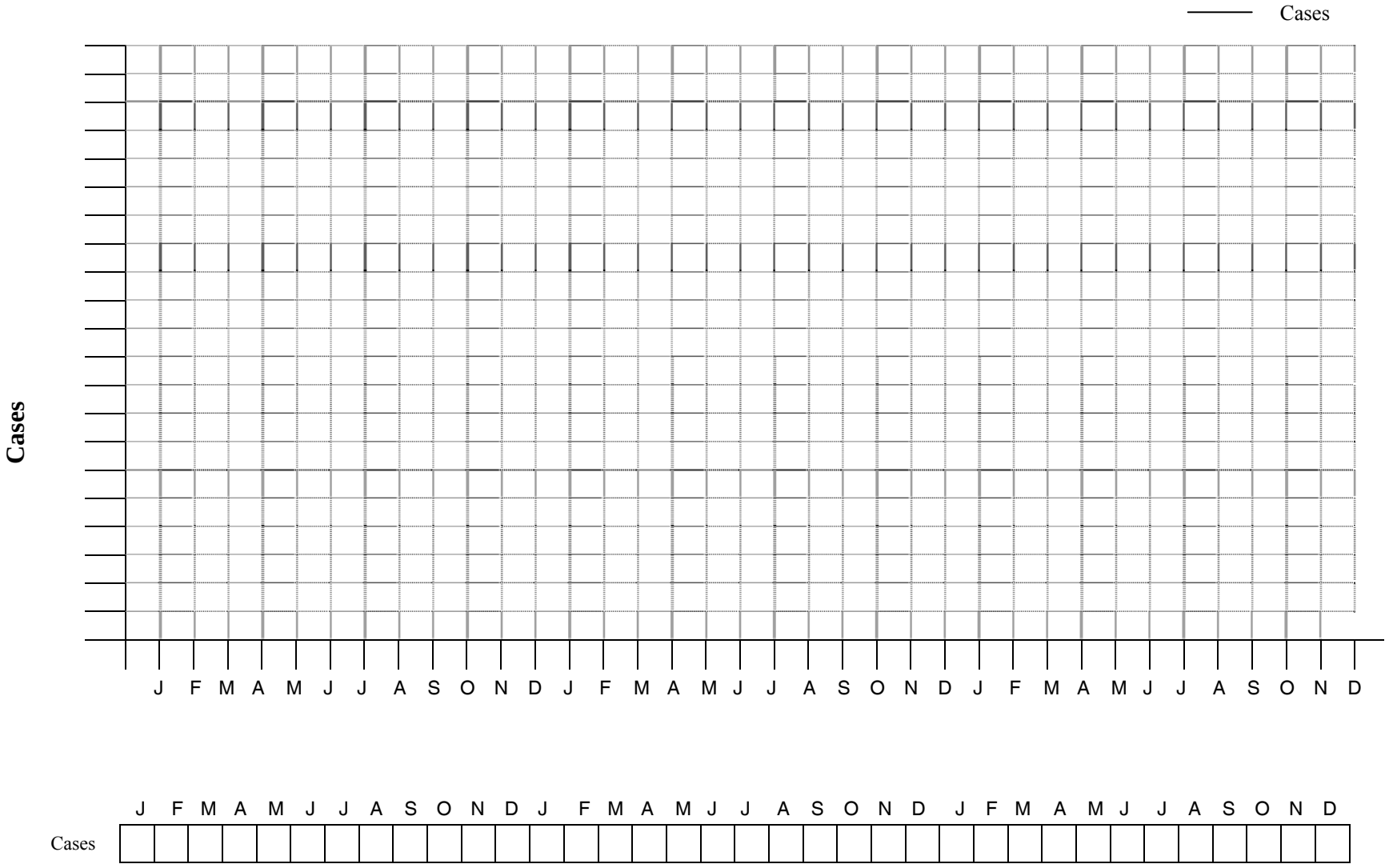
Place: Plot the location cases by community.

Person: Count cases and deaths in each month. During an outbreak analyse by age distribution.

Public health action

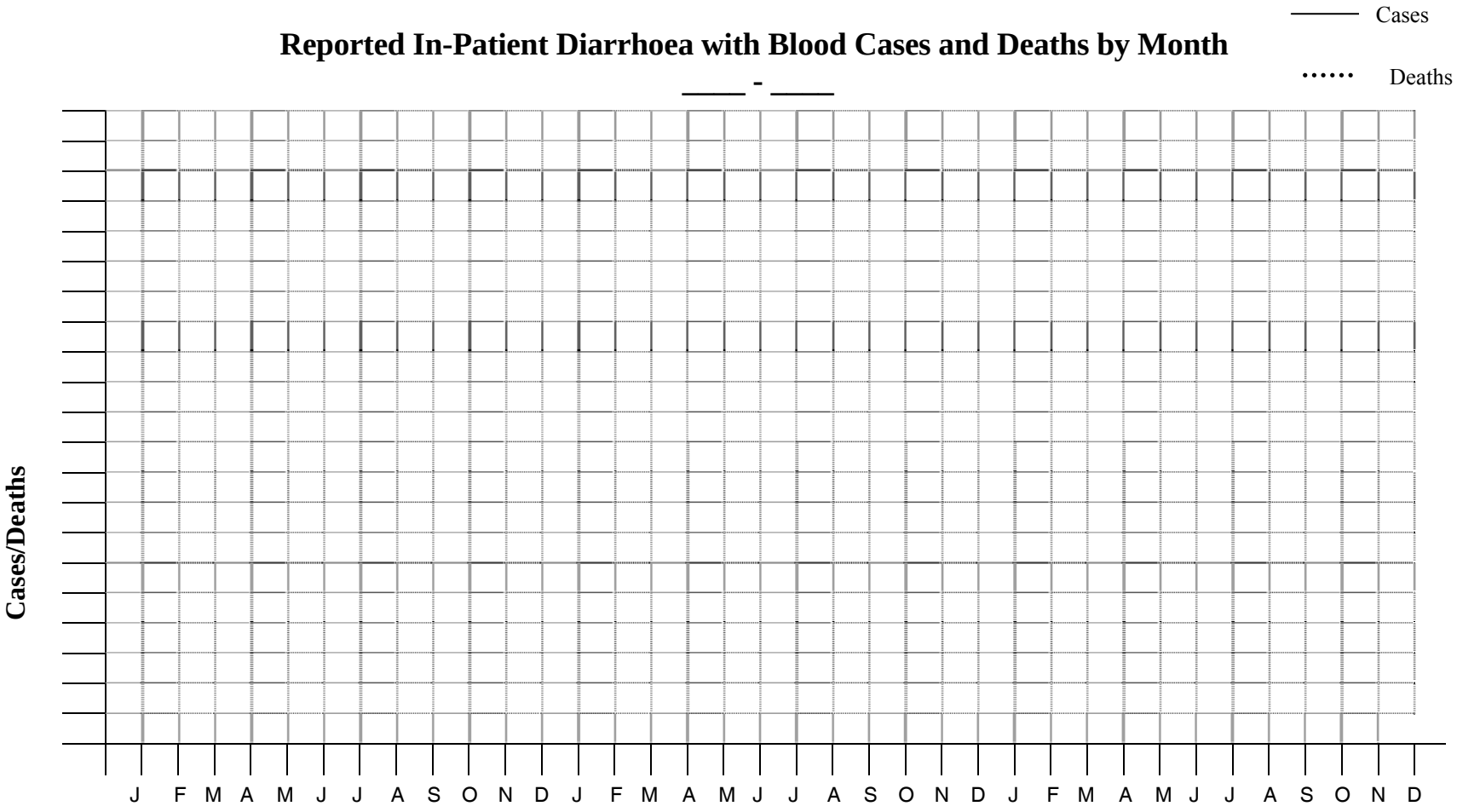
- SD1 outbreaks should not be occurring in districts since SD1 outbreaks can be completely prevented by adequate food and water sanitation and good hand washing practices. A SD1 outbreak indicates inadequate food and water sanitation in the district.
- A SD1 outbreak should be suspected if the trends show an unusual increase in diarrhoea with blood cases or deaths. This should trigger stool collection to attempt isolation of the organism.
- Even a small increase in diarrhoea with blood **deaths** should trigger a lab-based suspected outbreak investigation and collection of stool specimens.
- If the outbreak of diarrhoea with blood continues and the stool specimens were transported to the lab in good condition and were negative, national level epidemiologists and lab experts should be requested to determine the etiology of the outbreak. In districts at risk for viral hemorrhagic fever (VHF), diarrhoea with blood deaths should trigger consideration of VHF.
- *Shigella dysenteriae* type 1 outbreaks from a common source of water or food (funerals, water supply) may be identified by careful analysis of precise maps of cases and deaths.
- Age distribution of cases and deaths is important, especially because the case fatality rate can be very different by age (very young and old persons have the highest case fatality). Case fatality rates by age group may lead to public health messages about faster case detection and treatment in those age groups, especially among household or intimate contacts of diarrhoea with blood cases.

Reported Diarrhoea with Blood Outpatient Cases by Month ____ - ____



Reported In-Patient Diarrhoea with Blood Cases and Deaths by Month

____ - ____



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Cases																																				
Deaths																																				
CFR																																				

DRACUNCULIASIS

Introduction

- Dracunculiasis is commonly known as guinea worm disease. It is caused by a large nematode, a disabling parasite that emerges through the skin of the infected person.

- This is an old disease, which leads to socio-economic consequences. It is transmitted through the drinking of water containing a crustacean (Cyclops) that had earlier on ingested the immature form of the nematode (infective larvae). The cyclops lives in stagnant water sources (lakes, swamps, ponds and rivers) in rural areas in African countries. The female nematode discharges from the host's skin when there is contact with water. The incubation period is 9 to 12 months. There is no treatment or vaccine against the illness

.

Surveillance goal

- Active detection and investigation of each case at the community level.
- Appropriate and prompt control measures initiated according to national guidelines. In areas where guinea worm has been eradicated, maintain active searches for any new case.
- Report all imported cases to countries or areas of origin.

Case Definition

Suspected case:

- A person presenting or having presented in the last 12 months with a skin lesion in an endemic area.

Confirmed case:

- A person presenting or having presented in the last 12 months with a skin lesion in an endemic area and emergence of guinea worm or pre-emerged worm confirmed by surgical extraction. No laboratory confirmation required.

Analysis by Time, Place, and Person

Time: Graph cases monthly and quarterly.

Place: Plot distribution of communities/villages and work sites for cases that have been reported.

Person: Count cases monthly, and analyse by age distribution.

Public health action

If a single case is suspected:

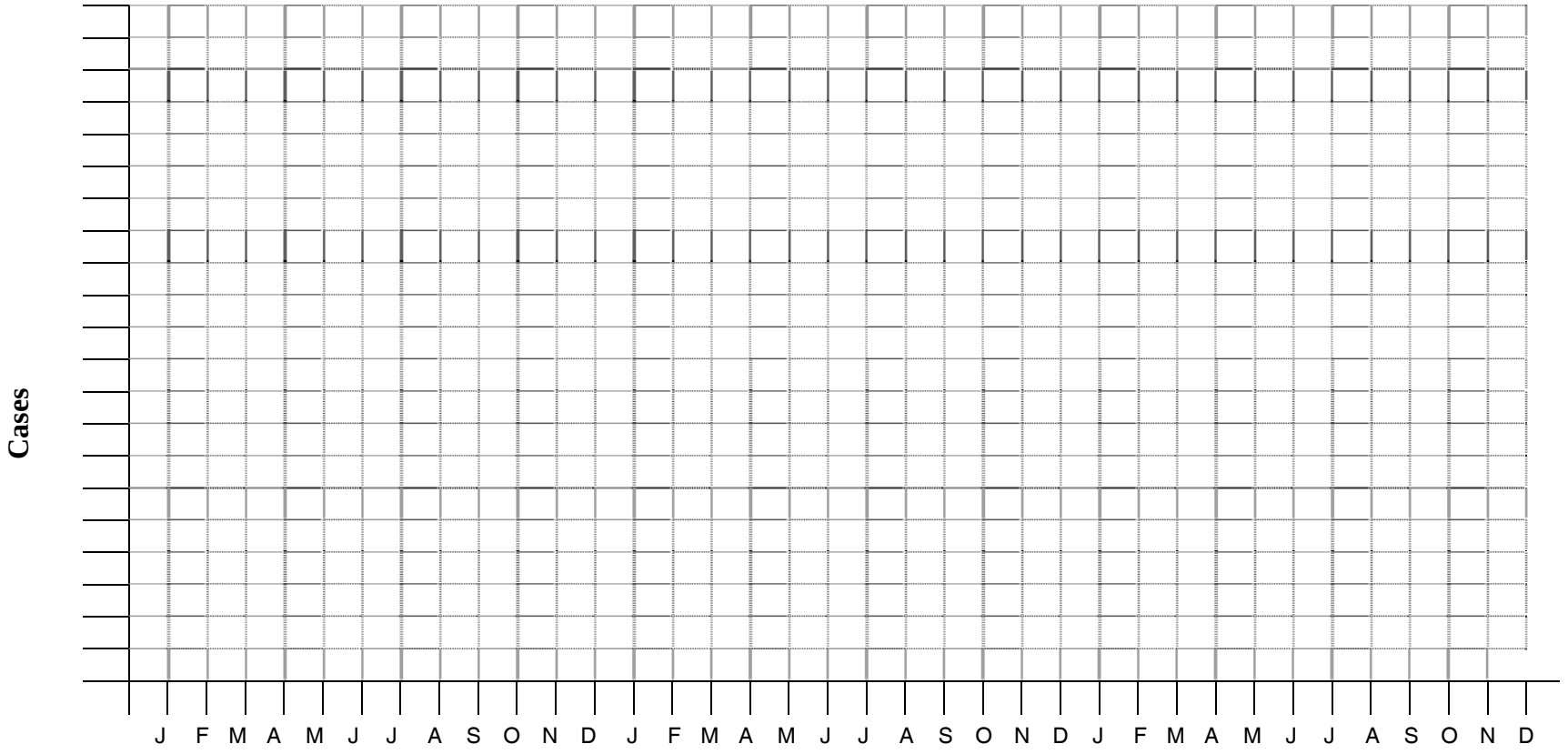
- Report the case according to national programme guidelines for eradication of Dracunculiasis.
- Treat case according to national guidelines.
- Conduct case investigation to confirm risk factors.
- Improve access to safe water according to national guidelines.
- Ensure that the patient does not contaminate the sources of drinking water
- Report monthly to a higher level

Reported Dracunculiasis (Guinea worm) Cases and Number Contained by Month

—— Cases

____ - ____

..... Cases Contained



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Cases																																				
Cases Contained																																				
Containment Rate																																				

LEPROSY

Introduction

Leprosy is a chronic mycobacterial disease of the skin, the peripheral nerves and upper airway mucous membranes. The disease is transmitted mainly through airborne spread from nasal secretions of patients infected by *Mycobacterium leprae* and also through inoculation into broken skin.

Patients are classified into two groups, depending on presence of skin and nerve signs:

- Paucibacillary patients (PB) with 1 to 5 skin patches and a single nerve enlargement
- Multibacillary patients (MB) with more than 5 skin patches and several nerve enlargements

At a prevalence rate of 1.15/10,000 population in 2001, the country is close to achieving the elimination goal

Surveillance goal

- Observe national trends towards the leprosy elimination target, defined as a reduction in prevalence to less than 1 case per 10,000 population
- Monitor resistance of *mycobacterium leprae* (Hansen's bacillus) to drugs used for MDT on an ongoing basis. As leprosy nears elimination, supplement routine surveillance with community-based surveillance

Case definition Suspected case

- A person showing one of three cardinal signs of leprosy hypopigmented or reddish skin lesion, loss or decrease of sensations in skin patch, enlargement of peripheral nerve

Confirmed case

- A person showing at least two cardinal signs of leprosy and who has not completed a full course of treatment with MDT

Analysis by Time, Place, and Person

Time: Graph new leprosy cases by year.
Place: Plot cases by communities.
Person:

- Count newly detected cases by classification (MB and PB).
- Analyse by age and disability.
- Analyse by treatment (cases cured, defaultered or relapse)

Public health action

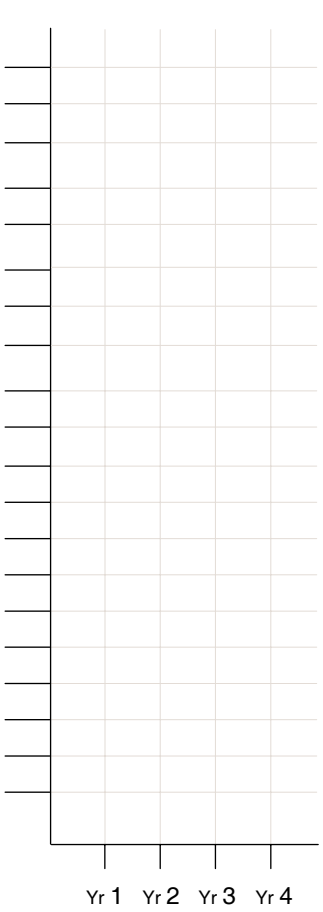
If a single case is suspected:

- Report the suspected case to the appropriate level of the health system.
- Investigate case for risk factors.
- Begin appropriate case management
- MB patients must be treated for 12 months with a 3-drug regimen (12 MB blister packs to be taken in a period of 18 months).
- PB patients must be treated for 6 months with a 2-drug MDT regimen (6 PB blister packs to be taken in a period of 9 months).

If a suspected case is confirmed:

- Examine patients for skin and nerve signs at each contact patient has with a health worker to diagnose and care for leprosy reactions and impairments
- Examine risk factors for treatment interruption (for example, inadequate supplies of MDT in the health center and poor accessibility of patients' villages
- Give sufficient blister packs for a full course of treatment to patients unable to attend a health center monthly.
- Identify any fast increase or decrease of new cases during a period.
- Assess adequacy of surveillance in areas where under- or over-reporting is suspected.
- Monitor distribution of MDT drugs.

Reported New Leprosy Cases by Year, _____ - _____



	1	2	3	4
MB Ad				
MB Ch				
PB Ad				
PB Ch				

Leprosy Analysis and Quality of Surveillance Program

	Yr		Yr		Yr		Yr	
	PB	MB	PB	MB	PB	MB	PB	MB
Elimination indicators								
Prevalence								
Prevalence rate								
Detection								
Detection rate								
Patient care indicators								
Proportion of children <15 yrs among newly detected cases								
Proportion of cases with Grade 2 disabilities among newly detected								
Cure rate								
Managerial indicator								
Proportion of health facilities providing MDT services								

LYMPHATIC FILARIASIS

Introduction

The disease is caused by microfilaria worm known as Wuchereria bancrofti. Though the disease is transmitted through the bite of an infected Culex mosquito elsewhere, in Ghana, it is transmitted through the bite of an infected female Anopheles mosquito; the same species that causes malaria.

In Ghana, the most endemic areas are the three northern regions and the coastal belt stretching from Axim to Ada. Microfilaria prevalence in some of the communities is as high as 40%.

Case definition

A suspected case is Hydrocoele or lymphoedema in a resident of an endemic area for which other causes of these findings have been excluded.

A confirmed case is a person who is Microfilaria positive or antigen positive with or without hydrocoele or lymphoedema.

Surveillance goals

- Routine monthly reporting of aggregated data on cases from district to regional level and to national level
- Active case finding through surveys of selected groups or through mass surveys
- Population surveys to determine microfilaria load for detection of new communities and monitoring reduction

Analysis by Time, Place and Person

Time: Number of cases by month.

Calculate yearly incidence.

Place: Plot the prevalence per community and districts and calculate point prevalence (if active case detection) by geographic origin.

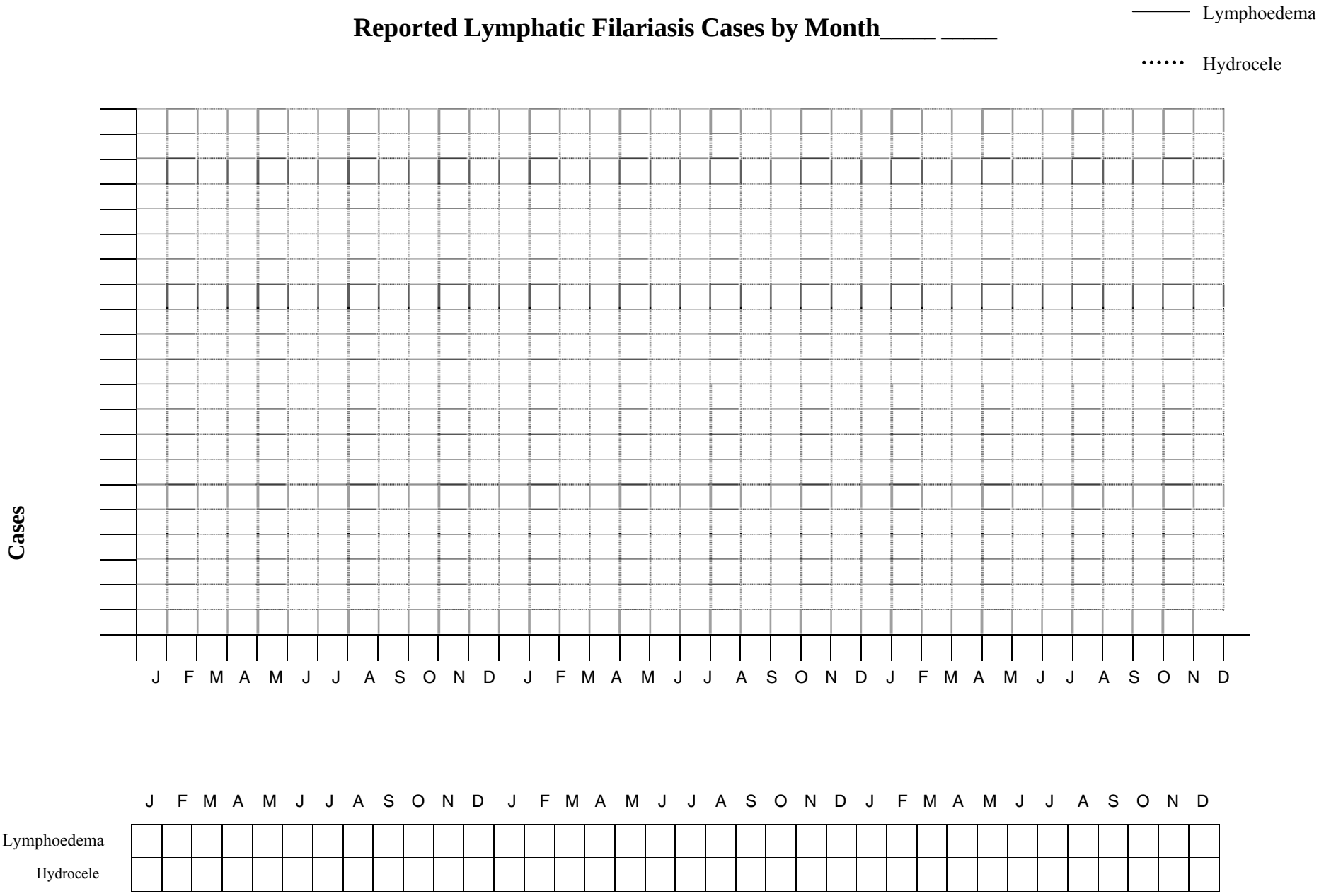
Person: Analyze number of new cases, laboratory confirmed cases, chronic conditions (hydrocoele or lymphoedema)

Calculate point prevalence (if active detection) by sex.

Public health action

- Mass treatment with ivermectin and albendazole in endemic areas.
- Repeated yearly treatment accompanied by monitoring of microfilaria levels
- Using Community Directed Treatment strategy.
- Promotion of use of insecticide treated nets.
- Vector control.
- Case management as relevant:
    - Care of lymphoedema by regular washing, etc.
    - Hydrocoelectomy

Reported Lymphatic Filariasis Cases by Month____ ____



MALARIA

Introduction

Malaria is a highly prevalent tropical illness with fever following the bite of infective female Anopheles mosquitoes, which transmit a parasite, Plasmodium falciparum, p. ovale, P. vivax or P. malariae. Serious malarial infections are usually due to P. falciparum and may result in severe anaemia and cerebral involvement.

Malaria is hyperendemic in Ghana (transmission is high and stable throughout. It accounts for 40% of all OPD cases, 36.9% of admissions, 13.2 % of all deaths and 25% of deaths among children under 5 years. Among pregnant women, malaria accounts for 13.8% of OPD attendances, 10.6% of admissions and 9.4% of deaths.

Surveillance goal

Improve percentage of inpatient malaria cases confirmed microscopically (from current 17% to 50%).
Monitor anti-malarial resistance using district sentinel sites.

Case definition

Uncomplicated malaria

Any person with fever or fever with headache, back pain, chills, sweats, myalgia, nausea and vomiting diagnosed clinically as malaria.

Confirmed uncomplicated malaria

Any person with fever or fever with headache, back pain, chills, sweats, myalgia, nausea and vomiting and with laboratory confirmation of diagnosis by malaria blood film or other diagnostic test for malaria parasites.

Severe malaria

Any person hospitalized with a primary diagnosis of malaria and confirmed by a positive blood smear or other diagnostic test for malaria. In addition, the person may have any of the following: change in behaviour (confusion or drowsiness), altered consciousness, general weakness (prostration), convulsions, hypoglycemia (sugar<2.2mmol/l), difficulty in breathing, renal failure (reduced urine output), severe anemia/pallor (Hb<5g/dl), coca-cola dark urine, jaundice/yellow urine, hyperpyrexia (Temp>39.5oc), spontaneous bleeding (DIC).

Malaria with severe anemia

Any child 2 months up to 5 years with malaria and, if an outpatient, with severe palmar pallor (Hb<5g/dl), or if an inpatient, with a laboratory test confirming severe anemia
(Note: Young infants less than 2 months are usually classified as serious bacterial infection and are referred for further evaluation.)

Analysis by Time, Place and Person

Time:

- Graph the number of malaria cases in uncomplicated clinically diagnosed, on outpatient basis by month.
- Graph number of malaria cases in uncomplicated laboratory confirmed on outpatient and inpatient basis.
- Graph number of severe malaria cases (inpatient) by month.
- Graph inpatient malaria cases with severe anaemia by month.
- Graph clinical malaria cases in pregnant women by month.
- Graph laboratory confirmed malaria cases in pregnant women by month.

Place:

- Plot location of households for new cases and deaths.

Person:

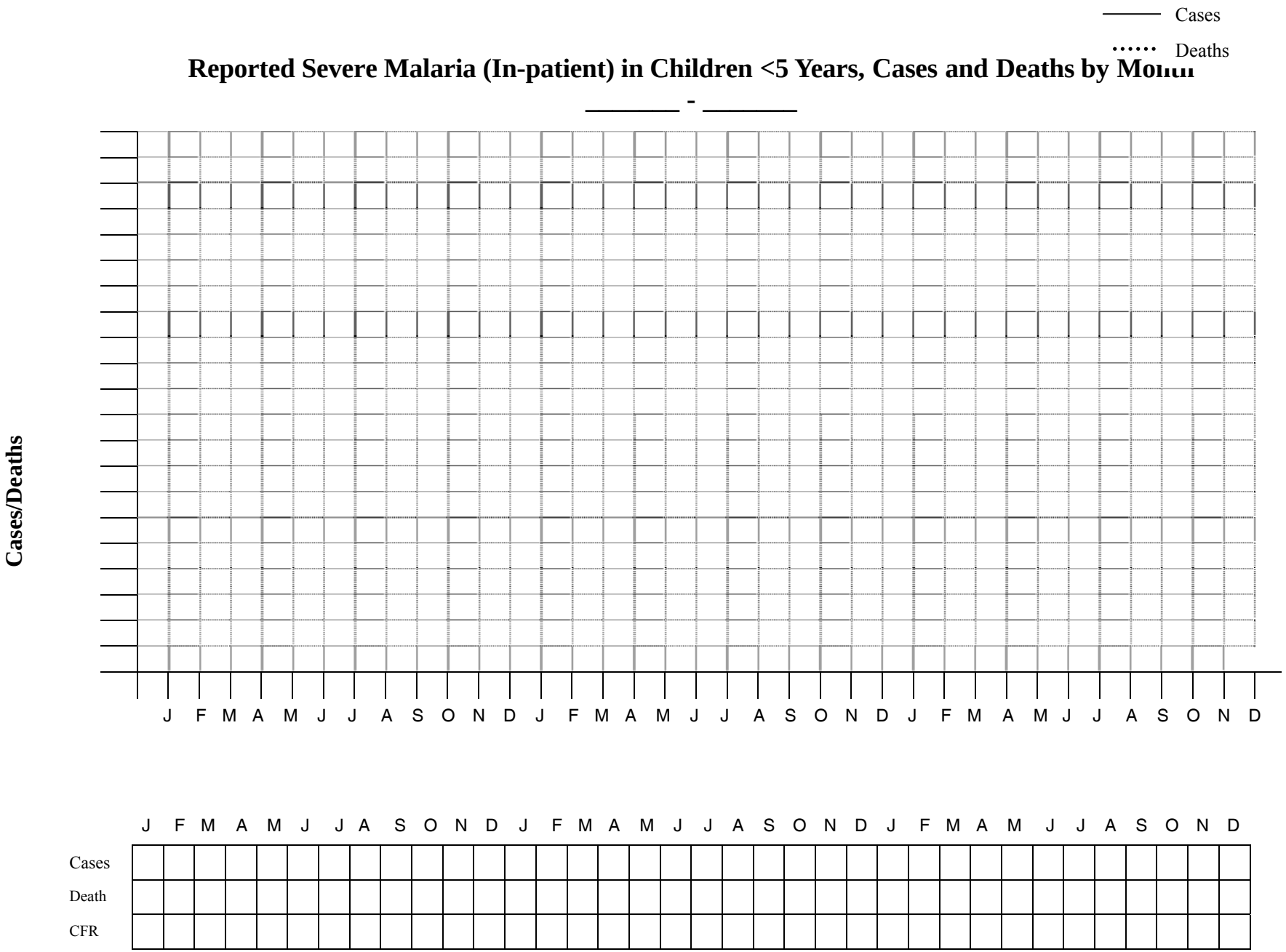
- Number of uncomplicated clinical diagnosed malaria cases by age for ages less than 5 years and greater or equal to 5 years by month
- Number of uncomplicated lab-confirmed malaria cases by age for ages less than 5 years and greater or equal to 5 years by month
- Number of inpatient severe malaria cases by age group by month.
- Number of inpatient malaria cases with severe anaemia by age group by month.
- Number of clinical malaria cases in pregnant women by age group by month.
- Number of lab-confirmed malaria cases in pregnant women by age group by month.
- Insecticide treated nets and adequate treatment of malaria cases are highly effective in decreasing child deaths due to malaria.
- In-patient malaria cases and deaths, and in-patient malaria cases and deaths with severe anemia should decline by >50%.
- Out-patient malaria cases should decline by at least 30%. A decline for out-patient malaria cases is more difficult to achieve than in-patient cases and deaths because only approximately 50% of the illnesses diagnosed as malaria among out-patients are truly due to malaria.
- Laboratory confirmed out-patient malaria cases should decline by >50%. When interpreting trends in laboratory-confirmed cases, consider the number of persons tested. For example, if supplies for lab tests run short for several months, then a declining trend may be an artifact and not represent a true decline in malaria cases
- If the trend in in-patient malaria cases and deaths (including in-patient malaria cases and deaths with severe anemia) is not declining, then the district team should review the coverage and effectiveness of all the malaria program components in the district.
- The district team must consider several other factors that may cause the trend to not decline: increase in community referral due to improved community aspects of the Integrated Management of Childhood Illnesses (IMCI) program, improved availability of affordable drugs at the health facilities, improved health facility quality (shorter waiting times, friendlier staff, etc.), seasonal variation after rainy season, increasing drug resistance, or change in health workers or health worker diagnosis, or an increase in malaria like fever-causing illness.

- Since most of the malaria and severe anemia deaths occur in children <5 years old, trends in the <5 year old malaria cases and deaths should be followed the closest.

Public health actions

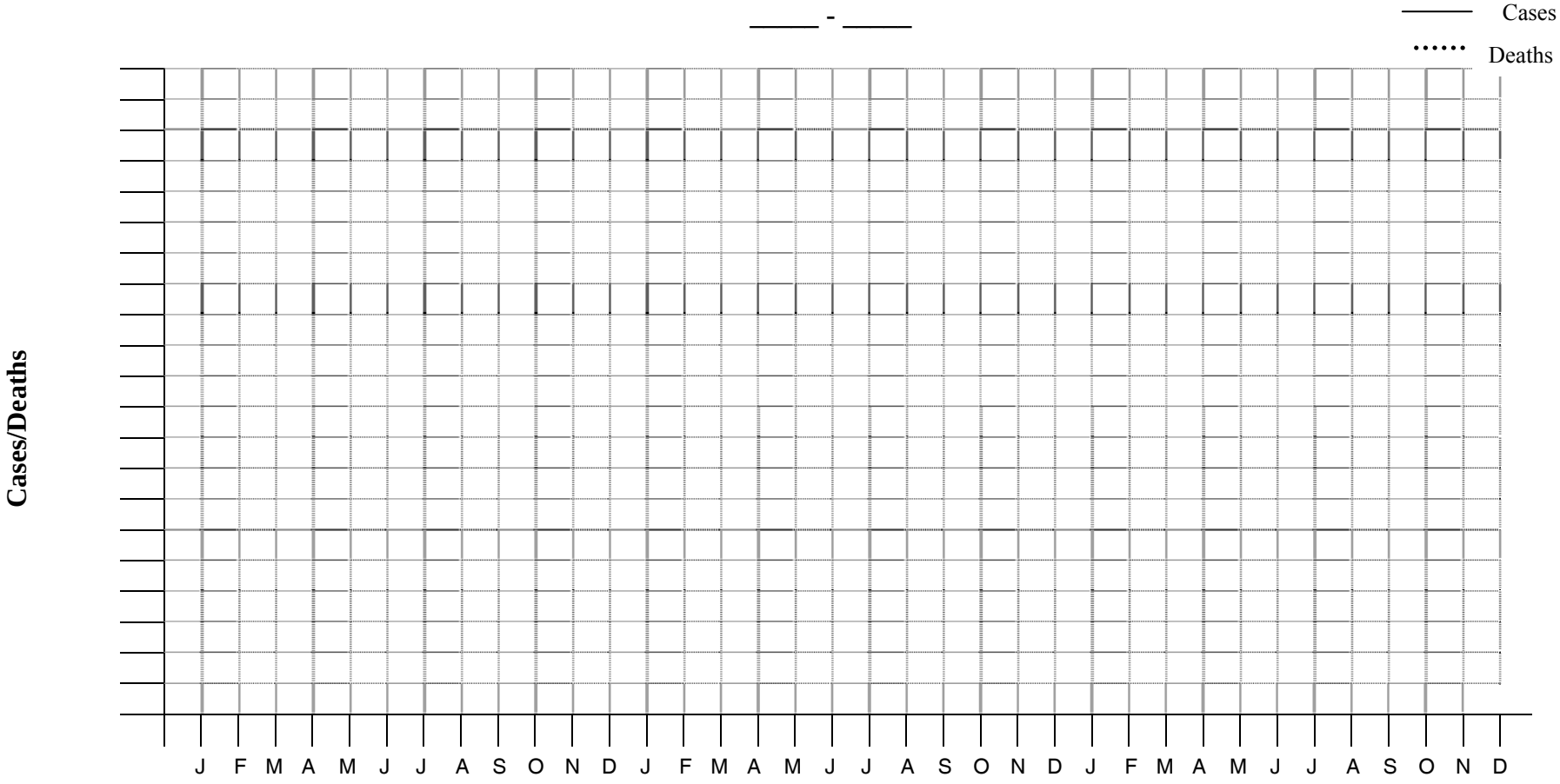
A district malaria program should be comprised of the following components covering the whole district:

- Early recognition and treatment of malaria/fever cases at home and at the community level
- Promotion of use of insecticide treated mosquito nets (ITNs) and other insecticide treated materials
- Chemoprophylaxis(e.g. Intermittent Preventive Therapy, IPT) malaria treatment in pregnancy
- Indoor residual spraying where applicable
- Integrated management of the environment
- Quality case management at the health facility level: early diagnosis, prompt and appropriate treatment of malaria cases at health facility and home.
- Ensuring availability of drugs, equipment, and supplies
- Health promotion


Cases
Deaths
Reported Severe Malaria (In-patient) in Children <5 Years, Cases and Deaths by Month
_____ - _____
Cases/Deaths
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
Cases
Death
CFR

Reported In-patient Malaria with Severe Anaemia in <5 Years Cases and Deaths by Month

_____ - _____



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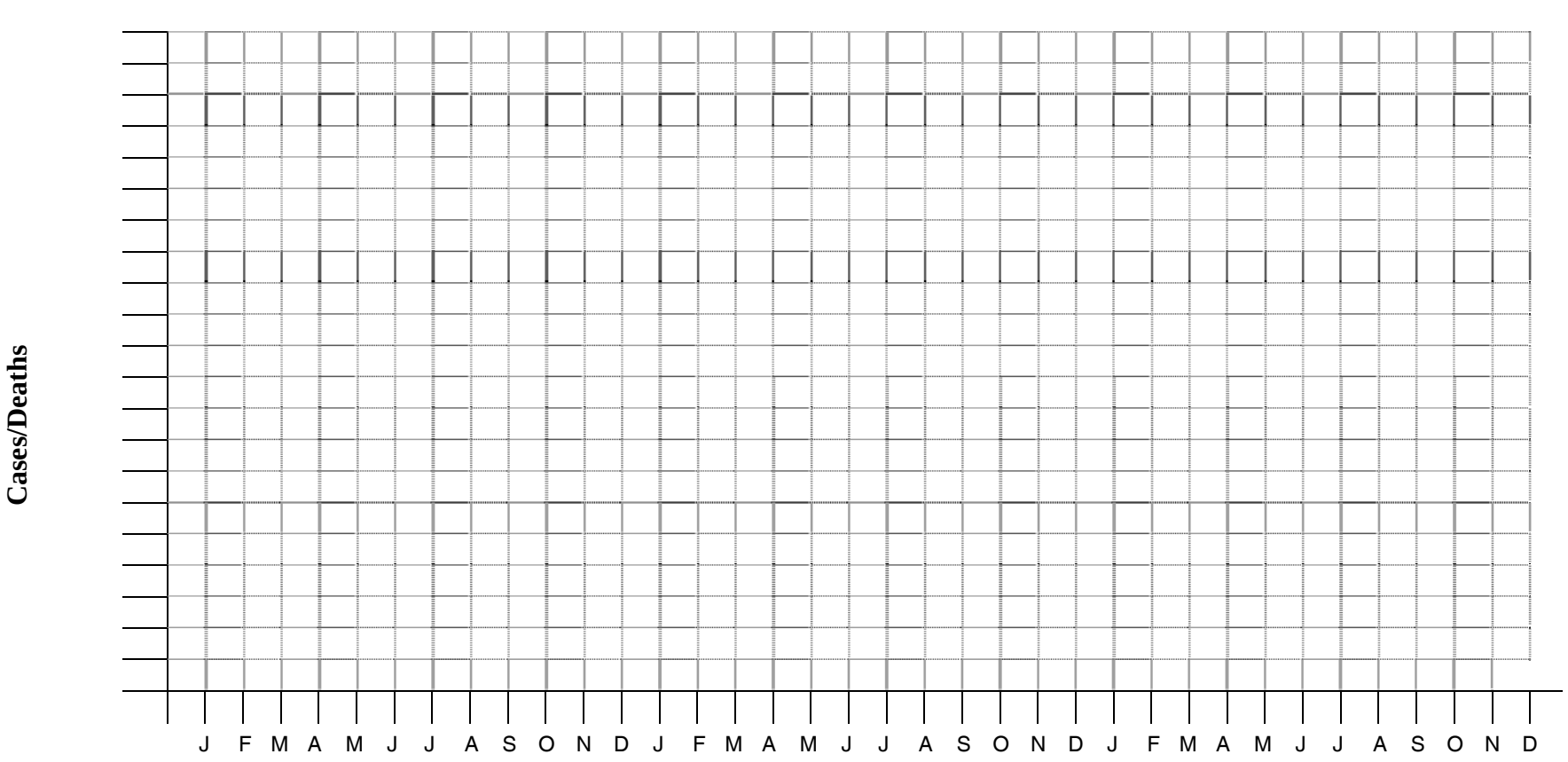
Cases																																				
Deaths																																				
CFR																																				

Reported Severe Malaria Cases and Deaths in <5 Years + by Month

_____ - _____



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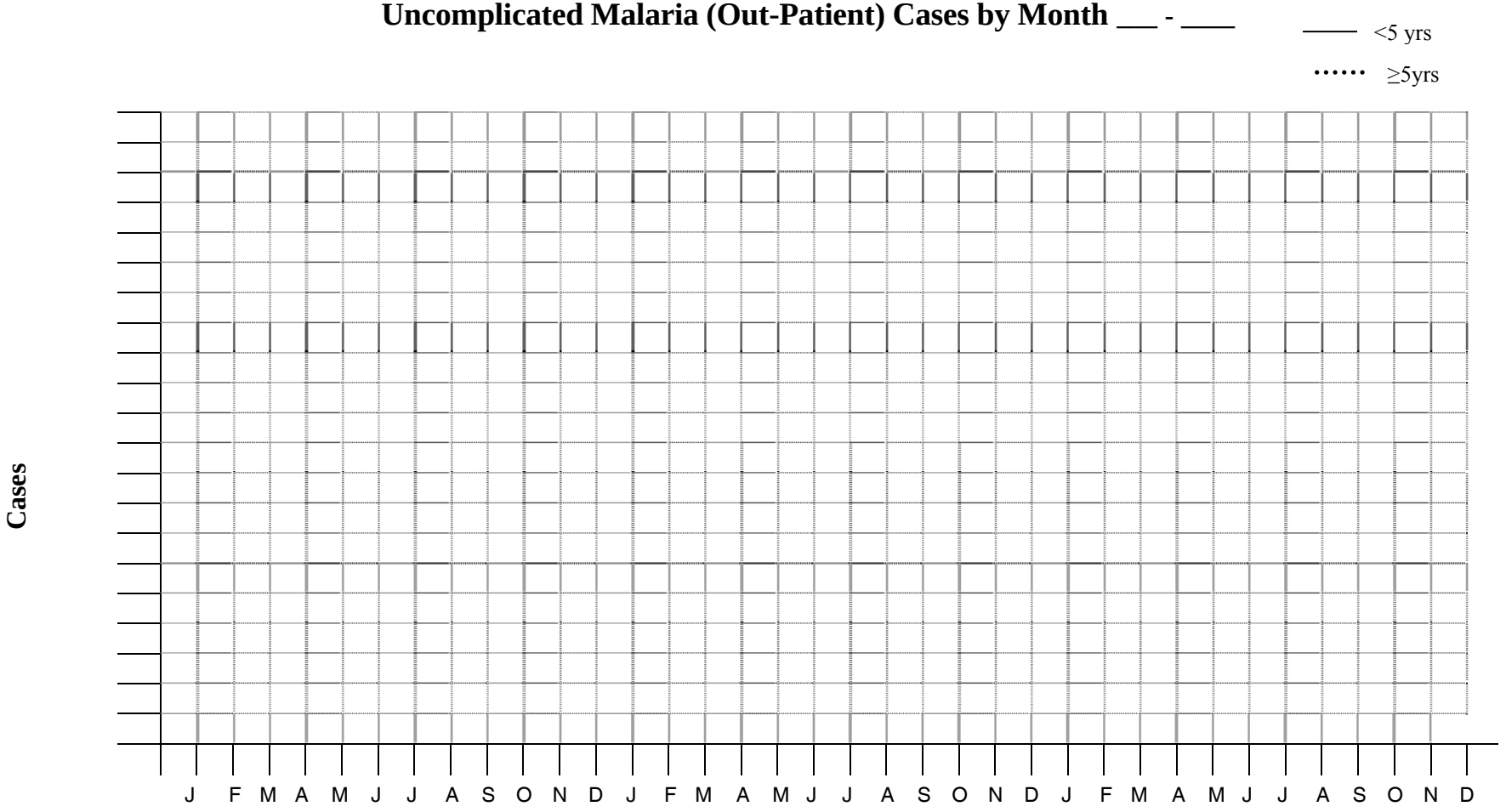
Cases																																					
Deaths																																					
CFR																																					

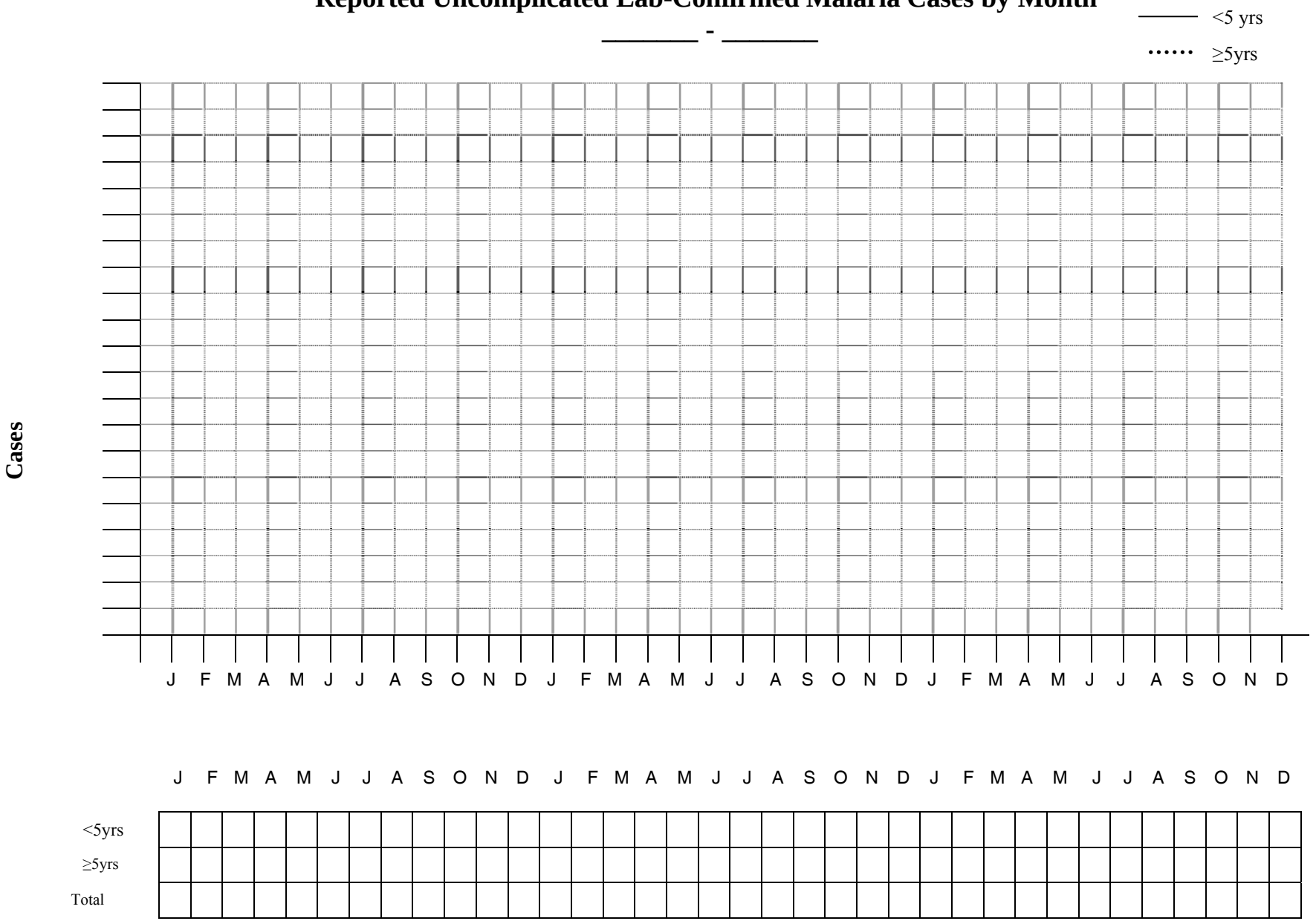
Uncomplicated Malaria (Out-Patient) Cases by Month ___ - ____



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
<5yrs																																				
≥5yrs																																				
Total																																				

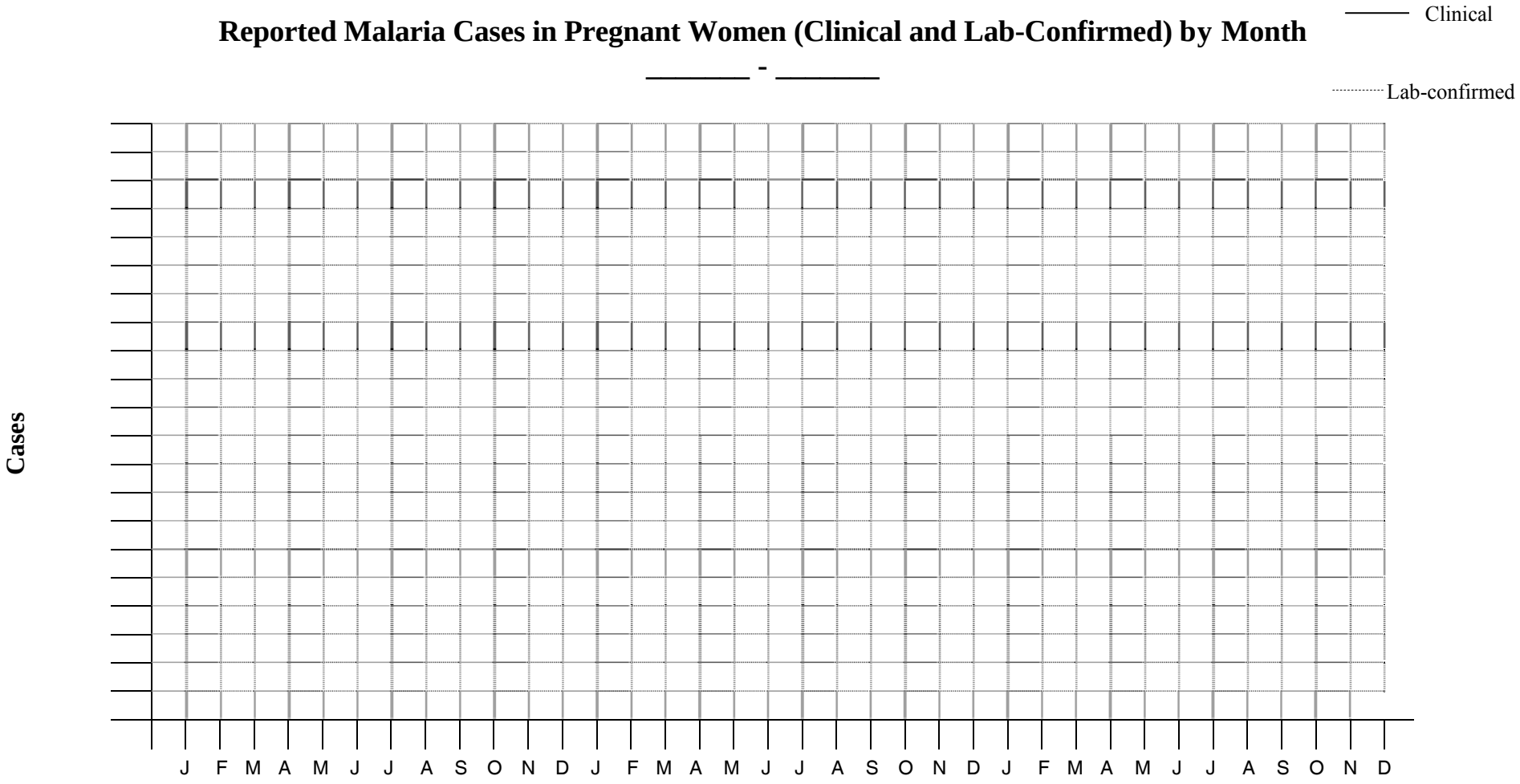
Reported Uncomplicated Lab-Confirmed Malaria Cases by Month

_____ - _____



Reported Malaria Cases in Pregnant Women (Clinical and Lab-Confirmed) by Month

_____ - _____



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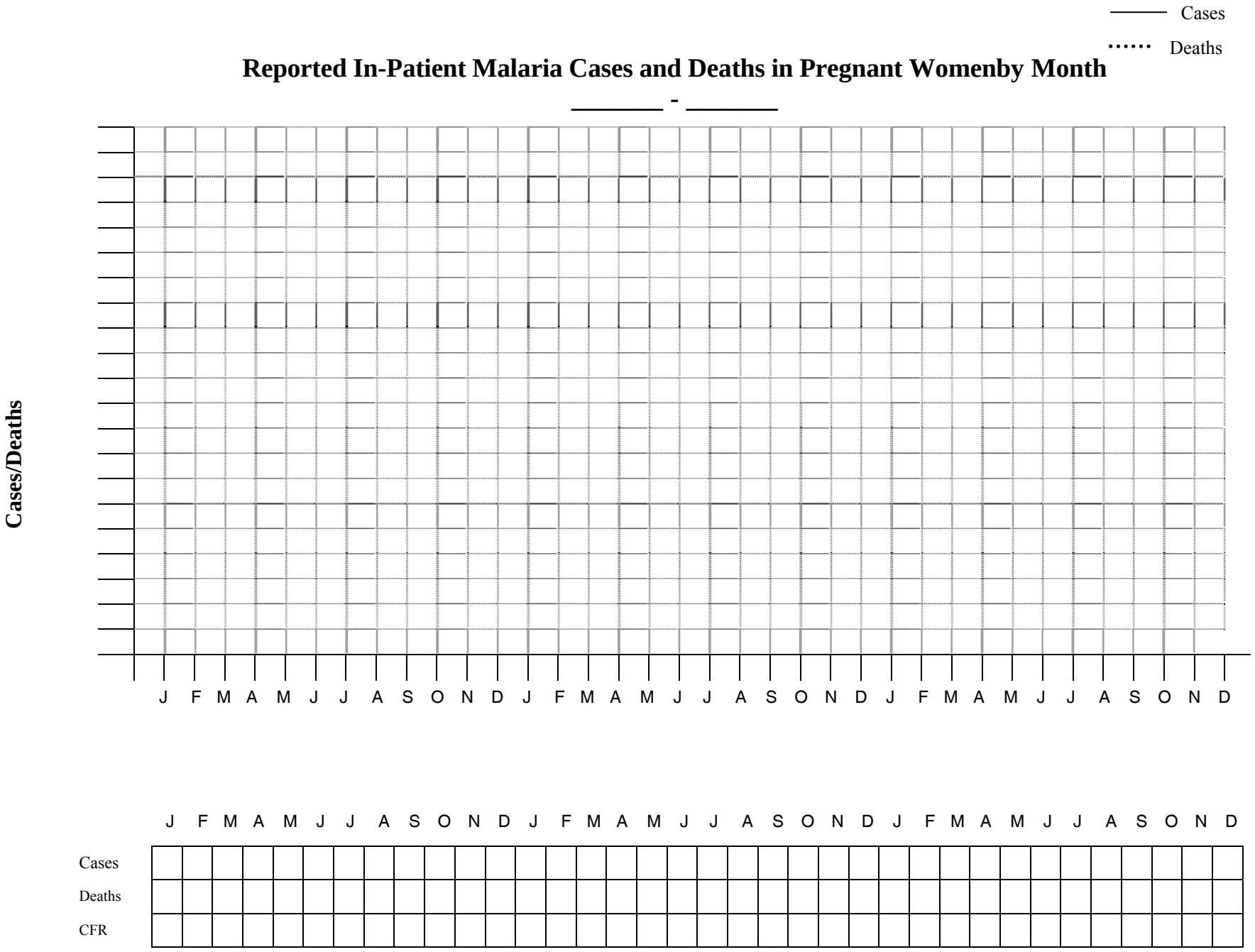
Clinical																																				
Lab Confirmed																																				
Total																																				


Cases
Deaths
Reported In-Patient Malaria Cases and Deaths in Pregnant Womenby Month
_____ - _____
Cases/Deaths
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
Cases
Deaths
CFR

MEASLES

Introduction
Measles is a viral disease which is transmitted by human beings through droplets. It is associated with fever and marculopapular rash of coryza. Incubation periods range from 7-18 days. Deficiency and malnutrition may result in severe illness due to the virus itself and associated bacterial infections especially pneumonia.

Measles Supplemental Immunization Activities (SIAs) were conducted nation wide in 2002. In 2003, 1158 suspected measles cases were investigated with blood specimen collected of which 46 were laboratory confirmed (4%). In 2004, 928 cases were investigated with 60 being laboratory confirmed (6.5%).

Every district can reduce measles deaths to zero by achieving high routine coverage and high coverage <15 year old supplemental immunization activity. Zero measles deaths can be maintained with periodic follow-up campaigns in children <5 years old every 3-5 years. An outbreak of measles in the district after the initial campaign indicates a weakness of the mass campaign or low routine coverage.

Surveillance goal
Detect and investigate any suspected case of measles promptly.

Analysis by Time, Place, and Person
Time: Graph suspected and laboratory confirmed cases and deaths monthly. Draw epidemic curves of cases during outbreaks.
Place: Plot location of cases by communities.
Person: Count cases and analyse by age and immunization status.

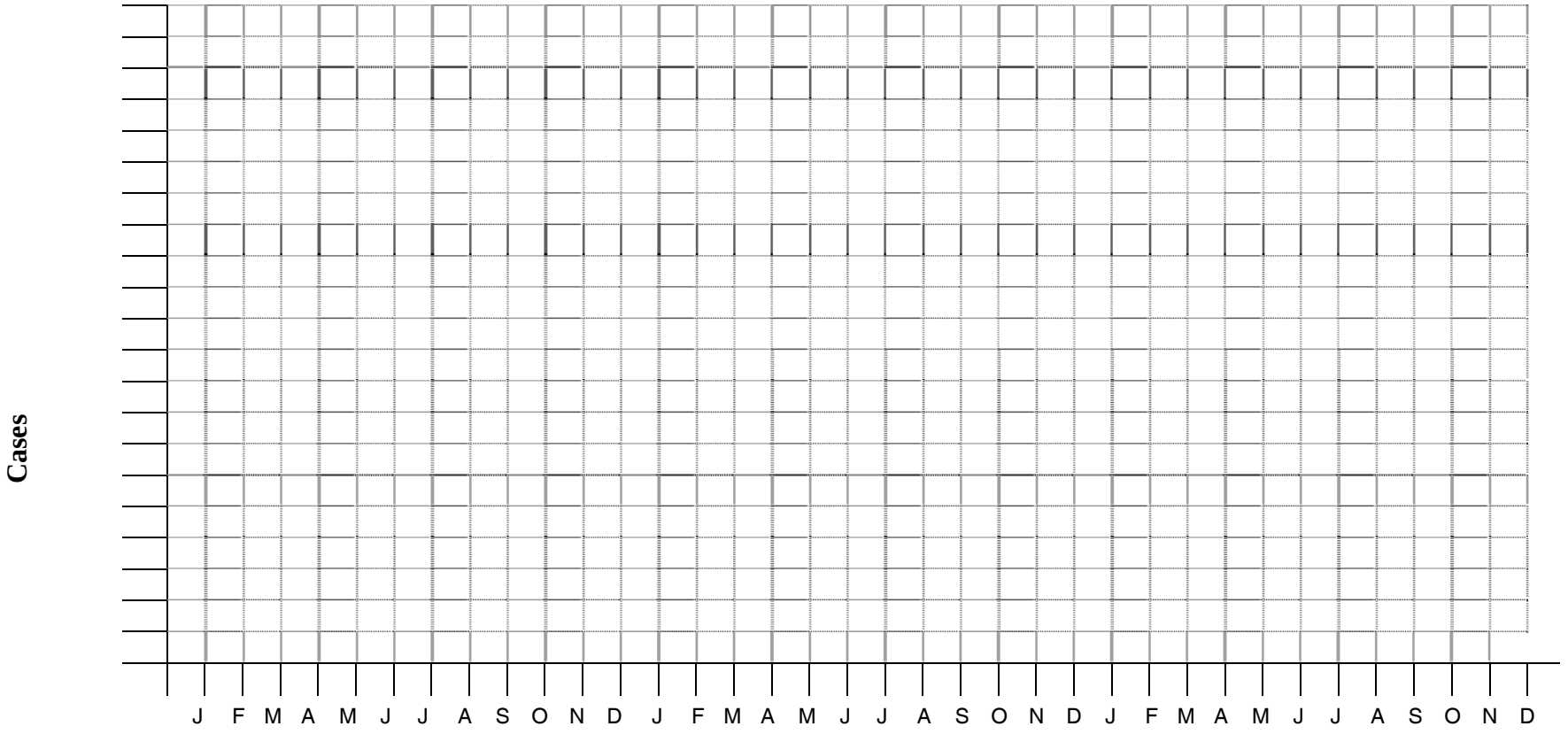
Public health action
- Weekly record review through active surveillance visits to all health facilities.
- Immediate reporting of suspected measles cases.
- Laboratory confirmation of each suspected measles case in non-epidemic situations.
- Investigation of outbreaks with lab confirmation (of the first 5 cases in suspected outbreaks) and line listing of all cases.
- Monthly aggregate reporting of suspected cases (including zero reporting) using the “IDS monthly summary report form”.

Reported Suspected and Confirmed Measles Cases by Month

_____ - _____

——— Suspected Cases

····· Confirmed cases (lab or epidemiologic linkage to a lab confirmed case)



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Suspected Cases																																				
Confirmed																																				
% Confirmed																																				

MENINGITIS

Introduction

Acute infection of the central nervous system usually caused by *Neisseria meningitidis, Haemophilus influenzae*, or S*treptococcus pneumoniae*, transmitted human-to-human via airborne droplet spread. Neisseria meningitidis has been responsible for epidemics.

Attack rates are highest among children age less than 15 years. Case fatality rates are usually 10% to 20% among treated patients, and 70% among untreated cases. Target case fatality rate: <10%.

In Ghana, large outbreaks due to *N. meningitidis* (incidence greater than 1 case per 1,000 population) may occur from November through May in regions in the northern sector. Outside the meningitis belt, smaller outbreaks may occur year-round.

Surveillance goal

Use a rapid latex slide agglutination test to confirm *N. meningitidis* during outbreaks. Perform periodic sero-grouping to determine if cause of outbreak is vaccine-preventable. Perform periodic susceptibility testing for penicillin and chloramphenicol.

Case Definition

Suspected case:

Any person with sudden onset of fever (>38.5 C rectal or 38.0 C axillary) and one of the following signs: neck stiffness, altered consciousness or other meningeal sign.

Confirmed case:

A suspected case confirmed by isolation of *N. meningitidis* from CSF or blood.

Analysis by Time, Place and Person

Time: After you have calculated your Alert and Epidemic thresholds, draw a graph and monitor thresholds on weekly basis. During epidemics, construct an epidemic curve. Calculate also, case fatality rate.

Place: In epidemics (not in endemic situations), plot location by community/village and district. Estimate distance to the nearest health facility.

Person: Analyze by age distribution.

Public Health Action

District team should identify an alert and an action (or epidemic) threshold. The alert threshold is the number of meningitis cases per week that would signify a suspected outbreak in the district and in each health facility. A dotted line can be drawn on the graph to show the alert threshold that signifies there is potential for a suspected outbreak.

WHO recommendations for detection of meningococcal outbreaks in meningitis-belt countries were revised in September 2000. Two thresholds are recommended: 1) alert threshold, 2) epidemic threshold.

The alert threshold is used to: 1) sound an early warning and launch an investigation, 2) check outbreak preparedness, 3) start a vaccination campaign if there is an outbreak in a neighboring area, and 4) prioritize areas for vaccination campaigns in the course of an epidemic.

The epidemic threshold is used to confirm the emergence of an epidemic so as to step up control measures, i.e. mass vaccination and appropriate case management.

The alert threshold is 5 reported meningitis cases per 100 000 inhabitants per week for districts with a population of >30 000 and 2 cases in 1 week for districts with populations <30 000 inhabitants.

The epidemic threshold is the following:

For populations of >30 000 inhabitants:

The epidemic threshold is 10 cases per 100 000 per week.

For populations of <30 000 inhabitants:

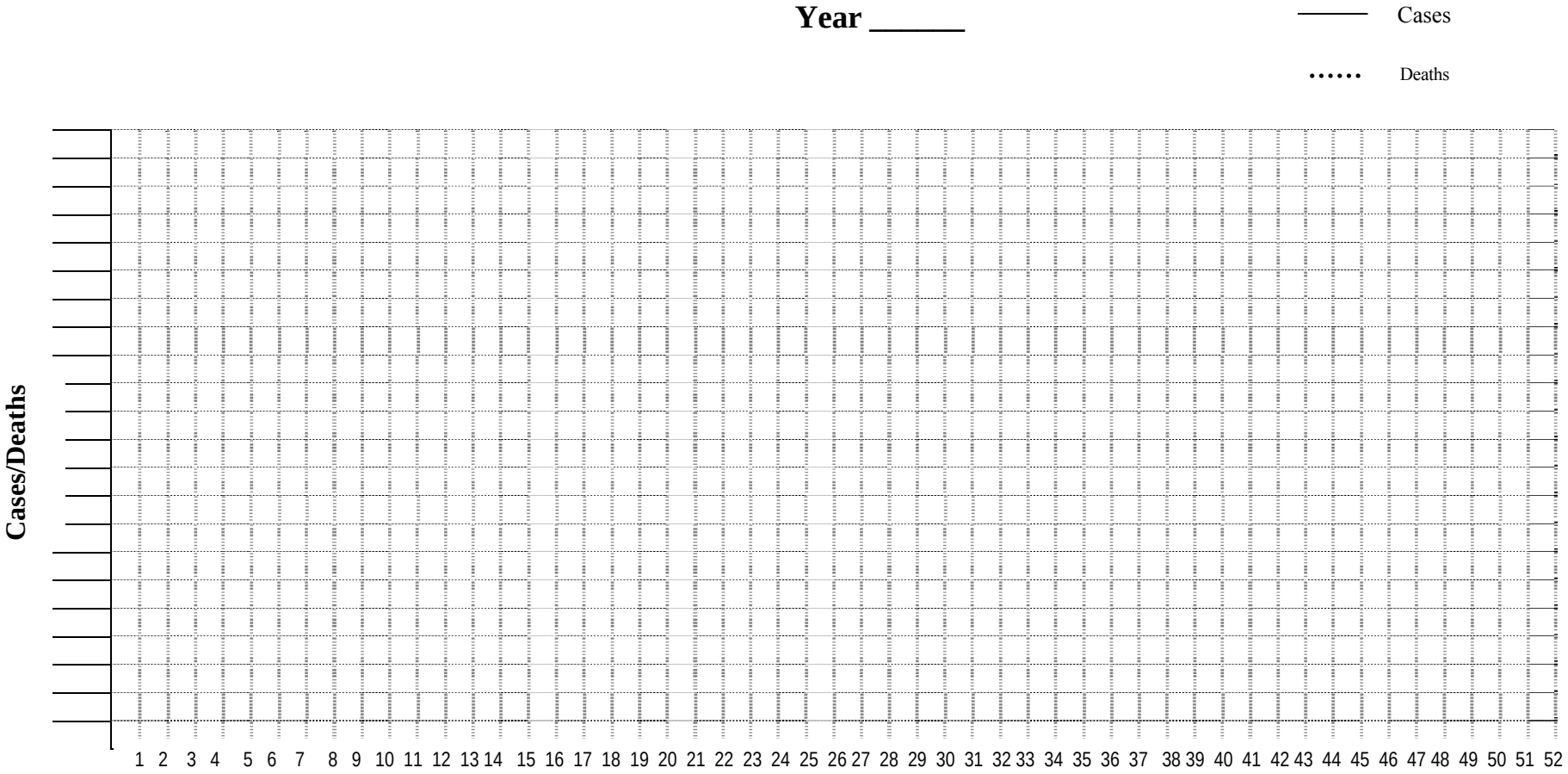
5 cases in 1 week, or

Doubling of number of cases over 3 weeks (for example, 1 case in first week, 2 cases in the second week, and 4 cases in the third week), or Other situations on a case-by-case basis (for example, 2 confirmed cases in 1 week are enough to start vaccination in refugees, displaced persons, or mass gatherings). If the alert threshold is reached, the following action should be taken: inform authorities, conduct an investigation, confirm with lab testing, treat cases, strengthen surveillance, and prepare for a vaccination campaign.

If the epidemic threshold is reached, the following action should be taken:

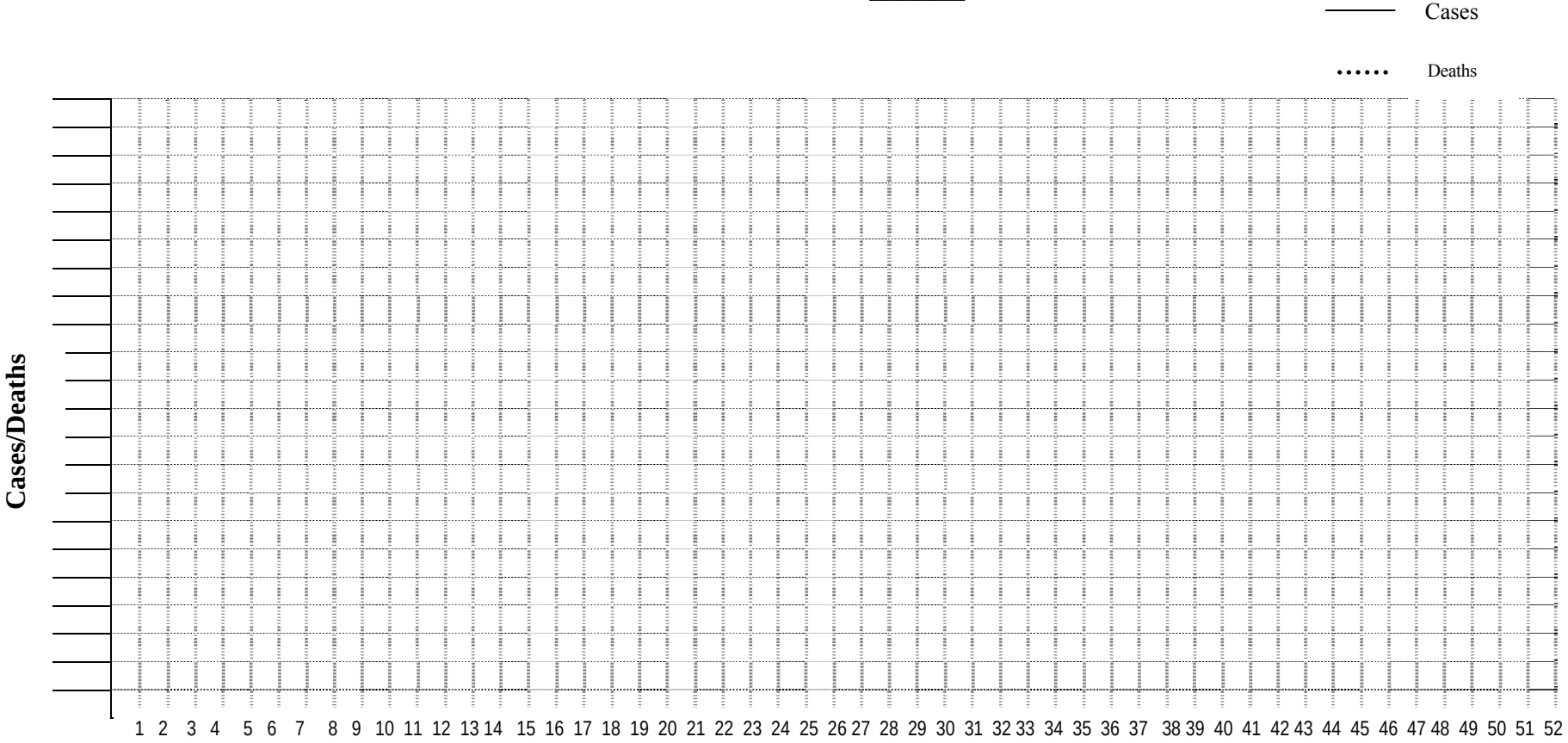
- Begin mass vaccination,
- Distribute treatments to health facilities.
- Treat cases according to guidelines adapted for use during epidemics,
- Inform the public.

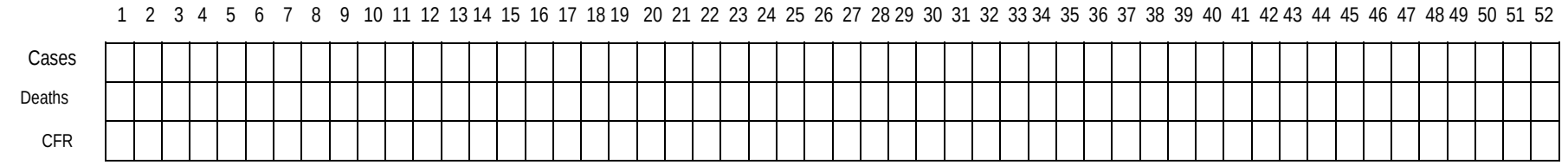
Reported Meningitis Cases and Deaths by Week
Year _____



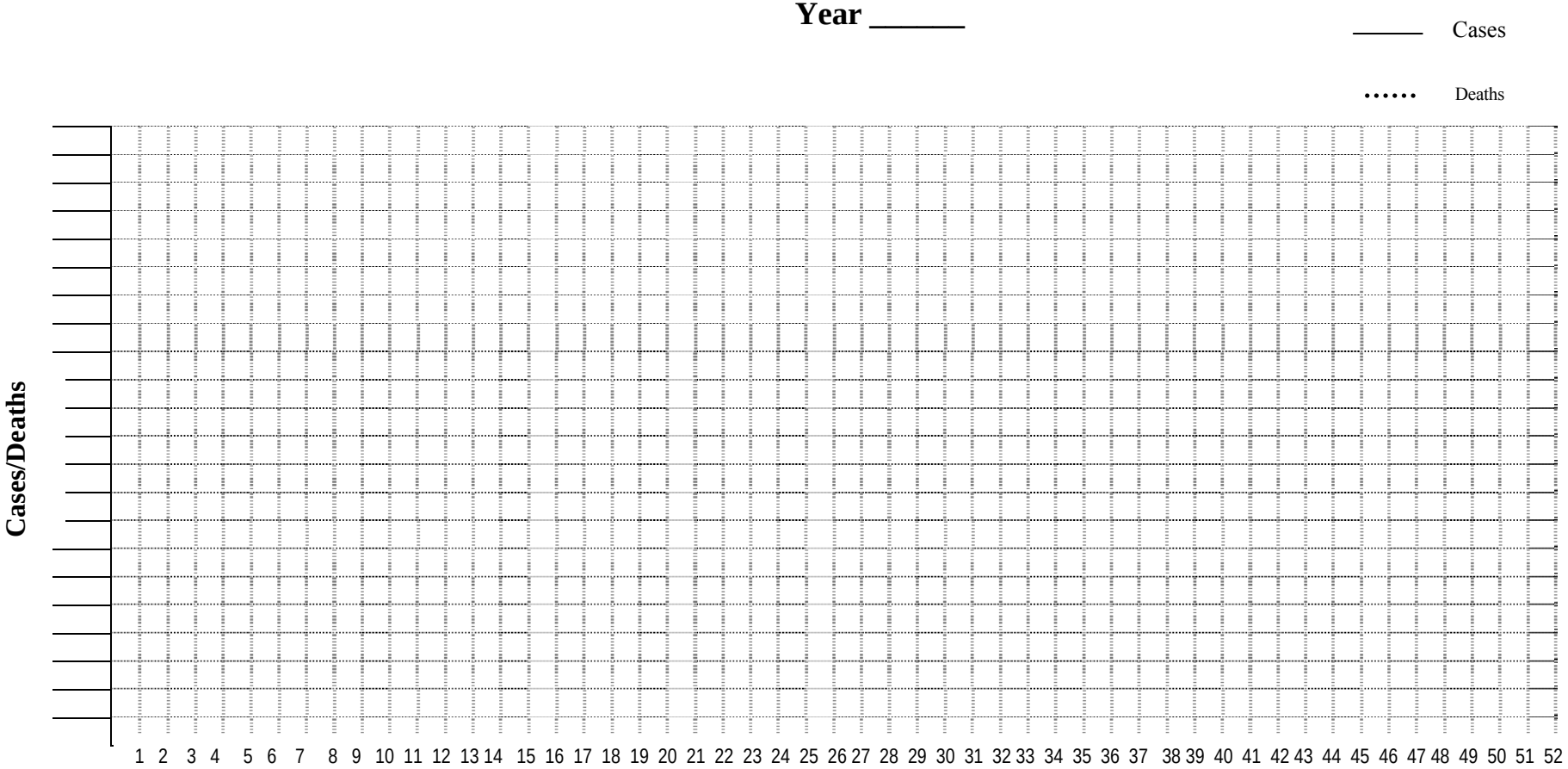
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
Cases	
Deaths	
CFR	

Reported Meningitis Cases and Deaths by Week
Year _____





Reported Meningitis Cases and Deaths by Week
Year _____



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52

Cases	
Deaths	
CFR	

NEONATAL TETANUS

Introduction

Neonatal tetanus (NNT) is a vaccine preventable disease and is the most common form of tetanus in infants in developing countries. The disease is caused by contamination of the umbilical stump with tetanus spores following childbirth, through cutting the cord with non-sterile instrument or by application of contaminated dressing materials to the cord.

Surveillance goal

- Detect and report cases of NNT immediately.
- Confirm each case and prevent additional cases by immunizing all pregnant women in areas around the confirmed case
- Identify high risk areas and target TT campaigns to women of child bearing age.

Case definition

NNT case is any newborn who is normal at birth and after two days cannot suck or feed and becomes stiff and or has convulsion or both. Symptoms begin 3-21days after birth.

Analysis by Time, Place and Person

Time: Draw graph showing cases and deaths by months

Place: Plot location of case households and location of birth attendants

Person: Analyse each case by cord care.

The elimination of neonatal tetanus as a public health problem by the year 2005 is defined as a rate less than 1 case per 1000 live births at district level.

Possible causes are the following:

- TT immunization status of women in childbearing age in the locality
- Location of health centers and trained birth attendants
- Graph cases and deaths monthly

Public Health Action

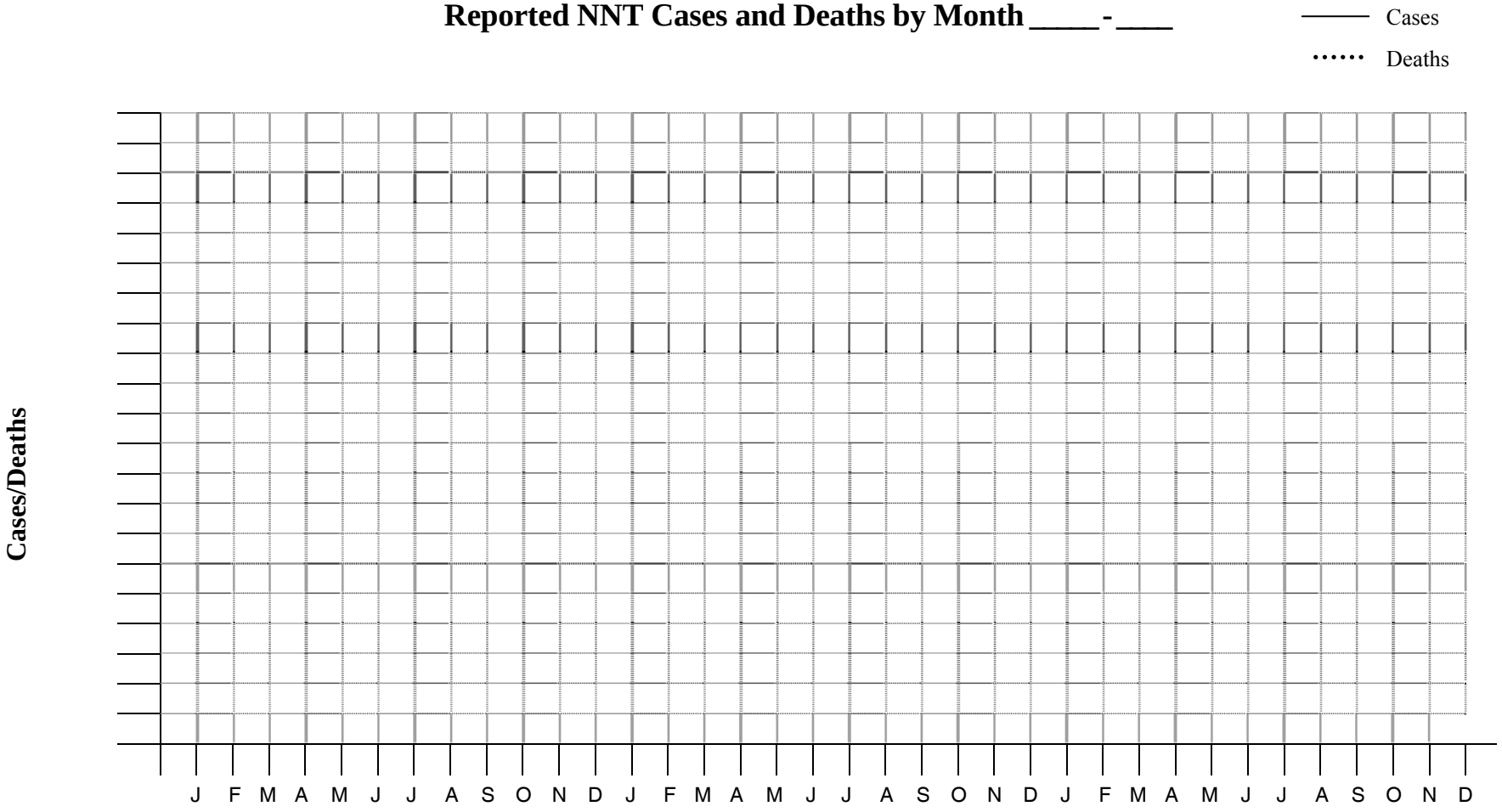
If a single case is suspected:

- Report case-based information immediately to the next level.
- Conduct an investigation to determine the risk of transmission.
- Treat and manage the case according to national recommendations, usually with supportive care and, if feasible, in intensive care. No routine isolation precautions are needed.

If a case is confirmed through investigation:

- Immunize the mother with at least 2 doses of tetanus toxoid and other pregnant women in the same locality as the case.
- Conduct a supplemental immunization activity for women of childbearing age in the locality.
- Improve routine vaccine coverage through EPI and maternal immunization programme activities.
- Educate birth attendants and women of childbearing age on the need for clean cord cutting and care. Increase the number of trained birth attendants.

Reported NNT Cases and Deaths by Month ____-___



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Cases																																				
Deaths																																				
CFR																																				

ONCHOCERCIASIS

Introduction

Onchocerciasis is a filarial infection of the skin and eye caused by *Onchocerca volvulus* transmitted through the bite of infected female *Simulium* black flies. It is the second leading infectious cause of blindness worldwide. It causes debilitating problems leading to significant decrease in productivity in areas where it is endemic.

Incubation period is years to decades since repeated infection is necessary for disease manifestation. Clinical illness is unusual in children even in endemic areas.

Case definition:

Suspected case:

- In an endemic area, any person with fibrous nodules in subcutaneous tissues is a suspected case.

Confirmed case:

- Is a suspected case that is laboratory confirmed (by the presence of microfilaria in skin snip, adult worms in excised nodules), or typical ocular manifestations (such as slit-lamp observations of microfilaria in the cornea, the anterior chamber, or the vitreous body).

Surveillance goal

- Early detection of cases is important to reduce the recurrence of transmission of the parasite in areas where it has been eradicated (zones covered by the Onchocerciasis Programme).
- Conduct periodic case search in sentinel villages: using diethylcarbamazine (DEC). In case of a positive reaction to DEC, confirm with a microscopic examination of a skin biopsy from each suspected case.

Analysis by Time, Place and Person

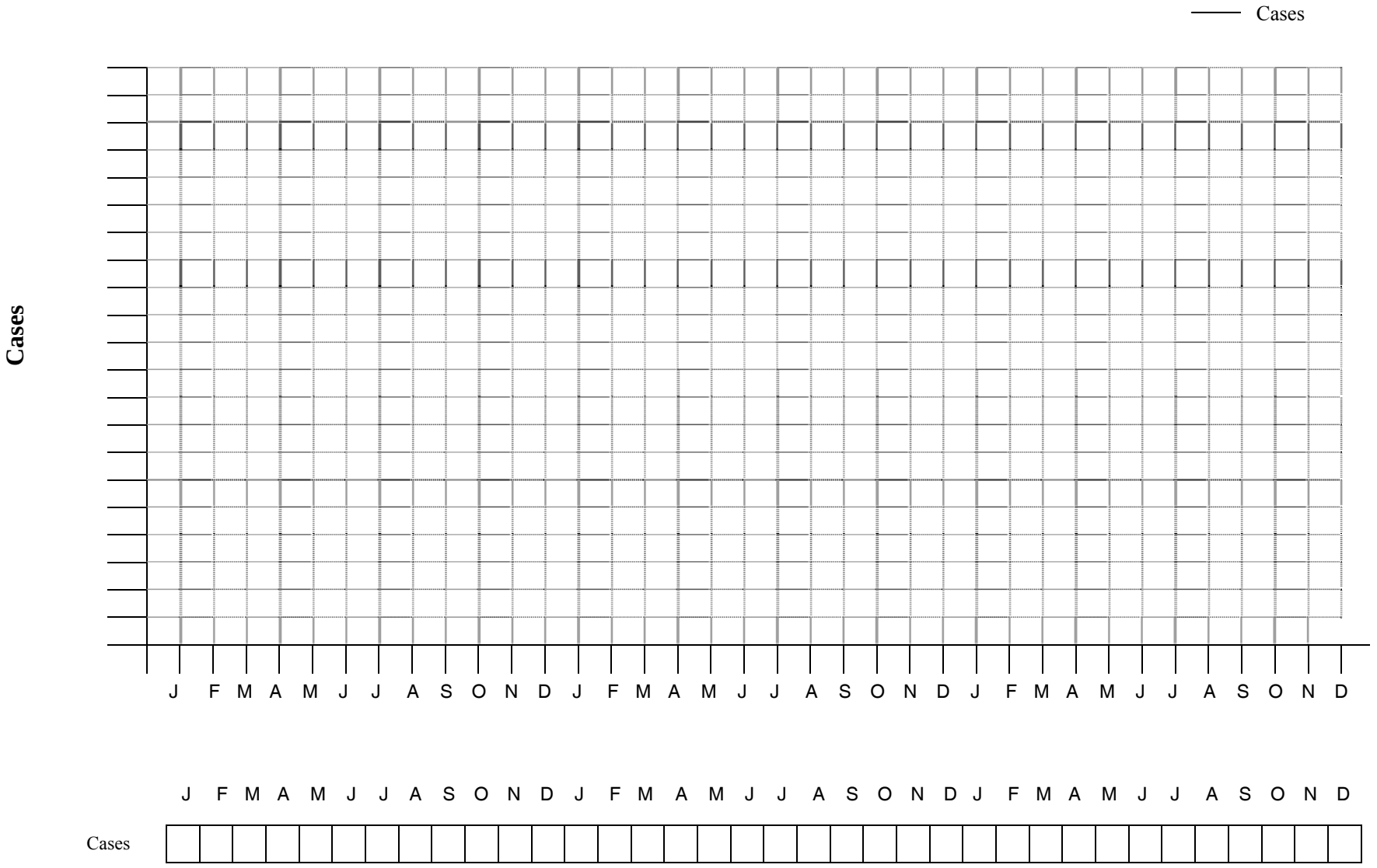
- Time: Graph cases monthly
- Place: Draw a spot map showing distribution of cases by community/village, district or region.
- Person: Count cases monthly.

Public health action

If a case is confirmed:

- Conduct a migration investigation of the case to identify the origin of infection and initiate control activities.
- Carry out vector control activities according to the Onchocerciasis Control Programme (OCP) guidelines.
- Conduct periodic mass treatment with ivermectin in areas with endemic onchocerciasis during the last 10 years.
- Conduct active case finding via population-based surveys and skin snips.

Reported Onchocerciasis Cases by Month _____ - _____



PNEUMONIA IN CHILDREN UNDER FIVE YEARS

Introduction

Pneumonia is an infection of the lower airways caused by bacteria or viruses transmitted person-to person via aerosolized respiratory droplet spread. The main bacterial causes of pneumonia among children are *Streptococcus pneumoniae* (the pneumococcus) and *Haemophilus influenzae* type b (Hib). Incubation period is usually less than 7 days, depending on the etiology.
Viruses such as Respiratory Syncytial Virus (RSV) may also cause ARI and pneumonia.

Acute Respiratory Infections (ARIs) and pneumonia are among the top causes of mortality among children less than 5 years of age. Pneumonia can kill up to 5% of all children <5 years old and is often responsible for 25% of all child deaths.

Surveillance goal

- Early identification and prompt treatment of pneumonia cases.
- Monitor anti-microbial resistance routinely and during outbreaks.
- Reducing the proportion of severe pneumonia cases compared to non-severe pneumonia cases to monitor quality of interventions.

Case Definition

Suspected case definition (IMCI) for pneumonia:

- A child presenting with cough or difficult breathing and:
- 50 or more breaths per minute for infant age 2 months up to 1 year.
- 40 or more breaths per minute for young child 1 year up to 5 years.

Suspected case definition (IMCI) for severe pneumonia:

- A child presenting with cough or difficult breathing and any general danger sign, or chest in-drawing or stridor in a calm child.
- General danger signs for children 2 months to 5 years are: unable to drink or breast feed, vomits everything, convulsions, lethargy, or unconsciousness.

Confirmed case:
Radiographic or laboratory confirmation of pneumonia will not be feasible in most districts.

Analysis by Time, Place, and Person

Time: Graph cases and deaths by month. Plot month-to-month data and compare to previous periods and look out for unexpected or unusual increases.
Place: Plot cases by community/village, district or region.
Person: Count monthly pneumonia and severe pneumonia cases and deaths. Analyse age distribution

Public health action

If you observe that the number of cases or deaths is increasing over a period of time:

- Report the problem to the next level.
- Investigate the cause for the increase and identify the problem.
- Make sure that cases are managed according to IMCI guidelines.
- Treat cases appropriately with recommended antimicrobial drugs.

If the numbers of cases or deaths increase to two times the number usually seen during a similar period in the past:

- Assess health worker practices of IMCI guidelines for assessing, classifying and treating children with pneumonia and severe pneumonia.
- Identify high-risk populations through analysis of person, place and time.
- Conduct community education about when to seek care for pneumonia in their out-patient registers for monthly counting of cases.

Interpretation

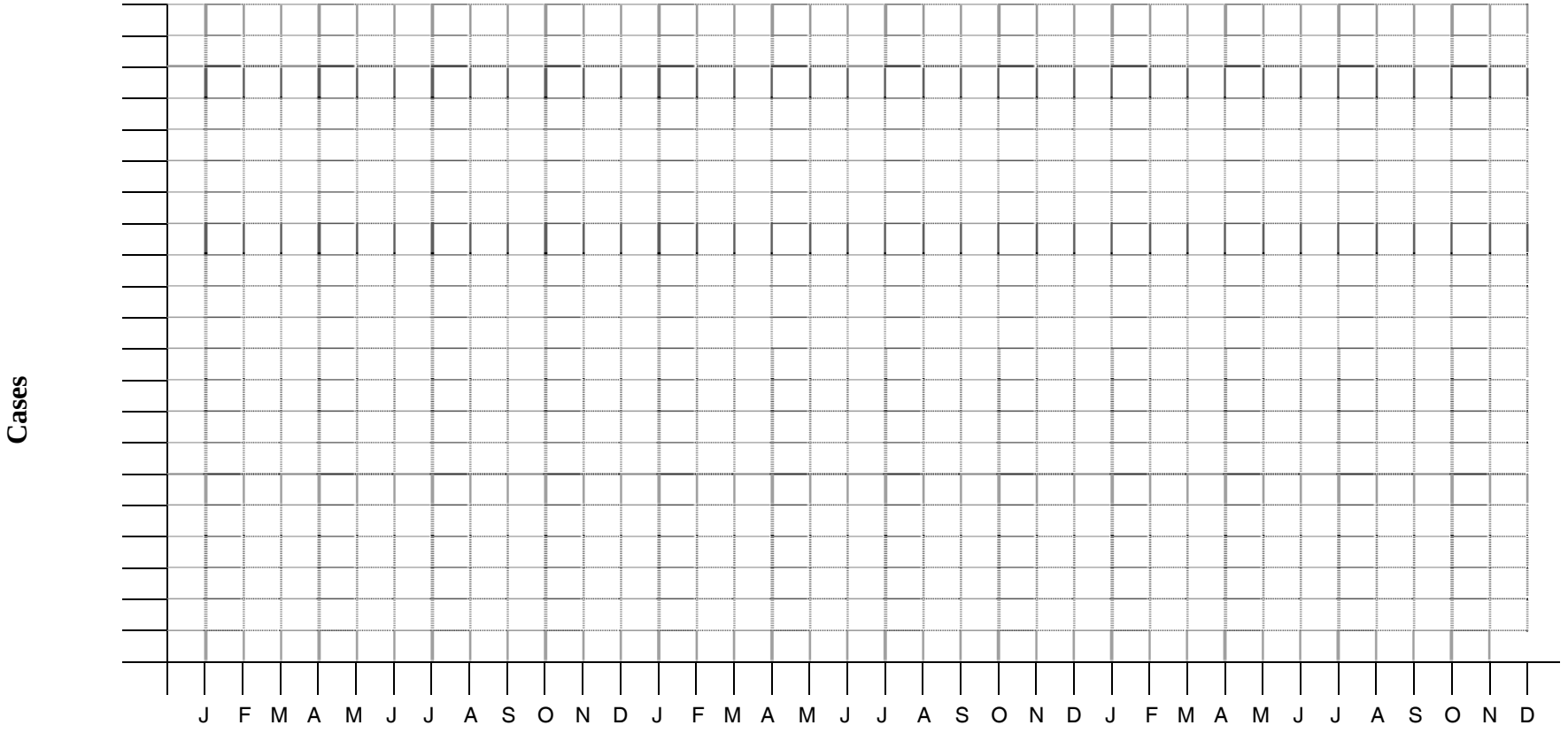
- A high incidence or increasing incidence of HIV in the district may complicate the interpretation of <5 year-old pneumonia surveillance data since childhood pneumonia cases and deaths will increase with high or increasing HIV incidence.
- In the absence of high or increasing incidence of HIV, severe cases of pneumonia and pneumonia deaths should be reduced by 50% from their current high levels by the proper functioning of the health facility and community components of IMCI throughout the district.
- After *Haemophilus influenzae* type b and *Streptococcus pneumoniae* vaccines are introduced into district immunization programs, many mild pneumonia cases, as well as severe cases and deaths, should be prevented.

Reported <5 Years Old Out-Patient and In-Patient Pneumonia Cases by Month

_____ - _____

——— Pneumonia Cases

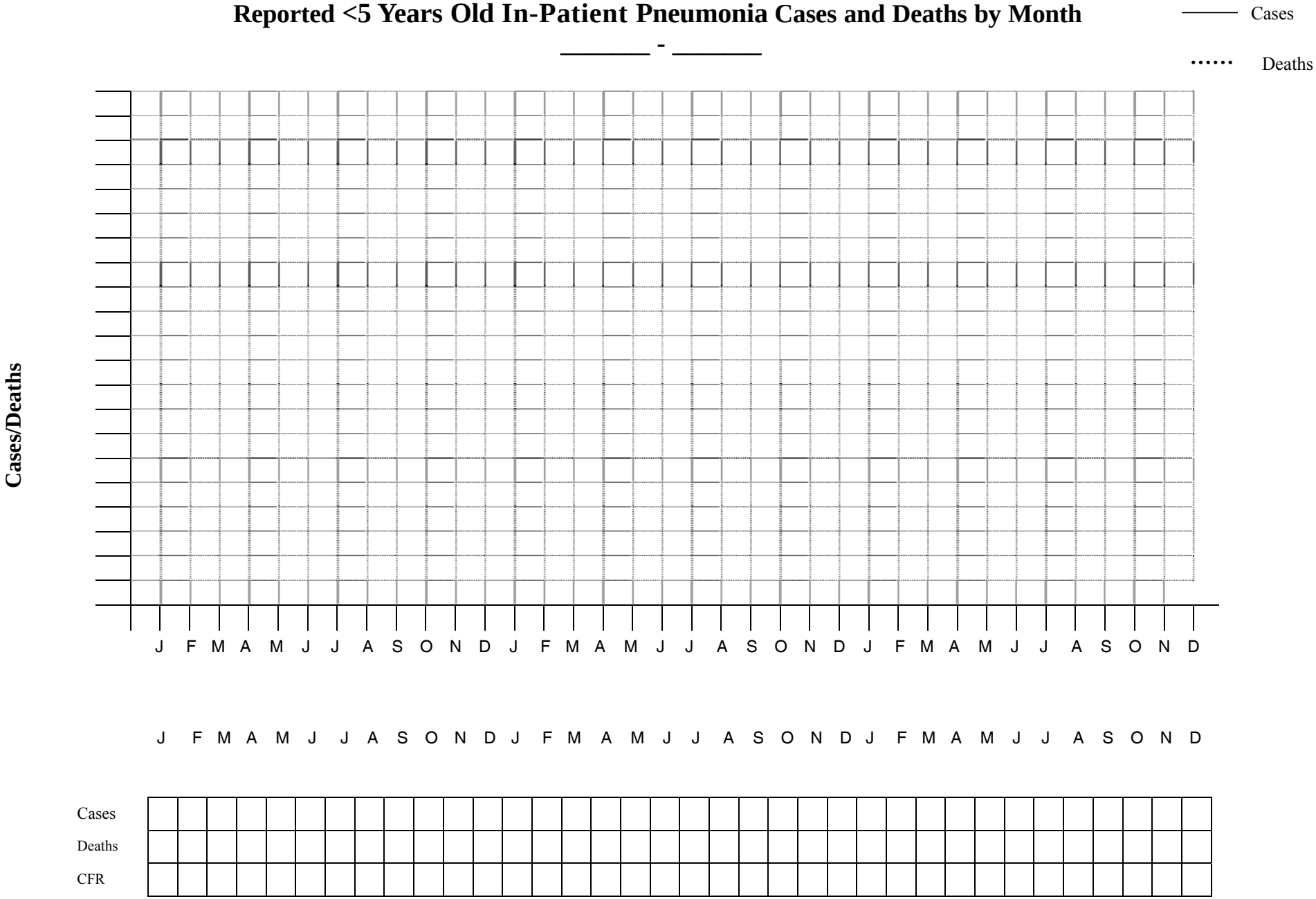
····· Severe pneumonia Cases



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Cases																																				
Severe Cases																																				
Total Cases																																				

Reported <5 Years Old In-Patient Pneumonia Cases and Deaths by Month

_____ - _____



SCHISTOSOMIASIS

Introduction
Schistosomiasis is a tropical parasitic disease that leads to ill health. It is caused by species of the flat worm or blood flukes known as Schistosoma species. People are infected by contact with water where infected intermediate snail host live. Larva forms of the parasites released by the snail penetrate the skin of people in the water. Infected individuals may contaminate their water sources with faeces or urine.

Six hundred million (600 million) people all over the world are at risk; 200 million people are infected of whom 20 million are severely ill.
It is one of the most prevalent disease conditions in the country and especially along the Volta River basin.

There are two forms of the disease.
1. Urinary Schistosomiasis caused by S. haematobium. The parasite resides in the blood vessels of the bladder.

2. Intestinal Schistosomiasis caused by S. mansoni and other types. The parasite resides in the blood vessels of the lining of the intestine

Surveillance goal
Control the disease so that it is no longer of public health importance

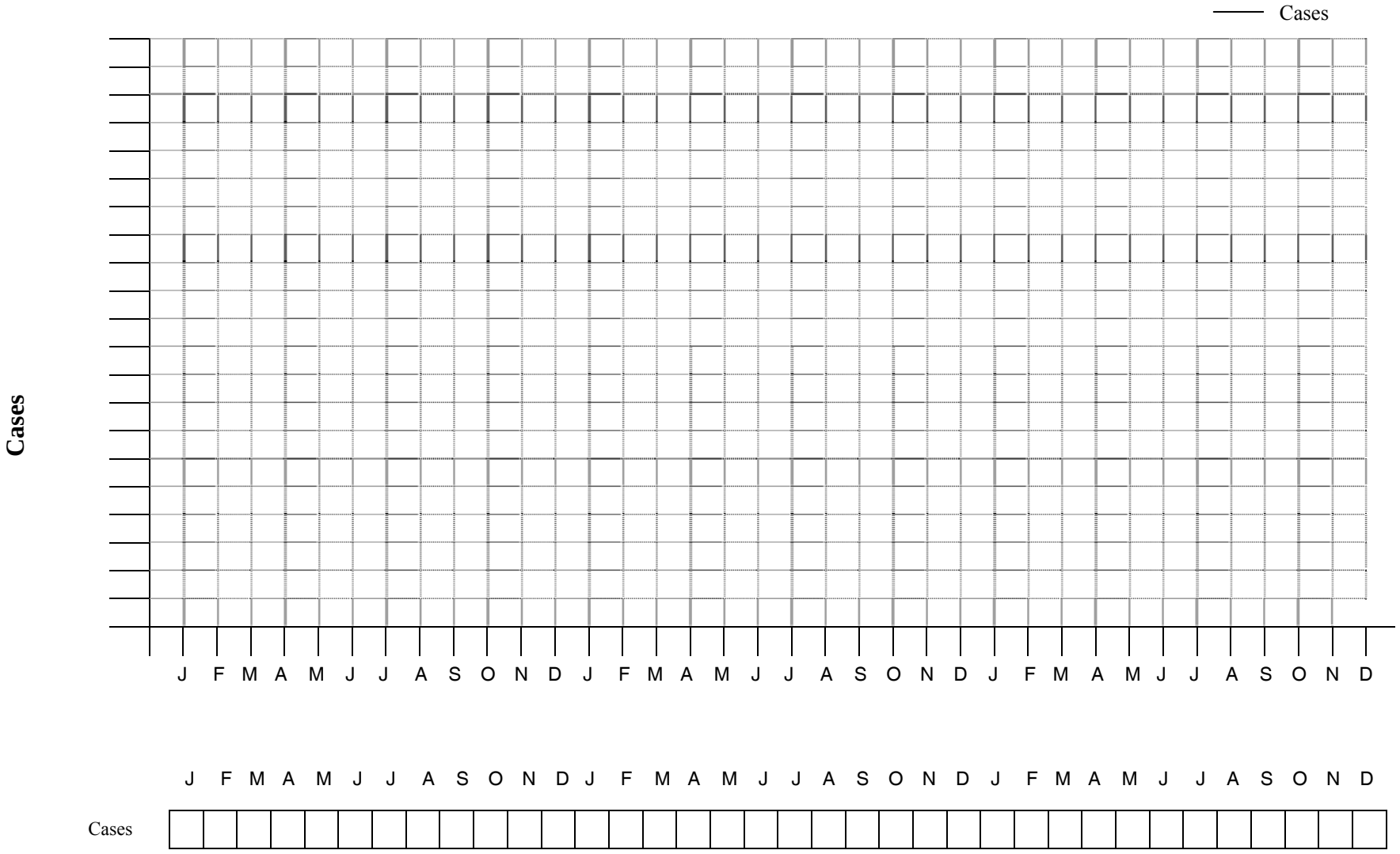
Case definition for urinary schistosomiasis
Suspected case: Any person with visible haematuria or with positive reagent stripe for haematuria.

Confirmed case: A person with eggs of Schistosoma haematobium in urine (microscopy)

Analysis by Time, Place and Person
Time: Plot a time graph of cases per month
Place: Draw a spot map showing affected places
Person: Calculate point prevalent from survey data

Public Health Action
- Conduct health education to inform and thereby create awareness of the disease.
- Find cases and treat.
- Improve water and sanitation; dispose of faeces and urine so that viable eggs will not reach fresh water bodies containing intermediate snail host.
- Control the intermediate hosts i.e. the fresh water snails (improve irrigation and agricultural practices)

Reported Urinary Schistosomiasis Cases by Month ____ - ____



SEXUALLY TRANSMITTED INFECTIONS

Introduction

Sexually transmitted infections are infections of human genitor-urinary and the reproductive system transmitted through sexual contact. The most common STIs are gonorrhoea, Chlamydia, Syphillis and chancroid.

The incubation period of these diseases is between 2 days and 12 weeks. They are endemic in most countries in the world including Ghana and are the leading causes of abortion, stillbirth, pre-maturity and congenital infections. They may lead to pelvic inflammatory disease (PID) a major cause of decreased fertility in women.

Surveillance goals

- Early detection and treatment of STIs to reduce transmission rates.
- Active efforts to diagnose latent syphilis to prevent significant disability.
- Improve early and effective treatment of STIs using single algorithms based on syndromic diagnosis for index cases and partners.
- Carry out laboratory-based anti-microbial sensitivity.
- Monitoring and modifying treatment guidelines accordingly at the national level.
- Compare surveillance data for both STIs and HIV/AIDS since STIs may reflect co-presence of HIV.

Case Definition

Suspected case

- Genital ulcer syndrome (non-vesicular): Any male with an ulcer on the penis, scrotum, or rectum with or without inguinal adenopathy or any female with ulcer on the labia, vagina or rectum with or without inguinal adenopathy.
- Urethral discharge syndrome: Any male with urethral discharge with or without dysuria.

Confirmed case

- Genital ulcer syndrome (non-vesicular) Any suspected case confirmed by laboratory method
- Urethral discharge syndrome: Any suspected case confirmed by laboratory method

Analysis by Time, Place, and Person

Time: Draw graph of cases monthly.

Place: Plot maps of cases by locality.

Person: Count cases monthly and analyse by age, occupation and marital status.

Public Health Action

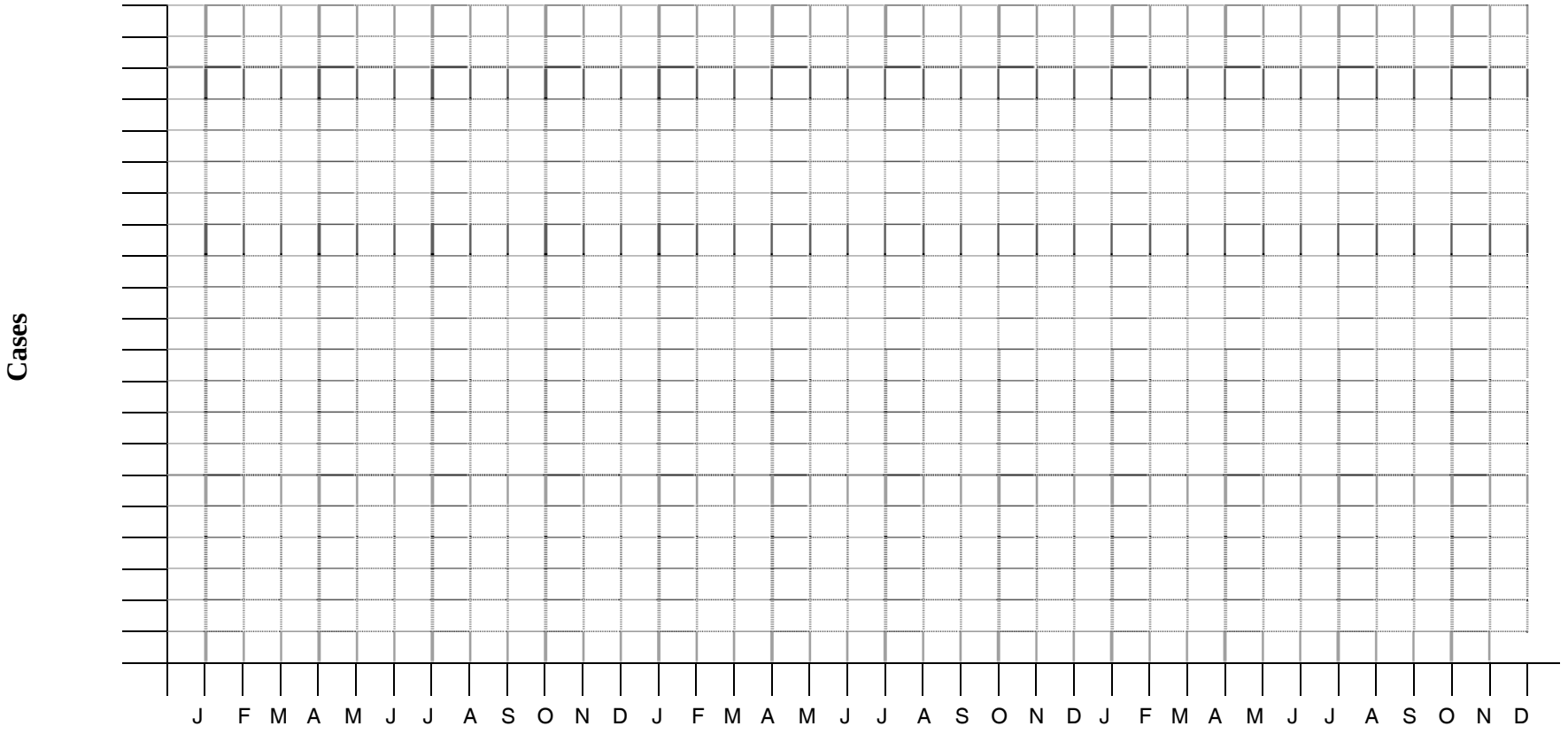
- Conduct active case finding for specific target groups.
- Conduct primary prevention activities such as promotion of safer sex behaviours, social marketing and provision of condoms
- Assess the use of algorithms for detection and treatment of STIs and improve health worker practice with algorithms.
- Include STI prevention and care services in maternal and child health in the family planning services
- Target acceptable and effective STI prevention and care services to populations identified as vulnerable to STI transmission
- Promote early STI health seeking behaviour

Reported Male and Female Genital Ulcer Cases by Month

____ - ____

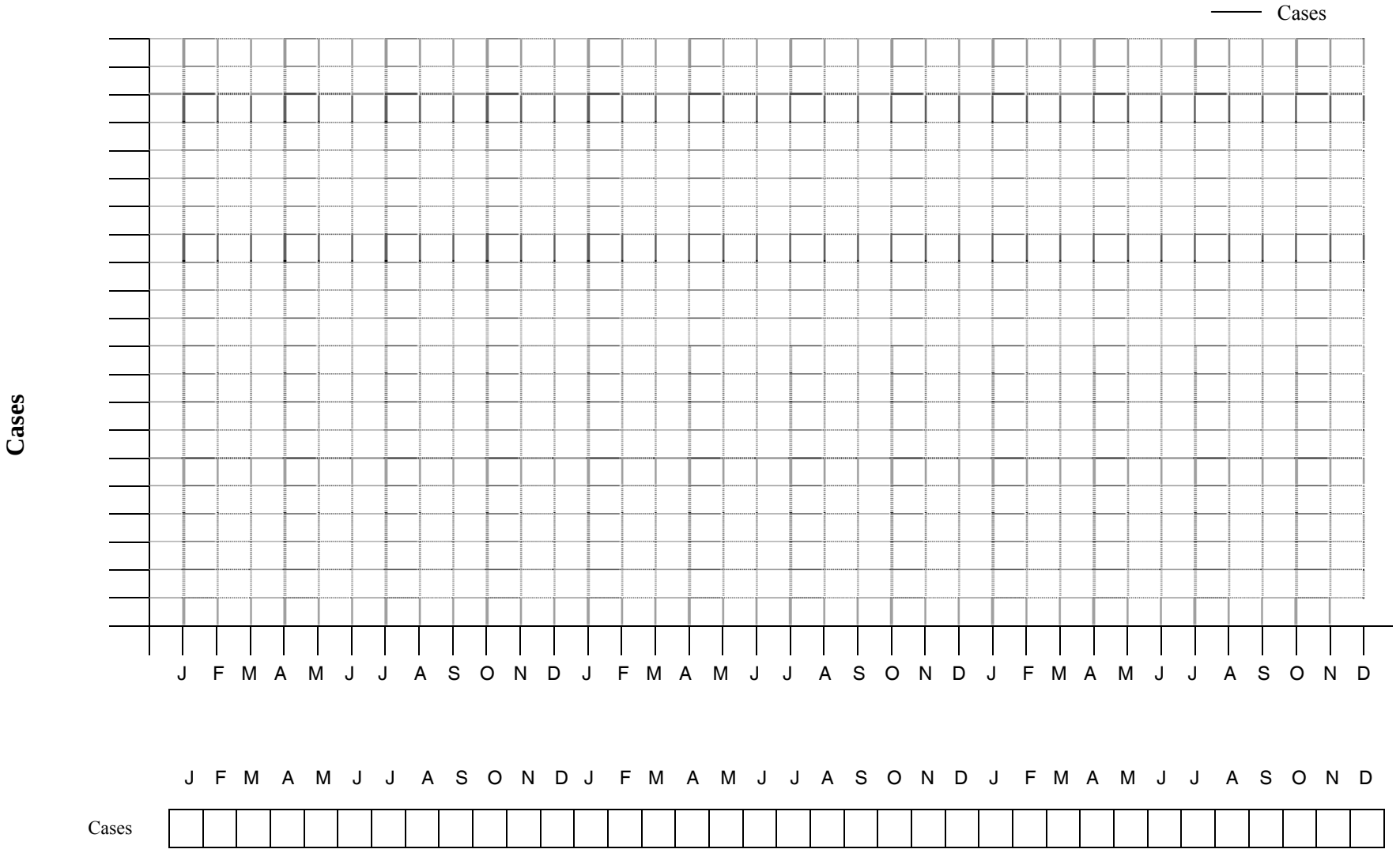
——— Male

····· Female



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Male																																				
Female																																				
Total																																				

Reported Male Urethral Discharge Cases by Month _____- _____



TUBERCULOSIS

Introduction

TB is an infectious airborne disease of the lungs and other organs caused by mycobacterium tuberculosis and transmitted from person-to person by droplet through coughing, sneezing or spitting. Pulmonary tuberculosis is more common than the extra pulmonary form and attracts primary focus for public health intervention. The cardinal symptoms of pulmonary tuberculosis are chronic cough, weight loss, fever, loss of appetite and night sweats. Its incubation period is 1-3 months. In Ghana, 30,000 cases are expected annually.

Surveillance goals

- Early detection of persons with infectious pulmonary TB to improve chances of cure and reduction in its transmission
- To improve percent of TB cases confirmed by microscopy

Case definition

Suspected case:

- Any person with cough for two weeks or more

Confirmed case:

- Any smear positive pulmonary TB
    - A suspected patient with at least 2 sputum specimen positive for
    - Acid Fast Bacilli (AFB).
    - One sputum specimen positive for AFB and radiologic abnormalities consistent with active pulmonary TB as determined by the clinician.
    - One positive sputum for AFB microscopically and one on culture.
- Smear negative (*as indicated in the Technical Guidelines for IDSR in Ghana)*

Analysis by Time, Place and person

Time: Draw graphs of cases and deaths quarterly.

Place: Plot distribution of cases by households and workplaces.

Count quarterly cases and deaths

Person: Analysis age and sex distribution

Public Health actions

When the number of cases and deaths are increasing over a period of time;

- report problem to the next level or according to national guidelines
- treat individual cases with DOTS including the treatment supporter
- investigate cause of increase

When the number of cases and deaths increase to two times the usual number seen;

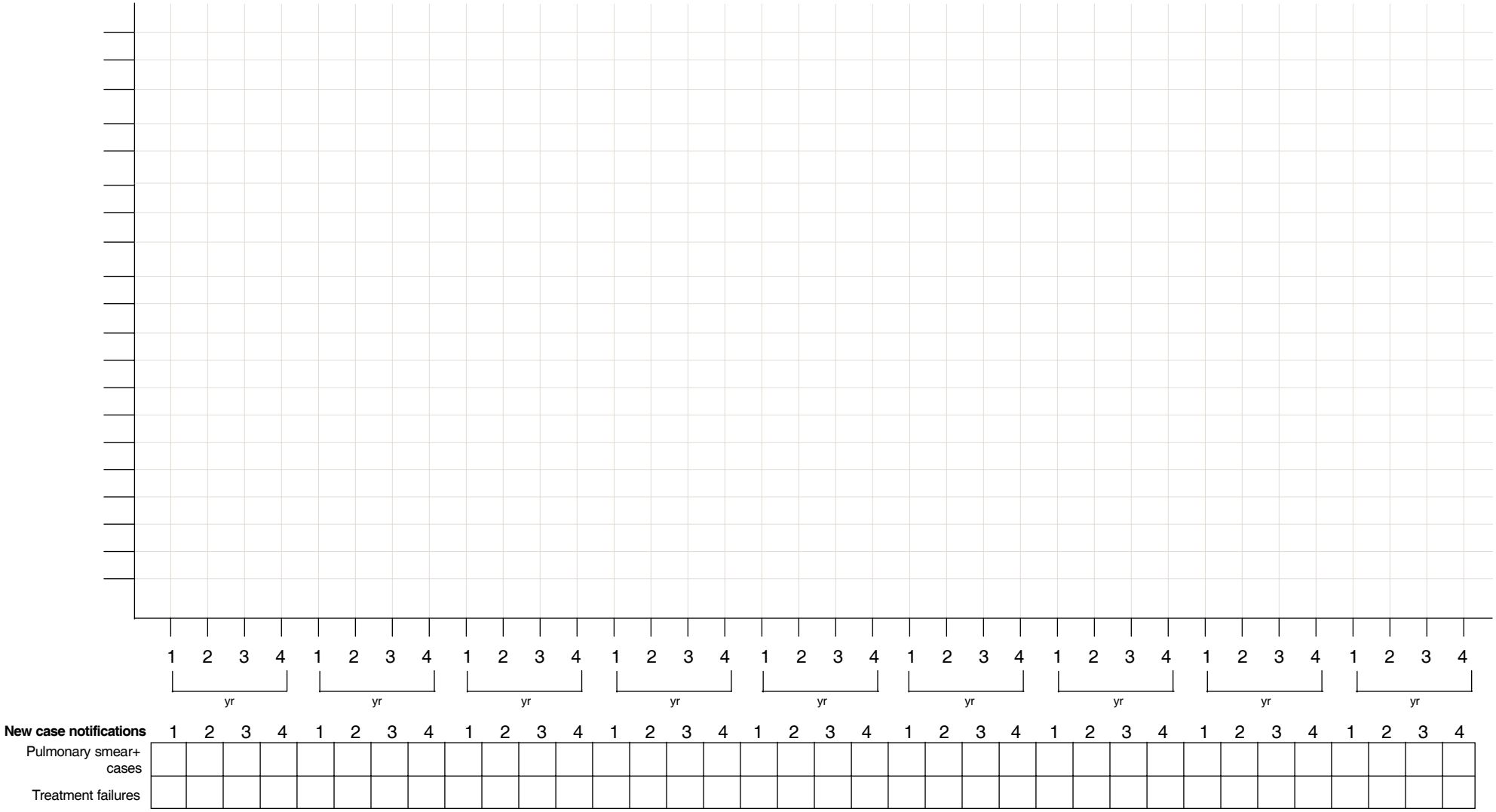
- Assess health worker performance with detection and treatment of smear positive pulmonary TB and improve practices as needed.
- Assess DOTS programmes and take action to make identification improvement.
- Conduct drug susceptibility tests to establish patterns of resistance in collaboration with national Public Health Laboratory.

Reported Pulmonary Smear + Cases and Treatment Failures by Quarter

_____ - ____

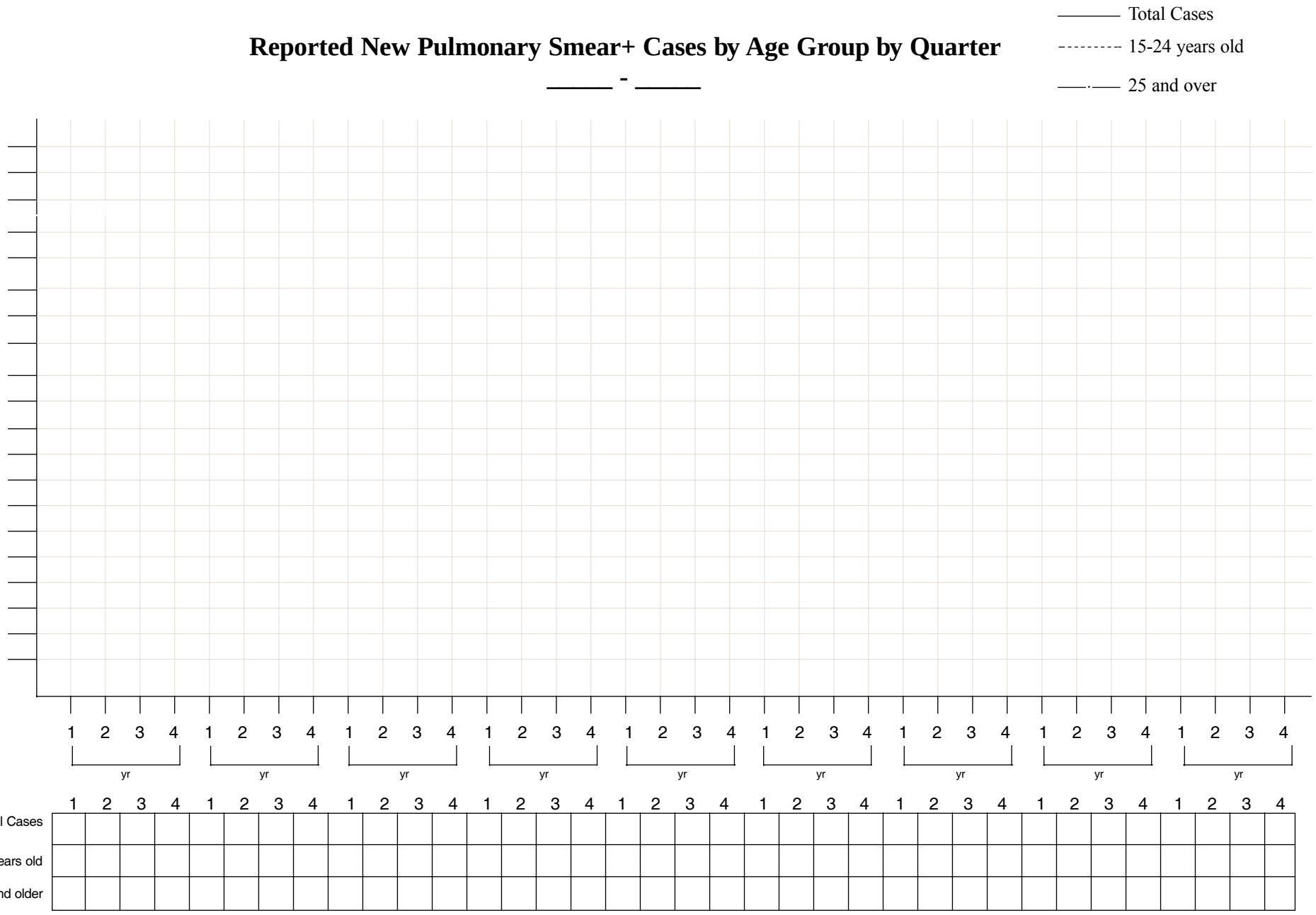
——— Pulmonary smear+ cases

--------- Treatment failures



Reported New Pulmonary Smear+ Cases by Age Group by Quarter

_____ - _____



TB Person Analysis

	Yr	Yr	Yr
	n (%)	n (%)	n (%)
Case Notifications			
Pulmonary - Smear+ New Case			
Pulmonary - Smear+ Relapse			
Pulmonary - Smear Negative			
Extra-pulmonary			
Total			
Category of Retreatment cases			
Relapses			
Failures			
Retreatment after interruption			
Total			

Age of new pulm. smear+ cases						
	M	F	M	F	M	F
0-14						
15-24						
25-34						
35-44						
45-54						
55-64						
65+						
Total						

Cohort analysis done on patients registered in the previous year

	Yr		Yr		Yr	
Smear Conversion	New pulm. smear+ (at 2 mo)	Re-rx smear+ (at 3 mo)	New pulm. smear+ (at 2 mo)	Re-rx smear+ (at 3 mo)	New pulm. smear+ (at 2 mo)	Re-rx smear+ (at 3 mo)
No. new sputum+ converted by 2-3 mo.						
No. new sputum+ evaluated with sputum by end of 3rd month (Denominator)						

Treatment Results	New pulm. smear+	Re-rx smear+	New pulm. smear+	Re-rx smear+	New pulm. smear+	Re-rx smear+
Total registered						
Total evaluated						
Smear neg. at end of treatment (cured)						
Complete treatment, but smear not done at end of treatment						
Died						
Failure						
Interrupted treatment						
Transferred out						

Cohort analysis on patients registered, semiannual

	1	2	1	2	1	2
Total registered						
Total evaluated						
Smear negative at end of treatment						
Complete treatment, smear not done at end						
	yr 1		yr 2		yr 3	

TRACHOMA

Introduction

Trachoma is an infectious eye disease which causes inflammation and scarring of the conjunctiva, the inner lining of the eyelid, thus leading to blindness.

It is the second largest cause of preventable blindness in the world after cataract

The WHO estimates that there are at least 3.2 million people who are irreversibly blind, 6 million have low vision due to trachoma and 7.6 million have Trachoma trichiasis (TT) whilst 84.8 million people have active disease.

The Surgery, Antibiotics, Facial cleaningness and Environmental sanitation (SAFE) strategy endorsed by WHO is a package of interventions for the control and elimination of blindness due to trachoma.

In areas of hyper-endemic prevalence, mass treatment campaigns have been successful in reducing severity and frequency when associated with education of the people in personal hygiene and improvement of the sanitary environment, particularly a good water supply.

In such areas mass treatment of the whole population, especially children, with topical Tetracycline or Erythromycin ointments can be used with varying schedules. Oral Sulfonamides, Tetracycline, Erythromycin and Azithromycin are also effective in the active stages of the disease.

Surveillance goals

- Early detection and prompt treatment of cases with the aim of reducing the occurrence of blindness among affected individuals and
- To conduct specific prevalence surveys in endemic communities and carry out appropriate treatment

Analysis by Time, Place and Person

Time: Plot monthly data and compare to previous periods.

Place: Plot location of affected communities/villages and districts.

Person: Analyze age distribution of cases.

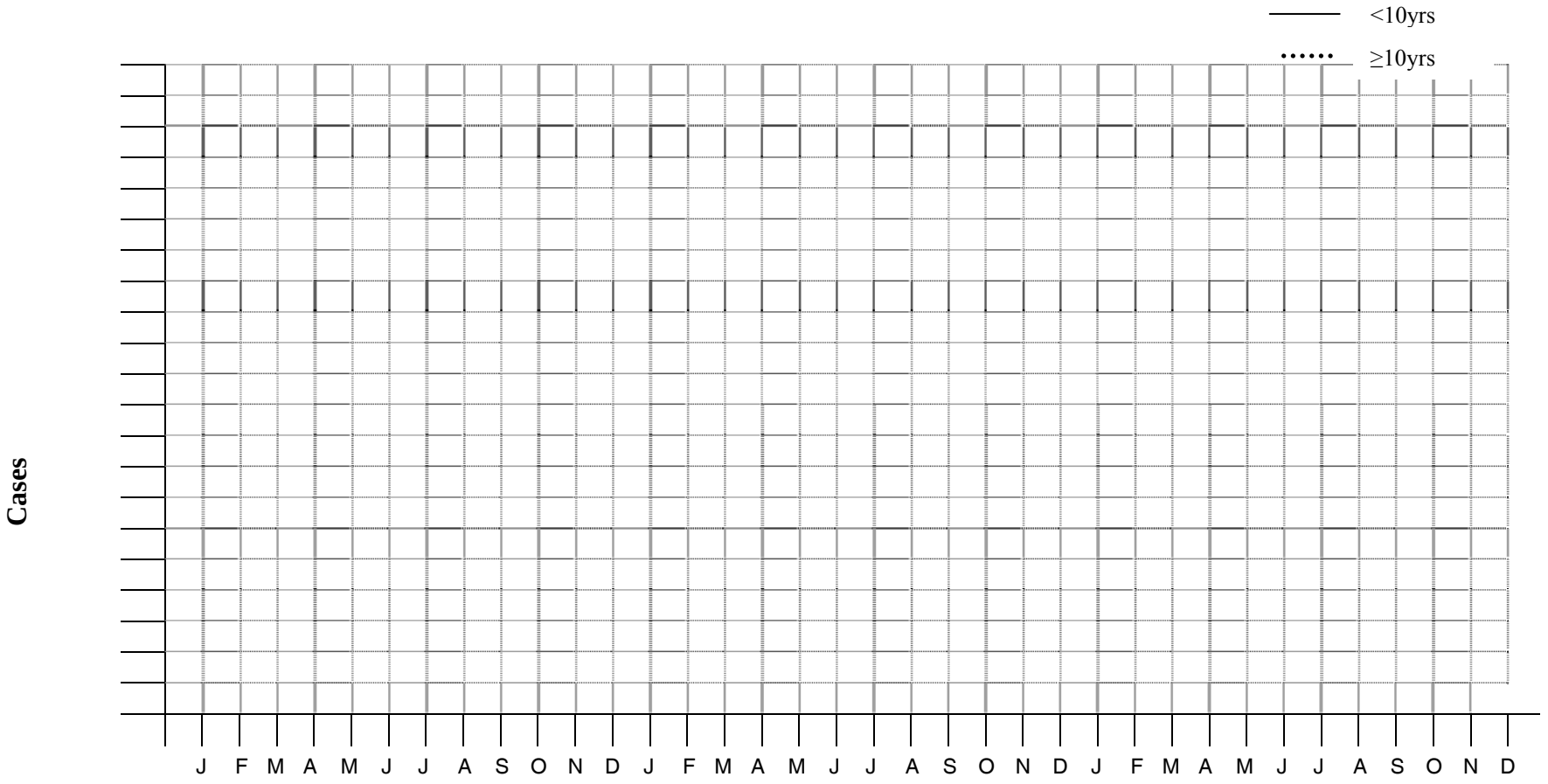
Public Health action

- Report unusual increase to the next (higher) level
- Treat individual cases with appropriate antibiotics.
- Investigate the cause for the increase in new cases
- Carry out community prevalence surveys and treat appropriately
- Conduct community education for prompt detection and management of cases

If the number of new cases exceeds the upper limit of cases seen in the same period in previous years:

- Evaluate and improve, as needed, prevention strategies, such as promotion of face washing, surgery for potentially disabling lesions, intensive community education and mass treatment where appropriate especially for young children and other high-risk populations.
- Increase access to and uptake of trichiasis surgery.
- Educate the public on the need for personal hygiene, especially the risk in common use of toilet articles.
- Improve basic sanitation, including availability and use of soap and water;
- Encourage washing of face and avoid use of common towels.

Reported Trachoma Cases by Month _____ - _____



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
<10yrs																																				
≥10 yrs																																				
All Ages																																				

VIRAL HAEMORRHAGIC FEVERS

Introduction

Viral haemorrhagic fever is a haemorrhagic disease syndrome caused by the following viruses: Ebola, Marburg (filoviruses), Lassa fever, Rift Valley fever (RVF), Congo Crimean Haemorrhagic fever (CCHF) and Dengue Haemorrhagic Fever (DHF). No DHF has been reported in Africa.

The disease is transmitted from person-to-person (Ebola, Marburg, Lassa, CCHF) or via mosquitoes (RVF, dengue), ticks (CCHF), rodents (Lassa) or contact with infected animals (RVF, CCHF). Ebola and Marburg may be transmitted via sexual contact.

Some viral haemorrhagic fevers (VHF) have explosive outbreak potential: international reporting to WHO is required within 24 hours. Incubation period is variable, from 3 to 21 days depending on etiology.

The minority of cases has haemorrhagic symptoms, but among those with these symptoms, the case fatality rate is high (15% to 90%).

Risk factors: In the health care setting, outbreaks may be amplified when standard barrier precautions are not taken, or in ceremonies involving touching ill or deceased infected persons or their secretions. Sporadic cases may arise from sexual contact or via sylvatic exposures (for example, occupation) or possibly following direct contact with infected animals.

Surveillance goal

- Detect haemorrhagic fever cases and outbreaks promptly and seek laboratory verification of the etiology of all cases of suspected VHF.
- In outbreak settings, the disease spectrum of VHF agents may include non-haemorrhagic febrile syndromes, and laboratory testing should be considered among persons with milder symptoms suggestive of viral illness.

Case definition:

Suspected case: Illness with onset of fever and no response to treatment of usual causes of fever in the area, and at least one of the following signs: bloody diarrhoea, bleeding from gums, bleeding into skin (purpura), bleeding into eyes and urine.

Confirmed case: A suspected case with laboratory confirmation (positive IgM antibody or viral isolation), or epidemiological link to confirmed cases or outbreak.

Other haemorrhagic conditions that may mimic VHF include yellow fever, dengue, anthrax, leptospirosis, rickettsial infections, relapsing fever and other infectious agents and toxic exposures.

Analysis by Time, Place and Person

Time: Graph cases and deaths monthly. Construct an epidemic curve during the outbreak.

Place: Plot location of cases by households and work sites using precise mapping.

Person: Analyse age and sex distribution.

Assess risk factors immediately and consider request for assistance to improve outbreak control.

Public health action

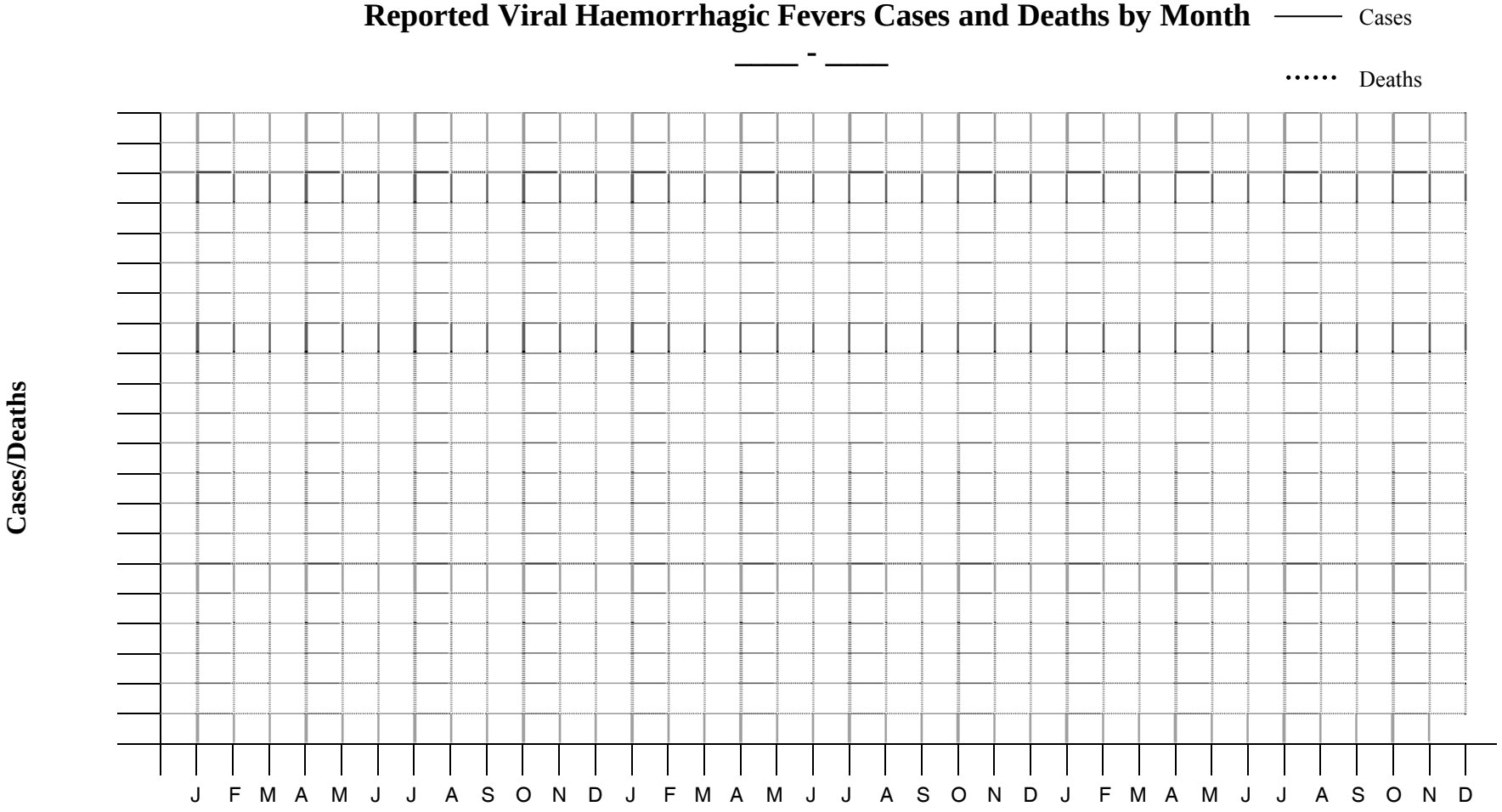
Respond to an alert threshold
If a single case is suspected:

- Report case-based information immediately to the appropriate levels.
- Begin VHF isolation precautions immediately and enhance standard precautions throughout the health care setting. Use protective clothing, disinfect surfaces and spills, and safely dispose of patient waste and materials used for patient care.
- Treat and manage the patient with supportive care.
- Collect specimen safely to confirm case.

Respond to epidemic
If a single case is confirmed:

- Maintain strict VHF infection control practices throughout the duration of the outbreak.
- Mobilise the community for early detection and care.
- Conduct community education about the confirmed case, how the disease is transmitted, and how to use infection control in the home care settings.
- Conduct active searches for additional cases that may not come to the health care setting (older women or small children, for example) and provide information about prevention in the home and when to seek care.
- Request additional help from higher levels as needed.
- Establish isolation ward to handle additional cases that may come to the health center.

Reported Viral Haemorrhagic Fevers Cases and Deaths by Month



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Cases																																				
Deaths																																				
CFR																																				

VIRAL HEPATITIS

Introduction

An acute viral illness, which may be caused by different kinds of viruses including Hepatitis A, B, C, D, and E. Transmission, is mainly faeco-oral for hepatitis A and E, percutaneous for Hepatitis B, C, and D, sexual and through transfusion of infected blood and blood products. Estimates suggest that worldwide, there are 385 million carriers of hepatitis B virus and 170 million carriers of hepatitis C virus. More than one million deaths each year are attributable to hepatitis B. Over 6,000 cases were reported in 2000 in Ghana through the routine reporting system. Most infections occur in early childhood. A variable proportion of adult infections are asymptomatic.

Surveillance goal

- To reduce incidence and prevalence of the disease so that it is no longer of public health importance.

Case definitions

Suspected case:

Any person with acute illness typically including: acute jaundice (within one week of onset of fever); dark urine; anorexia; malaise; extreme fatigue; and right upper quadrant abdominal pain.

Confirmed case:

A suspected case that is laboratory confirmed **or**, for hepatitis A only, a case compatible with the clinical description, in a person who has epidemiological link with a laboratory confirmed case of Hepatitis A.

Analysis of Time, Place and Person

Time: Graph the number of cases by month. Calculate incidence of acute viral hepatitis by month. Construct an epidemic curve during outbreaks.

Place: Plot location of households for new cases and deaths.

Person: Count the number of new hepatitis cases and deaths by month and analyse by age and sex.

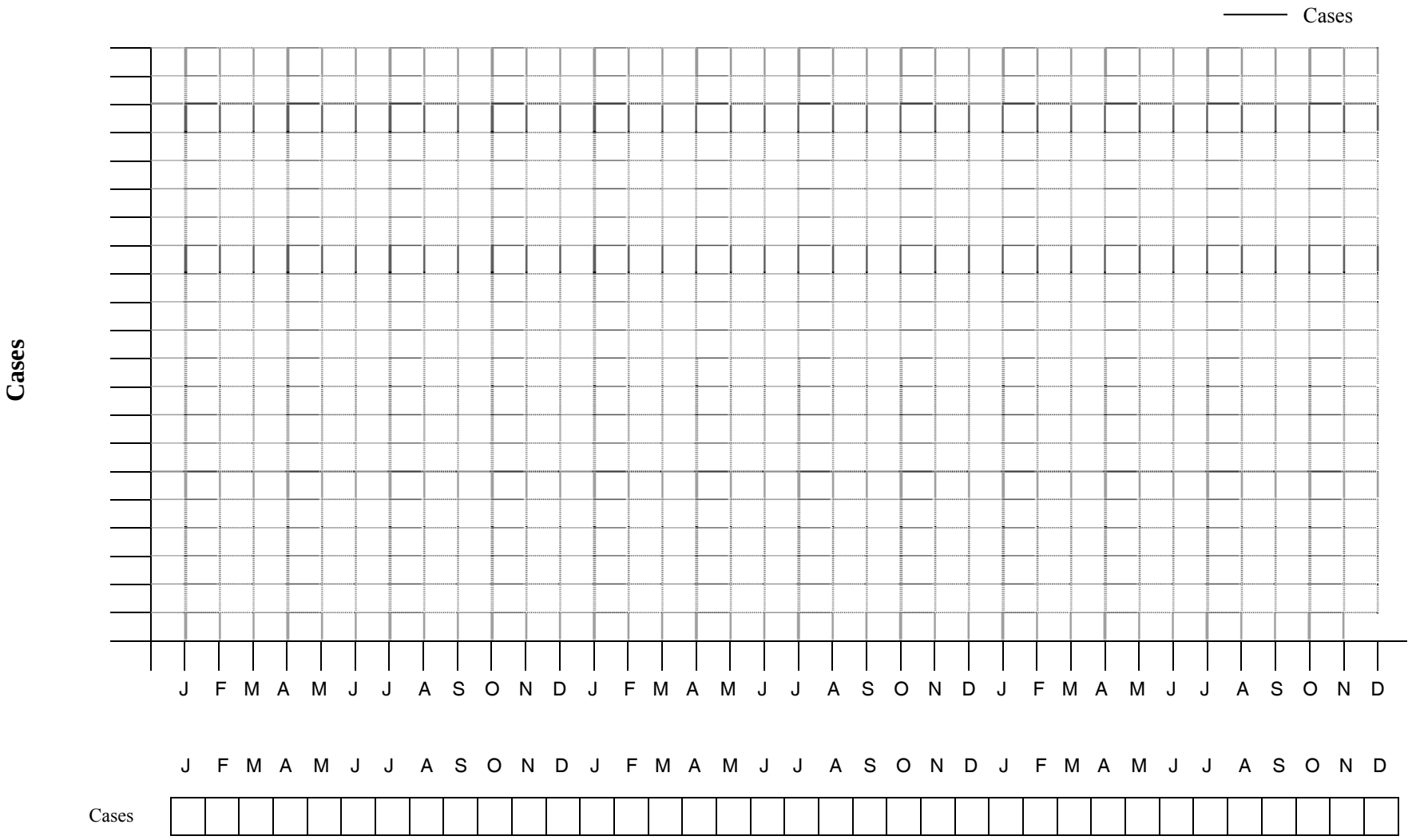
Public Health Action

If the number of new cases exceeds the upper limit of cases seen in a previous non-epidemic period in previous years:

Evaluate and improve, as needed, prevention strategies, such as

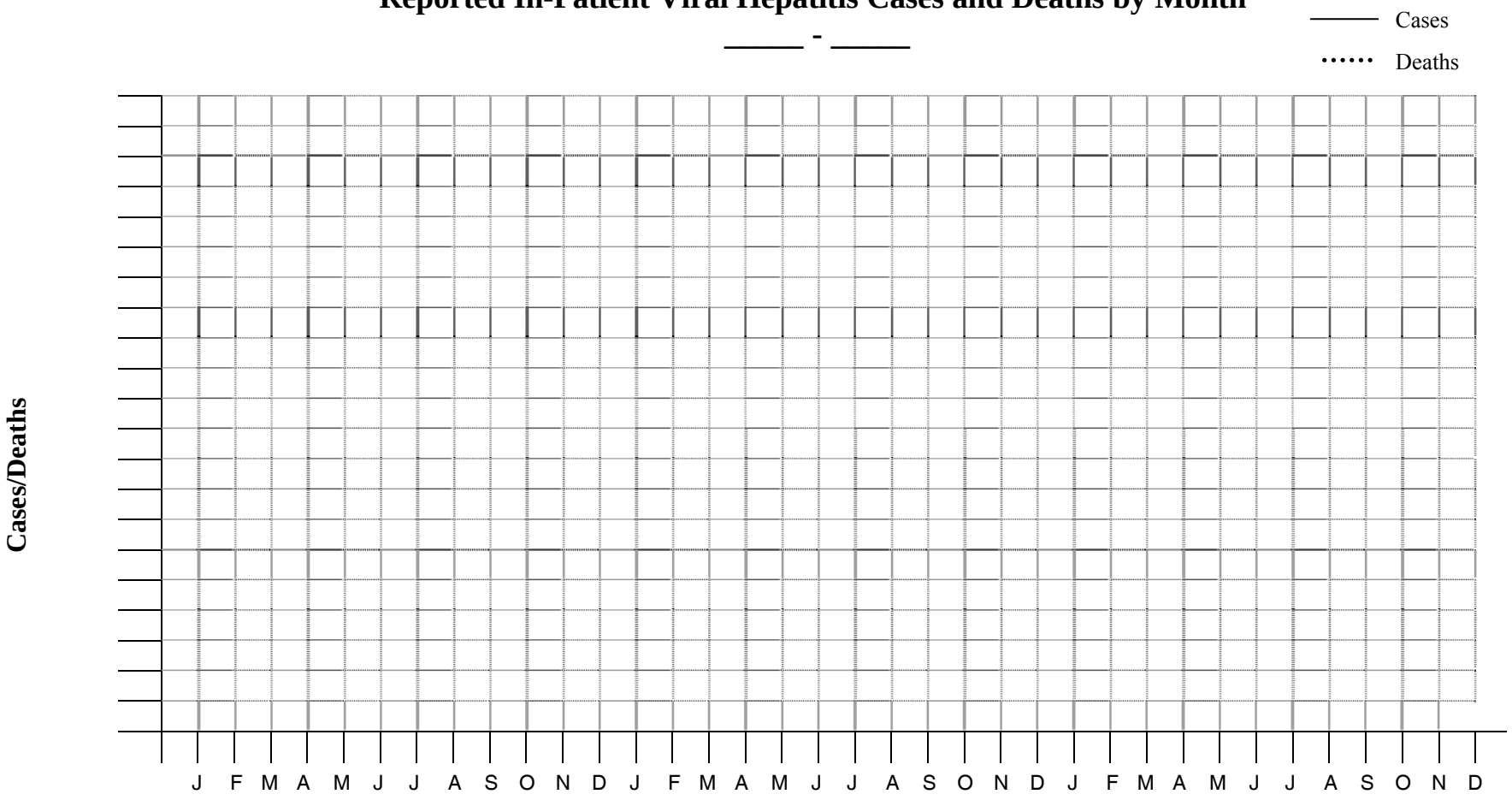
- Immunization of children and at risk groups.
- Transfusion safety.
- Safe and appropriate use and disposal of injections.
- Intensive public education
- Routine screening of food handlers.
- Calculate hepatitis B vaccine coverage of infants.

Reported Outpatient Viral Hepatitis Cases by Month _____ - ____



Reported In-Patient Viral Hepatitis Cases and Deaths by Month

_____ - _____



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Cases																																				
Deaths																																				
CFR																																				

YAWS

Introduction

It is an infectious disease caused by spirochaetal organism called Treponema pertenue. This disease is commonly found in the rural areas among low socio-economic groups. This disease is associated with poor personal hygiene and it is commonly found in children between 5-15 years. The disease is transmitted by direct contact between individuals.

Surveillance goals

- Elimination of the disease
- Detect all cases and report promptly.

Analysis by Time, Place and Person

Time: Graph number of cases monthly

Place: Plot location of affected households, communities and districts.

Person: Analyse age distribution of cases (<15, and 15+).

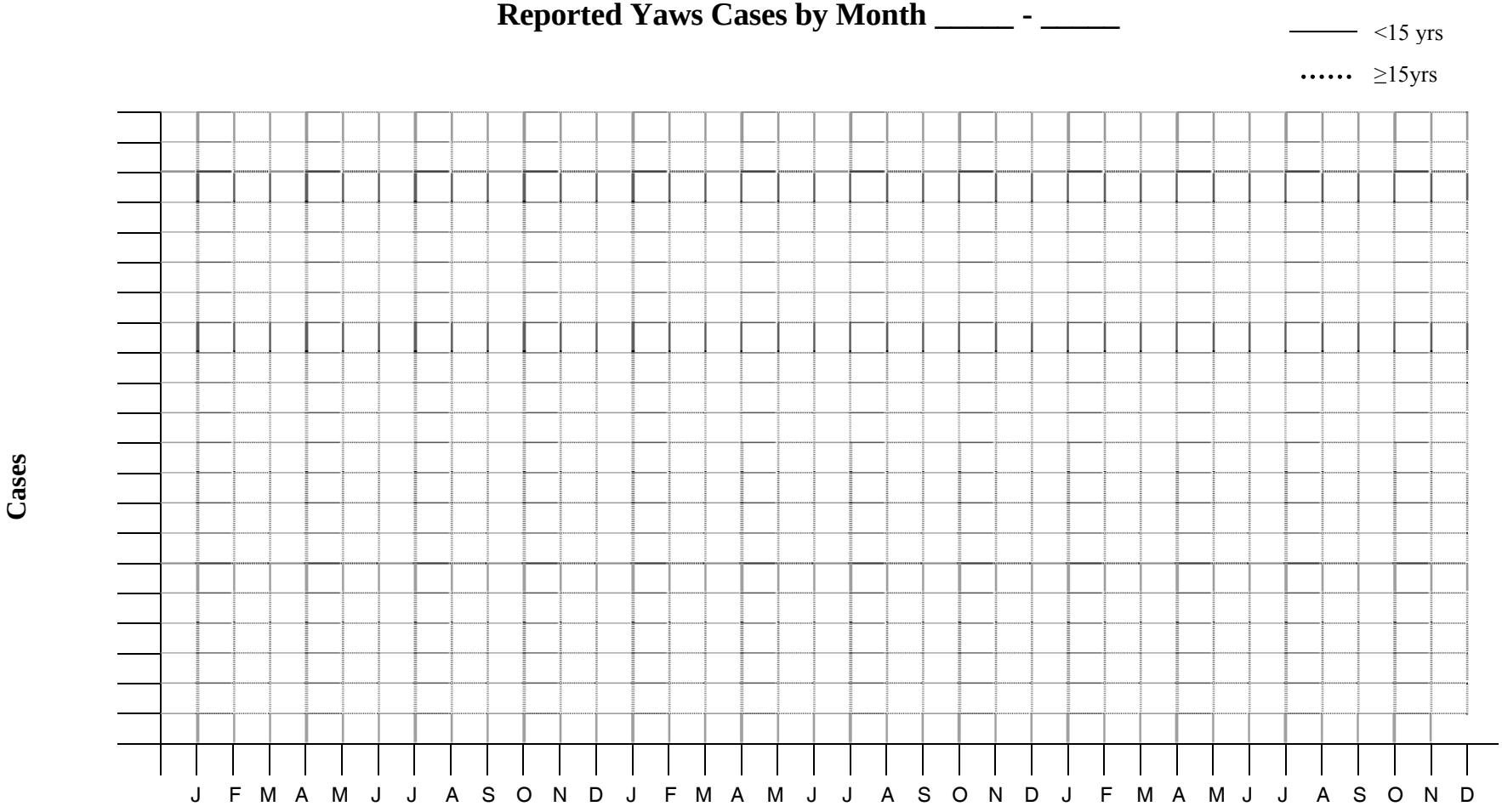
Public health action

Adequate treatment of cases (both infectious and non-infectious) and contacts with Benzathine Penicillin G are highly effective in decreasing the spread.

The district should employ the following strategies.

- Early detection and reporting of cases through active and passive case search.
- Total Mass Treatment (TMT) of populace either as “active Yaws cases” or as “latent cases and contacts”.
- Juvenile Mass Treatment (JMT) of active yaws cases for all persons below 15 years together with all obvious contacts of infectious cases.
- Selective Mass Treatment (SMT) for all active yaws cases, household and other obvious contacts of infectious yaws cases
- District should review strategy if the cases do not decline after mass campaign and treatment of cases and contacts.
- Conduct periodic surveys to determine the prevalence of the disease
- Periodic case search to capture and treat all cases.
- Periodic mass treatment.

Reported Yaws Cases by Month _____ - _____



	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
<15yrs																																				
≥15yrs																																				
Total																																				

YELLOW FEVER

Introduction
It is a viral disease caused by a flavivirus transmitted human-to-human via *Aedes* mosquitoes (urban epidemics) or via forest mosquito species and forest primate reservoirs (jungle cycle).
Large-scale outbreaks occur every 3 to 10 years in villages or cities. Sporadic cases can occur regularly in endemic areas. The incubation period is 3 to 6 days after the bite from an infected mosquito (Aedes aegypti).

Surveillance goal
Detect and investigate all outbreaks of Yellow fever promptly.

Case definition
Suspected case: A person with acute onset of fever (<39°C), followed by jaundice within two weeks of onset of first symptoms. Haemorrhagic manifestations and renal failure may occur.

Confirmed case: A suspected case with laboratory confirmation (positive IgM antibody or viral isolation) or epidemiological link to confirmed cases or outbreaks

Analysis by Time, Place and Person
Time: Graph cases and deaths monthly. Construct an epidemic curve during outbreaks.
Place: Plot location of cases by households and occupation with precise mapping.
Person: Analyse by age and risk factors.

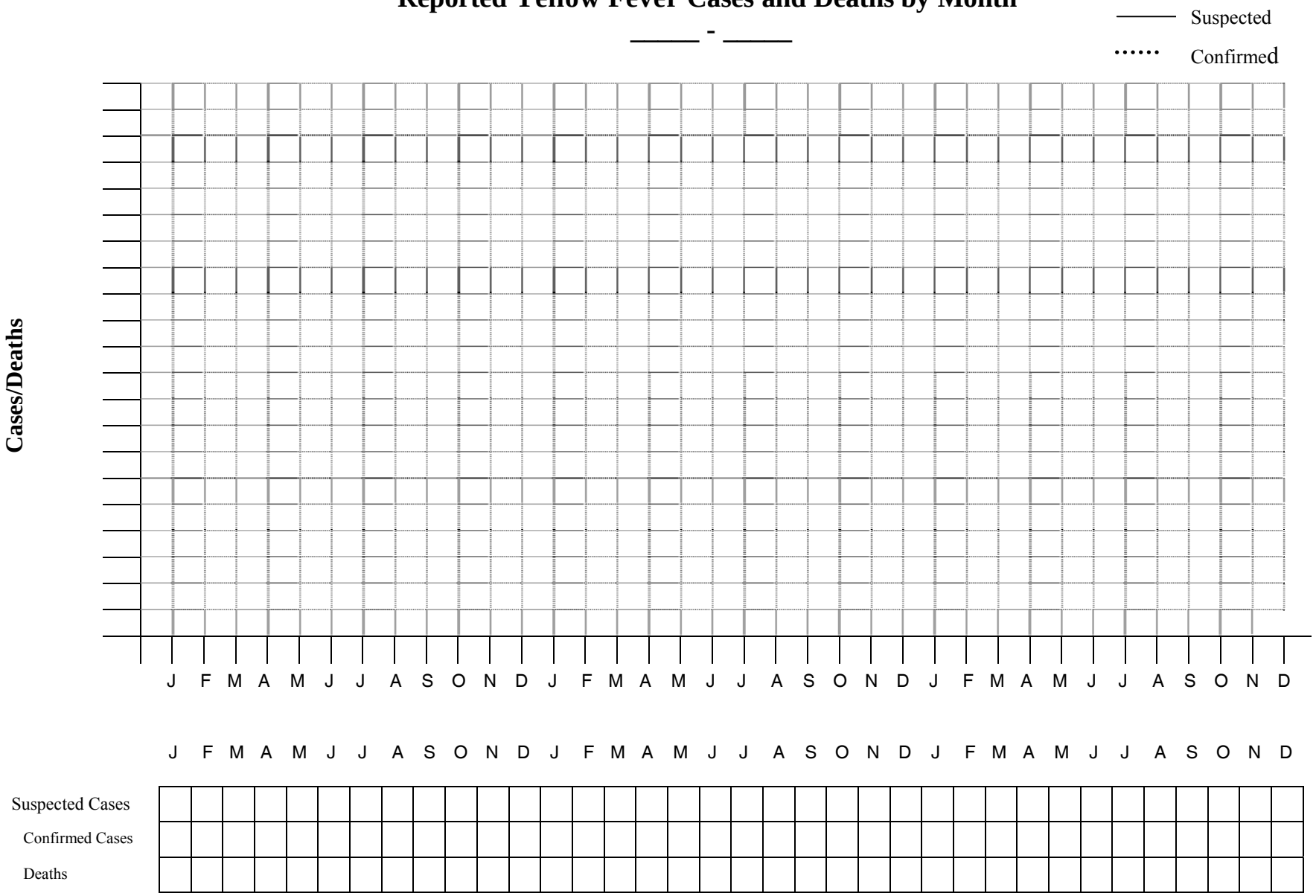
Public health action

Respond to alert threshold
If a single case is suspected:
- Report case-based information immediately to the next level.
- Treat and manage the patient with supportive care.
- Collect specimen for laboratory confirmation.
- Investigate the case to determine how transmission occurred.
- Plan for an immunization activity.

Respond to epidemic threshold
If a single case is confirmed:
- Mobilise community early to enable rapid case detection and treatment.
- Conduct a mass campaign in appropriate age group in the area (ages 6 months and older) and in areas with low vaccine coverage.
- Identify high-risk population groups and take steps to reduce exposure to mosquitoes.
- Improve routine and mass vaccination campaigns to include yellow fever in high-risk areas.

Reported Yellow Fever Cases and Deaths by Month

_____ - _____



ANNEXES

Annex 1: MONTHLY COMMUNICABLE DISEASE SURVEILLANCE REPORT FORM

Record by patient's (outpatient/inpatient) status the total number of cases and total number of deaths for each disease/condition diagnosed during the reporting month. Record zero (0) when no cases of the disease/condition are seen during the month. Report these totals to the next level.

Year _____ Month _____

Health Facility _____ Sub-district _____ District _____ Region _____

	Out-Patient	In-Patient	
Total Number of Patients seen			
Disease or condition	**Cases**	**Cases**	**Deaths**
Uncomplicated malaria < 5yrs			
Uncomplicated malaria 5yrs and above			
Uncomplicated malaria < 5yrs lab confirmed			
Uncomplicated malaria 5yrs and above lab confirmed			
Severe malaria < 5yrs			
Severe malaria 5yrs and above			
In-Patient Malaria with severe anaemia (<5 years) Hb < 5g/dl			
Malaria in pregnant women clinical			
Malaria in pregnant women lab-confirmed			
Pneumonia (<5 years)			
Severe Pneumonia (< 5 years)			
Diarrhoea with some dehydration (<5 years)			
Diarrhoea with severe dehydration (<5 years)			
AIDS			
Male Urethral Discharge			
Male genital ulcer			
Female genital ulcer			
Diarrhoea with blood			
Viral Hepatitis			
Trachoma < 10yrs			
Trachoma 10+yrs			
Urinary Schistosomiasis			
Infectious Yaws < 15yrs			
Infectious Yaws 15+yrs			
Lymphatic filariasis-Lymphoedema (Elephantiasis)			
Lymphatic filariasis-Hydrocele			
Onchocerciasis			

*Report zero (0) when no cases of disease are seen in reporting period.

Total immediately reportable cases previously reported this month on case–based forms or line lists

Disease	No. of cases*	No. of deaths	Disease	No. of cases*	No of deaths	Disease	No. of cases*	No. of deaths
AFP			Measles			Yellow Fever		
Cholera			Meningitis			Viral Hemorrhagic Fever		
Dracunculiasis (Guinea worm)			Neonatal Tetanus					
Other Disease (specify)			Other Disease (specify)			Other Disease (specify)		

*Report zero (0) when no cases of disease are seen in reporting period.

No. of health facility sites supposed to report _____ No. of sites that reported on time _____ No. of sites that reported late _____

Analysis, interpretations, comments, and recommendations on both out-patient and in-patient data

Other information:

Look at the trends in the District Analysis Book. Comments on observed trends? Abnormal increase in cases, deaths, or case fatality ratios? Lack of decrease of previous increasing trends? Improving trends?

Conclusions, actions taken, and recommendations:

Date Sent: _____ Date Received: _____

Person Reporting: _____ Person Receiving: _____

Signature of Person Reporting:_____ Signature of Person Receiving: _____

Annex 2: WEEKLY NOTIFIABLE DISEASE REPORTING FORM

Reporting Health Facility_____ Sub-district _____

District_____ Region_____

Week Beginning Sunday _____/_____/_____

Week Ending Saturday _____/_____/_____ Year _____

REPORTING SITE (Health Facility/District/Region)	CHOLERA		MEASLES		MENINGITIS	
	Cases*[1]	Deaths	Cases*	Deaths	Cases*	Deaths
Total						

Name of Person Reporting: _____Signature _____:

Date: _____/_____/_____

***** Report zero (0) when no cases of disease are seen in reporting period

Annex 3: TUBERCULOSIS QUARTERLY REPORT FORM

Year _____ Quarter _____

Health Facility _____ Sub-District _____

District _____ Region_____

Case Notifications	Number
Pulmonary- Smear + New case	
Pulmonary- Smear + Relapse	
Pulmonary- Smear Negative	
Pulmonary- Smear not done/unknown	
Extra-pulmonary	
Total	

Category of Re-treatment cases	Number
Relapses	
Failures	
Re-treatment after interruption	
Total	

Age of new pulmonary smear+ cases			
	M	F	Total
0-14			
15-24			
25-34			
35-44			
45-54			
55-64			
65+			
Total			

Cohort Analysis done on patients registered in same quarter in the previous year

Smear conversion	New pulm smear+ (at 2 months)	Re-rx smear+ (at 3 months)
New sputum + converted by 2-3 months		
New sputum + evaluated with sputum by end of 3rd month		

Treatment results	New pulm smear+	Re-rx smear+
Total registered		
Total evaluated		
Smear negative a tend of treatment (cured)		
Completed treatment, but smear not done at end of treatment		
Died		
Failure		
Interrupted treatment		
Transferred out		

Analysis, interpretations, comments, and recommendations

Other information:

Comments on observed trends? Abnormal increase in cases ? lack of decrease of previous increasing trends? Improving trends?

Conclusions, actions taken, and recommendations:

Sent Report Date: _____ Person: _____

Received Report Date: _____ Person: _____

Annex 4: LEPROSY QUARTERLY REPORT FORM

Year _____ Quarter _____

Health Facility _____ Sub-district _____District _____ Region_____

Category	Indicators	Clinical form of leprosy		Total
		Multibacillary	Paucibacillary	
Total cases under treatment during the quarter	Total cases being treated during the quarter			
In-coming cases seen during the quarter	Total new cases never treated (=detection)			
	0-14 years			
	15+ years			
	New cases with < 2nd degree disability			
	Relapse, defaulter, or transferred			
Cases that left programme during this quarter	Died			
	Treatment finished			
	Transferred			
	Lost to follow-up (at least 1 year without treatment			
	Total			
Cases in programme at the last day of the quarter	Total (=cases at the beginning plus new cases during the quarter minus cases that left the programme)			

Analysis, interpretations, comments, and recommendations

Other information:

Comments on observed trends Abnormal increase in cases? Lack of decrease of previous increasing trends? Improving trends?

Conclusions, actions taken, and recommendations:

Sent Report Date: _____ Person: _____

Received Report Date: _____ Person: _____

Annex 5: MONTHLY REGISTRATION OF BURULI ULCER CASES (BU 02)

***Month of _____Name of Institution*: _____ *Subdistrict*_____*District:* _____**
***Region:* _____**

N°	Name (Last/First) (6)	Age (7)	Sex (8)	Address Village/town (9)	[a]Patient Classification (13)		[b]Location (s) of Lesion (19)	[c]Clinical Form(s) (20)	Disability Present upon presentation (21)		Date of Clinical Diagnosis (22)	[d]Confirmation of Diagnosis (23)	
					New	**Rec**			**Yes**	**No**		**Yes (Which)**	**No**

[a] Classification	[b]Location of Lesions	[c]Clinical Forms	[d]Confirmation of Diagnosis
New	Upper Limbs (UL)	Nodule (N)	AFB Smear (AFB)
Recurrent (Rec)	Lower Limbs (LL)	Papule (P)	Culture (CUL)
	Abdomen (AB)	Plaque (Q)	Histopathology (HIS)
	Back (BK)	Oedema (E)	Polymerase Chain Reaction (PCR)
	Buttocks &perineum (BP)	Ulcer (U)	
	Thorax (TH)	Osteomyelitis (O)	
	Head and Neck (HN)		

For Hospitals, Health Centres and Community levels

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