

Surveillance and Control of Communicable Diseases: Guidelines for Public Health Services in Georgia

With sections on vaccine preventable diseases

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National Center for Disease Control and Medical Statistics



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- ▲ *Implementation of appropriate health system reform.*
- ▲ *Generation of new financing for health care, as well as more effective use of existing funds.*
- ▲ *Design and implementation of health information systems for disease surveillance.*
- ▲ *Delivery of quality services by health workers.*
- ▲ *Availability and appropriate use of health commodities.*

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Abstract

The Georgian National Health Policy, adopted in 1999, declares the reduction of communicable and socially dangerous diseases a major priority for maintaining and improving the health of the Georgian population over the next decade. Uniform and comprehensive guidelines for health workers who deal with infectious disease surveillance are a critical component of ensuring the effective functioning of the surveillance system.

The guidelines outlined in this report are the first attempt to develop a comprehensive document to help Georgian health workers comply with the above goal. The guidelines outline how to: identify and register cases of infectious diseases; confirm and classify cases; notify and report; analyze data; investigate outbreaks; and utilize available information for making decisions to prevent and control infectious diseases and improve the functioning of the surveillance system. They are designed primarily for health personnel working at rayon and regional centers of public health. Besides the general norms for the surveillance system as a whole, the guidelines include nine disease-specific sections devoted exclusively to guiding public health workers for effective prevention and control of vaccine-preventable diseases.

The second edition of the guidelines includes a number of modifications and improvements suggested by an expert group that coordinated piloting of the surveillance reforms in Imereti in 2003-2004.

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Acronyms

AFP	Acute Flaccid Paralysis
ARI	Acute Respiratory Infection
BCG	Bacillus, Calmette and Guerin Vaccine
CFR	Case Fatality Rate
CIF	Curatio International Foundation
CNS	Central Nervous System
CPH	Center of Public Health
CRS	Congenital Rubella Syndrome
CSF	Cerebral Spinal Fluid
DPT	Diphtheria, Pertussis and Tetanus Vaccine
DT	Diphtheria and Tetanus Toxoid Combination
HBsAg	Hepatitis B Surface Antigen
ICD	International Classification of Diseases
IgM	Immune Globulin M
NID	National Immunization Day
MoLHSA	Ministry of Labor, Health and Social Affairs
MMR	Measles, Mumps and Rubella Vaccine
MR	Measles and Rubella Vaccine
NCDC	National Center for Disease Control
OPV	Oral Poliomyelitis Vaccine
PAU	Polyclinic Ambulatory Unit
PCR	Polymerase Chain Reaction
PHR_{plus}	Partners for Health Reform _{plus} Project
SARS	Severe Acute Respiratory Syndrome
RIG	Rabies Immunoglobulin
STD	Sexually Transmitted Disease
Td	Diphtheria and Tetanus Toxoid
TT	Tetanus Toxoid
VPD	Vaccine Preventable Disease
VE	Vaccine Efficacy
USAID	United States Agency for International Development
WHO	World Health Organization

Contributors

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1. Introduction

Effective communicable disease control relies on functioning disease surveillance, which is the systematic and regular collection of information on the occurrence, distribution, and trends of an event on an ongoing basis with sufficient accuracy and completeness to provide the basis for action. A well-functioning disease surveillance system therefore provides information for planning, implementation, monitoring, and evaluation of public health programs. It includes case detection and registration, case confirmation, data reporting, data analysis, outbreak investigation, response and preparedness activities, feedback, and communication. Health authorities must also provide appropriate supervision, training, and resources for the surveillance system to operate properly.

The Georgian National Health Policy, adopted in 1999, declares the improvement of maternal and child health and the reduction of communicable and socially dangerous diseases among the main priorities for maintaining and improving the health of the population of Georgia over the next decade (see Table 1). Improved coverage of target populations with immunizations and increased effectiveness of epidemiological surveillance are viewed as important strategies to achieve these objectives. The policy links these strategies with the need for improvements of the Georgian Health Information System in order to provide managers, stakeholders, and the public with appropriate information to make correct strategic, tactical, and operational decisions.

These guidelines provide general procedures and standards applicable for all infectious diseases while supplying detailed procedures and strategies for the following eight vaccine preventable diseases (VPDs) and rabies most of which are targeted for elimination or considerable reduction as outlined in the National Health Policy:

- ▲ Diphtheria
- ▲ Mumps
- ▲ Tetanus
- ▲ Poliomyelitis
- ▲ Rubella
- ▲ Hepatitis B
- ▲ Measles
- ▲ Pertussis
- ▲ Rabies

Table 1. National Strategies and Targets for the Reduction of VPDs 1999-2009

Disease	Target	Strategies
Poliomyelitis	Maintaining elimination of the disease	▲ 98% coverage of the eligible population with planned immunization
Measles	Elimination by 2007 and certification by 2010	▲ Increase of the effectiveness of epidemiological surveillance ▲ Strengthening of laboratory services
Tetanus	Elimination of neonatal tetanus by 2005	▲ Provision of relevant conditions for delivery ▲ Immunization of pregnant women if necessary
Diphtheria	Incidence < 0.1 per 100,000 population and no mortality by 2006	▲ 95% coverage of child population by planned immunization ▲ 85% coverage of adult population by revaccination ▲ Improvement of epidemiological surveillance
Hepatitis B	Reduction of the number of new cases by 80%	▲ 95% coverage of infants by immunization ▲ Provision of safe blood and blood products

Disease	Target	Strategies
		<ul style="list-style-type: none"> ▲ Provision of safety of medical manipulations ▲ Public education about individual protection
Mumps, Pertussis	Incidence < 0.1 per 100,000 by 2006	<ul style="list-style-type: none"> ▲ 95% coverage of the eligible population with planned immunization ▲ Increase of the effectiveness of epidemiological surveillance ▲ Strengthening of laboratory services
Rubella and CRS	Congenital Rubella Incidence <0.01 per 1000 live births	<ul style="list-style-type: none"> ▲ Increase the efficiency of epidemiological surveillance ▲ Begin planned immunization in 2004

The following nine sections of this document provide specific guidance for health workers at all levels with regard to the core functions of surveillance.

2. Identification and Registration of Cases of Infectious and Parasitic Diseases

2.1 Case Detection

An ideal surveillance system is sensitive enough to correctly identify *all cases* of a particular disease occurring in the community. Experts estimate that the sensitivity of the Georgian surveillance system for VPDs is currently at 50 percent, meaning approximately half of all occurring cases are not registered for various reasons. This severely undermines the country's efforts to successfully control these diseases and eventually eradicate them, which will improve the overall health and well-being of the population and eliminate the associated economic burden of morbidity and mortality.

Responsibilities of health care facilities with regard to infectious diseases are defined by current normative documents. Specifically, those responsibilities are the following:

1. Provide consultation (physical checkup) to every patient with an infectious disease referring to the facility or cases occurring in the facility catchment area (according to the existing normative documents)
2. Refer all cases with communicable diseases requiring case confirmation for laboratory testing as specified in the existing guidelines.
3. Administer proper treatment to any patient with a communicable disease
4. Refer patients to higher level facilities for appropriate diagnostics and treatment as needed
5. Register all cases of communicable diseases presenting themselves to private practitioners or occurring in facility targeted areas, as specified by current regulations
6. Notify the public health system of all cases of infectious diseases according to the current regulations
7. Inform the community of the catchment area about the importance of prompt referral of infectious diseases cases, possible risks, and benefits of treatment. Information about entitlements of free consultation at the facility should be delivered as well
8. Prepare and submit monthly reports on infectious diseases according to the current regulations
9. Support and facilitate any work carried out by a rayon/regional Center of Public Health (CPH) or National Center for Disease Control (NCDC) during case/outbreak investigation in your facility targeted area

10. Comply with any rules set by respective authorities in case of an infectious disease outbreak

2.2 Registration

All clinically diagnosed or laboratory-confirmed cases of communicable diseases that come to health facilities for treatment or consultation (irrespective of whether they are reported urgently or once a month) must be registered in a standard Infectious Disease Registration Journal number 60/A, which specifies the case-based information to be collected (see Figure 1). This record book is also used for registering cases of food, occupational, and other poisonings, radiological lesions, post-vaccination unusual reactions, and complications (see MoLHSA Decree 112/n 4 June, 2003).

Journal 60/A is kept at the facility and used for preparation of urgent notifications and reports and during outbreak investigations. Submitting an urgent notification does not relieve one from registering the information in journal 60/A.

Detailed instructions for the completion of journal 60/A are provided in Figure 1.

Journal 60/B (for CPH) (Figure 2) is kept at the rayon and regional levels and is used for preparation of reports and during outbreak investigations. Similar to journal 60/A, it is designed to record information on clinical (probable) or confirmed cases of communicable diseases and other conditions as described above. Upon receipt of an urgent notification (see section 4), it is necessary for the CPH to transcribe key information into columns 1-11, 13-14, and 17-22 of journal 60/B. Other columns should be filled out during case/outbreak investigations. If a new case (including convalescent cases) is revealed during case/outbreak investigation, information about the case also should be recorded in journal 60/B.

Completed journals 60A and 60B should be kept at the facilities for five years.

Figure 1. Journal 60/A

N	Name	Age	Gender	Address	Place of study/work	Disease onset date	Date of first presentation/hospitalization	Provisional diagnosis	Date of provisional diagnosis	Final diagnosis	Date of final diagnosis	Outcome	Physician who diagnosed the case	Notification sent to whom/where/means of notification	Time /Date of notification	Name of a person who received notification	Comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Instructions for the completion of Journal 60/A (for providers). All columns should be filled out clearly and correctly:

1. Case registration number, assigned chronologically
2. The first and the last name of a patient
3. Age (under 15 years of age, indicate date of birth: year, month, day)
4. Gender
5. Actual address of a patient, indicate permanent address as well if different from the current one
6. Occupation/study or other status (e.g., non-organized, unemployed, government and private employment, temporary or permanent job), indicate respective facility/institution – for the purpose of identifying possible contacts)
7. Date of onset of the disease. Indicate precise (if possible) date (day, month) that patient considers was the onset
8. Indicate date of the patient's first presentation in or hospitalization to your facility
9. Provisional (first) diagnosis
10. Date preliminary diagnosis established
11. Final diagnosis
12. Date final diagnosis established
13. Outcome should be filled out after recovery/discharge of a patient or in fatal case of a disease. Indicate exact date (dd/mm/yy).
14. Indicate last name of the physician who diagnosed the case
15. Indicate address and the name of the institution notified about the case and the means of notification (urgent notification card, by phone, fax, etc.)
16. Indicate notification date and time. In case of sending an urgent notification card via courier, indicate date and time of its delivery.
17. Indicate the full name of a person who received notification.
18. Indicate additional information that may facilitate case investigation and management or if you consider important in the current situation.

Figure 2. Journal 60/B (for CPH)

N	Name	Age	Gender	Address	Place of study/work	Disease onset date	Date of first presentation	Facility that sent notification & means of notification	Provisional diagnosis	Date provisional diagnosis established	Date specific treatment started	Date specimen taken	Result and date of lab. analysis	Vaccination status	Date case investigation started	Final DS	Final Classification	Date Final DS established	Outcome	Facility notified and means of notification	Notification date & time	Person that received notification	Case status	Comments
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

Instructions for the completion of Journal 60/B. All columns should be filled out clearly and correctly:

1. Case registration number (chronologically at CPH)
2. The first and the last name of a patient
3. Age (under 15 years of age, indicate date of birth: year, month, day)
4. Gender
5. Actual address of a patient, indicate permanent address as well if different from the current one
6. Occupation/study or other status (e.g., non-organized, unemployed, government and private employment, temporary or permanent job), indicate respective facility/institution)
7. Date of onset of the disease. Indicate precise (if possible) date (day, month) that patient considers was the onset
8. Indicate the date of the first presentation of a patient to a medical facility/institution regardless of diagnosis made by and notification received from that facility/institution
9. Indicate facility/institution name that had sent notification and indicate the means of notification (urgent notification card, by phone, fax, etc). Indicate notification date and time. In case of sending an urgent notification card via courier, indicate date and time of its delivery
10. Clinical diagnosis (i.e. the first provisional diagnosis made by a health care provider as was subsequently notified upon)
11. Indicate date provisional diagnosis was established
12. Indicate date and time of specific treatment started (e.g., in cases of diphtheria, tetanus, and botulism, indicate date of serum administration, etc.)
13. Date specimen taken should be filled out if a specimen is taken for laboratory investigation. Indicate the type of specimen taken.
14. If specimen is taken for laboratory investigation, record date and time, results of laboratory analysis (indicating type of specimen and performed test) in this column.
15. This column should be filled out for VPDs only. Indicate vaccine doses received and date of their administration.
16. If an investigation is carried out by CPH (not the facility itself), the date should be filled out by the CPH officer.
17. Indicate final diagnosis.
18. Classify case [clinical (probable) or confirmed] in accordance with the standard case definitions.
19. Date final diagnosis was established.
20. Should be filled out after recovery/discharge of a patient or in case of fatal outcome of a disease. Indicate exact date (dd/mm/yy) for a given outcome.
21. Indicate the name and address of the facility (or facilities) that was further notified by CPH about the case and the means of notification (urgent notification card, phone, fax, or other) in accordance with the order of notified facilities (if two or more facilities are notified).
22. Indicate notification date and time. In case of sending an urgent notification card via courier, indicate date and time of its delivery.
23. Indicate full name of a person who received a notification.
24. Indicate patient's status in an outbreak: index (single, sporadic case), secondary case, or group/outbreak (two or more patients).
25. Indicate additional information that may facilitate case investigation and management or that you consider important in current situation.

3. Case Definitions/Case Confirmation and Classification

The usefulness of public health surveillance data depends on its uniformity, simplicity, and timeliness. State and local public health officials use the information about occurrence of diseases to accurately monitor trends, plan and make decisions, and evaluate effectiveness of interventions. The case definitions introduced in these guidelines establish uniform criteria for disease confirmation and classification to be applied by CPH and individual public and private facilities in Georgia for public health surveillance purposes.

3.1 General Principles

Upon receipt of immediate/urgent notifications, CPH staff (who are responsible for reporting of surveillance data) classify cases *for epidemiological surveillance purposes* into two categories: **clinical (probable)** and **confirmed** based on the latest available reports/notifications from health facilities and case-related laboratory and epidemiological data. Case confirmation criteria are outlined in the guidelines below.

Updates in case notifications and/or results of case/outbreak laboratory investigation allow CPH staff to update their classification of cases (recorded in column 18 of journal 60/B).

Clinical (probable) case is defined as any case for which clinical symptoms are compatible and resemble a notifiable disease.

Purpose: Clinical (probable) case definitions outlined in the guidelines below may help providers to determine whether what they are seeing is a case of a notifiable disease.

Action: When a physician suspects a case of a notifiable disease, he/she must notify the rayon CPH; this should lead to an investigation of a case/potential outbreak and initiation of appropriate public health action (specific actions are listed by disease in Table A, Notification, Reporting, and Investigation Requirements for Communicable Diseases (see section 9 in these guidelines)).

Note: Initiation and specifics of treatment is a *purely clinical decision*, which is normally made once a provisional diagnosis is established. This decision does not have to depend on compatibility of a patient's symptoms with epidemiological surveillance definitions or case descriptions outlined in this manual.

Confirmed case is one that is confirmed by disease-specific laboratory tests and/or where an epidemiological link to other confirmed case(s) has been established.

For some diseases (e.g., tetanus), definition of a confirmed case is not applicable, because there is no laboratory test and no epidemiological link.

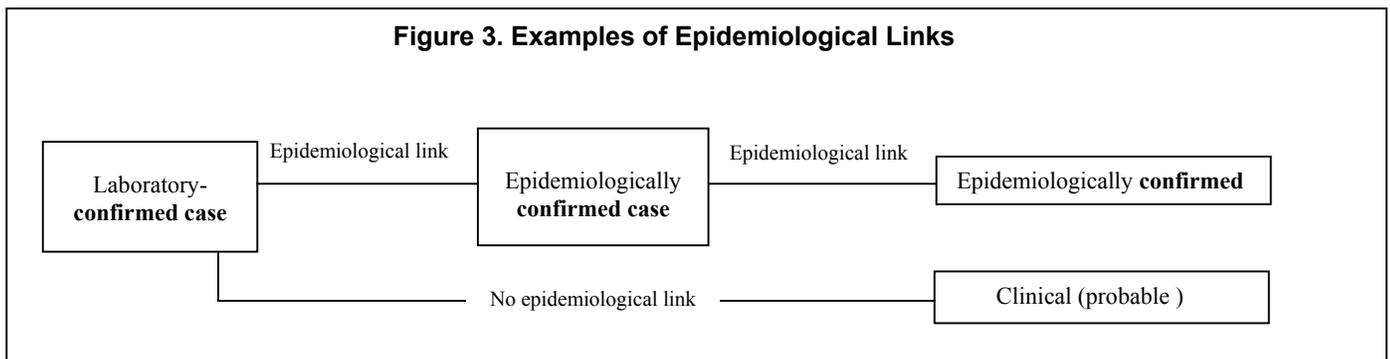
Purpose: Regional and national surveillance managers use disease confirmation rates to do the following:

- ▲ Make public health interventions that have a long-term nature (e.g., policy changes, mass campaigns, development of disease elimination strategies, etc.)
- ▲ Assess the success of disease elimination efforts
- ▲ Assess the maturity of the surveillance system in various regions and in various settings
- ▲ Plan surveillance/laboratory system strengthening activities

Details on computation of disease confirmation rates are provided in section 5.3, Recommended Methods of Analysis of these guidelines.

An epidemiological link is defined as an individual who has had close contact (specific for the transmission mechanism of a given disease) with a **case** during a period of incubation of the disease prior to the onset of symptoms (see Figure 3).

Epidemiologically confirmed is a case that has close contact (specific for the transmission mechanism of a given disease) with a **laboratory confirmed case**.



Both the number of all “**clinical (probable)**” and “**confirmed**” cases are reported through the surveillance reporting system from CPH to NCDC on a monthly basis, as described in sections 4.2, Monthly Summary Notification and 4.3, Monthly Reporting.

Cases not compatible with the specified clinical descriptions of notifiable diseases and not confirmed either by specified lab tests or epidemiologically **must not be reported through the surveillance channels from the rayon CPH upwards**. A case should be discarded for epidemiological surveillance purposes and medical statistics if:

- a. an updated urgent notification about the change in the diagnosis (including the change from a notifiable communicable disease to a “somatic” disease, which also requires submission of an urgent notification) is received from a facility, or
- b. during case/outbreak investigations, case records show that the case is not compatible with a clinical description of a notifiable disease and is not laboratory or epidemiologically confirmed

Table 2 illustrates how VPD cases are classified in the epidemiological surveillance system.

Table 2. Classification of VPD Cases in the Georgia Epidemiological Surveillance System

Disease	Clinical Description “Clinical (probable) case” criteria	“Confirmed Case” Criteria (at least one of the following)		Epidemiological Link
		Laboratory confirmed	Epidemiologically confirmed	
Diphtheria	Any person with: ▲ laryngitis or pharyngitis or tonsillitis and ▲ an adherent membrane of the tonsils, pharynx and/or nose	A case that meets the clinical description with Isolation of toxin-producing <i>Corynebacterium diphtheria</i> or <i>C.ulcerans</i> from a clinical specimen Note: Non-respiratory/cutaneous diphtheria cases with isolation of toxigenic strains should be reported, as should asymptomatic carriers (any anatomical site) with toxigenic strains. Cases with non-toxigenic <i>C.diphtheriae</i> or <i>C.ulcerans</i> should not be reported.	A case that meets the clinical description and has epidemiological link to a laboratory-confirmed case.	Close contact (household, work/school setting, etc.) with another case 2-7 days prior to the onset of symptoms
Measles	Any person with: ▲ fever, and ▲ maculopapular rash* (i.e., non-vesicular) and ▲ cough, running nose or conjunctivitis. * Measles rash usually begins on the face and neck and over the next 3 days gradually proceeds downward and outwards, reaching the hands and feet	A case that meets the clinical description with Presence of measles-specific IgM antibodies	A case that meets the clinical description and has an epidemiological link to a lab-confirmed case	Contact with another case 7-17 days prior to the onset of symptoms
Mumps	Any person with: ▲ acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland ▲ lasting >2 days and without other apparent cause	A case that meets the clinical description of mumps with ■ Isolation of mumps virus from a clinical specimen or ■ seroconversion or significant (at least fourfold) rise in serum mumps IgG titre* or ■ mumps-specific IgM antibodies * * In the absence of mumps immunization in the preceding six weeks	A case that meets the clinical description of mumps and has an epidemiological link to a lab-confirmed case	Close contact (household, school, etc.) with another case 11-26 days prior to the onset of symptoms
Rubella	Any person with: ▲ fever ▲ maculopapular rash and ▲ suboccipital, cervical or post-auricular lymphadenopathy or ▲ arthralgia/arthritis Rubella cannot be confirmed clinically	Presence of rubella-specific IgM antibodies	A case that meets the clinical description of rubella and has an epidemiological link to a lab-confirmed case	Contact with another case 11-24 days prior to the onset of symptoms

Pertussis	A person with: a cough lasting at least two weeks and , at least one of the following: ▲ paroxysms of coughing or ▲ inspiratory “whooping” or ▲ vomiting immediately after cough without other apparent cause	A case that meets the clinical description of pertussis and 1. Isolation of B. pertussis from a clinical specimen or 2. Positive polymerase chain (PCR) reaction assay for B. pertussis or 3. Positive paired serology	A case that meets the clinical description of pertussis and has an epidemiological link to a lab-confirmed case	Close contact (household, school, etc.) with another case 2-15 days prior to the onset of symptoms
Tetanus	Any person with acute onset of hypertonia and/or painful muscular contractions (usually of the muscles of the jaw and neck) and generalized muscle spasms without other apparent cause	N/A		N/A
Neonatal tetanus	Any neonate with a normal ability to suck and cry during the first two days of life, and who between 3 and 28 days of age cannot suck normally, and becomes stiff or has clonic convulsions or both	N/A		N/A
Acute viral hepatitis	Any person with acute illness, typically including acute jaundice, dark urine, anorexia, malaise, fatigue, and right upper quadrant tenderness. Biological signs include increased urine urobilinogen and usually >2.5 times the upper limit of serum alanine aminotransferase (ALT) Note: a variable proportion of infections is asymptomatic	A case compatible with the clinical description with Hepatitis A IgM antibody to hepatitis A antigen (anti-HAV) positive Hepatitis B 1. IgM antibody to hepatitis B core antigen (anti-HBc) positive (if done) or 2. Hepatitis B surface antigen (HbsAg) positive (if the previous test can not be done) For patients negative for hepatitis A or B, further testing for a diagnosis of acute hepatitis C, D or E is recommended. Hepatitis C 1. Antibody to hepatitis C antigen (anti-HCV) positive Hepatitis D (only as co-infection or super-infection of hepatitis B) 1. Anti-HDV positive and HBsAg positive 2. Anti-HDV positive and IgM anti-HBc positive Hepatitis E 1. IgM antibody to hepatitis E antigen (IgM anti-HEV) positive	Hepatitis A A case compatible with the clinical description in a person who has an epidemiological link to a lab-confirmed hepatitis A case.	For Hepatitis A only: Close contact (household, sexual, etc.) with a case (which later will be lab-confirmed) during period of communicability, 15-50 days prior to the onset of symptoms.

Congenital rubella syndrome	An illness manifesting in infancy, resulting from rubella infection <i>in utero</i> and characterized by two of the manifestations specified in group A, or one from group A and one or more from group B: A) Cataracts/congenital glaucoma, congenital heart disease, hearing impairment, pigmentary retinopathy B) Purpura, splenomegaly, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease, or jaundice with onset within 24 hours after birth	A clinically consistent case that has rubella- specific immunoglobulin M (IgM) antibody.	N/A	N/A
Congenital rubella infection	A case without clinical manifestations that has a history of rubella exposure during mother's pregnancy	A case with no clinical manifestations in which rubella-specific IgM antibody was detected	N/A	N/A
Poliomyelitis	Any child under 15 years of age with acute (rapidly developed within 1-4 days) flaccid paralysis (AFP) or any person at any age with paralysis illness suspected for polio	AFP case, in whom poliovirus has been isolated from feces	N/A	N/A
Febrile rash illness	Any person with fever and maculopapular rash Note: such cases require syndromatic supervision, which will be initiated during stage III of measles control	Group cases of febrile rash illnesses require laboratory testing to identify or exclude measles and or rubella	N/A	N/A
Rabies	An acute encephalitis dominated by forms of hyperactivity or paralytic syndromes that progresses towards coma and death (usually by respiratory failure) within 7 to 10 days after the first symptom if no intensive care is instituted. Bites or scratches from a suspected animal can usually be tracked back in the patient's medical history. The incubation period may vary from days to years but usually falls between 30 and 90 days.	A clinical case with <i>In humans:</i> ▲ Detection of rabies viral antigens by direct fluorescent antibody (FA) in clinical specimens, preferably brain tissue (collected post mortem) ▲ Isolation of rabies virus from clinical specimens collected ante mortem (e.g., skin or cornea smear) and confirmation of rabies viral antigens by direct FA test ▲ Detectable rabies-neutralizing antibody titer in the CSF (cerebral spinal fluid) of an unvaccinated person ▲ Identification of viral antigens by PCR on fixed tissue collected post mortem or in a clinical specimen (brain tissue, skin, cornea, saliva). ▲ Bio-test: Mice inoculation with infected brain extract and one-month follow-up <i>In animals:</i> ▲ Detection of rabies viral antigens by direct FA method in brain tissue. ▲ Bio-test: Mice inoculation with infected brain extract and one-month follow-up	N/A	N/A

4. Notification and Reporting

All notifiable diseases and conditions are divided into two groups according to their implication to public health surveillance and response:

- ▲ Diseases and conditions of which health authorities must be notified urgently
- ▲ Diseases and conditions of which health authorities must be notified monthly

All reportable diseases and conditions are divided into two groups as well:

- ▲ Diseases and conditions subject to monthly reporting
- ▲ Diseases and conditions subject to annual reporting

Note: Groups of notifiable and reportable diseases do not match.

All institutions and providers rendering health care services to the population regardless of their subordination and forms of ownership, including laboratories and private care providers, must notify the local public health service whenever they diagnose, suspect, or even receive positive laboratory results for any of the diseases or conditions listed below. The NCDC determines and annually updates the list of notifiable and reportable diseases on the basis of the current epidemiological situation.

4.1 Urgent Notification

“Urgent notification” refers to urgent (during the same business day, but under no circumstances more than 24 hours from first identification) submission of information about clinical (probable) or laboratory-revealed cases to the next highest level of the public health service. In such cases, the provider must notify the rayon CPH about such cases within that timeframe using any available means of communication (notification card, phone, fax, e-mail). The rayon CPH in turn must submit the appropriate information to the central (NCDC, MoLHSA) and regional (regional CPH) institutions.

Notification of every single case of the diseases and conditions shown in Table 3 has to be sent through the public health system.

For the following internationally regulated, especially dangerous diseases, information should be submitted **immediately (without any delay)**:

1. Plague
2. Cholera
3. Yellow fever
4. Viral hemorrhagic fever
 - 4.1. CCHF (Crimean-Congo Hemorrhagic Fever)
 - 4.2. Hemorrhagic fever with renal syndrome

- 4.3. Unspecified viral hemorrhagic fever
5. Tularemia
6. Anthrax
7. Rabies
8. Severe acute respiratory syndrome (SARS)
9. Smallpox
10. Tickborne encephalitis A84.0; 84.1; 84.8; 84.9.

Table 3. List of Urgently Notifiable Diseases and Flow of Notifications through the Public Health System

	Name	ICD-10 Code	Notification should be sent to the rayon CPH		Notification should be sent from the rayon CPH to the regional CPH and NCDC
			By health care providers	By laboratories	
1.	Diphtheria	A36	X	X	X
2.	Pertussis	A37	X	X	X
3.	Neonatal tetanus	A33	X		X
4.	Tetanus	A34 -35	X		X
5.	AFP / Acute poliomyelitis	A80	X	X	X
6.	Measles	B05	X	X	X
7.	Rubella	B06	X	X	
8.	Congenital rubella syndrome	P.35.0	X		X
9.	Mumps	B26	X	X	
10.	Acute viral hepatitis A	B15	X	X	
11.	Acute viral hepatitis B	B16	X	X	
12.	Acute viral hepatitis C	B17.1	X	X	
13.	Acute viral hepatitis E	B17.2	X	X	
14.	Cholera	A00	X	X	X
15.	Typhoid fever	A01	X	X	
16.	Paratyphoid fevers A, B, C;	A01.1-4	X	X	
17.	Other salmonella infections	A02	X	X	
18.	Shigellosis	A03	X	X	
19.	Other bacterial intestinal infections	A04	X	X	
20.	among them: Esherichiosis	A04.4	X	X	
21.	Yersiniosis	A04.6	X	X	
22.	Food-borne bacterial intoxications	A05	X	X*	
23.	among them Botulism	A05.1	X	X	X
24.	Unspecified infectious diarrheal diseases	A09	X		
25.	Tuberculosis meningitis	A17.0	X	X	X
26.	Plague	A20	X	X	X
27.	Tularemia	A21	X	X	X
28.	Anthrax	A22	X	X	X

			Notification should be sent to the rayon CPH		
29.	Brucellosis	A23	X	X	X
30.	Leptospirosis	A27	X	X	X
31.	Listeriosis	A32	X	X	X
32.	Meningococcal Infection	A39	X	X	X
33.	Relapsing fever	A68	X	X	X
34.	Lyme disease (Borelliosis)	A69.2	X	X	X
35.	Flea-borne typhus	A75	X	X	X
36.	Q fever	A78	X	X	X
37.	Rabies	A82	X	X	X
38.	Unconfirmed viral infections of CNS	A89	X		X
39.	Arthropods transmitted viral fevers and viral hemorrhagic fevers	A90-A99	X	X	X
40.	Yellow fever	A95	X	X	X
41.	Malaria	B50-54	X	X	
42.	Trichinosis	B75	X	X	
43.	Haemophilus Influenza B pneumonia or meningitis	J14; G00.0	X	X	
44.	Hospitalized cases of influenza-like illness	J- 06.9; 22; 10; 10.1; 11; 11.1; 12; 12.1; 12.2; 12.8; 18.	X		
45.	Fever of unknown etiology (t>38 and lasts more than 5 days)	R - 50.0; 50.1; 50.9.	X		X
46.	Radiological lesions	W88; 91	X	X	X
47.	Acute occupational poisonings	Z 57.4 - 57.5	X	X	
48.	Post-vaccination, unusual reactions and complications	Y58-59; 64.1	X		X
49.	Intrahospital Infections	Y95	X	X	
50.	Isolations of vancomycin resistant staphylococcus		X	X	X
51.	Severe acute respiratory syndrome		X		X
52.	Fatal cases of acute infectious diseases		X		X
53.	Contact with animals (risk of rabies)		X		
54.	Group cases of infectious diseases		X		X

* Indicating all identified pathogens

Urgent notification must be done of group cases of any infectious diseases (excluding acute respiratory infections (ARI) and influenza). Group cases imply three or more cases that occur in one or more facilities in one incubation period and that are epidemiologically linked or caused by one agent. In this case one urgent notification card should be filled out with an indication that this is a group case. A list of cases including the patients' names, ages, and addresses should be prepared and sent to the rayon CPH along with the card. This information also could be delivered by any other means of communication (e.g., phone, fax, e-mail).

During outbreaks of a large number of cases, it is permissible to notify the CPH via telephone providing brief information only (the diagnose, number of cases, age groups of cases, and support required). Names of the patients do not have to be specified in such cases.

Note: Rayon CPH should immediately notify the State Sanitary Inspection, in addition to the regional CPH, for any cases of food and acute workplace-related intoxications, radiation lesions, as well as group cases of any communicable disease.

Veterinary services should be notified urgently upon identification of zoonotic infections (e.g., anthrax, brucellosis, and other) in humans.

4.1.1 Urgent Notification Card

The *Urgent Notification Card* in the standard format is to be used at all levels of the public health system and can be completed by a health practitioner who has suspected or detected a clinical (probable) or confirmed case of any disease listed in Table 3, or by CPH personnel who need to send the information further up the public health surveillance system. See Figure 4 for a sample card.

Figure 4. Urgent Notification Card

Confidential		Urgent Notification Card #58/1	
1. The notification sent to _____(facility) Case diagnosed by _____(name, position) Notification sent by _____(name, position, facility) Signature _____		Date	Time
2. Registration number (in Journal 60) = = = = = >>>>		Registration # in 60a or 60b (underline)	
3. Last (family) name	First name	Middle name	
4. Sex: Male ____ Female ____		5. Age (for children under 15 please indicate the date of birth)	
6. Address			
Town/village		Rayon	Street, house, apt #
7. Name and address of workplace or children's facility			
8. Diagnosis			
9. DATES ==>>>	Disease onset:	First visit to health facility:	
10. Current location of the patient		a) At a hospital _____(indicate which one) b) At home _____(indicate actual address) c) Other _____	
11. Additional information (e.g., potential source of infection, group case)			

Data used to fill urgent notifications come from case histories and journal 60/A. Urgent notifications can be made by phone. In such cases, there is no need to send the card; however, the information should be passed on strictly in accordance with the urgent notification card format to be recorded on an urgent notification card at the receiving end.

In large facilities, many providers may diagnose infectious disease cases. All providers are required to complete urgent notification cards promptly for cases they see. In such large facilities it is recommended that one person (e.g., nurse) be assigned the responsibility of sending notifications to the CPH. This person would collect notification cards from providers and send all of them together.

As additional surveillance information becomes available, a patient's diagnosis may change. In this case, providers or laboratories must submit another urgent notification card with the updated diagnosis indicating "**changed**" (regardless of whether the changed diagnosis is urgently notifiable or not, e.g., somatic diseases) to the appropriate CPH, which, in turn, passes it to the NCDC. Group status for all notifiable diseases should be indicated in line #11 of the card for additional information.

If a rayon CPH receives notification about a case that was contracted in another territory (other rayon or city), or a case that visited another rayon or city during the incubation period, information about such a case should be sent to the respective rayon CPH (during the same business day, but under no circumstances later than 24 hours from identification) in order to enable it to implement response actions and report about the case. Information can be sent by any means of communication (telephone, fax, e-mail). At the receiving end, information is recorded in journal 60/B, notified to upper level (if required), and reported monthly/annually.

4.1.2 Laboratory Confirmation of a Communicable Disease Result/Notification Form

The ***Laboratory Confirmation of a Communicable Disease Result/Notification Form*** in the standard format is to be used by a) laboratories regardless of their subordination and ownership and b) by CPH personnel who need to send the information further up the public health surveillance system

Laboratories detecting or confirming a case of a notifiable disease from the list in Table 3 must follow the same requirements: urgently notify (during the same business day, but under no circumstances more than 24 hours from identification) the local CPH by any available means of communication.

A person responsible for the test result should send notifications using the standard Laboratory Confirmation of a Communicable Disease Result/Notification Form (see Figure 5). If notification is made by phone, the same format should be used (to be recorded in journal 60/B at the receiving end). In case of a negative result of a test, there is no need to send notification to the CPH. In such a case, a response should be sent on the same form to the physician requesting the test. Submission of only one notification to the CPH is required even if more than one specimen of a similar type may be taken from the patient during an episode of illness. Confidentiality of all laboratory notifications is regulated by the Law on Health Care.

Figure 5. Laboratory Confirmation of a Communicable Disease Result/Notification Form

Confidential		Laboratory Result/Notification of a Communicable Disease Form #58/2	
Case: Last Name | First Name | Middle Name | Age | Sex |			
Address [Apt #; Street; City (village); Country] | Tel: | Date specimen was taken [dd / mm / yy] -----/-----/-----			
Referred by <input type="radio"/> Self-referral <input type="radio"/> Physician <input type="radio"/> Health facility/CPH <input type="radio"/> Laboratory <input type="radio"/> Other _____	Contact information of the referring physician or institution: Name _____ Address _____ Telephone _____ Fax _____ E-mail _____		
Result (outcome) (indicate if pathogen is isolated) _____			
Type of specimen <input type="radio"/> Blood <input type="radio"/> CSF <input type="radio"/> Stool <input type="radio"/> Urine <input type="radio"/> Sputum Other _____	Smear <input type="radio"/> Pharyngeal <input type="radio"/> Naso-pharyngeal <input type="radio"/> Vaginal <input type="radio"/> Oral <input type="radio"/> Skin <input type="radio"/> Eye	Type of test performed Culture <input type="radio"/> Bacteriology <input type="radio"/> Virology <input type="radio"/> Parasitology	<input type="radio"/> Serology (specify) _____ <input type="radio"/> Immunology (specify) _____ <input type="radio"/> Microscopy <input type="radio"/> Histology <input type="radio"/> Molecular identification
Date and time of result:	Date and time of CPH notification:	Name and address of laboratory	Name and signature of the person responsible for the result:
Notification sent by [name and signature] :			Notification recipient: [name and position]

Chiefs and managers of private sector facilities and laboratories involved in diagnosis and treatment of infectious diseases are responsible for ensuring that their staff are aware of and comply with the case notification requirements.

4.2 Monthly Summary Notification

On the basis of case-based information contained in record book 60, each month **health facilities** submit one notification to the rayon CPH by the first day of the next month about several diseases and conditions, as shown in Figure 6. (Note that health facilities are not required to notify on a monthly basis about those diseases subject to urgent notification.)

If a facility (rayon) does not see a single case of a particular disease during a given reporting period, it must indicate “0” in the respective rows of the “TOTAL” column of the report (rather than leaving blank spaces) to avoid confusion between “no cases” and “incomplete reporting of cases.”

Figure 6. Monthly Summary Notification Form

Monthly Summary Notification Form #58/3											
Facility _____ Month _____ Year _____											
Responsible person for completing the form _____											
Disease/Age	ICD-10 Code	<1	1-4	5-14	15-19	20-29	30-59	60 and more	TOTAL	No. LAB TESTED	among them No. LAB CONFIRMED
Acute respiratory infections	J00-J06										
Influenza	J10-J11										
Amebiasis	A06										
Scarlet fever	A38										
Varicella	B01										
Other viral hepatitis	B17.0 17.8										
Chronic viral hepatitis B	B18.0- 18.1										
Chronic viral hepatitis C	B18.2										
Cytomegalovirus infection	B25										
Infectious mononucleosis	B27										
Leishmaniasis	B55										
Echinococcosis	B67										
Ascariasis	B77										
Trichocephalosis	B79										
Enterobiasis	B80										
Snake bites	X20									||	||
Toxic insects bites	X21-25									||	||

4.3 HIV/AIDS and Tuberculosis Notification

HIV/AIDS Infection Notification Rules

Facilities that confirm HIV/AIDS infection should notify CPH of the rayon in which the patient is resident about the case within 72 hours. Figure 7 shows an HIV/AIDS Urgent Notification Card.

Figure 7. HIV/AIDS Urgent Notification Card

Confidential	HIV/AIDS Special Urgent Notification Card – #58/4							
Notification sent to <hr/> (rayon, facility)	registration # in 60/A							
Notification sent by <hr/> (name, position, facility) <hr/> (Signature) contact address, tel., fax, e-mail <hr/>	Information about the patient:							
	sex: (mark with X)		female		male		unknown	
	age group (mark with X)							
	0-1	1-4	5-14	15-19	20-29	30-59	60+	unknown
Diagnosis:				Date of diagnosis: dd/mm/yy				

A separate card is completed for each confirmed case and sent **according to the general rule of infectious disease case notification**: by any available means of communication (notification card, phone, fax, e-mail). If notification is made by phone, there is no need to send the card.

CPH personnel at the receiving end should register the case and use the information for analytical purposes. They are not authorized to request additional information from the facility that submitted the notification.

Regional/rayon CPH should perform HIV/AIDS case investigation in accordance with the current regulations in case such investigation is requested by a special task order issued by the Central Program.

Tuberculosis Infection Notification Rules

TB cases are subject to routine summary notification, which is prepared by specialized facilities and sent to rayon CPH quarterly. CPHs that receive such notifications should register and use aggregated data for situation analysis. Figure 8 shows a Tuberculosis Summary Notification Card.

Figure 8. Tuberculosis Summary Notification Card- #58/5

Notification sent to :

rayon (town) _____ facility _____

Notification sent by

(name, position) facility _____

date _____

1. Pulmonary tuberculosis

	New Cases								TOTAL registered cases								TOTAL	
	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65+	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65+	Female	Male
Smear positive (+)																		
Smear negative (-)																		
Without bacterioscopy																		

2. Extra-pulmonary tuberculosis

	TB meningitis	Bone TB	Urogenital TB	TB pleuritis	Lymph node TB	Other TB	Military TB	TOTAL	
								Male	Male
New cases									
Total registered									

Note: The form is to be filled by I, II, III level TB facilities (polyclinics, cabinets, dispensaries) and send to rayon CPH quarterly according to the place of residence of patients.

Signature _____

4.4 Monthly Reporting

4.4.1 Monthly Reporting by Rayon CPH

The monthly report contains information about a number of urgently notifiable diseases (which CPH epidemiologists can get from journal 60/B and investigation reports) as well as about influenza, ARI, and amebiasis. Data have to be aggregated from the monthly notifications submitted by health facilities, and workbooks for data aggregation are provided.

Rayon CPHs submit two copies of the monthly reports to the regional CPH not later than on the fifth day of the following month, according to the Infectious and Parasitic Diseases Form found in Figure 9.

Figure 9. Infectious and Parasitic Disease Monthly Reporting Form

Infectious and Parasitic Diseases Monthly Reporting Form #IV-03												
Disease/age group	ICD-X Code	<1	1-4	5-14	15-19	20-29	30-59	60 and more	TOTAL	No. LAB TESTED	No. LAB CONFIRMED	TOTAL CONFIRMED (lab. or epid. Link)
1	2	3	4	5	6	7	8	9	10	11	12	13
Diphtheria	A36											
Pertussis	A37											
Measles	B05											
Rubella	B06											
Mumps	B26											
Acute Viral Hepatitis A	B15											
Acute Viral Hepatitis B	B16											
Acute Viral Hepatitis C	B17.1											
Acute Viral Hepatitis E	B17.2											
Typhoid fever	A01											
Paratyphoid A, B, C fever	A01.1-4											
Other salmonellosis	A02											
Shigellosis	A03											
Other Intestinal bacterial Infections	A04											
of them Esherichiosis	A04.4											
Yersiniosis	A04.6											
Foodborne Bacterial Intoxications	A05											
of them Botulism	A05.1											
Amebiasis	A06											
Unspecified infectious diarrheal diseases	A09											
Brucellosis	A23											
Meningococcal Infection	A39											
Malaria	B50-54											
Leishmaniasis	B55											
Acute Respiratory Infections	J00-J06											
Influenza	J10-J11											
Hospitalized cases of Influenza-like illness	J-06.9; 22; 10; 10.1; 11; 11.1; 12; 12.1; 12.2; 12.8; 18;											
Fatal cases of infectious diseases										Specify disease(s):		

If there is no single case of any notifiable diseases during a given reporting period, facilities are required to indicate “0” in the respective line of the “Total” column of the reporting form (instead of leaving a blank space) in order to avoid confusion between “no cases” and “incomplete reporting of cases.” Group of diseases such as “other bacterial infections” (A04) includes a number of diseases. If during a reporting period other cases (apart from esherichiosis and yersiniosis) occurred outside of the total group number, these cases should be recorded separately.

Monthly statistical reports to the NCDC should include cases for which final classification is pending. Diagnoses could still change as additional laboratory and epidemiological data become available. Monthly reports should be updated after the final classification.

Along with the monthly report form, rayon CPHs should submit to the regional CPH *two copies* of standard case/outbreak investigation reports about cases of selected urgently notifiable diseases (see VPD-specific sections) and *two copies* of anti-rabies activity reports in accordance with the established form CD-4. Copies of all reporting forms and investigation reports submitted should remain at the facility (see Tables A and B in section 9). The format of case and outbreak investigation reports and other aspects of the investigation are discussed in subsequent sections of these guidelines.

4.4.2 Monthly Reporting by Regional CPHs

Regional CPHs forward one of the two copies of the monthly reports received from the rayon CPH to the NCDC. They also enter the information from these reports into an electronic database and should submit an aggregated regional summary report (in the same format) to the NCDC by the seventh day of the following month.

4.5 Annual Reporting

Health facilities are not required to submit annual reports. Rayon and regional CPHs provide annual reports using the form in Figure 10. They should follow the same procedures outlined in the monthly reporting section (i.e., aggregate data from the monthly reports submitted by health facilities and monthly reports prepared at CPH; workbooks for data aggregation are provided).

Instructions for completing summary notification (58/3) and monthly/annual reporting forms are the following:

- ▲ Columns 3-9 – indicate the number of cases in the reporting month/year broken down by age groups.
- ▲ Column 10 – indicates the total number of cases that should equal the sum of numbers in columns 3-9.
- ▲ Column 11 – indicates the number of laboratory-tested cases.
- ▲ Column 12 – indicates the number of laboratory-confirmed cases.
- ▲ Column 13 – monthly/annual reporting form indicates the total number of cases that are classified as “confirmed cases” (laboratory or epidemiological link) according to the standard case definitions.

Figure 10. CPH Annual Report Form

Annually reportable Infectious and Parasitic Diseases
Reporting Form #IV-03

Disease/age group	ICD-X Code	<1	1-4	5-14	15-19	20-29	30-59	60 and more	TOTAL	No. LAB TESTED	No. LAB CONFIRMED	TOTAL CONFIRMED (Lab. or epid. Link)
1	2	3	4	5	6	7	8	9	10	11	12	13
AFP/Acute poliomyelitis	A80											
Congenital Rubella Syndrom	P.35.0											
Neonatal Tetanus	A33											
Tetanus	A34-35											
Cholera	A00											
Plague	A20											
Tularemia	A21											
Anthrax	A22											
Leptospirosis	A27											
Listeriosis	A32											
Scarlet fever	A38											
Relapsing fever	A68											
Flea- borne typhus	A75											
Lyme disease	A69.2											
Q fever	A78											
Rabies	A82											
Unconfirmed Viral infections of CNS	A89											
Arthropods transmitted viral fevers and viral hemorrhagic fevers	A90- A99											
Yeallow fever	A95											
Varicella	B01											
Other viral hepatitis	B17											
Chronic viral hepatitis B	B18.0-18.1											
Chronic viral hepatitis C	B18.2											
Cytomegalovirus infection	B25											
Infectious mononucleosis	B27											
Echinococcosis	B67											
Trichinosis	B75											
Ascariasis	B77											
Trichocephalosis	B79											
Enterobiasis	B80											
Heamophilus influenza B pneumonia or meningitis	J14											
Intrahospital infections	Y95											
SARS												

5. Data Analysis

Prompt analysis of the collected data provides information for the following:

- ▲ Identifying causes of problems and their most appropriate solutions
- ▲ Identifying trends and taking prompt public health action
- ▲ Evaluating the quality of disease prevention and control activities/programs over the medium and long term.

The differences in the scope and depth of the data analysis are determined by the level of the public health system where the analysis is performed, and whether the analysis is routine (monthly, yearly) or urgent (e.g., during outbreaks). In order for the analysis to be meaningful, complete, and accurate, VPD surveillance data need to be available. Data are typically analyzed *by time* (e.g., a monthly trend), *place* (e.g., by subordinated rayons or facilities), and *demographic and biological factors* (e.g., by age group, immunization status, gender).

5.1 Urgent Analysis

Urgent analysis (during an outbreak investigation) should be performed by a rayon CPH

- ▲ to identify causes of fatalities (if any) of any notifiable disease
- ▲ in case of outbreaks of notifiable diseases

Urgent analysis includes summarizing cases by the day or week of onset, determining locations at risk (using maps, tables, or histograms), and breaking down cases and deaths by age group, gender, immunization status, place of work, school attendance, and other known risk factors to determine who is at greatest risk of contracting the disease and what prevention or control measures are most appropriate. Urgent analysis is prepared in written form. It should be kept for five years and submitted to upper levels of the public health system according to existing regulations and requirements.

The recommended types of urgent analysis are presented in Table 4.

Table 4. Recommended Types of Urgent Analysis

Recommended type of urgent analysis of surveillance data	Purpose	Timeframe	Facility	Rayon/ Regional CPH
Reasons behind each fatality (if any)	To identify exactly what has failed in the disease prevention and control program	As soon as possible (up to 12-72 hrs)	X	X
Summarizing cases by time (day or week of onset)	To confirm the occurrence of more cases in a place and time than expected, which defines an outbreak To estimate incubation period	Upon receiving urgent case notifications and during outbreak investigation		X
Case/death breakdown or mapping by place	To try to identify vehicle(s) of infection To verify diagnosis To determine high-risk areas or locations of populations at risk			X
Case/death breakdown by age group, gender, immunization status, place of work, school attendance	To determine who is at greatest risk of a given disease and potential risk factors			X

5.2 Routine Analysis

Routine analysis is performed at all levels of the public health system. It is typically based on the data from monthly/annual reports 58/1, 58/2, 58/3, investigation forms, etc. Recommended routine types of analysis for each of the levels are presented in Table 5.

Table 5. Recommended Types of Routine Analysis

Recommended type of routine analysis of surveillance data	Purpose	Timeframe		
		Facility	Rayon CPH	Regional CPH
Case-fatality rates. Reasons behind each of the deaths (if any).	Identify exactly what has failed in the disease prevention and control program	Annually		Quarterly Annually
Morbidity by time (trends)	Determine abrupt or long-term changes in disease occurrence	Annually <i>(for facilities serving >50 00 people)</i>	Quarterly Annually	Quarterly Annually
Case/death breakdown by place	Determine high risk areas or locations of populations at risk		Quarterly Annually	Quarterly Annually
Case/death breakdown by age group and immunization status	Determine who is at greatest risk of a given disease and potential risk factors		Quarterly Annually	Quarterly Annually
Incidence per 100,000, age/sex/ immunization, status/occupation and other factor-specific incidence rates	Determine who is at greatest risk and identify major risk factors for a given disease		Quarterly Annually	Quarterly Annually
Proportion of cases lab-tested, case confirmation rates	Assess functioning of lab. service, maturity of the surveillance system, and success of disease elimination		Quarterly Annually	Quarterly Annually
Vaccination efficacy	Low vaccine efficacy require investigation of possible reasons			Annually
Timeliness of reporting	Identify facilities that prevent timely analysis		Monthly	Monthly
Completeness/accuracy of reporting	Identify source of poor-quality data		Monthly	Monthly
Case/Outbreak investigation rate	Monitor CPH adherence to the outbreak investigation requirements and highlight possible barriers		Quarterly Annually	Quarterly Annually

Routine analysis is prepared in written form. It should be kept for five years and submitted to upper levels of the public health system according to existing regulations and requirements.

During routine comparative analysis, a given parameter should be compared to the same parameter for the previous timeframe (e.g. quarter to quarter, year to year, etc.)

Diseases targeted for elimination (for example, poliomyelitis) may require routine analysis of additional information as specified by the World Health Organization (WHO). As a rule, this type of analysis is based on investigations of each reported case (according to the order of MoLHSA #230/0, 02.07.1997) and is usually performed by national experts at the NCDC.

5.3 Recommended Methods of Analysis

5.3.1 Reasons for Deaths

Knowing the reason why a patient with an infectious disease has died will help facilities choose an appropriate public health response or action to prevent more fatalities in the future. Analysis of reasons behind deaths involves reviewing case information (case histories, notifications, records in journal 60/A) and exploring the possible causes as presented in Table 6.

Table 6. Causes of Infectious Disease Fatalities and Possible Public Health Actions

Reasons	Possible public health action:
1. Patient sought health care too late	Intensify community health education Discourage self-treatment
2. Case identified timely, but treatment was not provided	Enforce adherence to case management standards Combat treatment through “unofficial” channels
3. Case identified in a timely manner, but treatment was delayed (drugs not available and have not been delivered in timely manner from other places)	Improve drug delivery channels Educate other practitioners about how bad communication and cooperation resulted in a patient’s death
4. Inappropriate treatment given (misdiagnosis, other reasons)	Enhance provider education
5. Drug resistance developed	Modify case management protocols
6. Immunization failure	Calculate vaccine efficacy Evaluate vaccine storage and administration in this area

5.3.2 Case Fatality Rates

The case fatality rate (CFR) is the proportion of persons with a particular condition who die from that condition. The CFR is a measure of severity of illness, which also can reflect the appropriateness of case detection and case management practices, as shown in the following equation:

$$\text{Case fatality rate} = \frac{\text{No. of deaths among incident cases}}{\text{No. of incident cases}} \times 100\%$$

Currently there are very few infectious disease-related deaths in Georgia, due to improved disease control; therefore, it makes sense to determine and monitor this rate only at the regional and national levels. *Health managers observing a high CFR for a given disease (as communicated by NCDC) need to urgently take measures to improve accessibility of care, timeliness of treatment, and adherence to proper case management protocols/guidelines.*

5.3.3 Morbidity Trends

Regular monitoring of priority infectious diseases morbidity is recommended for every health facility involved in the surveillance program that serves 5,000 or more people, along with all CPHs.

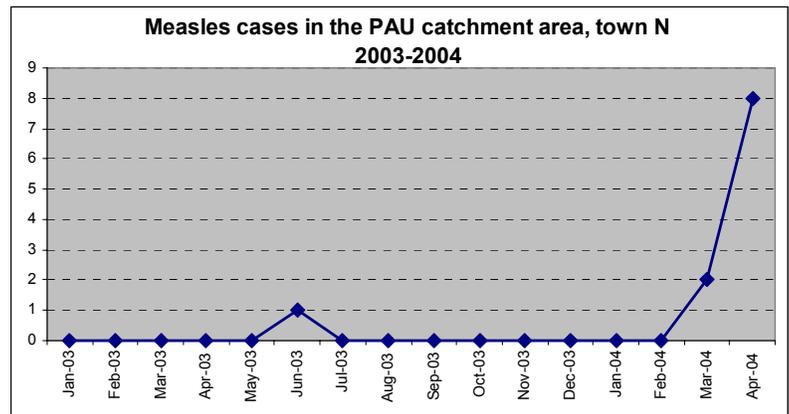
A CPH epidemiologist, a physician who is most directly involved in the detection and treatment of infectious diseases, or a statistician may monitor morbidity trends. The data should be regularly reviewed by the facility chief doctor/manager and shared in this or other forms with the health administration of a given area and other stakeholders who are interested or in need this information.

Recommended morbidity monitoring tables for VPDs are contained in the *Workbook for Rayon Centers on Surveillance and Control of Vaccine-Preventable Diseases in Georgia*¹ and examples are provided in Figure 11. However, health workers are encouraged to use any other alternative, for example, to plot them in a chart, if it helps to present or highlight a problem to those who need to know.

Figure 11. Examples of Morbidity Monitoring Tables and Graph

Cases of Priority Infectious Diseases, 2004, Town N

	J	F	M	A	M	J	J	A	S	O	N	D	Total
Diphtheria	0	1	0	0									1
AFP	0	0	0	0									0
Measles	0	0	2	8									10



Absolute numbers can be used for trends monitoring during quarterly analysis if target population of health care facilities and rayon CPH catchment areas of do not change significantly. In other cases trend monitoring should be based on incidence rates.

Case investigations and classification by CPH staff will help ensure that no other cases are missed, non-confirmed cases are filtered out, and only those cases that meet the standard case definition are reported to the next level.

¹ Ministry of Labor, Health and Social Affairs, National Center for Disease Control. October 2004. *Workbook for Rayon Centers on Surveillance and Control of Vaccine Preventable Diseases in Georgia*. Bethesda, MD: The Partners for Health Reform/plus Project, Abt Associates Inc.

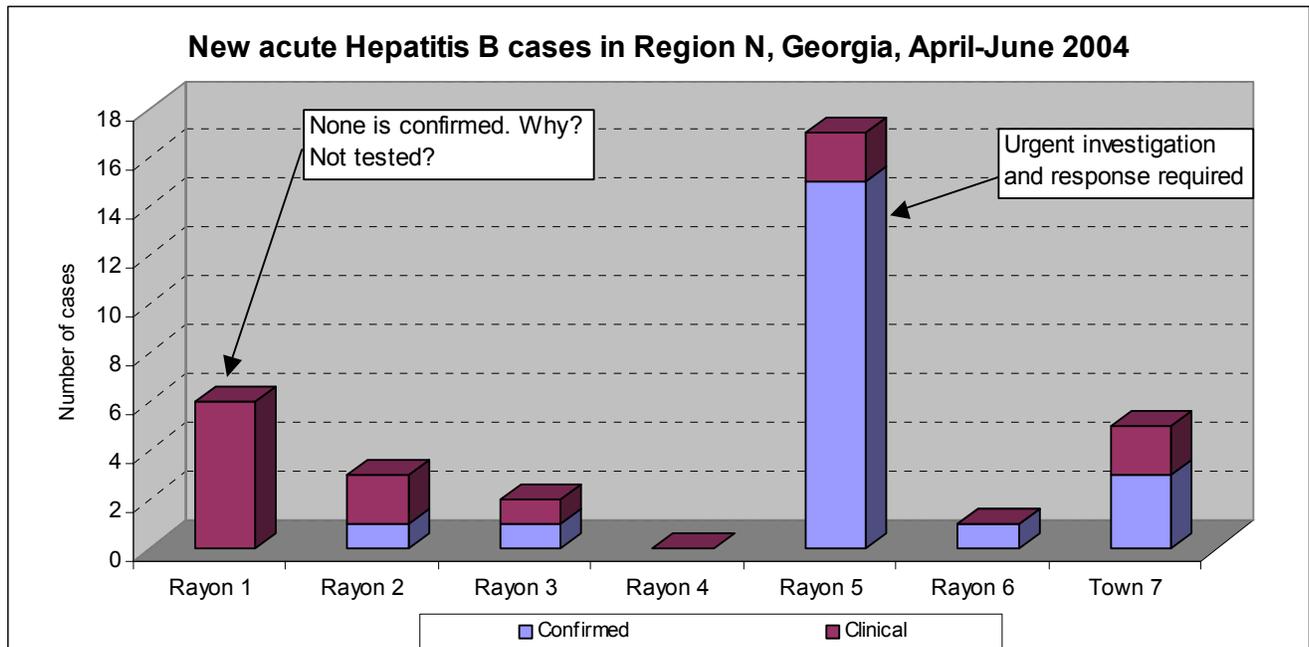
5.3.4 Case/Death Breakdown by Place

Analyzing data according to place (where disease is occurring) can help determine why and how it is spreading. Routine analyses are typically performed by the CPH on a quarterly or yearly basis. However, during large disease outbreaks, it is recommended that individual health facilities use local maps to mark the location of clinical (probable) and confirmed cases and other sites that might be relevant for the given disease (e.g., schools, markets, water supply sources). See Figure 12 for a sample analysis.

The analysis can help managers identify “problem” areas that require priority attention and help them advocate for the most rational allocation of resources for corrective and prophylactic measures. Zero or low case confirmation rates may be indicative of poor health worker adherence to existing case management protocols, and this would also need to be corrected.

It should be noted that comparative analysis of morbidity by place based on absolute number of cases may distort the true disease morbidity picture; comparing incidence rates is more illustrative. Incidence rate is discussed below, in section 5.3.6.

Figure 12. Example of Graph Showing Case Breakdown by Location

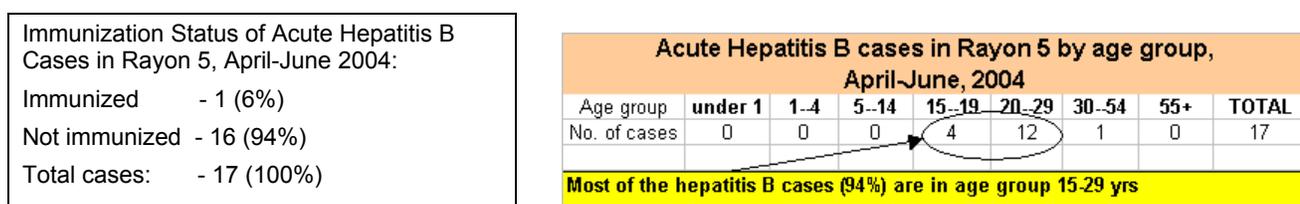


5.3.5 Case/Death Breakdown by Age Group and Immunization Status

Analyzing data by personal information of the individual can help further narrow the group at greatest risk and indicate potential risk factors.

Worksheets facilitating such analysis are included in the workbook designed for CPHs and polyclinic ambulatory units (PAUs) (Figure 13.)

Figure 13. Example of Case Breakdown by Person (Age Group and Immunizations)



Immunization Status of Acute Hepatitis B Cases in Rayon 5, April-June 2004:
 Immunized - 1 (6%)
 Not immunized - 16 (94%)
 Total cases: - 17 (100%)

Armed with this information, managers can more easily target response interventions such as catch-up immunization or prophylactic education. It also helps in allocating scarce available resources in the most appropriate way to combat the disease.

5.3.6 Incidence Rates

As noted above in section 5.3.4, using disease incidence rate as the basic measure of disease occurrence is more reliable than using the absolute number of cases of the disease in a population. For example, village X (with 500 population) registers five measles cases in a given period; village Y (with 1,000 population) also registers five measles cases in the period. If case numbers alone are compared, one might conclude that the disease is equally pervasive in the two settings, whereas, in fact, the disease incidence rate is twice as high in village X as in village Y.

Incidence rate is defined as the number of new cases occurring during a given time period (usually a calendar year) in a population at risk, i.e., susceptible for developing a particular disease. Population at risk might be the population of a rayon, a region, or a country; the number used is usually the population at mid-year. Incidence rates are expressed as the number of new cases per 1,000, 10,000, or 100,000 population, depending on the condition being measured. Communicable disease incidence rates are routinely measured per 100,000 population. The rate is calculated as follows:

$$\text{Incidence per 100,000} = \frac{\text{No. of new cases occurring during one year} \times 100,000}{\text{Population at mid-period}}$$

Incidence rates typically

- ▲ allow public health managers to monitor disease occurrence over time in various territories, and
- ▲ help them determine who is at greatest risk of a given disease and what are potential risk factors (in such cases age, sex, and other population group-specific incidence rates prove to be the most useful).

In order to describe epidemiological process in more detail other factors such as age, sex, occupation, and immunization status are used. This helps managers to determine specifically which population groups are at greatest risk.

Age, occupation, and other factor-specific incidence rates can be determined accurately only if reliable statistical data on denominators (size of specific population groups) are available. Worksheets facilitating such analysis can be found in the workbook for CPH and PAU health workers

For example, the 1994-1995 diphtheria incidence rate in Georgia for children under 14 reached 15-16 cases per 100,000 population. However, incidence rates were also very high among adolescents 15-19 years old (9-10 cases per 100,000) and among adults 20-49 years old (about eight cases per 100,000). These rates indicated the necessity to implement a mass immunization for the entire population.

As another example, the incidence rate of hepatitis B is very likely to be much higher in health personnel of surgical departments, injecting drug users, and others at risk. In order to calculate the incidence rate, the numerator for this equation would be, for example, the number of new cases among health personnel of surgical departments. The denominator would be the total number of health personnel of surgical departments. This incidence rate can be compared to the incidence rate calculated for other departments, which presumably will show that personnel performing surgical manipulations are at greater risk for contracting hepatitis B. Such analysis can help to demonstrate that vaccination and other prevention efforts should be targeted at these groups.

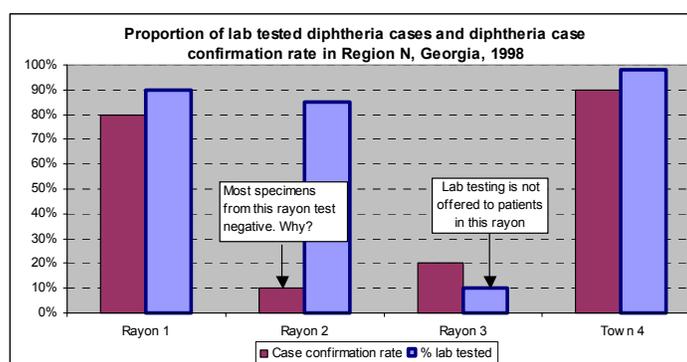
5.3.7 Case Confirmation Rates, Proportion of Cases Lab Tested

In a well-functioning surveillance system, disease confirmation rates are expected to exceed 70 to 80 percent. For diseases in the elimination phase (polio, measles), this rate is expected to approach 100 percent, as shown in the following equation:

$$\text{Case confirmation rate} = \frac{\text{No. of confirmed cases}}{\text{Total number of cases}} \times 100\%$$

As mentioned earlier in the case definition/case classification section, a confirmed case is one that has been confirmed by disease-specific laboratory tests and/or where an epidemiological link to other laboratory-confirmed case(s) has been established. In those instances where lab confirmation of a disease is not widely accessible, cases can be confirmed if they meet a clinical description of the disease and are epidemiologically linked to a clinical (probable) case (e.g., mumps, rubella). For some diseases (e.g., tetanus), definition of a confirmed case is not applicable because there is no lab test and no epidemiological link – they are confirmed based purely on clinical presentation.

Figure 14. Graphic Illustration of Rates of Confirmed Diphtheria Cases



Computation of case confirmation rates (see Figure 14 for an example) is recommended primarily for the regional and national surveillance managers to assess the maturity of the surveillance system in various regions and in various settings, assess the success of disease elimination efforts, plan surveillance/laboratory system-strengthening activities, develop disease elimination strategies, suggest policy changes, and plan other long-term interventions such as mass immunization campaigns. These are decisions for which health managers cannot rely on reports that include unconfirmed cases.

Monitoring of the proportion of cases that have been laboratory tested is important, first and foremost, for diseases targeted for elimination or considerable reduction (e.g., polio, measles, diphtheria).

It is recommended to calculate proportions of laboratory-tested and -confirmed cases separately. Their comparative analysis will help to identify poorly performing facilities/laboratories or rayons, research potential reasons for this, and implement plans for improving performance. The suggested equations are as follows:

$$\textit{Proportion of laboratory-tested cases} = \frac{\textit{No. of cases of a given disease that were lab tested}}{\textit{Total no. of clinical (probable) cases of this disease}} \times 100\%$$

$$\textit{Proportion of lab-confirmed cases} = \frac{\textit{No. of laboratory-confirmed cases}}{\textit{Total no. of clinical (probable) cases of this disease}} \times 100\%$$

$$\textit{Proportion of lab samples confirmed} = \frac{\textit{No. of laboratory-confirmed cases}}{\textit{No. of cases of a given disease that were lab tested}} \times 100\%$$

5.3.8 Vaccination Efficacy

The ability of a vaccine to prevent disease depends on its potency and proper administration to an individual capable of responding. Such field assessments of vaccine efficacy can be very useful, particularly when doubt is cast on the efficacy of the vaccine because of the occurrence of disease among vaccinated persons.

The term “vaccine efficacy” describes ability of a vaccine to prevent disease after vaccine administration. Methodology described below can be used for the vaccines given once (e.g. measles, mumps).

In order to define vaccine efficacy (VE), for example, for measles vaccine, the following information is required:

1. The study population is children aged 24-35 months. This age group should have been 12-24 months old last year. The data can be obtained from the population by age groups report (form 2.2.)
2. Measles vaccination coverage rate in children under 24 months of age. The data can be taken from GEOVAC or respective workbooks. The study population should have received vaccination last year.
3. The number of vaccinated children aged 24-35 month old who contracted the disease.
4. The number of unvaccinated children aged 24-35 month old who contracted the disease

After getting the above information the following calculations should be done:

- a) The total number of vaccinated children is the study population (children aged 24-35 months) x coverage rate
- b) The total number of unvaccinated children is the study population (children aged 24-35 months) minus the number of vaccinated children.

$$\text{Incidence for vaccinated} = \frac{\text{No. of vaccinated children aged 24-35 months who got the disease}}{\text{Total no. of vaccinated children}}$$

$$\text{Incidence for unvaccinated} = \frac{\text{No. of unvaccinated children aged 24-35 months who got the disease}}{\text{Total no. of unvaccinated children}}$$

$$\text{VE} = \frac{\text{Incidence for unvaccinated} - \text{Incidence for vaccinated}}{\text{Incidence for unvaccinated}}$$

When calculating VE for the vaccines requiring multiple injections (e.g., DPT, OPV) full vaccination should be considered. Children who completed vaccination series (3 doses) should be compared to those who did not receive even one dose of the vaccine.

The efficacy of the children's vaccines, if given as suggested in the immunization schedule, is typically in the 80 to 95 percent range. If it is much lower, health managers should investigate possible reasons why (cold chain failure, improper vaccine administration). If it is low for a number of vaccines, such an investigation is urgent.

Since vaccines are usually less than 100 percent efficacious (some people will fail to seroconvert initially, immunity of others will wane with time), there always will be some cases among the immunized. As long as there is less than 100 percent vaccine coverage and the vaccine used is less than 100 percent efficacious, the number of individuals susceptible will accumulate, and this will require an ongoing follow-up immunization (either routine booster dose or periodic supplemental campaigns).

5.3.9 Timeliness and Accuracy of Reporting

For the surveillance system to function properly, reporting and subsequent decision making must be rapid. Health facilities should submit monthly reports on infectious disease morbidity and mortality not later than on the first day of the following month. Rayon CPHs have three to four days to verify, clarify, correct, and aggregate the information received (see also section 4.3), and they must submit reports to regional CPHs not later than on the fifth day of the following month. A report is considered to be timely and accurate on the basis of the following criteria:

- ▲ A report is considered to be **timely** if the higher level office receives it by the established deadline.
- ▲ A report is considered **accurate** if it is complete and the higher level office has requested and received clarifications (if needed) and has not revealed any inaccuracies during verification through its own records (e.g., urgent notifications, case investigation protocols, and so forth).
- ▲ The report is considered complete if all the required fields are filled out (for disease cases which were registered in the reported period) and zeros are in place for the diseases not registered during the reported period.

CPH managers are encouraged to monitor timeliness and accuracy of reporting on a monthly basis using suggested tables included in the workbook (see an example in Table 7). The target is 95 percent.

Factors affecting the quality of reporting by poorly performing facilities (timeliness or accuracy <80%) need to be investigated and promptly addressed.

Table 7. Sample Monitoring Worksheet of Timeliness and Accuracy of Reporting

Subordinated facilities	TIMELINESS					ACCURACY				
	Jan	Feb	....	Dec	Proportion	Jan	Feb	....	Dec	Proportion
Facility 1	X	X	X	X	100%	X	X	X	X	100%
Facility 2	X	-----	-----	X	50%	-----	-----	X	X	75%
Facility 3	X	X	X	X	100%	X	----	X	X	83%
.....										
Facility 15	X	X	X	X	100%	X	X	X	X	100%
Total (15)	15	12	12	15		12	13	13	14	
Proportion	100%	80%	80%	100%		80%	87%	87%	93%	

5.3.10 Case/Outbreak Investigation Rate

It is recommended that regional CPH managers monitor the case and outbreak investigation rate on a quarterly and annual basis. The equation for the investigation rate is as follows:

$$\text{Investigation rate} = \frac{\text{No. of investigations initiated in a given time period}}{\text{No. of times the threshold was reached during the same period}}$$

This is needed to evaluate the rayon CPH adherence to the outbreak investigation requirements. Possible barriers should be investigated and corrective measures taken if the rate is less than 90-100 percent. The rayon CPH also can conduct this type of analysis itself for self-evaluation. More details on the investigation process, including outbreak thresholds for VPDs, are provided in the next section.

6. Investigation of Reported Cases and Outbreaks

An investigation is aimed at identifying people who have been exposed to or affected by an infectious disease. It provides information that can be used to take immediate action to control the disease and improve long-term activities to prevent its recurrence. The information gleaned from an investigation serves to do the following:

- ▲ Verify the outbreak
- ▲ Perform the final case classification
- ▲ Identify and treat additional cases that had not been reported or recognized
- ▲ Collect information and laboratory specimens for confirming the outbreak
- ▲ Identify the source(s) of infection or cause of the outbreak
- ▲ Describe how the disease is transmitted and populations at risk
- ▲ Select appropriate response activities to control the outbreak
- ▲ Strengthen prevention activities to prevent future recurrence of the outbreak

In Georgia, the rayon CPH has primary responsibility for investigating outbreaks. In certain circumstances (minor outbreak, availability of competent staff and resources) health facilities may undertake some or all aspects of investigations, but they must keep the rayon CPH fully informed. This section describes the general activities to be undertaken in investigating a case or an outbreak. More details can be found in disease-specific sections of these guidelines.

When a reported case or outbreak is identified, the following steps should be taken:

1. **Make a decision to investigate.** Case investigation should be initiated when the investigation threshold is reached.

Investigation threshold. Investigation as well as the list of notifiable diseases/cases are defined and annually updated by the NCDC on the basis of the epidemiological situation in the country (see Table A, Notification, Reporting, and Investigation Requirements for Infectious Diseases).

The rayon CPH should begin investigation as soon as possible, but not later than two business days from the time notification is received for AFP/polio, diphtheria, measles, mumps, rubella, pertussis, and rabies, and not later than three business days from notification for tetanus, hepatitis B.

2. **Prepare to conduct an investigation.** The chief epidemiologist together with the chief of the CPH decide on investigation team composition, make sure needed funds are available, and request additional technical resources.

Note: Participation of the NCDC and/or regional CPH experts or laboratory experts is required during case and outbreak investigations of AFP/polio, diphtheria, neonatal tetanus, pertussis, measles, and congenital rubella.

The team leader clarifies objectives, roles, and responsibilities, and decides where the investigation will begin (usually in the most affected place). Needed authorizations must be obtained, forms for collecting information prepared, and methods and supplies for collecting lab specimens assembled. Travel arrangements for getting to and from the site of investigation need to be made. If required, the transportation of specimens to the appropriate laboratories must be arranged as well.

3. **Verify the case/potential outbreak on-site.** Review medical records to verify that cases meet the clinical description of the disease (the definition of a clinical (probable) case). Discuss with clinician(s) if some do not so that a consensus can be reached. A case incompatible with the clinical description and not confirmed by specific laboratory tests is discarded for epidemiological surveillance purposes.
4. **Collect laboratory specimens** if this is mandated and has not been done yet. Refer to Table 8 for a summary of VPDs that trigger mandatory laboratory case confirmation and laboratory guidelines for collecting, storing, and transporting specimens. Review results with clinicians if and when the results become available to see if some of the cases could now be regarded as “confirmed.” Physicians should be informed about test results, if specimen collection and case confirmation is performed through the public health services facilities.

Table 8. Epidemiologic Conditions for VPDs Triggering Mandatory Laboratory Case Confirmation

Disease	Epidemiologic Conditions under which Laboratory Confirmation Is Mandatory	Where to Send Specimens*
Diphtheria	Any probable case	Contact regional CPH for the most current list of NCDC recognized and recommended laboratories in your area
AFP/Polio	Any probable case	NCDC
Congenital rubella syndrome	Any probable case	NCDC
Measles	Three or more cases** during the same period consistent with measles incubation period in a given geographic territory	NCDC
Rubella	Three or more cases** during the same period consistent with rubella incubation period in a given geographic territory	NCDC
Pertussis	Three or more probable cases** during the same period, consistent with pertussis incubation period in a given geographic territory	NCDC
Acute viral hepatitis	All clinical (probable) cases of hepatitis B. Where an outbreak of Hepatitis A is suspected, it is required to confirm at least one case (where all cases are epidemiologically linked) or every other case where such link can not be established	Contact regional CPH for the most current list of NCDC recognized or recommended laboratories in your area
Tetanus	No laboratory confirmation for this disease	
Mumps	Laboratory confirmation is not mandatory	

* Specimen collection should take place at the facility where a patient has come to seek care if such facility is equipped with a specimen collection kit. Referring sick patients (instead of specimens) to a laboratory is discouraged.

** Try to obtain specimens from three patients; one positive test result in a case that is epidemiologically linked to others will be sufficient to confirm an outbreak.

5. **Search for additional cases.** An active search should be conducted to determine if additional cases exist. This can be accomplished by
 - a. reviewing clinic registers, requesting that health workers in neighboring facilities search for similar cases in their registers, and
 - b. identifying areas of likely risk where the patients have lived, worked, or traveled during their infectious period, and visiting those places to speak to the contacts to find out if anyone else in the area around the case has been ill with signs or symptoms that meet the case definition.

Any newly identified cases must be referred to the health facility for treatment and notified/registered accordingly by CPH.

The number of susceptible contacts determines the potential for secondary transmission. Follow-up should be conducted until the end of the incubation period for that disease.

6. **Analyze the data concerning the outbreak.** The methods of analysis and presentation of outbreak data are described in the previous section of the guidelines. Data about the outbreak can be reanalyzed many times during the course of an outbreak. The initial analysis usually focuses on where the outbreak is occurring, to where it is spreading, the source of infection and the persons at risk of becoming ill. The data could be presented in a histogram representing the course of the disease; cases could be plotted on a spot map; where necessary, tables of the most relevant characteristics of cases could be made (e.g., comparing age group with vaccination status).

During an outbreak, these data will need to be updated frequently (often daily) to see if the information received changes the ideas regarding the causes and control strategies for the outbreak.

7. **Implement control and prevention measures.** Such measures are discussed in detail in the disease-specific sections of the guidelines.
8. **Prepare and submit** (to the NCDC and regional CPH) a **report on investigation findings** along with routine monthly reports.

The report should include:

- ▲ Case/Outbreak Investigation Card.
- ▲ Cluster Investigation Report (if group cases² have occurred)

The **Cluster Investigation Report** should contain the following information:

- ▲ Date outbreak started, time distribution of cases (days, weeks), description of the affected territory
- ▲ Number of affected individuals during outbreak; their age, gender, social distribution, division by disease onset (1, 2, 3, and more days); results of laboratory investigation
- ▲ Confirmed or probable source of infection

² Group cases imply three or more cases occurring simultaneously in one or more facilities in one incubation period, epidemiologically linked or caused by one agent. In this case one urgent notification card should be filled out with an indication of the group case.

- ▲ Confirmed or probable way of transmission, conditions that supported spread of disease, laboratory investigation results of the environment
- ▲ Response and preventive measures (door-to-door visits, immunizations, preventive treatment such as antibiotics and bacteriophages), lab investigation of contacts, isolation of suspected individuals.

Information about group cases and outbreaks should be submitted to the local health administration, and other decision makers or stakeholders who need this information in a verbal or written form.

According to the current regulations, all laboratories in Georgia (including private laboratories) are required to immediately inform respective territorial CPHs of the results of any positive tests for VPDs and other communicable diseases (listed in Table A). Twice a year the regional CPHs are required to update lists of laboratories performing surveillance functions.

7. Preparedness and Organization of Response to Outbreaks

Being prepared to respond to outbreaks and other public health priorities, that is, having procedures and resources in place in advance of a disease outbreak, will increase the efficiency and effectiveness of the response to the problem.

7.1 General Preparedness Activities

There are many suggested general preparedness activities that can be performed, some in advance of an outbreak of disease. These activities are summarized below:

1. **Plan and coordinate response activities at the rayon level.** This will be undertaken by the *Permanent Commission for Combating Socially Dangerous Diseases* (Presidential order #207 30 April 1999). Recommended composition of the commission is as follows:
 - △ Head of local administration
 - △ Head of local self-administration
 - △ CPH (director, epidemiologist, immunization manager)
 - △ Health administration
 - △ State Sanitary Supervision Inspection
 - △ Laboratory service
 - △ Rayon hospital and PAU
 - △ Rayonal education department
 - △ Nongovernmental organizations and private sector
 - △ Representatives of other agencies (Such representatives should be invited on as-needed basis; e.g., water supply, veterinary service, assistance to internally displaced persons and refugees, police, and others.)

The commission would meet on a routine basis to do the following:

- △ Review surveillance and vaccination coverage data for trends that cause a public health concern
- △ Review and update inventory of supplies needed for disease response and make sure they are ready for use (including medicines, antitoxins, vaccines, syringes, supplies for collecting and transporting specimens, lab supplies)
- △ Review other resources (personnel, transport, communications) and identify material and training needs
- △ Determine concrete roles and responsibilities of different services/agencies for response actions
- △ Update local response procedures and protocols

The rayon CPH typically will manage sporadic cases of notifiable diseases and small outbreaks on its own. In the event of a large outbreak, the commission should meet as soon as the outbreak is recognized and continue to hold meetings as often as needed to plan, implement, monitor, and report on the response to the outbreak. Based on the type of causative agent and the spread of an outbreak, central and/or regional level involvement should be considered.

2. **Secure availability of financial resources at a certain minimum level *at all times*** to support investigation and control activities as well as to ensure that there is a safe minimum stock of medicines, antitoxins, vaccines, and laboratory supplies. Central funds will be used in case of national significance outbreaks.
3. **Update and maintain personnel skills** to carry out response through retraining. Training topics should depend on locally identified priorities and the epidemiological situation.
4. **Develop and deliver community education messages or campaigns.** Community education messages should be developed to help the population know how to recognize the illness in question, how to prevent its transmission, and when to seek treatment. These messages should be clear, be concise, and address beliefs about the disease. Appropriate communication methods, such as the following, should be selected:
 - △ Newspapers
 - △ Television
 - △ Presentations at schools
 - △ Meetings with health personnel and trusted and respected community, religious, and political leaders

7.2 Response Procedures

Some aspects of response to disease outbreaks are specific to the causative agent, and these are described in detail in Chapter 10. However, there are general measures applicable to all outbreaks, regardless of the agent. When a large outbreak is confirmed, the epidemic management committee should implement a number of general response measures, such as the following:

- ▲ Ensure proper involvement of health facilities and other units in the affected areas. Be sure to assign clear responsibilities to individuals and units for specific response activities.
- ▲ Obtain additional emergency response funds from the regional or national level as needed.
- ▲ Alert nearby rayons or catchment areas about the outbreak and coordinate the response efforts.
- ▲ Monitor outbreak control management. Make sure that the staff at each facility know and use the recommended disease outbreak control protocols and that the disease is laboratory confirmable.
- ▲ Verify and fill gaps in health staff skills. On-the-job and one-on-one training may have to be carried out as appropriate.
- ▲ Inform and educate the community. Educate the public to calm any fears and encourage cooperation with the outbreak response team.

8. Feedback and Dissemination of Analyzed Data

In Georgia, data are reported routinely from the facilities upward through the system to the national level. Analyzed data and feedback should be sent regularly to lower levels. If lower level staff do not receive information that shows how the data they reported were used or what the data meant, they may think that their reporting is not important. This may result in their being less motivated to collect and report reliable data. In other words, feedback reinforces the health staff's participation in the surveillance system. Feedback also raises awareness about certain diseases and any achievements of disease control and prevention activities in the area. Feedback should be regular and timely at all levels of the health delivery system.

Feedback can be verbal, as in a telephone call, staff meeting, or supervisory visit; *or it can be written*, as in a report, fact sheet, or bulletin.

The rayon CPH, under normal circumstances, may predominately use oral feedback to facilities, emphasizing the data quality and the likely conclusions for the health facility and rayon as a whole that can be drawn from the reported data. The need for written feedback (reports, fact sheets) may increase during a large outbreak.

The regional CPH is recommended to use both oral and written feedback on a regular basis. Monthly meetings with rayon CPH directors should be used to jointly discuss epidemiological trends, findings of latest data analysis, and performance of individual rayons, as well as to follow up on the technical issues raised during phone call and supervisory visits.

Written analyses of the epidemiological situation and the functioning of the surveillance system in the region, highlighting actions needed to improve performance and other recommendations, should be produced every six months and disseminated to all the stakeholders in the region and rayons (e.g., Permanent Commission for Combating Socially Dangerous Diseases). Written outbreak response reports prepared by those who led the investigation could be disseminated to the same target audience after the response has taken place.

9. Supervision and Performance Evaluation to Improve System Functioning

This section describes how to routinely monitor and evaluate the performance of the surveillance system at the facility and rayon CPH levels.

9.1 Facility Level

Table 9 includes questions for a semiannual CPH evaluation of facility performance in the area of disease surveillance in order to accomplish the following:

- ▲ Identify problem areas
- ▲ Plan adequate interventions to address these issues
- ▲ Monitor how successful a facility is in taking corrective actions

In order to prepare for a supervisory visit, it is recommended that CPH staff review and bring with them relevant copies of the journal 60, copies of reports received from facilities, as well as their workbooks. Supervisions and evaluations should be carried out in an encouraging atmosphere. CPH personnel should provide clarification, explanations, and support as necessary, and should assist in finding reasonable and acceptable solutions to improve the system. The questions addressed in Table 9 also can be used by the facilities themselves to self-monitor their work.

Table 9. Sample Facility Performance Evaluation Form

Availability of Surveillance Documentation, Registers, and Forms	
1. Does the facility use the standard infectious diseases register journal 60/A ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
2. Does the facility have at least one copy of the urgent notification card?	Yes <input type="checkbox"/> No <input type="checkbox"/>
3. Does the facility have at least one copy of the monthly reporting form?	Yes <input type="checkbox"/> No <input type="checkbox"/>
4. Does the facility have the MoLHSA guidelines for surveillance?	Yes <input type="checkbox"/> No <input type="checkbox"/>
5. Does the facility have the MoLHSA lab guidelines for specimen collection and transportation?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Adherence to Notification and Reporting Requirements	
6. Prepare a list of infectious disease cases, for which urgent notifications were sent by this facility in the past 6 months. Check clinical registers randomly for the corresponding information. Has this facility always sent urgent notifications about notifiable diseases?	Yes <input type="checkbox"/> No <input type="checkbox"/>
7. Has submission of an urgent notification been ever delayed for more than 24 hours? Verify using clinical records.	Yes <input type="checkbox"/> No <input type="checkbox"/>
8. Have forms 58/3 for the past 6 months been always submitted prior to the established deadline?	Yes <input type="checkbox"/> No <input type="checkbox"/>
9. Are all the forms 58/3 for the past 6 months complete and accurate? Verify using the clinical records.	Yes <input type="checkbox"/> No <input type="checkbox"/>

9.2 Rayon CPH Level

Table 11 includes questions for the evaluation of a rayon CPH's performance in the area of disease surveillance by a region CPH. The aim of such evaluations is similar to those at the facility level:

- ▲ Identify problem areas
- ▲ Plan adequate interventions aimed at addressing these issues
- ▲ Monitor how successful a rayon is in taking corrective actions

Supervisions and evaluations should be carried out in an encouraging atmosphere. The regional experts should provide needed clarification, explanations, and support as necessary, and should find reasonable and acceptable solutions to improve the system. The questions provided in Table 11 also can be used by the rayon CPHs themselves in self-monitoring their work.

Table 11. Sample Rayon CPH Evaluation Form

Availability of Surveillance Documentation, Registers, and Forms	
1. Does the CPH use the standard infectious diseases journal 60/B ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
2. Has the CPH lacked urgent notification cards at any time in the last 6 months?	Yes <input type="checkbox"/> No <input type="checkbox"/>
3. Has the CPH lacked monthly reporting forms at any time in the past 6 months?	Yes <input type="checkbox"/> No <input type="checkbox"/>
4. Does the facility have the MoLHSA guidelines for surveillance?	Yes <input type="checkbox"/> No <input type="checkbox"/>
5. Does the facility have the MoLHSA lab guidelines for specimen collection and transportation?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Adherence to Notification and Reporting Requirements	
6. Prepare a list of infectious disease cases, for which urgent notifications were sent by this CPH in the past 2-3 months. Check journal 60/B randomly for the corresponding information. Has this CPH always forwarded urgent notifications about notifiable diseases?	Yes <input type="checkbox"/> No <input type="checkbox"/>
7. Has submission of an urgent notification been ever delayed for more than 24 hours?	Yes <input type="checkbox"/> No <input type="checkbox"/>
8. Have the monthly reports for the past 6 months been always submitted prior to the established deadline?	Yes <input type="checkbox"/> No <input type="checkbox"/>
9. Are all the monthly reports for the past 6 months complete and accurate? Verify using the journal 60/B and copies of forms 58/3 submitted by facilities.	Yes <input type="checkbox"/> No <input type="checkbox"/>
10. Have case-based investigation reports been submitted for all cases that require submission of such reports (see Table A)?	Yes <input type="checkbox"/> No <input type="checkbox"/>
11. Have the investigation reports been always submitted prior to the established deadline in the past 6 months?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Adherence to Laboratory Confirmation Requirements	
12. Does the rayon have the capacity to transport specimens to a higher level lab?	Yes <input type="checkbox"/> No <input type="checkbox"/>
13. Has this rayon reported cases of diseases requiring lab testing in the past 6 months? Check monthly reports and register 60/B. If answer is "yes" go to Q14, If "no," go to Q16.	Yes <input type="checkbox"/> No <input type="checkbox"/>
14. Were specimens collected? If answer is yes go to 15, If no go to 16	Yes <input type="checkbox"/> No <input type="checkbox"/>
15. Were test results received ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Data Analysis	
16. Does this CPH perform analysis of epidemiological data by time? Observe.	Yes <input type="checkbox"/> No <input type="checkbox"/>
17. Does this CPH perform analysis of epidemiological data by place? Observe.	Yes <input type="checkbox"/> No <input type="checkbox"/>
18. Does this CPH analyze timeliness and accuracy of forms 58/3 received from facilities? Observe.	Yes <input type="checkbox"/> No <input type="checkbox"/>

19. Does this CPH analyze case confirmation rates (lab+ epid. link) by disease?	Yes <input type="checkbox"/> No <input type="checkbox"/>
20. Does this CPH have appropriate demographic data at site (check availability of the population by age report) ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Case Outbreak Preparedness, Investigation, and Response	
21. Is the case/outbreak investigation rate in this rayon higher than 90%? Check the last 6-month period.	Yes <input type="checkbox"/> No <input type="checkbox"/>
22. Has the start of investigation ever been delayed beyond the recommended period in the past 6 months?	Yes <input type="checkbox"/> No <input type="checkbox"/>
23. Does the rayon have a permanent commission for combating socially dangerous diseases?	Yes <input type="checkbox"/> No <input type="checkbox"/>
24. Has the rayon had a 2 months' supply of all vaccines at all times in the past 6 months?	Yes <input type="checkbox"/> No <input type="checkbox"/>
25. Can the rayon CPH give convincing examples how their analysis of routine data resulted in a management decision and response action in the past 6 months?	Yes <input type="checkbox"/> No <input type="checkbox"/>
26. Can the rayon CPH give fresh examples of delivering community education materials and messages based on the current epidemiological situation?	Yes <input type="checkbox"/> No <input type="checkbox"/>
27. Has the rayon been always able to implement VPD case/outbreak control protocols recommended by these guidelines in the past 6 months (if "No" specify a reason: shortage of vaccines, drugs or supplies?, lack of funding?, transport means?)	Yes <input type="checkbox"/> No <input type="checkbox"/>
28. Did you provide on the job training to rayon CPH staff in the surveillance guidelines during monitoring visits?	Yes <input type="checkbox"/> No <input type="checkbox"/>
29. Has the CPH carried out a formal training for rayon providers in the surveillance guidelines?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Feedback and Supervision	
30. Can the rayon CPH provide examples of mechanisms it uses to provide routine/regular feedback to health facilities and other rayon stakeholders? If yes, specify:	Yes <input type="checkbox"/> No <input type="checkbox"/>
31. Does the rayon CPH have evidence of making supervisory visits to more than 80% of the facilities involved in the surveillance work on its service territory?	Yes <input type="checkbox"/> No <input type="checkbox"/>

Answering “No” to any of the questions requires clarification and discussion about what exactly is wrong and a provision of recommendations that will allow rayon CPHs to correct the mistakes soon.

The regional CPH may use summary tables as recommended above to identify problem questions (issues) common for most of the rayons in their region and target corrective interventions or follow-up training accordingly. The summary table is also a good instrument to track the performance of individual rayons over time and monitor their progress towards improving the functionality of the surveillance system in the country.

Table A. Notification, Reporting, and Investigation Requirements for Infectious Diseases

#	name	Code ICD-10	All inst/ prov. rendering healt. services	health facilities	CPH								
					notification		notification	routine reporting		investigation		investigation reporting	
					urgent	monthly	urgent	monthly	annual	threshold	time	case-based	group cases
1	Diphtheria	A36	L*						1 case	1-48 hr			
2	Pertussis	A37	L						1 case	1-48 hr			
3	Neonatal Tetanus	A33							1 case	1-48 hr			
4	Tetanus	A34-35							1 case	1-72 hr			
5	AFP / Acute poliomyelitis	A80	L						1 case	1-48 hr			
6	Measles	B05	L						1 case	1-48 hr			
7	Rubella	B06	L						1 case	1-48 hr			
8	Congenital rubella syndrome	P.35.0	L						1 case	1-48 hr			
9	Mumps	A37	L						1 case	1-48 hr			
10	Acute viral hepatitis A	B15	L						3 case	1-48 hr			
11	Acute viral hepatitis B	B16	L						1 case	1-72 hr			
12	Acute viral hepatitis C	B17.1	L						3 case	1-72 hr			
13	Acute viral hepatitis E	B17.2	L						3 case	1-48 hr			
14	Cholera	A00	L						1 case	1-48 hr			
15	Typhoid fever	A01	L						3 case	1-48 hr			
16	Paratyphoid fevers A, B, C;	A01.1-4	L						3 case	1-72 hr			
17	Other Salmonella infections	A02	L						3 case	1-72 hr			
18	Shigellosis	A03	L						3 case	1-48 hr			
19	Other bacterial intestinal infections	A04	L						3 case	1-48 hr			
20	among them: Esherichiosis	A04.4	L						3 case	1-48 hr			
21	Yersiniosis	A04.6	L						3 case	1-48 hr			
22	Food-borne bacterial intoxications	A05	L						3 case	1-48 hr			
23	Botulism	A05.1	L						1 case	1-48 hr			
24	Unspecified infectious diarrheal diseases	A09							3 case	1-48 hr			
25	Tuberculosis meningitis	A17.0	L						1 case	1-72 hr			
26	Plague	A20	L						1 case	1-48 hr			
27	Tularemia	A21	L						1 case	1-48 hr			
28	Anthrax	A22	L						1 case	1-48 hr			
29	Brucellosis	A23	L						1 case	1-48 hr			
30	Leptospirosis	A27	L						1 case	1-72 hr			
31	Listeriosis	A32	L						1 case	1-72 hr			
32	Meningococcal Infection	A39	L						1 case	1-48 hr			
33	Relapsing fever	A68	L						1 case	1-72 hr			
34	Lyme Disease	A69.2							1 case	1-72 hr			
35	Flea- borne typhus	A75	L						1 case	1-72 hr			
36	Q fever	A78	L						1 case	1-48 hr			
37	Rabies	A82	L						1 case	1-48 hr			
38	Unconfirmed Viral infections of CNS	A89							1 case	1-48 hr			
39	Arthropods transmitted viral fevers and viral hemor. fevers	A90-A99	L						1 case	1-48 hr			
40	Yellow fever	A95	L						1 case	1-72 hr			

41	Malaria;	B50-54	L					1 case	1-48 hr		
42	Trichinosis;	B75	L					1 case	1-48 hr		
43	Haemophilus influenza B pneumonia and meningitis	J14; G00.0	L					1 case	1-48 hr		
44	Hospitalized cases of Influenza-like illness	J- 06.9; 22; 10; 10.1; 11; 11.1; 12; 12.1; 12.2						1 case	1-48 hr		
45	Fever of unknown etiology (>38 and lasts more than 5 days)	R - 50.0; 50.1; 50.9						1 case	1-72 hr		
46	Radiological lesions	W88;91	L								
47	Acute occupational poisonings	Z 57.4 - 57.5	L								
48	Post vaccination unusual reactions and complications	Y58-59; 64.1						1 case	1-48 hr		
49	Intrahospital infections	Y95	L					1 case	1-48 hr		
50	Isolations of vancomycin resistant staphylococcus		L								
51	Severe Acute Respiratory Syndrome		L					1 case	1-48 hr		
52	Fatal cases of acute infectious diseases							1 case	1-48 hr		
53	Contact with animals (risk of							group / CRA*	1-48 hr		
54	Group cases of Inf. disease***										
55	Acute Respiratory Infections	J00-J06									
56	Influenza	J10-J11									
57	Amebiasis	A06									
58	Scarlet fever	A38									
59	Varicella	B01									
60	Other viral hepatitis	B17.0; 17.8									
61	Chronic viral hepatitis B	B18.0-18.1									
62	Chronic viral hepatitis C	B18.2									
63	Cytomegalovirus infection	B25									
64	Inf. mononucleosis	B27									
65	Leishmaniasis	B55									
66	Echinococcosis	B67									
67	Ascariasis	B77									
68	Trichocephalosis	B79									
69	Enterobiasis	B80									
70	Bites of a toxic snake	X20									
71	Bites of a toxic insects	X21-25									

* L - notification from Laboratores

** damage of more than one individual by one animal, or confirmed rabies in animal

*** excluding ARI and Influenza

Table B. Notification, Reporting, and Investigation Forms Submission Frequency and Deadlines

Name of the form	Frequency of submission and number of copies	Deadline (not later than)	Place of submission
Provider rendering health care services			
#58/1 Urgent notification card	Upon case identification. Standard form (one copy) or relevant information by any available means of communication	During the same business day or not later than within 24 hours	Rayon CPH
Laboratory			
#58/2 Communicable disease confirmation/notification form	Upon case identification. Standard form (one copy) or relevant information by any available means of communication	During the same business day or not later than within 24 hours	Rayon CPH
Health care facility			
#58/3 Monthly summary notification	Monthly (one copy)	1 st day of the next month	Rayon CPH
#58/4 HIV/AIDS special notification card (by the confirming facility)	Upon case identification. Standard form (one copy) or relevant information by any available means of communication	During the same business day or not later than within 72 hours	
#58/5 Tuberculosis monthly summary notification form	Quarterly (one copy)	1 st day of the next month	
Rayon CPH			
#58/1 Urgent notification card and the list of group cases (if there are group cases)	Upon case identification. Standard form (one copy) or relevant information by any available means of communication	Same business day or not later than within 24 hours	Regional CPH NCDC
#58/2 Communicable disease confirmation/notification form	Upon case identification. Standard form (one copy) or relevant information by any available means of communication	During the same business day or not later than within 24 hours	Regional CPH NCDC
Investigation report: - investigation card - cluster investigation report	Monthly During cases/group cases/outbreak Investigations of selected diseases (two copies)	5 th day of the next month	Regional CPH
Anti-rabies activity report	Monthly (two copies)	5 th day of the next month	
AFP/ Polio active surveillance form	Monthly (one copy)	5 th day of the next month	
Monthly report form	Monthly (two copies)	5 th day of the next month	
Annual report form	Annually (two copies)	15 th of January	
Regional CPH			
#58/1 Urgent notification card and list of group cases (if there are group cases)	Upon case identification. Standard form (one copy) or relevant information by any available means of communication	Same business day or not later than within 24 hours	NCDC

Name of the form	Frequency of submission and number of copies	Deadline (not later than)	Place of submission
Rayon investigation reports: - investigation card - cluster investigation report	Monthly during cases/group cases/outbreak investigations of selected diseases (forward one copy)	7 th day of the next month	
Anti-rabies activity report	Monthly (forward one copy)	7 th day of the next month	
AFP/ Polio active surveillance form	Monthly (forward one copy)	7 th day of the next month	
Rayon and regional monthly reports	Monthly (one copy)	7 th day of the next month	
Rayon and regional annual report	Annually (one copy)	20 th of January	

10. Disease-Specific VPD Prevention and Control Guidelines

10.1 Measles

10.1.1 Rationale for Surveillance

The major goals for measles surveillance at the current time are to identify high-risk areas and population groups and to predict (in order to prevent) potential outbreaks. Georgia has started moving toward the “measles elimination phase” in which the objective is to achieve and maintain interruption of measles transmission in the country. During this phase a very intensive case-based surveillance to detect, investigate, and confirm every suspected measles case in the community is required.

A preliminary plan for measles elimination has been developed with WHO guidance. According to the plan, elimination can be achieved through strict disease-specific surveillance procedures. Namely, it is necessary to achieve and maintain a high measles immunization coverage level (at least 95 percent) with the first and the second doses of measles vaccine and establish national surveillance of each case. Every suspected case should be investigated and laboratory tested. In the elimination phase, a “*suspected*” case – defined as any person with fever and maculopapular rash – is treated as a measles case for surveillance purposes.

High immunization coverage with 2 doses of the vaccine can be achieved by following the immunization strategic plan in Table 12, which envisions gradual increase of coverage rates every year.

Table 12. Preliminary National Measles Immunization and Case Control Plan

Year/Results	Measles-1 Coverage, %	Measles-2 Coverage, %	Measles Control Stages according to WHO Strategic Program
2003	79.9	66.2	I. Reporting on age, immunization status, and place. Lab investigation in case of outbreaks.
2004	87.0	70.0	I. Initiation of the development of a case-based database. Development of measles surveillance and laboratory investigation guidelines
2005	91.0	83.0	II. Development of a case-based database. Countrywide implementation of the surveillance and lab confirmation guidelines
2006	95.0	95.0	IIIa. National surveillance and laboratory investigation of every case
2007	95.0+	95.0+	IIIb. National surveillance and laboratory investigation of every case. Implementation of a syndrome surveillance of group cases manifested with a rash and a fever and their laboratory investigation

According to WHO recommendations, countries are advised to use the Clinical Classification scheme until the following two criteria are met:

- ▲ Low levels of measles incidence

- ▲ Access to a proficient measles laboratory

After achieving above criteria or for outbreak investigation, the Laboratory Classification scheme should be used.

10.1.2 Recommended Measles Case Definition

Clinical case definition:

- ▲ Any person in whom a clinician suspects measles infection, **or**
- ▲ Any person with the following symptoms:
 - △ Fever **and**,
 - △ Maculopapular rash³ (i.e., non-vesicular rash), **and**
 - △ Cough, running nose, or conjunctivitis (i.e., red eyes)

Laboratory criteria for diagnosis

- ▲ Presence of measles-specified IgM antibodies.

Case classification

▲ Clinical classification scheme:

- △ *Clinically confirmed*: A case that meets the clinical case definition
- △ *Discarded*: A suspect that does not meet the clinical case definition

▲ Laboratory classification scheme:

- △ *Laboratory-confirmed*: A case that meets the clinical case definition and is laboratory confirmed
- △ *Epidemiologically*: A case that meets the clinical case definition and is linked epidemiologically to a laboratory-confirmed case (contact with a case 7-17 days prior to the onset of symptoms).
- △ *Clinically confirmed*: A case that meets the clinical case definition and for which no adequate blood specimen was taken
- △ *Discarded*: A suspect case that does not meet the clinical or laboratory definition

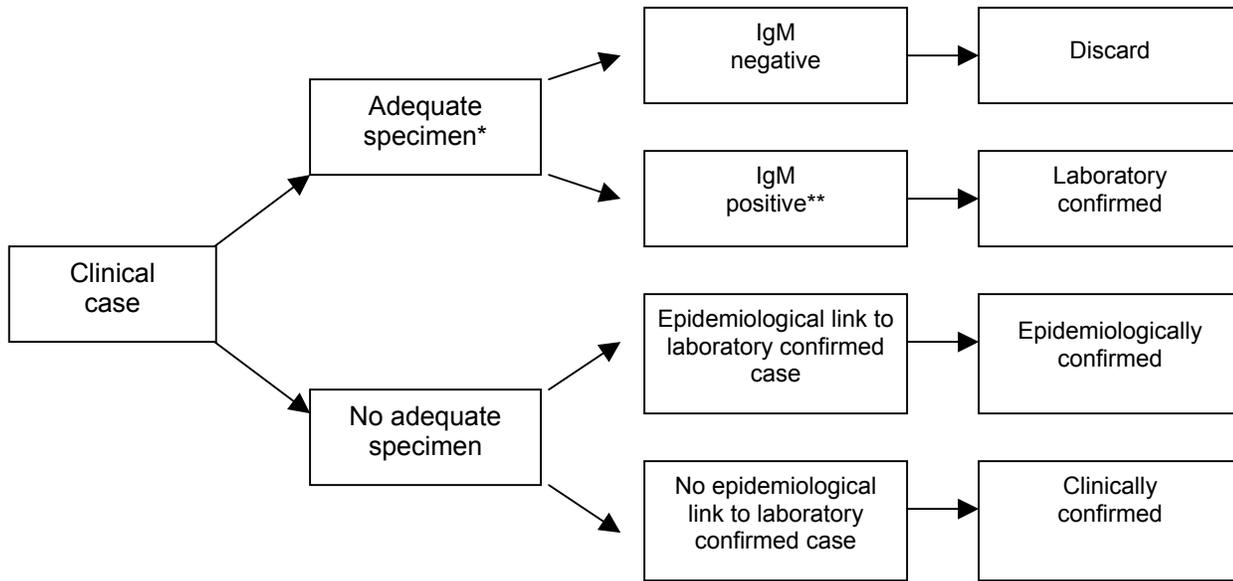
Epidemiological link is a contact with a case 7-17 days prior to the onset of symptoms.

Table 13. Measles Final Case Classification Table

Clinical (probable)	Case meets clinical description
Laboratory-confirmed	Case meets clinical description and is laboratory confirmed
Confirmed by epidemiological link	Case meets clinical description and has epidemiological link to a lab-confirmed case
Discarded	Case does not meet clinical description or is not laboratory confirmed

³ Measles rash usually begins on the face and neck and over the next three days gradually proceeds downward and outwards, reaching the hands and feet

Figure 15. Measles Final Case Classification Algorithm



* While IgM (ELISA) tests are more sensitive between days 4 and 28 after the onset of rash, a single serum sample obtained at the first contact with the health care system within 28 days after onset is considered adequate for measles surveillance.

** If the case was vaccinated within six weeks before serum collection and if an active search in the community does not find evidence of measles transmission and there is not history of travelling to areas where measles virus is known to be circulating, the case should be discarded.

Note: Adequacy of specimens is determined by the NCDC laboratory.

Laboratory testing is currently mandated for confirmation of outbreaks when there is a clustering of three or more clinical (probable) cases. Samples can be analyzed at the NCDC. Starting in 2006 every clinical (probable) case must be laboratory investigated, and starting in 2007 laboratory investigation will be required for every clinical (probable) case and group cases manifested with fever and rash.

10.1.3 Measles Case Notification Procedures and Forms

Any clinical (probable) case of measles identified by providers or a positive measles lab test requires urgent notification of the CPH within 24 hours by any existing means of communication. Starting in 2007, urgent notification must be made of every group case with fever and rash. General requirements are outlined in more detail earlier in these guidelines.

10.1.4 Measles Case/Outbreak Investigation

Every single reported measles case has to be investigated by a rayon CPH epidemiologist in cooperation with facility health workers within 2 business day of notification. Time is of the essence to prevent further transmission of the disease. When single cases are reported, visit of infection sites (place of residence of the patient) is required for further active revealing of cases.

The following steps are required in an investigation:

1. Verify that all cases meet the clinical description of measles by reviewing medical records.

Discuss with the physician(s) if some do not. A case incompatible with the clinical description and not confirmed by specific laboratory tests is eliminated from epidemiological surveillance reporting.

2. Collect data as envisioned in the measles investigation card (see Figure 16).

The collected data should be verified against the information found in the health facility's infectious disease register. It is entirely possible that the investigation will identify additional cases that have not been registered by the health facility. Facilities should continue filling out the investigation cards for all clinical (probable) cases identified.

3. Identify the source of infection and establish epidemiological links.

Check if measles patients were in contact with a confirmed case 7-17 days prior to onset of symptoms to determine the existence of an epidemiological link.

4. Collect specimens.

Serologic specimens should be obtained between days 4 and 28 after rash onset. However, a single serum obtained at the first contact with the health care system, regardless of which day following the rash onset this occurs, is considered adequate.

5. Assess potential for transmission and identify contacts.

The potential for transmission is usually determined by a number of susceptible contacts. Transmissions are particularly likely in schools and other institutions where population is densely aggregated.

- △ Determine dates of rash onset for each of the cases.
- △ Identify all contacts of the measles patients during their infectious period (4 days before and 4 days after the rash)
- △ Contacts over 9 months year of age that have not documented evidence of receiving at least one dose of measles containing vaccine are considered susceptible

6. Implement control and prevention measures (see next section).

7. Write a report and send it to the regional CPH in two copies (the region CPH will forward one copy to NCDC). This report should include:

- △ The first part of the Measles Investigation Card (see Figure 16) completed for each single case (number of cases in the card(s) should correspond to the number of cases indicated in the monthly report form).
- △ Outbreak Investigation Card, which is prepared for measles/rubella group cases (see Figure 17)

8. Inform local health administration and other stakeholders about outbreak/group cases verbally or in a written form.

Recommended data analysis, presentations, reports:

- ▲ Mortality reduction phase
 - △ Number of cases and incidence rate by month and year, and geographic area

- △ Age-specific, sex-specific and district-specific incidence rates
- △ Measles vaccine coverage by year and geographic area
- △ DPT1-measles or BCG-measles dropout rate
- △ Completeness/timeliness of monthly reporting
- △ Proportion of known outbreaks confirmed by the laboratory.
- △ Proportion of cases by age group and immunization status. Core age groups suggested: 0-8 months, 9-11 months, 1-4 years, 5-9 years, 10-14 years, 15-19 years, 20-24 years, 25 years and over; or 0-1; 1-4 years, 5-9 years, 10-14 years, 15-19 years, 20-29 years, 30 and over.

Low-incidence or elimination phase – same as mortality reductions phase plus the following:

Performance indicators:	Targets
△ % of weekly reports received	> 80%
△ % of cases* notified ≤48 hours after rash onset	> 80%
△ % of cases* investigated with house visit < 48 hours after notification	> 80%
△ % of cases* with adequate specimen** and laboratory results within 7 days	> 80%
△ % of confirmed cases with source of infection identified	> 80%

*All cases that meet the clinical case definition

** An adequate specimen is a blood specimen collected within 28 days of the onset of rash.

Figure 16. Measles Investigation Card

of facility and date

Registration # in NCDC Region

rayon

Part I monthly IV-03 1/Ms

#	Patient epidemiological number	GE	GE	GE
1.	Name (additional info*)			
2.	Address			
3.	Rash onset date	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
4.	Sex	Female Male	Female Male	Female Male
5.	Date of birth	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
6.	Age at rash onset	Full no. of years _____	Full no. of years _____	Full no. of years _____
7.	No of received doses	_____ unknown	_____ unknown	_____ unknown
8.	Date of last vaccination	/ / / / Day month year unknown	/ / / / Day month year unknown	/ / / / Day month year unknown
9.	Date of notification to CPH	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
10.	Date of investigation	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
11.	Clinical description: fever	Yes No unknown	Yes No unknown	Yes No unknown
12.	Clinical description: (underline)	Cough, coryza, conjunctivits, unknown	Cough, coryza, conjunctivits, unknown	Cough, coryza, conjunctivits, unknown
13.	Rash duration	_____ days unknown	_____ days unknown	_____ days unknown
14.	Outcome**	died; alive; lost to follow/up/unknown	died; alive; lost to follow/up/unknown	died; alive; lost to follow/up/unknown
15.	Hospitalization (indicate)	Yes _____ No	Yes _____ No	Yes _____ No
16.	Group case	Yes No unknown	Yes No unknown	Yes No unknown
17.	Complications	Yes No unknown	Yes No unknown	Yes No unknown
18.	Encephalitis	Yes No unknown	Yes No unknown	Yes No unknown
19.	Pneumonia	Yes No unknown	Yes No unknown	Yes No unknown
20.	Diarrhea	Yes No unknown	Yes No unknown	Yes No unknown
21.	Other	_____ unknown	_____ unknown	_____ unknown
22.	Final classification (underline one)	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed
23.	Date of spesimen collection?	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
24.	Date of lab result?	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
25.	Measles IgM	positive; negative; In process; Inconclusive	positive; negative; In process; Inconclusive	positive; negative; In process; Inconclusive

* If the information represents additional data on the case already reported, please indicate this.

** **Death** is defined as death due to measles or its complications within 2 months of onset of measles.

Card should be completed for each case and submitted to regional CPH before day 5 and to NCDC (Tbilisi, 380077, st. M. Asatiani #9, Tel. 37-16-77.39-64-38) before day 7 of the next month.

Responsible Person _____ (name, position)

Signature _____

Figure 17. Measles / Rubella Group Outbreak Investigation Card
(circle relevant disease)

region _____ rayon _____ facility _____

1.	Date of onset of the first case	/	/	/	/
		dd	mm	yy	
2.	Date of onset of the last case	/	/	/	/
		dd	mm	yy	
3.	Total number of cases				
4.	Number of deaths* (due to measles or its complications within 2 months of onset of measles)				
5.	Number of measles cases that resulted in encephalitis				
6.	Number of cases hospitalized				
7.	<i>for Rubella:</i> number of child-bearing age (14-49) women who are cases				
8.	<i>for Rubella:</i> number of pregnant women who are cases				
9.	Number of cases with specimens sent for laboratory investigation				
10.	Number of laboratory-confirmed cases				

***Death** is defined as death due to measles or its complications within 2 months of onset of measles.

Immunization status	Age Groups							Age unknown
	<1 y	1-4 y	5-9 y	10-14 y	15-19 y	20-29 y	30+	
0 doses								
1 dose								
2+ doses								
Unknown number of doses								

Description of the outbreak:
Measures taken:

Responsible person (name, position)

Signature

10.1.5 Measles Outbreak Control/Response

A single measles case in Georgia is considered an outbreak and requires the following control actions from the health facility and rayon CPH:

- ▲ All exposed susceptible are at risk for infection and further transmission to others. They should be vaccinated with a measles vaccine preferably within 72 hours of exposure to provide some protection. If vaccine supply is limited, priority should be given to young children for whom the risk of death is greatest. In most cases, post-exposure vaccination is preferable to the use of immunoglobulin. However, people contraindicated to measles vaccine (e.g., pregnant women; immuno-suppressed or deficient persons), children aged 9 to 11 months should be given immunoglobulin within 6 days of exposure.
- ▲ Exposed susceptible who were not immunized and not given IG, regardless of the reason, should be recommended to be isolated from the affected settings until at least 21 days after the onset of rash in the last case of measles in that setting.
- ▲ Children with measles should be kept out of school for 4 days after the appearance of a rash. Measles patients in the hospitals should also be isolated through the fourth day of rash to reduce the exposure of other patients at high risk.
- ▲ Imposing quarantine is usually both difficult and disruptive to schools and other institutions. Under special circumstances, such as during outbreaks in schools attended by a large number of persons who refuse vaccination, quarantine measures might be warranted. However such actions are not recommended as a routine measure for control of most outbreaks. Infants should be segregated if measles occurs in an institution.

10.1.6 Recommended Scope of Routine Monthly Analysis of Measles Surveillance Data to Be Performed by CPH

(See section 5 for more detailed information.)

The CPH should perform a monthly analysis of the following data:

1. Measles vaccine coverage (at 24 months) by year and subordinated area/setting
2. Incidence rate by month, year, and geographic area
3. Measles cases by age group and immunization status
4. Case “confirmation” rate for the territory
5. Completeness/timeliness of monthly reporting

During the “measles elimination” phase, the following additional *performance indicators* will be analyzed and assessed:

- ▲ Percent of all clinical (probable) cases notified \leq 7 days of rash onset (target >80 percent)
- ▲ Percent of all clinical (probable) cases investigated \leq 48 hours after notification (target >80 percent)

- ▲ Percent of all clinical (probable) cases with blood specimen collected within 3 to 28 days of rash onset and lab results received (target >80 percent)
- ▲ Percent of the confirmed cases with the source of infection identified (target >80 percent)

10.1.7 Principle Uses of Data for Decision Making at the Regional and Rayon Levels

The regional and rayon-level CPHs will use the data primarily to accomplish the following:

1. Monitor incidence and coverage to track progress toward goals, e.g., decreasing incidence and increasing coverage (target 95 percent), and to identify areas of high risk or that have poor program performance
2. Describe the changing epidemiology of measles in terms of age and inter-epidemic period. Identify high-risk population groups.
3. Detect and investigate outbreaks to ensure proper response and determine why the outbreak occurred. Corrective measures will depend on the primary reason. The three major reasons are as follows:
 - △ Failure to vaccinate – low routine coverage, failure to provide timely post-exposure vaccination
 - △ Vaccine failure – people who fail to seroconvert initially (at least 5 percent of the population) and those who seroconvert but whose immunity subsequently wanes. Protective vaccine efficacy can be measured (see section 5.3.8, on vaccine efficacy)
 - △ Accumulation of susceptibles – unvaccinated people and vaccine failures.
4. Determine when the next outbreak may occur due to a build-up of susceptible and accelerate prevention activities beforehand.
5. Evaluate and improve the performance of the surveillance system (e.g., reaction time for notification, specimen collection).

PROTOCOL FOR LABORATORY CONFORMATION OF MEASLES

Sampling strategy: If your facility has registered 3 or more measles cases during the past 30 days, collect specimens from the last patient and two more measles patients. Collect specimens at any time on request of CPH.

Confirmation test: Serological assay. Demonstration of measles-specific IgM antibody.

Specimen to be collected: Serum or plasma

Referral laboratory: NCDC. Focal person: Nazi Chitadze Phone: 39 89 46

<p>I. DOCUMENTATION</p>	<p>IV. TRANSPORTATION</p>
<p>Supplies needed:</p> <p><input type="radio"/> Journal 60/A <input type="radio"/> Marker (water resistant)</p> <p><input type="radio"/> Lab investigation request form <input type="radio"/> Specimen label</p>	<p>Supplies needed:</p> <p><input type="radio"/> Ziplock plastic bag <input type="radio"/> Box label</p> <p><input type="radio"/> Plastic container <input type="radio"/> Cold box with ice packs</p>
<p>Steps:</p> <ol style="list-style-type: none"> 1. Create a specimen label with patient's name, identification number, date, and time. 2. Fill in a copy of a lab investigation request form with patient information (it will accompany specimen to the lab) 3. Make sure patient information has been entered in Journal 60/A and an urgent notification has been sent to CPH. 	<p>Steps:</p> <ol style="list-style-type: none"> 1. Tighten the cap, apply waterproof sealing tape over the cap and top of specimen container. 2. Place specimen container in a suitably sized plastic bag (1st layer) together with a small amount of absorbent material, such as cotton wool. The bag must be sealed either using heated bag sealer or waterproof adhesive tape; as an alternative, use ziplock plastic bags. Specimens from different patients should never be sealed in the same bag. 3. Sealed bags containing the specimens should be placed inside plastic containers with screw-cap lids (2nd layer). Provided that specimens have been double-bagged properly in sealed plastic bags, specimens from several patients may be packed inside the same secondary plastic container. Additional absorbent material should be placed inside the container to absorb any leakage that may occur. 4. Sealed plastic containers should be fitted into insulated 3rd layer containers (e.g., a cold box). First, place ice packs at the bottom of the box, and, along the sides, place the plastic container with the specimen in the center, then place more ice packs on top. Make sure that the container is firmly fixed in the outer box. 5. Put the lab investigation request form in a plastic bag and place it in the outer box. 6. Label box with name, address, and telephone number of the referral laboratory and the sender. 7. Label box with the safety precautions ("Do not freeze," "Do not expose to heat," "This side up," "Biological specimen," etc.). 8. Arrange shipping date. 9. When arrangements are finalized, inform the recipient of time and manner of transport and make sure that package reaches referral laboratory within 2–3 days of specimen collection.
<p>II. COLLECTION AND HANDLING</p> <p>Note: Collect a single serum within 4-28 days of rash onset.</p> <p>Supplies needed:</p> <p><input type="radio"/> Gloves <input type="radio"/> Pipette</p> <p><input type="radio"/> Vacutainer tube with needle <input type="radio"/> Adhesive tape</p> <p><input type="radio"/> Tourniquet <input type="radio"/> Band aid</p> <p><input type="radio"/> Sterilizing swabs</p>	
<p>Steps:</p> <ol style="list-style-type: none"> 1. Collect 5ml of blood by venipuncture into a sterile tube (without anticoagulant) labeled with patient identification and collection date, and time. 2. Allow blood to clot. 3. Centrifuge blood at 1000g for 10 minutes to separate the serum. * Blood can be stored at 4-8^oC for up to 24 hours before the serum is separated. Do not freeze whole blood. If there is no centrifuge, blood should be kept in refrigerator until there is complete retraction of the clot from the serum. 4. Carefully remove the serum with a pipette, avoiding extracting red cells, and transfer it aseptically into a sterile labeled vial. * If vacutainer tubes containing a gel (yellow cap) are used, serum does not need to be separated after centrifugation manually. (The gel will provide this function.) 5. Make sure vial is properly labeled (see section I). 	
<p>III. STORAGE</p>	<p>V. COMMUNICATING TEST RESULTS</p>
<p>▲ Whole blood may be held at 4-80C if it can be transported to arrive at the testing lab within 24 hours. In other cases it should be centrifuged (if there is no centrifuge see section II).</p> <p>▲ Store serum at 4-80C until it is ready for shipment for up to 7 days. (Sera must be frozen at -20^oC for longer periods of storage; in this case, avoid repeated freezing and thawing.)</p>	<p>Laboratory should communicate results to the clinician within 2 days of receiving the sample. If the result of the test is positive, it should also notify the rayon CPH.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Record the results in the case history and Journal 60/A.

10.2 Rubella and Congenital Rubella Syndrome

10.2.1 Rationale for Surveillance

Public health importance of rubella relates to the teratogenic effects of primary rubella infection in pregnant women. The most serious complications of rubella result from infection during the first trimester of pregnancy. Rubella infection can affect all organs of the developing fetus and cause miscarriage, fetal death, and congenital abnormalities. Twenty percent of infants born to women infected during the first 20 weeks of pregnancy will develop a pattern of birth defects called Congenital Rubella Syndrome (CRS). Maternal infection at a very early stage of gestation (prior to week 10) almost inevitably leads to serious complications: up to 90 percent of surviving infants will be born with CRS and it will be manifested with more severe permanent structural malformations (e.g., congenital heart disease, cataracts). Infants infected with rubella late in gestation (after week 20) do not normally exhibit clinical manifestation of CRS. Such a condition, when infants do not have clinical manifestation of CRS but do have rubella IgM antibodies, is defined as Congenital Rubella Infection (CRI). Infants with CRS and CRI are infectious for the first six months of life (possibly up to one year), and they can infect susceptible pregnant women.

Currently rubella infection in Georgia has a cyclic nature. However, after implementation of rubella vaccination, transmission of the infection will decrease and periods between outbreaks will increase.

CRS is subject to registration and reporting. CRS incidence in countries not performing routine immunization (Georgia was among them till 2004) typically ranges between 1.0 to 1.5 per 1000 live births (expected number for Georgia would be 40 to 60 cases annually). Prior to 2004 no cases of CRS were diagnosed in Georgia, indicating inadequate knowledge of CRS clinical manifestations among physicians.

As Georgia is about to start rubella immunization, surveillance data will be used to evaluate the effectiveness of the prevention program and to identify groups of people or areas where additional disease control efforts are required to reduce disease incidence. The National Health Policy calls for the introduction of rubella immunization to prevent the consequences of rubella during pregnancy and achieve CRS incidence < 0.01 per 1000 live births. Currently rubella routine vaccination is performed according to the National Immunization Calendar with MMR vaccine.

Even after the introduction of rubella vaccinations, CRS cases will continue to register for 20 years or more, until the cohorts of vaccinated children reach childbearing age.

The four major *strategies* to achieve the improved CRS incidence goal are the following:

- ▲ Achieve and maintain⁴ high rubella immunization levels for children.
- ▲ Ensure protection of women of childbearing age, up to 30 percent of whom in Georgia may be susceptible to rubella, by
 - △ Routinely immunizing girls 13-14 years old (this protects future mothers directly, although it has little effect on overall transmission of rubella)

⁴ Introduction of rubella vaccine into the Expanded Program on Immunization is *not* recommended when sustained high coverage cannot be guaranteed, because this will slow, but not interrupt rubella transmission, and susceptibility of women of childbearing age will increase.

- △ Offering immunization to all women of childbearing age during family planning counselling and recommending they avoid becoming pregnant for three months after being vaccinated.
- ▲ Conduct accurate surveillance for rubella and CRS and take control measures promptly when a rubella outbreak occurs.
- ▲ Establish serological surveillance of susceptibility if resources permit to monitor (in addition to clinical surveillance) the effect of the program on susceptibility of different age groups, particularly among women of childbearing age.

10.2.2 Recommended Rubella Case Definition

Clinical description: Any patient of any age with:

- ▲ fever
- ▲ maculopapular rash, **and**
- ▲ suboccipital, cervical or post-auricular lymphadenopathy **or** arthralgia/arthritis

Rubella is not always manifested clinically.

Case classification

- ▲ **Clinical (probable)⁵:** A case that meets the clinical description of rubella
- ▲ **Confirmed:** A confirmed case has at least one of the following:
 - △ **By laboratory:** presence of rubella-specific IgM antibodies
 - △ **Epidemiologically:** Meets the clinical description of rubella and has an epidemiological link to a lab. confirmed case

Laboratory testing for rubella is currently mandated for group cases (at least one case should be investigated).

Epidemiological link is defined as contact with another case 11-24 days prior to disease onset.

Pregnant women exposed to rubella should be advised to seek testing for rubella infection privately to decide if there is a need for early termination of pregnancy. Asymptomatic rubella infection can be diagnosed by a positive rubella-specific IgM antibody test or a significant rise in IgG antibody between acute- and convalescent-phase tests. The acute-phase IgG serum specimen should be collected as soon as possible after exposure, whereas the convalescent-phase IgG specimen should be collected >7 to 14 days (preferably two to three weeks) later.

⁵ Up to one-third of rubella infections may be subclinical (e.g., without elevated temperature or without rash).

10.2.3 Rubella and CRS Case Notification, Procedures, and Forms

Follow the general requirements outlined in section 4 of the guidelines on notification and reporting: any clinical (probable) rubella or CRS case identified by providers or a positive rubella lab test requires submission of an urgent notification to CPH within 24 hours by any existing means of communication.

10.2.4 Rubella Outbreak Investigation

Note: Every clinical (probable) or confirmed case requires an investigation by a rayon CPH epidemiologist in cooperation with facility health workers within 2 business days of notification.

The following steps should be taken (please refer to section 6 on outbreak investigation for more details).

a) Verify that all cases meet the clinical description of rubella by reviewing medical records.

b) Collect data as envisioned in the rubella investigation card (see Figure 18).

The collected data should be verified against the information found in the health facility's infectious disease register 60/A. It is entirely possible that the investigation will identify additional cases that have not been registered by the health facility.

c) Identify the source of infection and establish epidemiological links.

Check if rubella patients were in contact with a clinical (probable) or confirmed case 11-24 days prior to the onset of symptoms to determine the existence of an epidemiological link.

d) Assess potential for transmission and identify contacts.

The potential for transmission is usually determined by a number of susceptible contacts. Transmissions are particularly likely in schools and other institutions where population is densely aggregated.

- △ Determine dates of rash onset for each of the cases.
- △ Identify all contacts (particularly pregnant women) of the rubella patients during their infectious period (7 days before and 7 days after the rash).
- △ Consider contacts over 9 months of age that have not documented evidence of receiving at least one dose of rubella containing vaccine as being susceptible.

e) Prepare a separate list of all women of childbearing age who are either rubella patients or contacts of a rubella case, indicating their pregnancy status, and if pregnant, the gestational age at disease onset.

f) Analyze the data about the outbreak as described in the general part of the guidelines.

The emphasis should be on identifying areas and population groups at highest risk.

g) Implement control and prevention measures (see next section).

h) Write a report and send it to the regional CPH in two copies (the regional CPH will forward one copy to NCDC). The report should include a

- △ The first part of the **Rubella Investigation Card** (see Figure 18) filled out for each single case (number of cases in the card should correspond to the number of cases indicated in the monthly report form)
- △ **Outbreak Investigation Card**, which is prepared for group cases of Measles/Rubella (see figure 17).

i) Inform local health administration and other stakeholders about outbreak/group cases verbally or in a written form.

10.2.5 Rubella Outbreak Control/Response

The goal of rubella outbreak investigation is to prevent exposure of susceptible pregnant women to rubella, and thereby prevent cases of CRS. The following control actions from the health facility and rayon CPH are required when three or more rubella cases are detected:

- ▲ Isolate patients for 5 to 7 days after rash onset and recommend that they restrict contact with pregnant women.
- ▲ Identify and vaccinate susceptible persons who have no contraindications to rubella vaccine. Immunoglobulin does not prevent rubella infection after exposure and is not recommended for that purpose.
- ▲ Recommend all pregnant women who are exposed to rubella to get serological evaluation for rubella specific IgM and IgG antibodies and immediate medical consultation.

Note: History of rubella infection in the past without serological confirmation is not reliable for assessing one's immune status.

- ▲ Obtain a list of all pregnant women, particularly in the first trimester, and counsel all of them regarding the risks for intrauterine rubella infection and recommend that they restrict their contact with persons who have rubella and not attend activities where they might be exposed to rubella for at least 6 weeks (two incubation periods) after rash onset in the last identified patient to minimize their chances of coming in contact with persons with *symptomatic or asymptomatic* rubella infection.
- ▲ Conduct outreach activities in affected communities (e.g., at workplaces or schools) and facilities that should convey
 - △ the seriousness of rubella infection;
 - △ the importance of rubella vaccination; **and**
 - △ the importance of persons seeking medical advice for rubella-like illness and of health workers reporting rubella.
- ▲ Promote awareness of CRS and establish active CRS surveillance (specific activities are discussed below)

10.2.6 Recommended Congenital Rubella Syndrome Case Definition

CRS is an illness manifesting in infancy, resulting from rubella infection in utero.

Case classification

Clinical (probable):

An infant for whom a qualified physician detects two of the manifestations listed in a), or one manifestation listed in a) and one or more from b):

a) Cataracts/congenital glaucoma, congenital heart defect,⁶ hearing impairment (the most common defect), pigmentary retinopathy

b) Purpura, splenomegaly, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease, jaundice with onset within 24 hours after birth.

Confirmed: A case clinically consistent with rubella-specific immunoglobulin IgM antibody.

IgM will be easily detected in the first six months of life (rarely up to 1 year of age). The persistence of maternally derived rubella-specific IgG beyond 6 months (the age when they would usually have waned) can be detected in 95 percent of infants with CRS. The presence of IgG in a child over 6 months of age together with the clinical picture of CRS will be an indication of a prenatal rather than postnatal infection.

10.2.7 Recommended Congenital Rubella Infection Case Definition

Case classification

Clinical (probable): A case without clinical manifestations that has a history of rubella exposure during mother's pregnancy

Confirmed: A case with no clinical manifestations in which rubella-specific immunoglobulin M (IgM) antibody was detected

10.2.8 How to Promote Awareness of CRS and Establish Active CRS Surveillance

Cases of CRS may be identified through the following methods:

- ▲ **Active surveillance for CRS after a rubella outbreak, initiated early in an outbreak and continued for at least 9 months after it ended.** The CPH should follow up with all the pregnant women infected with rubella during pregnancy. Obstetricians and pediatricians, as well as ophthalmologists, otologists, cardiologists, and cardiac surgeons should be alerted to the occurrence of an outbreak and its implications, informed of the clinical (probable) case definition for CRS, provided with written guidelines or training if necessary, and supplied with appropriate notification forms. Pediatricians should be advised to screen infants attending DPT

⁶ The most common defects are: patent ductus arteriosus and peripheral pulmonary artery sclerosis

immunization visits for signs of CRS and inquire about the maternal history of rubella in pregnancy.

- ▲ Retrospective review of hospital records of CRS-compatible defects in infants
- ▲ The integration of CRS studies in general surveys of disability
- ▲ Serological studies in the institutions for the deaf and/or blind

CRS case investigation should be initiated by the CPH within 24 hours of getting a notification about a single case of CRS. If the NCDC or regional CPH experts are available, they will normally assume leadership in the investigation. Case-based data should be collected as envisioned in the CRS case investigation card (see Figure 19), and blood samples should be collected from the infant.⁷

Infants with CRS are presumed to be infectious during the first year of life, so the following control measures should be instituted:

- ▲ Infants with CRS should be cared for only by personnel (e.g., caregivers, household contacts, medical personnel, laboratory workers) known to be immune to rubella; otherwise, such personnel should be immunized.
- ▲ Infants with CRS should be managed with contact isolation. Their mothers should be made aware of the potential hazard of their infants to susceptible pregnant contacts.

10.2.9 Recommended Scope of Routine Monthly Analysis of Rubella Surveillance Data to Be Performed by CPH

(See section 5 for more detailed information.)

The CPH should perform a routine monthly analysis of the following data:

1. Rubella vaccine coverage (at 24 months) by year and subordinated area/setting
2. Rubella incidence rate by month, year, and geographic area
3. Rubella cases by age group and immunization status
4. Rubella and CRS case “confirmation” rate for the territory
5. Completeness/timeliness of monthly reporting
6. Rubella and CRS case investigation rate

⁷ Laboratory testing is mandatory for every detected CRS case. Serum specimens should be sent to NCDC.

10.2.10 Principle Uses of Data for Decision Making at the Regional and Rayon Levels

The regional and rayon-level CPHs will use the data primarily to accomplish the following:

1. Monitor incidence and coverage to track progress toward goals, e.g., decreasing incidence and increasing coverage (target 95 percent), and to identify groups of people or areas where additional immunization efforts are required to reduce disease incidence.
2. Where necessary, enhance the existing immunization program by ensuring protection of women of childbearing age (for example, many CRS cases could be prevented through vaccination of women of reproductive age or postpartum vaccination).
3. Determine that the absence of reported CRS cases indicates the need to intensify CRS awareness and active surveillance (see above).
4. Evaluate and improve the performance of the surveillance system (e.g., reaction time for notification, case confirmation rate, outbreak investigation rate).
5. Conduct rubella and CRS education campaigns in high schools and other settings where susceptible females might congregate.

Figure 18. Rubella Investigation Card

of facility and date

Registration # in NCDC

Region

rayon

Part I

monthlyIV-03 2/Rub

#	Patient epidemiological number	GE	GE	GE	GE
1.	Name (additional info)				
2.	Address				
3.	Rash onset date	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
4.	Sex	Female Male	Female Male	Female Male	Female Male
5.	Date of birth	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
6.	Age at rash onset				
7.	No of received doses	_____ unknown	_____ unknown	_____ unknown	_____ unknown
8.	Date of last vaccination	/ / / / / Day month year unknown	/ / / / / Day month year unknown	/ / / / / Day month year unknown	/ / / / / Day month year unknown
9.	Date of notification to CPH	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year
10.	Date of investigation	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year
11.	Clinical description: (underline)	Fever; maculopapular rash; arthralgia/arthritis unknown	Fever; maculopapular rash; arthralgia/arthritis unknown	Fever; maculopapular rash; arthralgia/arthritis unknown	Fever; maculopapular rash; arthralgia/arthritis unknown
12.	Pregnancy (if applicable)	1) not pregnant; 2) ____wk pregnant; 3) unknown	1) not pregnant; 2) ____wk pregnant; 3) unknown	1) not pregnant; 2) ____wk pregnant; 3) unknown	1) not pregnant; 2) ____wk pregnant; 3) unknown
13.	Hospitalization (indicate)	Yes _____ No	Yes _____ No	Yes _____ No	Yes _____ No
14.	Group case	Yes No unknown	Yes No unknown	Yes No unknown	Yes No unknown
15.	Final classification (underline one)	1) Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed
16.	Date of specimen collection?	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year
17.	Date of lab result?	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year	/ / / / / Day month year
18.	Rubella IgM	Positive; Negative; In process; Inconclusive	Positive; Negative; In process; Inconclusive	Positive; Negative; In process; Inconclusive	Positive; Negative; In process; Inconclusive

* If the information represents additional data on the case already reported

Responsible Person _____ (name, position) _____
Signature _____

The card should be completed for each case and submitted to the region CPH before day 5 and to NCDC (Tbilisi, 380077, st. M. Asatiani #9, Tel. 37-16-77.39-64-38) before day 7 of the next month.

PROTOCOL FOR LABORATORY CONFORMATION OF RUBELLA

Sampling strategy: Collect specimens from every probable/clinical CRS case (see case definition above); one specimen from group cases of clinical rubella

Confirmation test: Serological assay. Demonstration of rubella specific IgM antibody.

Specimen to be collected: Serum or plasma.

Referral laboratory: NCDC.

I. DOCUMENTATION	IV. TRANSPORTATION
<p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="radio"/> Register 60/A <input type="radio"/> Marker (water resistant) <input type="radio"/> Lab investigation request form <input type="radio"/> Specimen label 	<p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="radio"/> Ziplock plastic bag <input type="radio"/> Cold box with ice packs <input type="radio"/> Plastic container <input type="radio"/> Box label
<p>Steps:</p> <ol style="list-style-type: none"> 1. Create a specimen label with patient's name, identification number, date, and time. 2. Fill in a copy of a lab investigation request form with patient information. (It will accompany specimen to the lab.) 3. Make sure patient information has been entered in register 60/A and an urgent notification has been sent to CPH. 	<p>Steps:</p> <ol style="list-style-type: none"> 1. Tighten the cap, apply waterproof sealing tape over the cap and top of specimen container. 2. Place specimen container in a suitably sized plastic bag (1st layer) together with a small amount of absorbent material, such as cotton wool. The bag must be sealed either using heated bag sealer or waterproof adhesive tape; as an alternative, use ziplock plastic bags. Specimens from different patients should never be sealed in the same bag. 3. Sealed bags containing the specimens should be placed inside plastic containers with screw-cap lids (2nd layer). Provided that specimens have been double-bagged properly in sealed plastic bags, specimens from several patients may be packed inside the same secondary plastic container. Additional absorbent material should be placed inside the container to absorb any leakage that may occur. 4. Sealed plastic containers should be fitted into insulated 3rd layer containers (e.g., a cold box). First, place ice packs at the bottom of the box, and, along the sides, place the plastic container with the specimen in the center, then place more ice packs on top. Make sure that the container is firmly fixed in the outer box. 5. Put the lab investigation request form in a plastic bag and place it in the outer box. 6. Label box with name, address, and telephone number of the referral laboratory and the sender. 7. Label box with the safety precautions ("Do not freeze," "Do not expose to heat," "This side up," "Biological specimen," etc.). 8. Arrange shipping date. 9. When arrangements are finalized, inform the recipient of time and manner of transport and make sure that package reaches referral laboratory within 2–3 days of specimen collection.
<p>II. COLLECTION AND HANDLING</p> <p>Note: collect a single serum at the first contact with patient</p> <p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="radio"/> Gloves <input type="radio"/> Pipette <input type="radio"/> Vacutainer tube with needle <input type="radio"/> Adhesive tape <input type="radio"/> Tourniquet <input type="radio"/> Band aid <input type="radio"/> Sterilizing swabs 	
<p>Steps:</p> <ol style="list-style-type: none"> 1. Collect 5 ml of blood (at least 3 ml from newborns) by venipuncture into a sterile tube (without anticoagulant) labeled with patient identification and collection date and time. 2. Allow blood to clot. 3. Centrifuge blood at 1000g for 10 minutes to separate the serum. <ul style="list-style-type: none"> * Blood can be stored at 4-8°C for up to 24 hours before the serum is separated. Do not freeze whole blood. If there is no centrifuge, blood should be kept in refrigerator until there is complete retraction of the clot from the serum. 4. Carefully remove the serum with a pipette, avoiding extracting red cells, and transfer it aseptically into a sterile labeled vial. <ul style="list-style-type: none"> * If vacutainer tubes containing a gel (yellow cap) are used, serum does not need to be separated after centrifugation manually. (The gel will provide this function.) 5. Make sure vial is properly labeled (see section I). 	
<p>III. STORAGE</p> <ul style="list-style-type: none"> ▲ Whole blood may be held at 4-8°C if it can be transported to arrive at the testing lab within 24 hours. In other cases it should be centrifuged (if there is no centrifuge see section II). ▲ Store serum at 4-8°C until it is ready for shipment for up to 7 days (Sera must be frozen at -20°C for longer periods of storage; in this case, avoid repeated freezing and thawing). 	<p>V. COMMUNICATING TEST RESULTS</p> <p>Laboratory should communicate results to the clinician within 2 days of receiving the sample. If the result of the test is positive, it should also notify the rayon CPH.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Record the results in the case history and Journal 60/A.

10.3 Mumps

10.3.1 Rationale for Surveillance

Outbreaks of mumps can prevent a large number of people from attending school and work. Although severe complications are rare, mumps can cause acquired sensorineural hearing loss in children (incidence is estimated at 5 per 100,000 cases). Mumps-associated encephalitis occurs in <2 per 100,000 cases, with approximately 1 percent of encephalitis cases being fatal. Some complications of mumps are known to occur more frequently among adults than among children. Adults have a higher risk for mumps meningoencephalitis than children. In addition, orchitis occurs in up to 38 percent of cases in post-pubertal males. Although it is frequently bilateral, it rarely causes sterility. Mastitis has been reported in as many as 31 percent of female mumps patients older than 15 years. Other rare complications of mumps are oophoritis and pancreatitis.

The reported number of mumps cases in Georgia is between 2500 and 5000 annually (or 55-110 per 100,000 population). Routine immunization of children started in 2001; however, coverage achieved in 2001-2002 was very low (<20 percent) due to vaccine shortages. The Georgia National Health Policy envisions reduction of mumps incidence to <0.1 per 100,000 by 2006 by achieving 95 percent coverage of the eligible population with planned immunization and increased effectiveness of epidemiological surveillance to evaluate the prevention program effectiveness and identify high-risk areas and population groups to prevent potential outbreaks.

Strategies to achieve this goal include the following:

- ▲ Achieve and maintain high mumps immunization coverage among children according to the national immunization calendar (the target is 95 percent).
- ▲ Conduct supplemental campaigns with a mumps-containing vaccine periodically or during outbreak situations (without regard to vaccination history), providing a second opportunity for vaccination and “catching up” the cohort of susceptibles (since the mumps vaccine is not 100 percent effective). The target age group should be determined according to mumps susceptibility. (e.g., on a basis of epidemiological data).
- ▲ Establish effective surveillance for mumps to report regularly the number, age, and vaccination status of people contracting mumps, to thoroughly conduct outbreak investigations and to monitor immunization coverage.

10.3.2 Recommended Mumps Case Definition

Clinical description: Mumps is an illness that

- ▲ is identified by an acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland **and**
- ▲ lasts more than two days without any other apparent cause.⁸

⁸ Not all cases of parotitis, especially sporadic ones, are due to mumps infection. Parotitis can also be caused by obstruction of salivary duct, tumors, drugs, parainfluenza virus types 1 and 3, influenza A virus, Coxsackie A virus, and HIV. However, these agents do not produce parotitis on an epidemic scale.

Case classification

- ▲ **Clinical (probable):** A case that meets the clinical description of mumps.
- ▲ **Confirmed:**
 - **By laboratory:** A case that meets the clinical description of mumps and has
 - Isolation of mumps virus from an appropriate clinical specimen⁹ *or*
 - Seroconversion or significant (at least fourfold) rise in serum mumps IgG titre¹⁰ *or*
 - IgM specific antibodies¹⁴.
 - **Epidemiologically:** A case that meets the clinical description of mumps and has an epidemiological link¹¹ to another case.

Laboratory testing for mumps is currently not required.

10.3.3 Mumps Case Notification Procedures and Forms.

Follow the general requirements outlined in section 4: any clinical (probable) mumps case identified by providers requires submission of an urgent notification to the CPH within 48 hours by any existing means of communication.

10.3.4 Mumps Case/Outbreak Investigation

Rapid identification of suspected clinical (probable) or confirmed cases of mumps is important in the initiation of control measures to prevent the spread of the disease among susceptible persons.

Note: Every clinical (probable) case requires an investigation by a rayon CPH epidemiologist in cooperation with facility health workers within one business day of notification.

The following steps should be undertaken in an investigation (refer to section 6 on outbreak investigation for more detailed information):

- a) Verify that all cases meet the clinical description of mumps by reviewing medical records.**
- b) Collect data as envisioned in the mumps outbreak investigation card (see Figure 20).**

The collected data should be verified against the information found in the health facility's infectious disease register 60/A. It is entirely possible that the investigation will identify additional cases that have not been registered by the health facility.

- c) Identify the source of infection and establish epidemiological links.**

⁹ Mumps virus can be isolated from throat swabs, urine and CSF.

¹⁰ In the absence of mumps immunization in the preceding six weeks

¹¹ A close contact (household, school, etc.) with a clinical case 11 to 26 days prior to the onset of symptoms.

Check if mumps patients were in contact with a clinical (probable) or confirmed case 11-26 days prior to the onset of symptoms to determine the existence of an epidemiological link.

d) Assess potential for transmission and identify contacts.

The potential for transmission is usually determined by a number of susceptible contacts. Transmissions are particularly likely in schools and other institutions where the population is densely aggregated.

All contacts of the mumps case patients during their infectious period (2 days before and 9 days after the onset of parotitis) should be identified. Contacts over 9 months of age that have not documented evidence of receiving at least one dose of mumps-containing vaccine are considered susceptible.

e) Analyze the data about the outbreak as described in the general part of the guidelines.

The emphasis should be on identifying areas and population groups at highest risk.

f) Implement control and prevention measures (see next section).

g) Write a report and send it to the regional CPH in two copies (the regional CPH will forward one copy to NCDC).

The report should include

- ▲ The first part of the **Mumps Investigation Card** (see Figure 20) completed for each single case (number of cases in the card(s) should correspond to the number of cases indicated in the monthly report form)
- ▲ **Cluster Investigation Report**, which is prepared for group cases.

h) Inform local health administration and other stakeholders about outbreak/group cases verbally or in a written form.

10.3.5 Mumps Outbreak Control/Response

Mumps is the only known cause of epidemic parotitis. The main strategy for controlling a mumps outbreak is to define the at-risk population and a transmission setting, and then to rapidly identify and vaccinate susceptible persons, or, if a contraindication exists, to exclude susceptible persons from the setting to prevent exposure and transmission. The following control actions should be taken:

1. Isolate patients and exclude them from school or workplace for nine days from onset of swelling.
2. Disinfect articles soiled with nose or throat secretions of patients.
3. Consider excluding exposed people who lack acceptable evidence of immunity (documented vaccination or a history a physician-diagnosed mumps) from school or work place from the 12th through the 26th days after exposure if other susceptibles are present.
4. Identify contacts and vaccinate susceptible persons. While mumps vaccination may not prevent the disease in persons already exposed, they will be protected against infection from subsequent exposures. However, if susceptible persons are immunized early in the course of an outbreak, they might be protected.

10.3.6 Recommended Scope of Routine Analysis of Mumps Surveillance Data to Be Performed by CPH

(See section 5 for more details.)

The CPH should perform routine monthly analysis of the following data:

- ▲ Mumps vaccine coverage (at 24 months) by year and subordinated area/setting
- ▲ Mumps incidence rate by month, year, and geographic area
- ▲ Mumps cases by age group and immunization status
- ▲ Completeness/timeliness of monthly reporting
- ▲ Mumps outbreak investigation rate

10.3.7 Principle Uses of Data for Decision Making at the Regional and Rayon Levels

The regional and rayon-level CPHs will use the data primarily to accomplish the following:

- ▲ Monitor incidence and coverage to track progress toward goals, e.g., decreasing incidence and increasing coverage (target 95 percent)
- ▲ Identify and characterize population requiring additional disease control measures
- ▲ Evaluate and improve the performance of the surveillance system (e.g., reaction time for notification, case confirmation rate, outbreak investigation rate)

Figure 20. Mumps Investigation Card

of facility and date

Registration # in NCDC

Region

rayon

Part I

monthlyIV-03 4/Mump

#	If inform. is additional indicate *	Patient #1	Patient #2	Patient #3	Patient #4
1.	Name				
2.	Address				
3.	Disease onset date	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
4.	Sex	Female Male	Female Male	Female Male	Female Male
5.	Date of birth	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
6.	No of received doses	_____ unknown	_____ unknown	_____ unknown	_____ unknown
7.	Date of last vaccination	/ / / / / Day month year unknown	/ / / / / Day month year unknown	/ / / / / Day month year unknown	/ / / / / Day month year unknown
8.	Date of notification to CPH	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
9.	Date of investigation	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
10.	Clinical description: (underline)	1) tender, self-limited swelling of the parotid or other salivary gland; 2) lasts more than two days	1) tender, self-limited swelling of the parotid or other salivary gland; 2) lasts more than two days	1) tender, self-limited swelling of the parotid or other salivary gland; 2) lasts more than two days	1) tender, self-limited swelling of the parotid or other salivary gland; 2) lasts more than two days
11.	Complications	Yes _____ No	Yes _____ No	Yes _____ No	Yes _____ No
12.	Hospitalization (indicate)	Yes _____ No	Yes _____ No	Yes _____ No	Yes _____ No
13.	Outcome	Died; Alive; Unknown	Died; Alive; Unknown	Died; Alive; Unknown	Died; Alive; Unknown
14.	Group case	Yes No unknown	Yes No unknown	Yes No unknown	Yes No unknown
15.	Final classification (underline one)	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed			

Responsible Person _____ (name, position) _____
Signature _____

The card should be completed for each case and submitted to the region CPH before day 5 and to NCDC (Tbilisi, 380077, st. M. Asatiani #9, Tel. 37-16-77.39-64-38) before day 7 of the next month.

*If the information represents additional data on the case already reported, please indicate this

10.4 Tetanus and Neonatal Tetanus

10.4.1 Rationale for Surveillance

In spite of the availability of DPT and Td vaccines and recommendations to use tetanus toxoid and tetanus immune globulin as post-exposure prophylaxis in wound management, 4 to 6 cases of this disease continue to be reported in Georgia annually. In 2002, the number of registered cases increased to 13, which is very alarming. With the reported case fatality rate at over 50 to 60¹² percent in recent years, tetanus continues to be one of the leading causes of infectious disease mortality in Georgia.

Serologic studies demonstrated an excellent correlation between vaccination coverage and immunity to tetanus.

While most tetanus cases in Georgia occurred in nonimmunized adults, a growing number of cases in the age group 5-14 years reflect problems with routine immunization coverage of children. Because tetanus is a completely preventable disease, every case of tetanus should be considered a failure to vaccinate. Administration of post-exposure prophylaxis, timely diagnosis, and treatment of tetanus cases can significantly reduce the fatality rate. Every tetanus death should be considered a failure to diagnose and treat in a timely manner.

Note: Each case should therefore be used as a case study to determine which factors contributed to the failure and which measures could be taken to prevent such cases in the future.

Information obtained through surveillance can help to characterize population groups or geographic areas in which additional efforts are needed to raise vaccination levels and reduce disease incidence and case fatality. It can be also used to raise awareness of the importance of adult immunization.

Strategies to combat tetanus include the following:

1. Achieve and maintain high (>90 percent) DPT and DT coverage in children, and provide Td booster to all persons > 14 years of age every 10 years.
2. Identify the population groups or geographic areas where tetanus cases are occurring and offer a Td immunization or booster to all adults without documental evidence of immunization.
3. Ensure that emergency reserves of tetanus antitoxin, immune globulin, and toxoid are available in each rayon and can be promptly mobilized for treatment or post-exposure prophylaxis in facilities should the need arise.
4. Establish effective surveillance for tetanus to report detailed case-based information, thoroughly investigate every tetanus case and death, and monitor immunization coverage with tetanus-containing toxoids (vaccines).

¹² Tetanus case fatality rate worldwide is 2 to 18 percent. Higher tetanus case fatality in Georgia is most likely indicative of under-reporting of nonfatal cases.

10.4.2 Recommended Case Definition

Clinical description: Any person with acute onset of hypertonia and/or painful muscular contractions (usually of the muscles of the jaw and neck) and generalized muscle spasms without other apparent cause.

A clinical description of neonatal tetanus is as follows: Any neonate with a normal ability to suck and cry during the first two days of life, and who between 3 and 28 days of age cannot suck normally, and becomes stiff or has convulsions or both.

Case classification

- ▲ **Clinical (probable):** A case that meets the clinical description of tetanus or neonatal tetanus
- ▲ **Confirmed:** not applicable

10.4.3 Tetanus and Neonatal Tetanus Case Notification Procedures and Forms

Follow the general requirements outlined in section 4: any clinical (probable) tetanus case identified by providers requires submission of an urgent notification to CPH within 24 hours by any existing means of communication.

Prompt notification may save a patient's life because this will facilitate:

- ▲ receiving faster hospitalization (nasotracheal intubation and mechanically assisted respiration are often required),
- ▲ receiving faster administration of tetanus immunoglobulin or antitoxin, and
- ▲ obtaining timely expert consultations on clinical management issues

10.4.4 Tetanus and Neonatal Tetanus Case Investigation

A single case of tetanus requires an investigation by a rayon CPH epidemiologist in cooperation with facility health workers within 3 business days of notification. Should there be a case of neonatal tetanus, the investigation should be performed within 2 business days and will be led by NCDC and/or regional CPH experts. The following steps should be undertaken in an investigation:

- a) *Verify that the case meets the clinical description of tetanus by reviewing medical records*
- b) *Collect case-based data as envisioned in the standard tetanus investigation card (see Figure 21)*
- c) *Analyze the case-based data and immunization coverage¹³ with tetanus-containing vaccines*

¹³ Tetanus coverage should be analyzed routinely (monthly) by CPH. Due to there being a small number of cases, other tetanus surveillance indicators will be analyzed at the national level.

Identify all reasons that have or may have contributed to a fatal outcome:

- ▲ Failure to immunize
- ▲ Vaccine failure
- ▲ Patient sought care too late
- ▲ Medicines not available
- ▲ Unacceptable delay of specific treatment after first medical contact
- ▲ Inappropriate post-exposure prophylaxis
- ▲ Inappropriate case treatment
- ▲ Failure to ensure aseptic conditions during delivery

d) Implement measures to prevent future cases

- ▲ Intensify routine immunization of children with DPT and DT to reach at least 90 percent coverage
- ▲ Conduct a Td booster campaign for adults
- ▲ Evaluate reliability of cold chain for vaccine storage and transportation
- ▲ Create a reserve of essential medicines for tetanus management
- ▲ Enforce adherence to case management standards and enhance provider education
- ▲ Intensify health education of population
- ▲ Write a case study and distribute to all practitioners in the country to promote their awareness.

e) Complete the tetanus investigation card and send it to regional CPH in two copies (the CPH will forward one copy to NCDC). The number of cards should correspond to the number of cases indicated in the monthly report form.

Figure 21. Tetanus Investigation Card

of facility and date

Registration # in NCDC

autonomous rep; region rayon

monthly IV-03 5/T

1	Full name of patient	
2	Date of birth	Day/ / Month/ / Year / /
3	Address	
4	Occupation	
5	Tetanus toxoid history prior to the disease	Include doses of ALL tetanus-containing toxoids. Exclude doses received after this particular injury. <input type="radio"/> Never <input type="radio"/> 1 dose <input type="radio"/> 2 doses <input type="radio"/> 3 doses <input type="radio"/> 4 doses <input type="radio"/> 5+ doses <input type="radio"/> Unknown Interval since last tetanus toxoid dose _____ (years)
6	Circumstances of antecedent injury	Date occurred/ / Month/ /Year/ /Describe the incident_____ Anatomic site _____ Contaminated (dirt, soil, etc)? Y/N Work related? Y/N Signs of infection? Y/N If no acute injury, identify and describe associate condition (e.g., diabetic ulcer)_____
7	Prophylactic care Prior to disease onset	Was medical care obtained for this injury? Y/N If yes, was TETANUS TOXOID administered after injury but before disease onset? Y/N If yes, how soon after injury? <input type="radio"/> Within 24hrs <input type="radio"/> 1-4days <input type="radio"/> 5-9 days <input type="radio"/> 10-14 days <input type="radio"/> More than 15 days Was TETANUS IMMUNOGLOBULIN prophylaxis given before tetanus onset? Y/N If yes, how soon after injury? <input type="radio"/> Within 24hrs <input type="radio"/> 1-4days <input type="radio"/> 5-9 days <input type="radio"/> 10-14 days <input type="radio"/> More than 15 days Was WOUND DEBRIDED before tetanus onset? Y/N If yes, how soon after injury? <input type="radio"/> Within 24hrs <input type="radio"/> 1-4days <input type="radio"/> 5-9 days <input type="radio"/> 10-14 days <input type="radio"/> More than 15 days
8	Course and treatment of tetanus disease	Disease onset Date/ /Month / /Year / / First contact with health system Date/ /Month / /Year / / Hospitalized? Date/ /Month / /Year / /Place of hospitalization_____ Tetanus IMMUNOGLOBULIN or ANTITOXIN therapy given? Y/N Initial dose_____ Total dosage_____ How soon after disease onset? <input type="radio"/> Within 24hrs <input type="radio"/> 1-4days <input type="radio"/> 5-9 days <input type="radio"/> 10-14 days <input type="radio"/> More than 15 days
9	In case of death	Day / /month / /year/ /Reason:_____ Possible contributing factors (check all that apply): <input type="checkbox"/> Failure to immunize <input type="checkbox"/> Vaccine failure <input type="checkbox"/> Patient sought care too late <input type="checkbox"/> Drugs not available timely <input type="checkbox"/> Delayed treatment after 1st consultation <input type="checkbox"/> Inappropriate post-exposure prophylaxis <input type="checkbox"/> Inappropriate treatment <input type="checkbox"/> Delivery in non-aseptic conditions <input type="checkbox"/> Other (specify) _____
10	Neonatal patients (less than 28 days old)	Mother's tetanus toxoid history prior to child's disease (known doses only) <input type="radio"/> None <input type="radio"/> 1 dose <input type="radio"/> 2 doses <input type="radio"/> 3 doses <input type="radio"/> 4 doses <input type="radio"/> 5+ doses <input type="radio"/> Unknown Interval since last tetanus toxoid dose _____(years) Patient born in <input type="radio"/> Hospital <input type="radio"/> Home <input type="radio"/> Other (specify)_____ Birth attended by <input type="radio"/> Physician <input type="radio"/> Nurse/midwife <input type="radio"/> Other (specify)_____

Responsible Person _____ Signature _____

(Name, position)

The card should be submitted to the region CPH before day 5 and to NCDC (Tbilisi, 380077, st. M. Asatiani #9, Tel. 37-16-77.39-64-38) before day 7 of the next month for each case.

10.5 Pertussis

10.5.1 Rationale for Surveillance

Pertussis is a major cause of childhood morbidity. The number of reported cases in Georgia is 80 to 300 annually (1.8-6.0 per 100,000 population). However, this disease is believed to be underreported in Georgia, because pertussis is often overlooked in the differential diagnosis of cough illness.

Pertussis-related deaths (none reported in Georgia in recent years) are mostly caused by secondary bacterial pneumonia. Other complications are rare, but may include neurological complications such as seizures and encephalopathy, otitis media, and conditions resulting from the pressure effects of severe paroxysmal coughing, such as pneumothorax, epistaxis, subdural hematomas, hernias and rectal prolapse. The risk of serious complications is the highest among young children, particularly those under one year of age.

Information obtained through surveillance of this disease can be used to do the following:

- ▲ Monitor the impact of routine immunization program and identify persons or areas in which additional efforts are required to reduce disease incidence
- ▲ Promptly identify outbreaks in which vaccination of non- and under-immunized children and anti-microbial prophylaxis of contacts can help limit the spread of the disease
- ▲ Monitor the effectiveness of outbreak control strategies.

The Georgia National Health Policy envisions reduction of pertussis incidence to < 0.1 per 100,000 by 2006 through the following *strategies*:

- ▲ Achieve more than 90 percent coverage of the eligible population with planned immunization and addressing excessively administered contraindications (the target is 95 percent coverage). The priority is to ensure that infants are completely immunized with a primary series of three doses of DPT vaccine at the youngest age possible (4 months of age).
- ▲ Establish effective surveillance for pertussis to report regularly the number, age, and vaccination status of children contracting pertussis, to thoroughly conduct outbreak investigations with proper case and contact management, and to monitor immunization coverage.
- ▲ Improve laboratory confirmation of pertussis, particularly standardization of specimen collection, transport, and processing.

10.5.2 Recommended Pertussis Case Definition

Clinical description: Pertussis is evident in a person that has *a cough lasting at least two weeks and* at least one of the following:

- ▲ paroxysms of coughing, or
- ▲ inspiratory “whooping” and

- ▲ vomiting immediately after cough without other apparent cause.

Case classification

- ▲ **Clinical (probable):** A case that meets the clinical description of pertussis
- ▲ **Confirmed:** A case that meets the clinical description of pertussis and has at least one of the following criteria:
 - **Laboratory-confirmed:**
 - △ Isolation of *B. pertussis* from a clinical specimen or
 - △ Positive polymerase chain (PCR) reaction assay for *B. pertussis*
 - △ Positive paired serology
 - **Epidemiologically confirmed:** an epidemiological link to a lab-confirmed case.

Epidemiological link is a close contact with another confirmed cases 2-15 days prior to onset of symptoms.

Laboratory testing is currently mandated for confirmation of outbreaks when there is a clustering of 3 or more clinical (probable) cases. Samples can be analyzed at NCDC.

10.5.3 Pertussis Case Notification Procedures and Forms

Any clinical case of pertussis identified by providers or a positive pertussis lab test requires urgent notification of the CPH within 24 hours by any existing means of communication. General requirements are outlined in more detail in section 4.

10.5.4 Pertussis Case/Outbreak Investigation

Anti-microbial treatment of promptly identified cases may lessen the severity of symptoms and may limit the period of communicability. In addition, prompt identification of cases will facilitate early identification of un- or under-vaccinated children among contacts. These children, if reached quickly, may be protected with vaccination. Anti-microbial prophylaxis of household and other close contacts may prevent secondary cases. Because pertussis can be very severe among young infants, early anti-microbial prophylaxis is particularly important in this age group.

Note: Every single reported pertussis case has to be investigated by a rayon CPH epidemiologist in cooperation with NCDC and regional CPH experts and facility health workers within 1 business day of notification.

The following steps are required in an investigation:

- Verify that all cases meet the clinical description of pertussis by reviewing medical records.*
- Collect data as envisioned in the pertussis investigation card* (see Figure 22).

The collected data should be verified against the information found in the health facility's infectious disease register 60/A.

c) Identify the source of infection and establish epidemiological links.

Check if pertussis patients were in close contact with a laboratory-confirmed case 2-15 days prior to onset of symptoms to determine the existence of an epidemiological link.

d) Collect specimens if the outbreak involves three or more pertussis cases from all of the patients.

The standard and preferred laboratory test for diagnosis of pertussis is isolation of *B. pertussis* by bacterial culture. The timing of specimen collection can affect the isolation rate, as can inadequately collected specimens. Isolation of the organism is most successful during the catarrhal stage (i.e., first 1-2 weeks of cough), prior to administration of antibiotics.

e) Assess potential for transmission and identify contacts.

The potential for transmission is usually determined by the number of susceptible contacts. Pertussis is transmitted by direct contact with discharges from respiratory mucous membranes of infected persons by the airborne route. Transmission is particularly likely at home (the disease can be brought in by a sibling) or among other close contacts.

- ▲ Identify all close contacts of the pertussis patients during their infectious period (from the early catarrhal stage to three weeks after onset of typical paroxysms; or if treated with antibiotics, the period of infectiousness usually stops five days after onset of therapy). **Close contacts are** household members and people who had direct contact with respiratory secretions from the case, (e.g., an explosive cough or sneeze in the face, sharing food or eating utensils, kissing or conducting a medical examination).
- ▲ Antibodies acquired passively through placenta rapidly fall during the first months of life. All close contacts over 4 months of age without documented evidence of receiving at least three DPT doses are therefore considered susceptible.

f) Implement control and prevention measures (see next section).

g) Write a report and send it to the regional CPH in two copies (the region CPH will forward one copy to NCDC). The report should include

- △ The first part of the **Pertussis Investigation Card** (see Figure 22) completed for each single case (number of the cases in the card(s) should correspond to the number of cases indicated in the monthly report form)
- △ **Cluster Investigation Report**, which is prepared for group cases

h) Inform local health administration and other stakeholders about outbreak/group cases verbally or in a written form.

10.5.5 Pertussis Outbreak Control/Response

A single pertussis case in Georgia is considered an outbreak and requires the following control actions from the health facility and rayon CPH:

- ▲ Respiratory isolation should be enforced for known cases. Exclude contact with young children and infants, especially non-immunized infants, until the patient has received at least 5 days of a minimum 14-day course of antibiotics. Cases that do not receive antibiotics should be isolated for 3 weeks.

- ▲ Discharges from nose and throat and articles soiled by these cases should be disinfected.
- ▲ Inadequately immunized household contacts under 7 years of age should be excluded from schools, day care centers, and public gatherings for 21 days after last exposure or until the cases and contacts have received 5 days of appropriate antibiotics.
- ▲ **Protection of close contacts** to prevent or minimize transmission (household members and people who had direct contact with respiratory secretions from the case, e.g., an explosive cough or sneeze in the face, sharing food or eating utensils, kissing or conducting a medical examination)
 - △ Administer antibiotic prophylaxis for 14 days regardless of age and vaccination status. Initiating chemo-prophylaxis more than 3 weeks after exposure has limited benefit for the contacts.
 - △ All close contacts under 7 years of age who have not received four doses of DPT should complete the series with minimal intervals (30 days between doses 1-2 and 2-3, and 6 months between the third and fourth dose). Close contacts under seven years of age that have received 4 doses of DPT, but have not received a dose within 3 years of exposure should be given a booster dose of DPT.

Pertussis vaccine is not given to persons 7 years of age or older, since reactions to the vaccine may be increased in older children and adults.

10.5.6 Recommended Scope of Routine Analysis of Pertussis Surveillance Data to Be Performed by CPH

(See section 5 for more details.)

The CPH should perform routine monthly analysis of the following data:

- ▲ DPT-3 (at 12 months) and DPT-4 (at 24 months) coverage by year and subordinated area/setting
- ▲ Incidence rate by month, year, and geographic area
- ▲ Pertussis cases by age group and immunization status
- ▲ Case “confirmation” and laboratory confirmation rates for the territory
- ▲ Completeness/timeliness of monthly reporting
- ▲ Pertussis case/outbreak investigation rate.

Figure 22. Pertussis Investigation Card

of facility and date

Registration # in NCDC

Region

rayon

Part I

monthly|V-03 6/Per

#	If inform. is additional indicate*	Patient #1	Patient #2	Patient #3	Patient #4
1.	Name				
2.	Address				
3.	Disease onset date	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
4.	Sex	Female Male	Female Male	Female Male	Female Male
5.	Date of birth	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
6.	No of received doses	_____ unknown	_____ unknown	_____ unknown	_____ unknown
7.	Date of last vaccination	/ / / / / Day month year unknown	/ / / / / Day month year unknown	/ / / / / Day month year unknown	/ / / / / Day month year unknown
8.	Date of notification to CPH	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
9.	Date of investigation	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
10.	Clinical description: (underline)	Cough; paroxysms; inspiratory whooping; vomiting immediately after cough; unknown	Cough; paroxysms; inspiratory whooping; vomiting immediately after cough; unknown	Cough; paroxysms; inspiratory whooping; vomiting immediately after cough; unknown	Cough; paroxysms; inspiratory whooping; vomiting immediately after cough; unknown
11.	Antibiotic therapy	Yes No	Yes No	Yes No	Yes No
12.	Complications	Yes _____ No	Yes _____ No	Yes _____ No	Yes _____ No
13.	Hospitalization (indicate)	Yes _____ No	Yes _____ No	Yes _____ No	Yes _____ No
14.	Outcome	Dies; Alive Unknown	Dies; Alive Unknown	Dies; Alive Unknown	Dies; Alive Unknown
15.	Group case	Yes No unknown	Yes No unknown	Yes No unknown	Yes No unknown
16.	Final classification (underline one)	1)Discarded; 2) Clinical 3) Lab.confirmed; 4) Epid.confirmed			
17.	Date of specimen collection?	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
18.	Date of lab result?	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year

*If the information represents additional data on the case already reported, please indicate this

Responsible Person _____ (name, position) _____

Signature _____

The card should be completed for each case and submitted to the region CPH before day 5 and to NCDC (Tbilisi, 380077, st. M. Asatiani #9, Tel. 37-16-77.39-64-38) before day 7 of the next month.

Part II (to be filled and kept at CPH)

19.	If <3 doses for ≥ 4 months old child, indicate reasons				
20.	Indicate start and end date of antibiotic therapy if performed	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year	/ / / / Day month year
21.	Source of Infection. If known, indicate	unknown; known:			

Response actions

isolation	<input type="radio"/> yes till _____ (date) <input type="radio"/> is not contagious <input type="radio"/> no	<input type="radio"/> yes till _____ (date) <input type="radio"/> is not contagious <input type="radio"/> no	<input type="radio"/> yes till _____ (date) <input type="radio"/> is not contagious <input type="radio"/> no	<input type="radio"/> yes till _____ (date) <input type="radio"/> is not contagious <input type="radio"/> no
-----------	---	---	---	---

> 9 months susceptible contacts

	name	age	address	measures taken: vaccination, isolation

Other outbreak control measures implemented:

- 1
- 2
- 3
- 4.

Comments/Conclusions:

Responsible person _____ (name, position)

10.5.7 Principle Uses of Data for Decision Making at the Regional and Rayon Levels

The regional and rayon-level CPHs will use the data primarily to accomplish the following:

- ▲ Monitor incidence and coverage to track progress toward goals, e.g., decreasing incidence and increasing coverage (target 95 percent), and to identify areas of high risk or with poor program performance.
- ▲ Promptly identify outbreaks in which vaccination of non- and under-immunized children and anti-microbial prophylaxis of contacts can help limit the spread of the disease.
- ▲ Determine why the outbreak occurred. The three major reasons are
 - △ failure to vaccinate (low routine coverage),
 - △ vaccine failure (low protective efficacy of vaccine), and
 - △ accumulation of susceptibles (unvaccinated people and vaccine failures)

Corrective measures will depend on the primary reason for the outbreak.

- ▲ Monitor the effectiveness of outbreak control strategies.
- ▲ Describe the changing epidemiology of pertussis reflected in increased incidence among adults. Raise awareness of physicians, as pertussis is often overlooked in the differential diagnosis of cough illness in adults.
- ▲ Evaluate and improve the performance of the surveillance system (e.g., reaction time for notification, specimen collection).

PROTOCOL FOR LABORATORY CONFORMATION OF PERTUSSIS

Sampling strategy: If your facility has registered 3 or more pertussis cases during the past 30 days, collect specimens from the last patient and two more pertussis patients. Collect specimens at any time on request of CPH.

Confirmation test: Isolation of *B. pertussis* by bacterial culture

Specimen to be collected: Naso-pharyngeal swab or aspirate

Referral laboratory: NCDC. Focal person: Tsaro Gomeluri Phone 39 89 46 / 39 64 38

<p>I. DOCUMENTATION</p>	<p>IV. TRANSPORTATION</p>
<p>Supplies needed:</p> <p><input type="checkbox"/> Journal 60/A <input type="checkbox"/> Marker (water resistant)</p> <p><input type="checkbox"/> Lab investigation request form <input type="checkbox"/> Specimen label</p>	<p>Supplies needed:</p> <p><input type="checkbox"/> Ziplock plastic bag <input type="checkbox"/> Shipping box/container</p> <p><input type="checkbox"/> Plastic container <input type="checkbox"/> Box label</p>
<p>Steps:</p> <ol style="list-style-type: none"> 1. Create a specimen label with patient's name, identification number, date, and time. 2. Fill in a copy of a lab investigation request form with patient information. (It will accompany specimen to the lab.) 3. Make sure patient information has been entered in Journal 60/A and an urgent notification has been sent to CPH. 	<p>Steps:</p> <ol style="list-style-type: none"> 1. Tighten the cap, apply waterproof sealing tape over the cap and top of specimen container. 2. Place specimen container in a suitably sized plastic bag (1st layer) together with a small amount of absorbent material, such as cotton wool. The bag must be sealed either using heated bag sealer or waterproof adhesive tape; as an alternative, use ziplock plastic bags. Specimens from different patients should never be sealed in the same bag. 3. Sealed bags containing the specimens should be placed inside plastic containers with screw-cap lids (2nd layer). Provided that specimens have been double-bagged properly in sealed plastic bags, specimens from several patients may be packed inside the same secondary plastic container. Additional absorbent material should be placed inside the container to absorb any leakage that may occur. 4. Sealed plastic containers should be fitted into insulated 3rd layer containers – outer shipping container. 5. Put the lab investigation request form in a plastic bag and place it in the outer box. 6. Label box with name, address, and telephone number of the referral laboratory and the sender. 7. Label box with the safety precautions ("Do not freeze," "Do not expose to heat," "This side up," "Biological specimen," etc.). 8. Arrange shipping date. 9. When arrangements are finalized, inform the recipient of time and manner of transport and make sure that package reaches referral laboratory within 24 hours of specimen collection.
<p>II. COLLECTION AND HANDLING</p>	
<p>Note: Collect two specimens (at the same time) preferably during the first 1-2 weeks of cough and before administration of antibiotics</p>	
<p>Supplies needed:</p> <p><input type="checkbox"/> Dacron or calcium alginate swabs (avoid rayon or cotton swabs, because they contain acids toxic to <i>B. pertussis</i>)</p> <p><input type="checkbox"/> Sterile saline solution</p> <p><input type="checkbox"/> Regan-Lowe transport medium or</p> <p><input type="checkbox"/> Regan-Lowe agar or Bordet-Gangou media</p>	
<p>Steps:</p> <p><i>Naso-pharyngeal specimens</i> are obtained under direct light using over-the-shoulder illumination using the aseptic technique to prevent contamination by other micro-organisms.</p> <ol style="list-style-type: none"> 1. Gently elevate the nose with the thumb of one hand. 2. Moisten the tip of a small flexible wire naso-pharyngeal swab with sterile water or saline and gently insert it into one of the nostrils. 3. Guide the swab backward and upward along the nasal septum until a distinct feel of resistance indicates that the posterior pharynx has been reached. 4. Gently remove the swab. <p>If while guiding the swab undue resistance is met, attempt the procedure through the opposite nostril. (Pay attention if a tear drop appears – you are in the right place!)</p> <ol style="list-style-type: none"> 5. Plate the specimen directly onto selective culture medium (Regan-Lowe agar or Bordet-Gengou medium) or place it in transport medium (half-strength Regan-Lowe). <p>Note: If these media are unavailable place the swab in a sterile container and send promptly to the lab. In this case, the specimen should arrive at the laboratory within 2 hours.</p> <ol style="list-style-type: none"> 6. Make sure the medium is properly labeled (see section I). 	

III. STORAGE	V. COMMUNICATING TEST RESULTS
<p>Steps:</p> <ol style="list-style-type: none"> 1. Specimen inoculated on the transport media can be stored at room temperature (25°C) for up to 24 hours until shipment. 2. If transportation is delayed, the specimen with the help of an epidemiologist should be inoculated on the Bordet-Gangou media and placed in a thermostat at 37°C (max 3-4 days). 3. In other cases the specimen should be decontaminated. If the facility is not able to decontaminate, the specimen should be sent to the laboratory for this purpose. 	<ol style="list-style-type: none"> 1. Laboratory should communicate results to the clinician within 2 days of receiving the sample. If the result of the test is positive, it should also notify the rayon CPH. <p>Steps:</p> <ol style="list-style-type: none"> 1. Record the results in the case history and in Journal 60/A

10.6 Acute Viral Hepatitis B (with case definitions for acute viral hepatitis A-E)

10.6.1 Rationale for Surveillance

Hepatitis B virus (HBV) infection is one of the major causes of infectious disease morbidity and mortality in Georgia. Based on the seroprevalence of HBsAg in the population (approximately 3 percent overall, and as high as 20 to 40 percent in certain population groups such as intravenous drug users and health workers), Georgia is considered to be a country with intermediate Hepatitis B endemicity.

Approximately 450 to 600 cases of the clinically manifested acute HBV infection are reported annually (10-13 per 100,000). However, with the sharp reduction in hospital utilization by the population in recent years it is reasonable to assume underreporting of clinically manifested hepatitis B. More than half of acute HBV infections are asymptomatic and are rarely diagnosed and reported. Clinical forms of acute hepatitis B are often associated with a long period of disability and have fatal outcomes in 1 to 2 percent of cases.

A variable proportion of persons with acute HBV infection develop chronic infection. Chronic HBV infection is defined as the presence of HBsAg in serum for at least 6 months, or the presence of HBsAg with a negative test for IgM anti-HBc. The risk of developing chronic infection is age-dependent. It is greatest for infants (90 percent), if they are infected at birth (perinatal transmission). Overall 30 to 50 percent of children and 3 to 6 percent of adults with acute infection will develop chronic infections. Persons with chronic HBV infection are at increased risk of developing liver cirrhosis or primary liver carcinoma. It is estimated that at least 600 people die each year due to HBV-induced chronic liver disease in Georgia. In addition, persons with chronic HBV infection are a major reservoir for transmission of HBV infections to others.

Information obtained through hepatitis B surveillance can be used to perform the following:

- ▲ Identify infected persons who need counseling to protect their liver from further harm and referral for medical management
- ▲ Identify contacts of cases who require post-exposure prophylaxis
- ▲ Detect outbreaks
- ▲ Monitor disease incidence in all age groups
- ▲ Determine the epidemiologic characteristics of infected persons, including the source of their infection, to assess and reduce the missed opportunities for vaccination.

The Georgia National Health Policy envisions reduction of the current hepatitis B incidence by 80 percent by 2009 through the following *strategies*:

1. Achieve greater than 90 percent coverage of infants with routine immunization (target 95 percent). A first dose should be given to infants as soon as possible after birth (preferably within 24 hours) to prevent HBV transmission from mother to infant. Perinatal transmission almost always results in a chronic infection.
2. Conduct catch-up vaccination of older persons *in addition* to routine infant vaccination (this

should not hinder efforts to achieve a high level of completion of the vaccination series among infants). Possible target groups could include young adolescents and persons with risk factors for acquiring HBV infection such as long-term haemodialysis patients, health personnel, intravenous drug users, commercial sex workers, residents of mental institutions, and so forth. The success of this strategy may vary, because persons in these groups usually initiate high-risk behaviors before they get vaccinated.

3. Maintain strict adherence to the post-exposure and perinatal exposure recommendations (described below).
4. Improve safety of medical manipulations including safe utilization of sharps, barrier protective measures, and thorough testing of blood and blood products.
5. Enhance public education about individual protection against blood-borne infections and sexually transmitted diseases (STDs).

10.6.2 Recommended Acute Viral Hepatitis Case Definitions

Clinical description: Any person that has an acute illness, typically including acute jaundice, dark urine, anorexia, malaise, fatigue, and right upper quadrant tenderness. Biological signs include increased urine urobilinogen and usually >2.5 times the upper limit of serum alanine aminotransferase (ALT).

Note: The proportion of asymptomatic infections is variable.

Case classification

- ▲ **Clinical (probable)** (unspecified acute viral hepatitis): A case that meets the clinical description above.
- ▲ **Confirmed:** A case that has at least one of the following.

For hepatitis B:

- ▲ IgM antibody to hepatitis B core antigen (anti-HBc) positive (if done) or
- ▲ Hepatitis B surface antigen (HbsAg) positive (if the previous test cannot be done)¹⁴

For hepatitis A:

- ▲ IgM antibody to hepatitis A antigen (anti-HAV) positive or
- ▲ A case compatible with the clinical description in a person who has an epidemiological link (a close contact with a lab-confirmed case during his/her period of communicability 15 to 50 days prior to the onset of symptoms) with a confirmed hepatitis A case.

For patients negative for hepatitis A or B, further testing for a diagnosis of acute hepatitis C, D, or E is recommended.

¹⁴ The anti-HBc IgM test is specific for acute infection. HBsAg is less desirable since cannot distinguish acute new infections from exacerbation of chronic hepatitis B. Continued seropositivity (>six months) is an indicator of chronic infection.

For hepatitis C:

- ▲ IgM antibody to hepatitis C antigen (anti-HCV) positive

For hepatitis D: (only as co-infection or super-infection of hepatitis B)

- ▲ Anti-HDV positive and HBsAg positive
- ▲ Anti-HDV positive and IgM anti-HBc positive

For hepatitis E:

IgM antibody to hepatitis E antigen (IgM anti-HEV) positive

Because the clinical picture for all acute viral hepatitis A through E is similar, only laboratory testing can reliably distinguish various etiological agents. Testing for as many markers as possible is therefore very important, because response measures depend on the type of hepatitis identified.

Anti-HBs is present in persons who have resolved from the HBV infection or those who have developed immunity after vaccination. anti-HBc is not present after vaccination.

Laboratory testing is currently mandated for every clinical (probable) case of acute viral hepatitis (except for an outbreak of hepatitis A, where it is required to confirm at least one case, provided that all cases are epidemiologically linked or every case where such link cannot be established). The regional CPH can be contacted to obtain the most current list of NCDC recognized/recommended laboratories in the area.

10.6.3 Case Notification Procedures and Forms

Any clinical (probable) case of acute viral hepatitis identified by providers or a positive lab test for any hepatitis requiring urgent notification of the CPH within 24 hours by any existing means of communication. General requirements are outlined in more detail in section 4.

10.6.4 Hepatitis B Case/Outbreak Investigation

Although outbreaks of hepatitis B are rare, rapid identification and investigation of cases of acute hepatitis B is important because the source could be identified and measures can be taken to prevent further transmission to other persons (e.g., post-exposure prophylaxis). In addition, identification of risk factors for infection provides a means to assess the effectiveness of hepatitis B immunization activities in the community and identify missed opportunities for immunization.

Note: A confirmed acute hepatitis B case requires an investigation by a rayon CPH epidemiologist in cooperation with facility health workers within 3 business days of notification.

The following steps are recommended in an investigation (see also section 6):

a) Verify that all hepatitis B cases are laboratory confirmed by reviewing medical records.

Collect serum specimens to confirm the evidence of acute liver disease (elevated aminotransferase levels) and determine its type if this has not been done previously.

b) Collect data as envisioned in the acute hepatitis B outbreak investigation card (see Figure 23).

The collected data should be verified against the information found in health facility's infectious disease register 60/A.

c) Identify the source of infection. Verify the following with respect to every patient:

- ▲ Was he/she in contact with an acute or chronic hepatitis case?
Sexual Household Other _____
- ▲ Did the person have dental work or surgery?
- ▲ Did the person have another type of surgery?
- ▲ Did the person have medical injections or vaccinations with nondisposable (i.e., used on multiple occasions) needles or syringes?
- ▲ Did the person have invasive diagnostic or endoscopic procedures?
- ▲ Did the person use needles for injection of drugs?
- ▲ Did the person have an accidental stick or puncture with a needle or other object contaminated with blood?
- ▲ Did the person have acupuncture? Tattooing? Ear piercing?
- ▲ Was the person employed in a medical, dental, or other field involving contact with human blood?
- ▲ Did the person receive blood or blood products? Specify dates _____
- ▲ Did the person have multiple sexual partners?
- ▲ Was the person associated with a dialysis or kidney transplant unit?

d) Conduct a search for additional cases if two or more cases occur in association with common exposure.

e) Investigate safety of (medical) manipulations and practices by the potential source of infection, such as the following:

- △ Adequacy of sterilization
- △ Safe utilization of sharps and medical waste
- △ Implementation of barrier methods for protection
- △ Sensitivity of tests used for screening of donated blood for HbsAg

f) Identify and prepare a list of contacts for post-exposure prophylaxis (e.g., sexual, household, persons with suspected blood exposure).

g) Implement control and prevention measures (see next section).

h) In case of outbreaks write a report and send to regional CPH in two copies (the region CPH will forward one copy to NCDC). The report should include

- △ The first part of the **Hepatitis B Investigation Card** (see Figure 23) filled for each single case (number of cases in the card(s) should correspond to the number of cases indicated in the monthly report form)
- △ **Cluster Investigation Report**, which is prepared for group cases

h) Inform local health administration and other stakeholders about outbreak verbally or in a written form.

10.6.5 Outbreak Control/Response

An outbreak of viral hepatitis requires the following control actions from the health facility and rayon CPH:

1. If the source of infection is identified, implement measures to stop further transmission by addressing the reason; for example:
 - △ Institute strict aseptic standards, adequate sterilization and safe medical waste disposal in the health facility
 - △ Withdraw the infected lot of a blood/plasma derivative from use
 - △ Test all donated blood by a more sensitive test
 - △ Impose stricter donor selection standards (e.g., only people without a history of viral hepatitis and injecting drug use who have not been received a blood transfusion or tattoo in the past 6 months); and,
 - △ Enforce aseptic sanitary practices in the tattoo parlor.
2. Ensure that post-exposure and perinatal prophylaxis are carried out.

Post-exposure prophylaxis

- a. Susceptible¹⁵ sexual contacts and persons with suspected blood exposure (e.g., sharing razors) to the index case should be given Hepatitis B Immunoglobulin (5 ml) and begin hepatitis B vaccine on a 0, 1-, and 6-month schedule preferably within 48 hours (maximum 14 days) of the exposure/last sexual contact. Immunoglobulin and vaccine should be administered into different anatomic sites.
- b. After percutaneous (e.g., needle stick) or mucous membrane exposures to blood that might contain HBsAg, a decision to provide post-exposure prophylaxis must include consideration of several factors:
 - △ Whether information on the source of blood is available
 - △ HBsAg status of the source
 - △ Hepatitis B status of the exposed person.

¹⁵ Testing for susceptibility may be considered if it does not delay the above measures. Persons are not susceptible to HBV infection if they are positive for anti-HBc, which are indicative of either acute, resolved, or chronic infection.

- c. Immunization of all other household contacts of a person with acute or chronic infection, particularly children and adolescents, is strongly encouraged.
- d. If the index case is a mother or caretaker of a child <12 months of age, this infant should be given Hepatitis B Immunoglobulin (0.5ml) and also vaccinated. Immunoglobulin is not needed for infants who already received at least 2 doses of the vaccine.

Perinatal exposure prophylaxis

Infants born to HbsAg-positive women should receive immunoprophylaxis with Hepatitis B Immunoglobulin (0.5–1ml) and hepatitis B vaccine within 12 hours of birth. Follow-up doses of vaccine should be given according to the immunization schedule (at 2 and 4 months of age). Immunoglobulin and vaccine should be administered into different anatomic sites.

10.6.6 Recommended Scope of Routine Analysis of Hepatitis B Surveillance Data to Be Performed by CPH

(see section 5 for more details)

The CPH should perform routine monthly analysis of the following data:

1. Hepatitis B-3 (at 12 months) coverage by subordinated area/setting
2. Incidence rate by month, year, and geographic area
3. Hepatitis B cases by age group and immunization status
4. Case/laboratory confirmation rates for the territory
5. Completeness/timeliness of monthly reporting
6. Acute hepatitis B outbreak investigation rate

10.6.7 Principle Uses of Data for Decision Making at the Regional and Rayon Levels

The regional and rayon-level CPHs will use the data primarily to accomplish the following:

- ▲ Monitor Hepatitis B-3 coverage by geographic area to identify areas with weak program performance where action needs to be taken to correct the situation.
- ▲ Promptly identify outbreaks and investigate why they occurred. Implement respective measures to stop further transmission and monitor the effectiveness of control strategies.
- ▲ Understand the epidemiology of hepatitis B in terms of distribution over time, by age group/occupation and by geographical area, typical causes and choose proper strategies for routine control measures, such as
 - △ Providing catch-up immunization;
 - △ Improving safe utilization of sharps, use of barrier protective measures, etc.; and
 - △ Enhancing public education about individual protection against blood-borne infections and STDs.

- ▲ Evaluate and improve the performance of the surveillance system (e.g., reaction time for notification, specimen collection).

Figure 23. Acute Hepatitis B Outbreak Investigation Card

of facility and date

Registration # in NCDC

Region

rayon

Monthly IV- 7/HB

SECTION I (CASE INFO)						
#		Patient #1	Patient #2	Patient #3	Patient #4	Patient #5
1.	Name					
2.	Date of birth					
3.	Address					
4.	Age					
5.	Group case	Yes No				
6.	Date of disease onset	/ /Day/ /Mo/ /Yr				
7.	Results of laboratory confirmation tests	1. Anti HBc 2. HBs Ag				
8.	Date of lab results	/ /Day/ /Mo/ /Yr				
9.	Date of notification to CPH	/ /Day/ /Mo/ /Yr				
10.	Date of epid investigation	/ /Day/ /Mo/ /Yr				
11.	Hospitalization	Yes No Where _____				
12.	Outcome	Died Alive Unknown				
13.	Number of immunizations received	_____ Unknown				
14.	Last vaccination date	/ /Day/ /Mo/ /Yr				
15.	Risk factor and source of infection					

Responsible Person _____ (name, position) _____
Signature _____

The card should be completed for each case and submitted to the region CPH before day 5 and to NCDC (Tbilisi, 380077, st. M. Asatiani #9, Tel. 37-16-77.39-64-38) before day 7 of the next month.

21.	Safety of practices by source	YES	NO								
	Sterilization adequate?	YES	NO								
	Sharps/waste utilization safe?	YES	NO								
	Barrier methods implemented?	YES	NO								
	Blood screening tests sensitive?	YES	NO								
22.	Provide details										

SECTION III (RESPONSE)

List of contacts for post-exposure prophylaxis

	Full name	Age	Address	Place of study/work	Type of contact (household, sexual, suspected blood or perinatal exposure)	Susceptible /Immune?	Date immunization started	Date immune globulin given

Implemented measures aimed at the source of infection to stop further transmission

- 1.
- 2.
- 3.

Other outbreak control measures:

- 1.
- 2.
- 3.

Comments/Conclusions:

Responsible person _____ (name, position)

PROTOCOL FOR LABORATORY CONFORMATION OF ACUTE VIRAL HEPATITIS

Sampling strategy: Collect specimens from every probable/clinical case of acute viral hepatitis (except for an outbreak of hepatitis A, where it is required to confirm at least one case, provided that all cases are epidemiologically linked, or every case, where such link can not be established).

Confirmation test: Serological assay. Demonstration of IgM antibody to hepatitis B core antigen (anti-HBc) or hepatitis B surface antigen (HBsAg) if the previous test cannot be done.

Specimen to be collected: Serum or plasma

Referral laboratory: Contact regional CPH for a list of NCDC recognized/recommended labs in your area.

I. DOCUMENTATION	IV. TRANSPORTATION
<p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Register 60/A <input type="checkbox"/> Lab investigation request form <input type="checkbox"/> Marker (water resistant) <input type="checkbox"/> Specimen label 	<p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ziplock plastic bag <input type="checkbox"/> Plastic container <input type="checkbox"/> Cold box with ice packs <input type="checkbox"/> Box label
<p>Steps:</p> <ol style="list-style-type: none"> 1. Create a specimen label with patient's name, identification number, date, and time. 2. Fill in a copy of a lab investigation request form with patient information. (It will accompany specimen to the lab). 3. Make sure patient information has been entered in Journal 60/A and an urgent notification has been sent to CPH. 	<p>Steps:</p> <ol style="list-style-type: none"> 1. Tighten the cap, apply waterproof sealing tape over the cap and top of specimen container. 2. Place specimen container in a suitably sized plastic bag (1st layer) together with a small amount of absorbent material, such as cotton wool. The bag must be sealed either using heated bag sealer or waterproof adhesive tape; as an alternative, use ziplock plastic bags. Specimens from different patients should never be sealed in the same bag. 3. Sealed bags containing the specimens should be placed inside plastic containers with screw-cap lids (2nd layer). Provided that specimens have been double-aggged properly in sealed plastic bags, specimens from several patients may be packed inside the same secondary plastic container. Additional absorbent material should be placed inside the container to absorb any leakage that may occur. 4. Sealed plastic containers should be fitted into insulated 3rd layer containers (e.g., a cold box). First place ice packs at the bottom of the box, and, along the sides, place the plastic container with the specimen in the center, then place more ice packs on top. 5. Put the lab investigation request form in a plastic bag and place it in the outer box 6. Label box with name, address, and telephone number of the referral laboratory and the sender. 7. Label box with the safety precautions ("Do not freeze," "Do not expose to heat," "This side up," "Biological specimen," etc.). 8. Arrange shipping date. 9. When arrangements are finalized, inform the recipient of time and manner of transport and make sure that package reaches referral laboratory within 2–3 days of specimen collection.
II. COLLECTION AND HANDLING	
<p>Note: collect a single serum at the first contact with patient</p> <p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gloves <input type="checkbox"/> Vacutainer tube with needle <input type="checkbox"/> Tourniquet <input type="checkbox"/> Sterilizing swabs <input type="checkbox"/> Pipette <input type="checkbox"/> Adhesive tape <input type="checkbox"/> Band aid 	
<p>Steps:</p> <ol style="list-style-type: none"> 1. Collect 5ml of blood by venipuncture into a sterile tube (without anticoagulant) labeled with patient identification and collection date, and time. 2. Allow blood to clot. 3. Centrifuge blood at 1000g for 10 minutes to separate the serum. <ul style="list-style-type: none"> * Blood can be stored at 4-8°C for up to 24 hours before the serum is separated. Do not freeze whole blood. If there is no centrifuge, blood should be kept in refrigerator until there is complete retraction of the clot from the serum. 4. Carefully remove the serum with a pipette, avoiding extracting red cells, and transfer it aseptically into a sterile labeled vial. <ul style="list-style-type: none"> * If vacutainer tubes containing a gel (yellow cap) are used, serum does not need to be separated after centrifugation manually. (The gel will provide this function). 5. Make sure vial is properly labeled (see section I). 	
III. STORAGE	V. COMMUNICATING TEST RESULTS
<p>Store serum at 4-8°C until it is ready for shipment for up to 7 days. (Sera must be frozen at -20°C for longer periods of storage; in this case, avoid repeated freezing and thawing.)</p> <p>Whole blood may be held at 4-8°C if it can be transported to arrive at the testing lab within 24 hours.</p>	<p>Laboratory should communicate results to the clinician within 2 days of receiving the sample. If the result of the test is positive, it should also notify the rayon CPH.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Record the results in the case history and the Journal 60/A.

10.7 Diphtheria

10.7.1 Rationale for Surveillance

A major epidemic of diphtheria in the 1990s killed more than 150 people in Georgia. Many of those who survived suffered from severe complications of this disease caused by remote effects of the diphtheria toxin, such as myocarditis and nerve paralysis. The epidemic control measures including mass immunization of the country population, laboratory testing, and treatment of 2000 patients and many thousands of contacts required a lot of material and human resources.

The epidemic has highlighted the need for adequate surveillance and epidemic preparedness. It is believed to have been caused primarily by a lack of routine immunization of adults and low coverage in children. Some of the fatalities could have been prevented if the cases had been detected earlier in the course of the disease and diphtheria antitoxin administered at an earlier stage.

Now that the epidemic is fully controlled, surveillance information will be used primarily to monitor the effectiveness of the routine disease prevention and control program and to characterize infected patients and areas so that additional intervention efforts can be focused on assessing and reducing the missed opportunities for vaccination, providing necessary anti-microbial prophylaxis, and enhancing epidemic preparedness activities.

The Georgia National Health Policy envisions reduction of diphtheria incidence < 0.1 per 100,000 population and elimination of diphtheria fatality by 2006 through the following *strategies*:

- ▲ Achieve more than 90 percent coverage of infants and children with routine immunization (target 95 percent). The immunization schedule calls for a five-dose immunization schedule: primary series of three doses of DPT reinforced with a first DPT booster dose in the second year of life and a second booster DT given at the age of five years.
- ▲ Achieve more than 85 percent coverage of adolescent and adult population Td boosters, given at 10-year intervals.
- ▲ Provide prompt detection, appropriate case management, and availability of adequate supplies of antitoxin and antibiotics.
- ▲ Conduct rapid case investigation and management of close contacts.
- ▲ Conduct appropriate outbreak management.
- ▲ Ensure adequate surveillance and strengthening of laboratory network.

10.7.2 Recommended Diphtheria Case Definition

Clinical description: Diphtheria is an acute illness characterized by

- ▲ laryngitis **or** pharyngitis **or** tonsillitis **and**
- ▲ an adherent membrane of the tonsils, pharynx, and/or nose.

Case classification

- ▲ **Probable (clinical):** A case that meets the clinical description of diphtheria
- ▲ **Confirmed:** A case clinically compatible with at least one of the following:
 - △ Isolation of toxin-producing *Corynebacterium diphtheria* or *C.ulcerans* from a clinical specimen, **or**
 - △ An epidemiological link¹⁶ to a confirmed case.

Note: Nonrespiratory/cutaneous diphtheria cases with isolation of toxigenic strains should be reported, as should asymptomatic carriers (any anatomical site) with toxigenic strains. Cases with nontoxigenic *C.diphtheriae* or *C.ulcerans* should not be reported.

Laboratory testing is currently mandated for every clinical (probable) case of diphtheria. The regional CPH can be contacted to obtain the most current list of NCDC recognized/recommended laboratories in the area.

10.7.3 Case Notification Procedures and Forms

Any clinical (probable) or confirmed case of diphtheria identified by providers or isolation of *Corynebacterium Diphtheriae* or *C. ulcerans* by any laboratory requires urgent notification of the CPH within 24 hours by any existing means of communication. General requirements are outlined in more detail in section 4.

10.7.4 Diphtheria Case/Outbreak Investigation

Rapid recognition and investigation of the disease is important to ensure early appropriate treatment with diphtheria antitoxin, obtain necessary laboratory specimens before antibiotic or antitoxin treatment, identify and evaluate contacts, and provide necessary antimicrobial prophylaxis to prevent further spread.

Note: Every single reported diphtheria case has to be investigated by a rayon CPH epidemiologist in cooperation with NCDC and regional CPH experts and facility health workers within 2 business day of notification. The following steps are required for investigation (see also section 6):

- a) **Verify that all cases meet the clinical description of diphtheria by reviewing medical records.**
- b) **Collect data as envisioned in the diphtheria investigation card (see Figure 24).**

The collected data should be verified against the information found in the health facility's infectious disease register 60/A. All newly identified cases as a result of the investigation should be recorded in this register as well. Facilities should follow up with recent cases of tonsillitis (registered within 7 to 10 days) for signs of diphtheria and continue filling out the investigation card for all new clinical (probable) cases identified.

¹⁶ Epidemiological link is defined as a close contact (household, work/school setting, etc.) with a confirmed case 2-7 days prior to the onset of symptoms.

c) Identify the source of infection and establish epidemiological links.

Check if diphtheria patients were in close contact with a confirmed case two to seven days prior to onset of symptoms to determine the existence of an epidemiological link.

d) Assess potential for transmission and identify close contacts.

Risk of contracting diphtheria is directly related to the proximity and the duration of the contact. A *close contact* is someone having cared for, having lived with, or having had direct contact with respiratory secretions of a clinical (probable) or confirmed case in the past seven days. Those are likely to be in the following groups:

- ▲ Household members living in the same house or apartment
- ▲ Friends, relatives, or caretakers who visited the patient at home
- ▲ Dates or sexual partners
- ▲ Classmates in the school or persons working in the same office.

A wider search for carriers is very complicated, expensive, and nonproductive.

e) Collect specimens from all the patients (if not done yet) and their close contacts.

All patients and their close contacts should have specimens taken from the nose and throat and from the membrane (i.e., both nasopharyngeal and pharyngeal swabs) for a culture prior to administration of antibiotics. If possible, swabs should be taken from beneath the membrane. Even if treatment with antibiotics has begun, specimens should be taken, but the likelihood of the bacteria isolation will be much smaller.

Serologic testing is recommended prior to the administration of antitoxin for cases only. Measurement of the patient's serum antibodies may help in assessing the probability and the course of diphtheria. If antibody levels are low (<0.01 iu/ml), diphtheria cannot be ruled out even if the culture is negative, but if levels are high, *C. diphtheria* is less likely to produce serious illness.

f) Implement control and prevention measures (see next section).

g) Write a report and send it to the regional CPH in two copies (the region CPH will forward one copy to NCDC). The report includes:

- △ The first part of the **Diphtheria Investigation Card** (see Figure 24) completed for each single case (number of cases in the card(s) should correspond to the number of cases indicated in the monthly report form)
- △ **Cluster Investigation Report**, which is prepared for group cases

h) Inform local health administration and other stakeholders about outbreak/group cases verbally or in a written form.

Figure 24. Diphtheria Investigation Card

Registration # _____ Month _____ Facility _____ Rayon _____

**Monthly IV-03
8/Diph**

Part I

#	If information is additional indicate *	Patient #1	Patient #2
	Name		
1.	Age		
2.	City, rayon, address		
3.	Institutional setting?	Yes No	Yes No
4.	Group case	Yes No	Yes No
5.	If yes, what?	Kindergarten, School, High school, Office	Kindergarten, School, High school, Office
6.	Contact with sick person or carrier? If yes, when and with whom?	Day/ /month / /Year / / Name _____	Day/ /month / /Year / / Name _____
7.	When did s/he became ill?	Day/ /month / /Year / /	Day/ /month / /Year / /
8.	When did s/he visited doctor for the first time and at what facility?	Day/ /month / /Year / / Facility _____	Day/ /month / /Year / / Facility _____
9.	Date diphtheria diagnosed for the first time	Day/ /month / /Year / /	Day/ /month / /Year / /
10.	Date of notification to CPH	Day/ /month / /Year / /	Day/ /month / /Year / /
11.	Date of investigation	Day/ /month / /Year / /	Day/ /month / /Year / /
12.	Date of first diagnosis	Day/ /month / /Year / /	Day/ /month / /Year / /
13.	Hospitalized when, where?	Day/ /month / /Year / / Hospital _____	Day/ /month / /Year / / Hospital _____
14.	Final diagnosis	Local, Generalized, Toxic	Local, Generalized, Toxic
15.	Antitoxin given? If yes, when and what amount?	/ / / / _____ units Day month year	/ / / / _____ units Day Month Year
16.	Date and time of specimen collection	hr/ Day/ /month / /Year /	hr/ Day/ /month / /Year /
17.	Date antibiotics started?	Day/ /month / /Year / / Before culture? Y/N	Day/ /month / /Year / / Before culture? Y/N
18.	Outcome	Died, discharged / / / / Day Month Year	Died, discharged/ / / / Day Month Year
19.	If dead, indicate cause.		
20.	Culture dates and results (biotype and toxigenicity of strain, if culture positive) If not done, please, indicate NOT DONE.	1. 2. 3. 4.	1. 2. 3. 4.
21.	DT or Td given before discharging?	Yes No	Yes No
22.	Number of received vaccinations	_____ unknown	_____ unknown
23.	Date of last vaccination and vaccine type	Day/ /month / /Year / / _____ unknown	Day/ /month / /Year / / _____ unknown
24.	How many people were in close contact?		
25.	How many of them tested bacteriologically?		
26.	From how many was <i>C. diphtheria</i> isolated?		

* If the information represents additional data on the case already reported, please indicate this.

Responsible Person _____ Signature _____

Name _____ Tel: _____ Address, fax, E-mail _____

The card should be submitted to the region CPH before day 5 and to NCDC (Tbilisi, 380077, st. M. Asatiani #9, Tel. 37-16-77.39-64-38) before day 7 of the next month **for each diphtheria case.**

10.7.5 Outbreak Control/Response

An outbreak of diphtheria requires the following control actions from the health facility and rayon CPH:

1. If diphtheria is suspected on the basis of clinical findings, antitoxin¹⁷ should be given **immediately** after bacteriologic specimens are taken, without waiting for results, since it can only neutralize circulating toxin and has no effect on toxin already bound to tissue. Late administration of antitoxin (after the third day from disease onset) may not help reduce the risk of development of diphtheria complications (toxic shock, myocarditis, neuritis) and a fatal outcome.

Note: Physicians who do not have antitoxin at their disposal must promptly inform the regional health administration.

2. Diphtheria patients should be isolated until two cultures are taken from both throat and nose not less than 24 hours apart, and not less than 24 hours after cessation of anti-microbial therapy, and fail to show diphtheria bacilli. Where cultures are not done, isolation may be ended after 14 days of appropriate antibiotic treatment.
3. Articles in contact with patient or soiled by discharges of patient should be disinfected.
4. Diphtheria patients should get a booster or start/continue vaccination series (if not immunized) prior to discharge from a hospital, because development of natural immunity after diphtheria cannot be guaranteed .
5. **Close diphtheria contacts (see section 10.7.4 d)** should do the following:
 - △ Undergo bacteriological investigation as described above
 - △ Remain under clinical surveillance for signs/symptoms specific for diphtheria for seven days after the last contact with a diphtheria case
 - △ Be offered prophylactic antibiotics irrespective of their immunization status. Those cases where *C. diphtheriae* was isolated must be cultured again at the end of the preventive course to assure eradication of the organism
 - △ Get a booster of diphtheria toxoid if more than 3 years have elapsed since their last dose, or initiate/continue a primary series (if they were not immunized) with Td if they are older than 7 years of age or administer the DPT/DT if they are young children.

10.7.6 Recommended Scope of Routine Analysis of Diphtheria Surveillance Data to Be Performed by CPH

(See section 5 for more details.)

The CPH should perform routine monthly analysis of the following data:

- ▲ DPT-3 (at 12 months), DPT-4 (at 24 months), DT (at 6 years) and Td (at 14 years and among

¹⁷ The recommended dosage and route of administration of diphtheria antitoxin depend on the extent and duration of the disease. Detailed recommendations can be obtained from the MoLHSA order #58. Treatment with a 14-day course of antibiotics should be promptly started as well.

adults) coverage by subordinated area/setting

- ▲ Cases by month/year, age group, immunization status, and geographic area
- ▲ Proportion of cases laboratory tested
- ▲ Case/laboratory confirmation rates for the territory
- ▲ Proportion of cases treated with antitoxin “on time” (≤ 3 days from the onset of symptoms)
- ▲ Major reasons for late treatment with antitoxin:
 - △ Patient sought care too late
 - △ Diphtheria was not recognized promptly
 - △ Physicians delayed measures aimed at ensuring immediate start of the specific treatment
 - △ CPH/NCDC failed to ensure availability of antitoxin at the place of patient’s hospitalization
- ▲ Completeness/timeliness of monthly reporting
- ▲ Diphtheria case/outbreak investigation rate.

10.7.7 Principle Uses of Data for Decision Making at the Regional and Rayon Levels

The regional and rayon-level CPHs will use the data primarily to accomplish the following:

1. Monitor diphtheria vaccination and booster coverage in all age groups by geographic area to identify areas with weak program performance where action needs to be taken to correct the situation.
2. Promptly identify cases and outbreaks and determine why they occurred (e.g., failure to immunize, vaccine failure, accumulation of susceptibles, waning immunity). Implement respective measures to stop further transmission and monitor the effectiveness of the control strategies.
3. Determine age-specific incidence rates, immunization status of cases, and other factors to understand epidemiology of diphtheria and define risk groups. Implement respective routine control strategies such as local Td booster campaigns for adolescents and adults or selected high-risk groups.
4. Determine major reasons for late treatment of diphtheria patients with antitoxin and implement measures to address them, such as
 - △ enhancing provider education,
 - △ making a regional reserve of diphtheria antitoxin, and
 - △ health education of population.
5. Evaluate and improve the performance of other aspects of the diphtheria surveillance system (e.g., reaction time for notification, proportion of cases laboratory tested) and take corrective measures as appropriate.

<p><u>Nasal swabs</u></p> <p>Nasal specimens are obtained under direct light using over-the-shoulder illumination using the aseptic technique to prevent contamination by other micro-organisms.</p> <ol style="list-style-type: none"> 1. Gently elevate the nose with the thumb of one hand. 2. Moisten the tip of a small flexible wire nasal swab with sterile water or saline and gently insert it into one of the nostrils. 3. Guide the swab with rotate movement till 1/3 of the nasal septum. 4. Take the specimen with the same swab from the second nostril. <p><u>Naso-pharyngeal swabs</u></p> <p>Naso-pharyngeal specimens are obtained under direct light using over-the-shoulder illumination using the aseptic technique to prevent contamination by other micro-organisms</p> <ol style="list-style-type: none"> 1. Gently elevate the nose with the thumb of one hand. 2. Moisten the tip of a small flexible wire naso-pharyngeal swab with sterile water or saline and gently insert it into one of the nostrils. 3. Guide the swab backward and upward along the nasal septum until a distinct feel of resistance indicates that the posterior pharynx has been reached. 4. Gently remove the swab. <p>If while guiding the swab undue resistance is met, attempt the procedure through the opposite nostril (pay attention if a tear drop appears – you are in the right place!)</p> <p><u>Skin diphtheria and other lesions</u></p> <ol style="list-style-type: none"> 1. Lesions should be cleansed with normal saline and crusted material removed. 2. Press the swab firmly into the lesion. <p>Note: In case of skin or eye diphtheria the throat and nasal specimens should be taken as well.</p>	
<p>After collection, inoculate the specimen on Amies or Stewart's transport medium or Blood agar.</p> <p>Note: If these media are unavailable place the swab in the sterile container or special packet containing silikagel and send promptly to the lab. In this case, the specimen should arrive at the laboratory within 2 hours.</p>	
<p>III. STORAGE</p>	<p>V. COMMUNICATING TEST RESULTS</p>
<p>Steps:</p> <ol style="list-style-type: none"> 1. Specimen inoculated on the transport media can be stored at room temperature (25°C) for up to 24 hours until shipment. 2. If transportation is delayed, the specimen with the help of an epidemiologist should be inoculated on the Blood agar and placed in a thermostat at 37°C (for 24-48 hours). 3. In other cases the specimen should be decontaminated. If the facility is not able to decontaminate, the specimen should be sent to the laboratory for this purpose. 	<p>Laboratory should communicate results to the clinician within 2 days of receiving the sample. If the result of the test is positive, it should also notify the rayon CPH.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Record the results in the case history and Journal 60/A.

10.8 Poliomyelitis

10.8.1 Rationale for Surveillance

Infection with poliovirus results in a spectrum of clinical manifestations from inapparent infection to non-specific febrile illness, aseptic meningitis, paralytic disease, and death. Two phases of acute poliomyelitis can be distinguished: a nonspecific febrile illness, followed in 0.1 to 1.0 percent of patients by aseptic meningitis and/or paralytic disease. Depending on the site of paralysis, poliomyelitis can be classified as spinal, bulbar, or spino-bulbar disease. Progression to maximum paralysis is rapid (two to four days), usually associated with fever and muscle pain, and it rarely continues after the temperature has returned to normal. Spinal paralysis is typically asymmetric, more severe proximally than distally, and deep tendon reflexes are absent or diminished. Bulbar paralysis may compromise respiration and swallowing. Between 2 and 10 percent of cases of paralytic poliomyelitis are fatal.

Poliomyelitis is targeted for eradication. In June 2002, Georgia as well as other European countries was certified by WHO as polio free. Experts noted that Georgia has established a good system of Acute Flaccid Paralysis (AFP) surveillance and that no indigenous wild polioviruses have been isolated in the country since 1991. Routine oral poliomyelitis vaccine (OPV) coverage rates have been steadily increasing and are now believed to be greater than 80 percent. One case of vaccine-associated paralytic poliomyelitis (VAPP) was reported in 1997.¹⁸ Despite the success of polio eradication activities, the potential for importation of wild poliovirus into Georgia will remain until worldwide poliomyelitis eradication is achieved.¹⁹

Highly sensitive surveillance for AFP, including immediate case investigation and specimen collection, is critical to detect potential wild poliovirus circulation with the ultimate objective of polio eradication. Countries with adequate surveillance systems should find at least one case of AFP each year for every 100,000 children less than 15 years of age. This minimum annual rate is based on the fact that in absence of wild poliovirus transmission, cases of AFP due to other causes (e.g., Guillain Barre syndrome, transverse myelitis, or tumors) will continue to occur. Therefore, a sensitive AFP surveillance system would be expected to detect these background cases, even when wild poliovirus is not circulating in a country.

Other strategies include maintaining and increasing routine OPV-3 coverage (target 98 percent), implementing additional immunization measures such as national/subnational immunization days and regular mop-up campaigns in border zones and hard-to-reach territories, where local circulation of the virus might take place.

10.8.2 Recommended Polio Case Definition

Clinical (probable) Case – A case that meets the following criteria:

- ▲ Any case of AFP rapidly developed within one to four days (including Guillain Barre

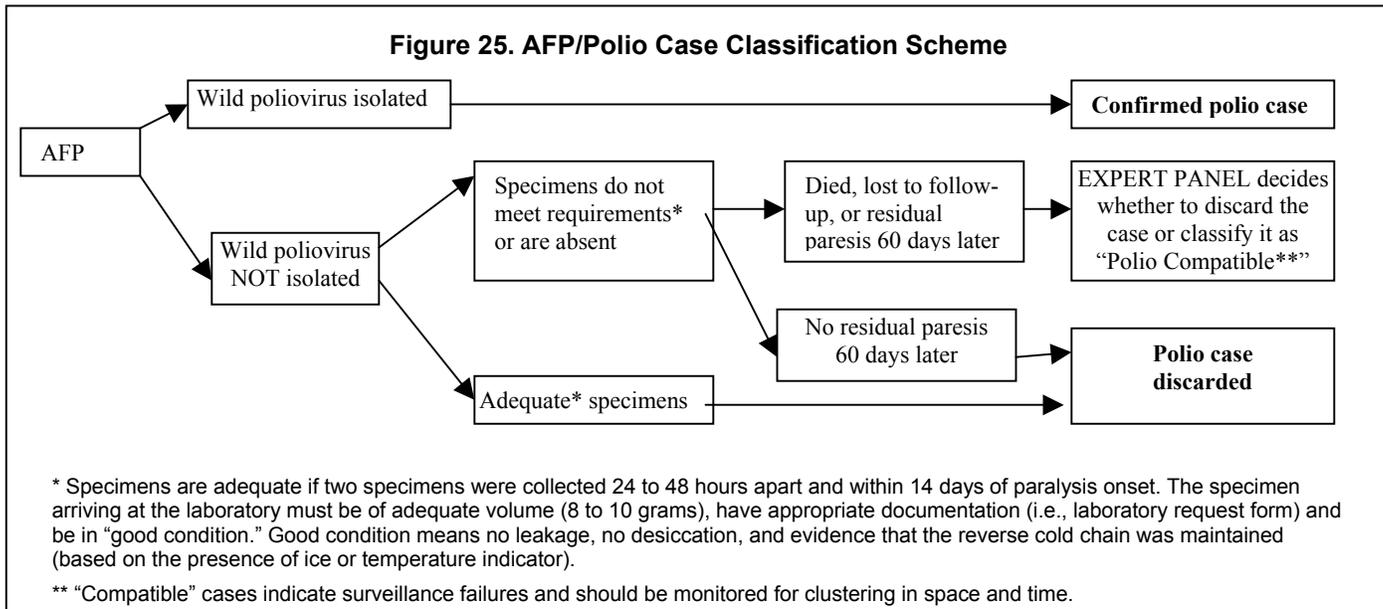
¹⁸ VAPP is a very rare disease with a risk of about one case per 2.5 million doses of OPV administered.

¹⁹ A nonparalytic case of confirmed imported wild poliovirus infection caused by poliovirus type 1, originating from the Indian subcontinent, occurred in Kvemo Kartli Region in 2001. The case was clinically manifested as meningoencephalitis and classified as nonparalytic polio.

syndrome²⁰) in children aged 0-15 years (except for paralysis of confirmed traumatic or tumor etiology), **or**

- ▲ Any person at any age in which a physician suspects acute poliomyelitis

Note: This suspected diagnosis can be used for a limited period of time, and a *final case classification must be made within 70 days of disease onset by the National Expert Panel*, according to the scheme presented in Figure 25.



Laboratory testing is mandated for every AFP and suspected polio case. Specimens should be sent to the National Polio Laboratory accredited by WHO. This laboratory is located at NCDC.

10.8.3 Case Notification Procedures and Forms

Any AFP or suspected polio case identified by providers requires urgent notification to the CPH within 24 hours by any existing means of communication.

10.8.4 AFP/Polio Case Investigation

Rapid recognition of suspected poliomyelitis cases is critical to identifying possible wild poliovirus transmission. It will allow collection of specimens for poliovirus isolation, which is critical for ruling out or confirming paralytic poliomyelitis, whether wild virus associated or vaccine related. Rapid detection of wild poliovirus-associated cases will permit the timely implementation of control efforts.

Note: Every single reported AFP or polio case has to be investigated by an investigation team led by an NCDC expert and including an expert neurologist, regional and rayon CPH epidemiologists,

²⁰ Guillain Barre syndrome, also known as Landry's ascending paralysis, is an acute idiopathic inflammatory demyelinating polyneuropathy characterized by the rapid onset of weakness and, often, paralysis of the legs, arms, breathing muscles, and face. The exact cause is unknown, but has been associated with abnormal immune response to viral infection.

and facility health workers, within 2 business days of notification.

The following steps are required for the investigation:

- a) *Collect data as envisioned in section I of the AFP Investigation Card (shown in Figure 26).*

Figure 26. AFP Investigation Card

SECTION I	
General information	
Date of investigation /-----/-----/-----/	Epidemiological number*
Patient's name and surname	Gender <input type="radio"/> Male <input type="radio"/> Female
Address	
Father's name and surname	Mother's name and surname
Patient's date of birth /-----/-----/-----/ or indicate age ___ years	
Case registration and hospitalization	
Date of the first visit to a physician after AFP onset	/-----/-----/-----/
Indicate the name of the facility visited	
Date of urgent notification	/-----/-----/-----/
Date of hospitalization	/-----/-----/-----/
Place of hospitalization	
Case history number	
Clinical diagnosis	
Name of diagnosing physician	
Clinical information	
Date of paralysis onset	/-----/-----/-----/
If the patient died, indicate date	/-----/-----/-----/
Seizures or other neurological disorders?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown
If yes, specify:	
Is paralysis acute (quickly progressing)?	<input type="radio"/> Yes <input type="radio"/> No
Is paralysis flaccid?	<input type="radio"/> Yes <input type="radio"/> No
If the paralysis is neither acute nor flaccid – STOP the investigation.	
If the diagnosis is known – specify it here:	
Are there other confirmed causes of paralysis (e.g., trauma)	<input type="radio"/> Yes <input type="radio"/> No
If yes, indicate the cause and STOP the investigation. If no - poliomyelitis is possible. Investigation should be continued	
Did the patient have temperature at paralysis onset?	<input type="radio"/> Yes <input type="radio"/> No
Is the paralysis asymmetrical?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown

Paralysis location		Left leg	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
		Right leg	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
		Left hand	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
		Right hand	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
		Respiratory muscles	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
		Neck muscles	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
		Facial muscles	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
		Other muscles specify _____	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown
Travel history					
Did the patient travel farther than 10km from his house within 28 days preceding the paralysis onset?		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown	
If yes		date of leaving /-----/-----/-----/		date of return /-----/-----/-----/	
Did the patient visit another country?		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown	
If yes – which one?					
If not, specify the names of rayon(s) and towns/villages visited in Georgia					
Have any other paralysis cases been reported in places visited by the patient within 60 days from the onset of paralysis in this case?		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown	
Immunization history					
Are patient's immunization records available?		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown	
Specify OPV doses received and type of evidence		OPV-1	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
		OPV-2	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
		OPV-3	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
		OPV-4	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
		OPV-5	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
Additional OPV doses received during mass campaigns		First	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
		Second	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
		Third	<input type="radio"/> <i>Documental</i>	<input type="radio"/> Verbal	<input type="radio"/> Unknown
Date of the last OPV dose		/-----/-----/-----/			
Was anyone living with the case vaccinated with OPV during 28 days prior to the onset of paralysis?		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown	
Fecal sample collection					
Date first sample taken		/-----/-----/-----/	date sent to NCDC /-----/-----/-----/		
Date second sample taken		/-----/-----/-----/	date sent to NCDC /-----/-----/-----/		
Have specimens from contacts been taken?		<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Unknown	
If yes, from how many people? _____					
Name, Last name of person who carried out investigation _____ Signature _____					
The card should be submitted to the region CPH before the fifth day and to NCDC before seventh day of the next month					

* A 12-symbol epidemiological number is assigned to every suspected polio case. Detailed instructions on how to assign a number are specified in the MoLHSA order #243/O dated July 2, 1997.

b) Collect two stool specimens from the case.

Two stool specimens should be obtained within 14 days from the paralysis onset with a 24- to 48-hour interval. Samples should not be dry and should be obtained in sufficient amount (approximately 8 to 10 grams). Transport media is not needed for stool sample transportation; it could be sent in hermetically closed Penicillin vial (not necessarily washed) or in a similar sterile vial observing cold chain requirements (+4 to 8°C).

Samples should be sent to the NCDC for investigation, accompanied by a referral form (Figure 27).

Figure 27. Laboratory Referral Form for Poliomyelitis Investigation

Epidemiological number: _____ Hospital _____

Type of material (e.g., feces, blood) sent for investigation _____

Patient's name and surname _____

Address: _____

Date of birth _____ /-----/-----/----/
D M Y

If not known indicate age in months _____

Date of paralysis onset _____ /-----/-----/----/

Date the first stool sample was taken _____ /-----/-----/----/

Date the first stool sample was taken _____ /-----/-----/----/

Date the first sample was sent _____ /-----/-----/----/

Date the second sample was sent _____ /-----/-----/----/

Date of the last OPV vaccination _____ /-----/-----/----/

Preliminary clinical diagnosis _____ (if specimen is taken from a contact, state so here)

Name of the person who carried out epidemiological investigation _____

Name of the person to whom laboratory test results should be sent _____

Address _____ Tel. Fax _____

This part should be filled in the laboratory

Date specimen received by the laboratory _____ /-----/-----/----/

Name of the person who received specimen _____

Is the specimen in good condition Yes No

c) Identify close and distant contacts of the case and check if they are properly vaccinated according to the immunization schedule to determine their susceptibility.

d) Collect a single stool sample from 5 close contacts of the AFP case who are under 5 years of age (e.g., brothers, sisters, playmates, classmates). Use the above recommendations and referral form for specimen transportation (as indicated in **b**).

e) Implement control and prevention measures.

- △ Unvaccinated or not fully vaccinated contacts under 15 years of age should be promptly immunized (however, the virus could have infected susceptible close contacts by the time the first case is recognized).
- △ The expert team may consider it necessary to immunize additional cohorts of children (e.g., 0- to 4-year olds not covered during national immunization days in 2002).
- △ Patient's throat discharges, feces, and articles soiled therewith should be disinfected. In communities with modern and adequate sewage disposal systems, feces could be discharged into sewers without preliminary disinfection.

f) Monitor the case and follow up after 60 days of disease onset. Complete section II of the AFP investigation card.

AFP Investigation Card (cont.)

SECTION II – EVALUATION AFTER 60 DAYS	
Date of investigation /-----/-----/-----/	Epidemiological number
Patient's name and surname	Gender <input type="radio"/> Male <input type="radio"/> Female
Address	
Was patient's condition evaluated after 60 days?	<input type="radio"/> Yes <input type="radio"/> No
If not, why?	Date of patient's death /-----/-----/-----/
	Patient lost out from supervision on (date) /-----/-----/-----/
Other reasons, specify _____	
If yes, does the paralysis still exist?	<input type="radio"/> Yes <input type="radio"/> No
Date of evaluation	/-----/-----/-----/
Evaluator's name and surname	Signature
Evaluator's address	Telephone

i) Prepare and submit all relevant documentation for the National Expert Panel meeting. Include a copy of patient's medical record, completed sections I and II of the epidemiological investigation card, laboratory test results, and control activity report. The Expert Panel will carry out the final case classification and complete the final section (III) of the investigation card.

AFP Investigation Card (cont.)

SECTION III – FINAL CASE CLASSIFICATION		
Date of investigation /-----/-----/-----/	Country	Epidemiological number
Patient's name and surname		
Final polio case classification (check only one)	<input type="radio"/> Confirmed <input type="radio"/> Compatible <input type="radio"/> Discarded	
Basis for the case classification (check all that apply)	<input type="radio"/> Isolation of poliovirus in stool sample <input type="radio"/> Poliovirus was not isolated from stool sample <input type="radio"/> Stool specimens were not investigated <input type="radio"/> Residual paralysis after 60 days <input type="radio"/> Patient died with symptoms of residual Polio <input type="radio"/> Autopsy results <input type="radio"/> Patient with residual polio symptoms lost to follow-up	
If poliomyelitis is confirmed indicate its type <input type="radio"/> Indigenous <input type="radio"/> Imported <input type="radio"/> Vaccine associated <input type="radio"/> Unknown		
If poliomyelitis is discarded, specify the final diagnosis		
Signature of the Expert Panel Head		

10.8.5 Routine Active Surveillance for AFP Cases

Active surveillance for AFP cases continues in order to completely eradicate poliomyelitis in the world. Surveillance measures include the following:

- ▲ Making weekly visits to hospitals and rehabilitation centers to refresh awareness of AFP registration
- ▲ Checking hospital and outpatient medical records for clinical signs of AFP
- ▲ Conducting seminars and meetings with neurologists, pediatricians, and physiotherapists concerning AFP diagnosis, registration, and investigation
- ▲ Conducting interviews with religious and community leaders, school teachers, social service workers, traditional healers, and others.

The CPH should carry out weekly active surveillance in medical facilities where AFP cases may occur. Surveillance results are recorded in the form shown in Figure 28. The form is sent monthly together with the monthly reports. One copy of the form should remain at the CPH.

10.8.6 Recommended Indicators for Evaluation of the AFP Surveillance Performance at the Regional Levels

Target

- | | |
|--|------------------|
| 1. Annualized non-polio AFP rate per 100,000 children under 15 years of age | $\geq 1/100,000$ |
| 2. Percentage of all expected monthly reports that were received | >90% |
| 3. Percentage of AFP cases investigated within one business day of notification | >90% |
| 4. Percentage of AFP cases with two adequate* stool specimens collected 24 to 48 hours apart and ≤ 14 days of paralysis onset | >80% |
| 5. Percentage of specimens arriving at the laboratory in adequate condition | >90% |

* Note that specimens are adequate if two specimens were collected 24 to 48 hours apart and within 14 days of paralysis onset. The specimen arriving at the laboratory must be of adequate volume (8 to 10 grams), have appropriate documentation (i.e., laboratory request form), and be in “good condition.” Good condition means no leakage, no desiccation, and evidence that the reverse cold chain was maintained (based on the presence of ice or temperature indicator).

10.8.7 Principle Uses of Data for Decision Making at the Regional and Rayon Levels

The regional and rayon-level CPHs will use the data primarily to accomplish the following:

- ▲ Monitor routine OPV-3 and polio boosters coverage in geographic areas and focus corrective efforts in low performing areas

- ▲ Identify high-risk areas for planning mop-up immunization campaigns
- ▲ Monitor performance of AFP surveillance using standard indicators listed above and focus efforts in low performing areas.

Figure 28. Weekly Surveillance Form for AFP

**Active weekly surveillance of AFP
Form CD-4AFP**

Health facility:				
Address: region----- rayon -----				
Reporting month, year -----/ -----				
	I Week	II Week	III week	IV week
Date of visit				
Period of time from the last visit				
* Signature of responsible person (chief doctor or head of the department)				
* Pediatric department (yes no)				
* Neurology department (yes no)				
* infectious department (yes no)				
No. of APF cases revealed during the visit				
Among them AFP cases which have not been notified				
Remarks:				
Name of investigator, Position				

**Active weekly surveillance of AFP
Form CD-4AFP**

Health facility:				
Address: region----- rayon -----				
Reporting month, year -----/ -----				
	I Week	II Week	III week	IV week
Date of visit				
Period of time from the last visit				
* Signature of responsible person (chief doctor or head of the department)				
* Pediatric department (yes no)				
* Neurology department (yes no)				
* Infectious department (yes no)				
No of APF cases revealed during the visit				
Among them AFP cases which have not been notified				
Remarks:				
Name of investigator, Position				

Note: both parts of the form should be filled. One copy is sent to NCDC by day 7 of the next month. One copy remain at CPH.

*Checking of registration journals and medical records, conversation with the clinicians

signature _____

signature _____

PROTOCOL FOR LABORATORY CONFORMATION OF POLIOMYELITIS

Sampling strategy: Collect specimens from every AFP and suspected polio case. Two specimens should be obtained within 14 days from the paralysis onset, with a 24-48 hour interval.

Confirmation test: Isolation of a poliovirus

Specimen to be collected: Stool

Referral laboratory: NCDC

Important: Stool samples must reach the laboratory within 2 to 3 days for testing.

I. DOCUMENTATION	IV. TRANSPORTATION
<p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Register 60/A <input type="checkbox"/> Marker (water resistant) <input type="checkbox"/> Lab investigation request form <input type="checkbox"/> Specimen label 	<p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ziplock plastic bag <input type="checkbox"/> Cold box with ice packs <input type="checkbox"/> Plastic container <input type="checkbox"/> Box Label
<p>Steps:</p> <ol style="list-style-type: none"> 1. Create a specimen label with patient's name, identification number, date, and time. 2. Fill in a copy of a lab investigation request form (see next page) with patient information to accompany the specimen. 3. Make sure patient information has been entered in register 60/A and an urgent notification has been sent to CPH. 	<p>Steps:</p> <ol style="list-style-type: none"> 1. Tighten the cap, apply waterproof sealing tape over the cap and top of specimen container. 2. Place specimen container in a suitably sized plastic bag (1st layer) together with a small amount of absorbent material, such as cotton wool. The bag must be sealed either using heated bag sealer or waterproof adhesive tape; as an alternative, use ziplock plastic bags. Specimens from different patients should never be sealed in the same bag. 3. Sealed bags containing the specimens should be placed inside plastic containers with screw-cap lids (2nd layer). Provided that specimens have been double-bagged properly in sealed plastic bags, specimens from several patients may be packed inside the same secondary plastic container. Additional absorbent material should be placed inside the container to absorb any leakage that may occur. 4. Sealed plastic containers should be fitted into insulated 3rd layer containers (e.g., a cold box). First, place ice packs at the bottom of the box, and, along the sides, place the plastic container with the specimen in the center, then place more ice packs on top. Make sure that the container is firmly fixed in the outer box. 5. Put the lab investigation request form in a plastic bag and place it in the outer box. 6. Label box with name, address, and telephone number of the referral laboratory and the sender. 7. Label box with the safety precautions ("Do not freeze," "Do not expose to heat," "This side up," "Biological specimen," etc.). 8. Arrange shipping date. 9. When arrangements are finalized, inform the recipient of time and manner of transport and make sure that package reaches referral laboratory within 2-3 days of specimen collection.
II. COLLECTION AND HANDLING	
<p>Supplies needed:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sterile container <input type="checkbox"/> Wooden spatula, or plastic spoon <input type="checkbox"/> Viral transport medium 	
<p>Steps:</p> <ol style="list-style-type: none"> 1. Place a separate clean container with a wide opening (for example, a plastic ice-cream container), or plastic wrap, or newspaper in the toilet bowl. Pass feces directly into the container or onto the plastic wrap or newspaper. Do not contaminate the feces with urine. 2. Using a wooden spatula or plastic spoon, place enough feces (8-10g) to at least half fill the specimen container (e.g., penicillin vial). 3. Add 8-10 ml of VTM (Viral Transport Medium) to prevent drying if transport to laboratory is not immediate. 4. Screw the lid on the specimen container firmly. 5. Make sure the container is properly labeled (see section I). 6. Place it in a sealed plastic bag. 	
III. STORAGE	V. COMMUNICATING TEST RESULTS
<p>Steps:</p> <ol style="list-style-type: none"> 1. Immediately refrigerate at 4-8°C. 2. Keep refrigerated until shipment. 	<p>Laboratory should communicate results to the clinician within 2 days of receiving the sample. If the result of the test is positive, it should also notify the rayon CPH.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Record the results in the case history and Journal 60/A.

10.9 Rabies

10.9.1 Rationale for Surveillance

Rabies is a fatal zoonotic viral disease, transmitted to humans through contact (mainly bites and scratches) with infected animals. Infected animals can be both domestic and wild, including dogs (the principal reservoir), cats, foxes, wolves, jackals, raccoons, and mongooses. The period of communicability before onset of clinical signs in these animals is usually 3-7 days.

Transmission from person to person is theoretically possible, but has never been documented.

Eleven (11) rabies deaths were registered in Georgia in 2003. Almost all cases had not sought medical care and subsequently did not receive post-exposure prophylaxis. Rabies mortality rate is 0.25 per 100,000 population; the case-fatality rate is 100 percent. Each year on average 15,000 people²¹ in Georgia need to receive post-exposure treatment after being exposed to animals suspected of carrying rabies.

Surveillance of both human and animal rabies is essential to detect high risk areas and outbreaks quickly, and to monitor the use of vaccine.

Major strategies for combating human rabies promoted in these recommendations include:

1. Prevention of human rabies through well-targeted post-exposure treatment and increased availability of rabies vaccine
2. Disease elimination through mass vaccination of dogs and other animals as well as stray animal control.

10.9.2 Recommended case definition

Clinical description of human rabies: an acute encephalitis dominated by forms of hyperactivity or paralytic syndromes that progresses towards coma and death (usually by respiratory failure), within 7 to 10 days after the first symptom if no intensive care is instituted. Bites or scratches from a suspected animal can usually be tracked back in the patient medical history. The incubation period may vary from days to years and more but usually falls between 30 and 90 days.

Human rabies case classification

- ▲ **Clinical (probable):** A case that meets the clinical description of rabies.
- ▲ **Confirmed:** A clinically compatible case with at least one of the following:
 - △ Detection of rabies viral antigens by direct fluorescent antibody (FA) in clinical specimens, preferably brain tissue (collected post mortem)
 - △ Isolation of rabies virus from clinical specimens collected ante mortem (e.g., skin or cornea smear) and confirmation of rabies viral antigens by direct fluorescent antibody testing

²¹ WHO estimates that approximately 250 people receive rabies post-exposure prophylaxis per one human rabies death; according to Georgia statistics, 1,348 post-exposure prophylaxis correspond to one human rabies case.

- △ Detectable rabies-neutralizing antibody titer in the cerebral spinal fluid (CSF) of an unvaccinated person
- △ Identification of viral antigens by PCR on fixed tissue collected post mortem or in a clinical specimen (brain tissue, skin, cornea, saliva)
- △ Bio-test: Mice inoculation with infected brain extract and one-month follow-up.

Human exposure to rabies that requires post-exposure prophylaxis

- ▲ A person who had close contact (bite, scratch, exposure to saliva) with a any animal in a rabies infected area.²²

Rabies confirmed in euthanized animal:

- ▲ Detection of rabies viral antigens by direct fluorescent method in brain tissue
- ▲ Bio-test: Mice inoculation with infected brain extract and one-month follow-up

The degree of exposure is taken into account when administering post-exposure prophylaxis (see section 6).

Laboratory testing is currently mandated for every clinical (probable) case of rabies in animal and humans. At present the only method – detection of rabies viral antigens by direct FA is performed. The regional CPH or NCDC can be contacted to arrange sample transportation to the National Center of Veterinary Expertise and Diagnostics, Tbilisi, Godziashvili Str.#65.

10.9.3 Case Notification Procedures and Forms

Any clinical (probable) or confirmed case of human rabies identified by providers or laboratories, as well as any human exposure to rabies (definite or probable), requires urgent notification of the CPH as soon as possible but not later than within 24 hours by any existing means of communication. If the notification is made by phone, there is no need to send an urgent notification card.

10.9.4 Human Rabies Exposure/Rabies Case/Death Investigation

Investigation is aimed at identifying sources of infection as well as humans exposed, in order to accurately assess the risk of infection and appropriately manage the exposure. Rapid exchange of information with services in charge of animal rabies surveillance and control is required to streamline implementation of other general rabies prevention measures.

Investigation is carried out

1. Individuals with a history of rabid (clinical or laboratory confirmed) animal contact should be investigated at once. They should be treated as an emergency
2. In rabies-infected areas when group cases occur (exposure of more than one individual to the same animal)

²² “Rabies infected area” is a geographical area where confirmed animal and/or human rabies cases have been registered in the past five years. The entire territory of Georgia is regarded as a “rabies infected area.”

3. In the human rabies area

Steps of an investigation:

- a) Verify that all cases meet the clinical description of human rabies.*
- b) Collect data as envisioned in the rabies investigation card (see Figure 29).*
- c) Identify the source of infection, euthanize the animal, and collect specimens for lab testing as appropriate (see section 5, points 5 and 6).*
- d) Identify all other exposed humans through review of health records and interviews with health workers and community members.*
- e) Ensure urgent post-exposure prophylaxis for all persons with animal exposure (bites, scratches, exposure to saliva) (more details are provided in section 6).*
- f) Implement general rabies prevention measures as outlined in section 5.*
- g) Institute appropriate control of rabies patient and contacts (see section 7).*
- h) Write a report which includes rabies investigation card (Figure 29) and send it to the regional CPH in two copies (the region CPH will forward one copy to NCDC).*
- i) Inform local health administration and other stakeholders about rabies cases and human exposure trends verbally or in a written form. Inter-sectoral cooperation of medical and veterinary services, and community involvement and participation are required for targeted response and control in animal reservoirs.*

10.9.5 Rabies Prevention Measures

Rabies prevention includes a number of measures provided by communal, veterinary and health care services.

- 1) Register, license, and immunize all dogs. Immunize all cats.
- 2) Collect ownerless animals and strays, vaccinate them and regulate their reproduction using modern methods to reduce their threat to the population, and euthanize if required.
- 3) **Educate the public and pet owners about the following list:**

- ✓ Pets such as dogs and cats must be immunized.
- ✓ Other domestic animals should be immunized in rabies-infected areas.
- ✓ Strange-acting or sick animals of any species, domestic or wild, may be dangerous and should not be picked up or handled.
- ✓ It is necessary to report such animals and animals that have bitten a person to the local health department.
- ✓ Children should be cautioned against provoking or attempting to capture stray or wild animals and against touching carcasses.
- ✓ Wild animals should not be kept as pets.
- ✓ Pets must be leashed in congested areas when not confined on owner's premises.

- 4) **Develop/maintain laboratory capacity to perform FA testing on all wild animals involved in human or domestic animal exposures and all domestic animals clinically suspected of having rabies.**
- 5) Educate physicians, veterinarians and animal control officials to obtain/euthanize/test²³ animals involved in human and domestic exposures
- 6) Detain and clinically observe for 10 days any healthy-appearing dog or cat known to have bitten a person (unwanted dogs may be euthanized immediately and examined for rabies by fluorescent microscopy). Dogs and cats showing suspicious signs of rabies²⁴ should be sacrificed²³ and tested for rabies. All wild mammals that have bitten a person should be sacrificed²³ immediately and the brain examined for evidence of rabies.
- 7) Euthanize immediately non-immunized dogs or cats bitten by known rabid animals.
- 8) Individuals at high risk (e.g., veterinarians, animal control and wildlife workers, laboratory and field personnel working with rabies, hunters) should receive pre-exposure immunization given in 1 ml doses by IM injection on days 0, 7, and 30 and a booster dose one year later. If risk of exposure continues, either additional single booster doses are given, or preferably serum is tested for neutralizing antibody every three years, with booster doses given when indicated.

²³ The intact heads, packed in ice (not frozen), of animals that die of (or that have been euthanized due to) suspected rabies should be submitted immediately to a laboratory for viral antigen testing by FA staining, or, if this is not available, by microscopic examination for Negri bodies, followed by mouse inoculation.

²⁴ If the biting animal was infective at the time of the bite, signs of rabies will usually follow within 4 to 7 days, with a change in behavior and excitability or paralysis, followed by death.

- 9) Individuals who previously received full course of pre- or post-exposure prophylaxis, which was completed within the past year, should receive 3 doses of the vaccine – 1 ml on days 0, 3 and 7. If the period after completion of the prophylaxis exceeds one year, the person should receive vaccination and RIG according to the ordinary scheme. See section 6.

10.9.6 Post-exposure Prophylaxis of Rabies after Animal Bites/Scratches or Contact with Saliva

- 1) **Treatment of bite wound:** The most effective rabies prevention is immediate and thorough cleaning with soap or detergent and flushing with water all wounds caused by an animal bite or scratch. The wound should not be sutured unless unavoidable for cosmetic or tissue-support reasons. Sutures, if required, should be placed after local infiltration of antiserum. They should be loose and not interfere with free bleeding and drainage.
- Checklist for treatment of animal bites:**

 1. Clean and flush the wound immediately (first aid)
 2. Thorough wound cleansing
 3. Rabies immune globulin and/or vaccine
 4. Tetanus prophylaxis and antibacterial treatment when required
 5. No sutures or wound closure advised
- 2) **Specific immunologic protection** is provided by administration of rabies immune globuline (RIG) as soon as possible after exposure to neutralize the virus at the bite wound site, and then by giving vaccine at a different site to elicit active immunity.
- △ **Human RIG** should be used in a single dose of **20 IU/kg**; with half the dose infiltrated into and around the bite wound if possible, and the rest given IM. **If serum or animal origin is used**, an intra-dermal or subcutaneous test dose should precede its administration to detect allergic sensitivity, and the dose should be increased to a total of **40 IU/kg**. Both serums should be administered according to the attached instruction.
 - △ **Rabies vaccine**²⁵ is given in the deltoid region in accordance with the instruction on vaccine use (see scheme below). The first dose is administered as soon as possible after the bite (at the same time as the single dose of RIG is given).

RIG and rabies vaccines should be available in all rayon and regional hospitals.

If neither RIG nor rabies vaccine is immediately available, health workers must refer the patient to the nearest rayon hospital.

²⁵ Immunization with rabies vaccine carries a very small risk of post-immunization encephalitis. No cases have been reported in Georgia so far.

Local reactions, such as pain, erythema, swelling or itching at the injection site, have been reported in 25percent of those receiving 1.0 ml doses. They are usually successfully managed with anti-inflammatory and antipyretic agents such as ibuprofen and acetaminophen.

Special situations: The vaccine can be safely given to pregnant women. Persons with immuno-suppression should receive the vaccine for post-exposure prophylaxis, too. Persons with a history of serious hypersensitivity to rabies vaccine should get post-exposure vaccination after administration of antihistamines. Adrenaline preparations should be readily available to counteract anaphylactic reactions.

Table 14 is a general guide to prophylaxis in various circumstances according to the instruction of most frequently used vaccine and immunoglobulin in Georgia (produced in the Russian Federation and approved by Chief Sanitary doctor on 12. 03. 2003):

Table 14. Guide to Rabies Prophylaxis

	Type of exposure	Information about animal	Post-exposure prophylaxis
1	No skin lesion, no exposure to saliva, no direct contact*	Rabid animal**	No treatment
2	Exposure to saliva of uninjured skin; single superficial scratch or bite on the body, hands, or legs (except for head, face, palm, fingers, toes, and genital area) by a domestic animal.	If after 10 days of supervision the animal remains healthy, interrupt treatment (after giving 3 doses of vaccine). In other cases (animal died, disappeared, euthanized), treatment should be continued with the recommended scheme.	Treatment is started immediately. Rabies vaccine is given in 1-ml doses on days 0, 3, 7, 14, 30, 90.
3	Any exposure of mucous to saliva; any scratch or bite on hand, face, neck, palm, fingers, toes, and genital area. Multiple bites and massive injuries (single deep bites and scratches) of any localization by domestic animals. Any exposure to saliva, any skin lesion from contact with wild animals (rodents, bats, etc.)	If 10 days of supervision is possible and after 10 days the animal remains healthy, interrupt treatment (after 3 doses of vaccine). In other cases (animal died, disappeared, euthanized), treatment should be continued with the proposed scheme	Combined treatment is started immediately with RIG on day 0 and rabies vaccine (1ml) on days 0, 3, 7, 14, 30, 90.

* "Contact" is considered exposure to saliva, scratches, abrasion, bites.

** If animal exhibits clinical signs of rabies (change of behavior, aggressiveness, excitability, dilated pupils, tremors or paralysis, salivation), it should be euthanized immediately and tested. If immunofluorescence test results of the animal are negative, a biotest (mice inoculation) should be performed, and in the case of a negative result, vaccination should be discontinued.

Note: Vaccines and immunoglobulines produced by other manufacturers should be always administered in accordance with respective instructions.

10.9.7 Control of Rabies Patient and Patients' Contacts

- 1) Contact isolation of rabies patient for respiratory secretions for the duration of the illness.
- 2) Concurrent disinfection of saliva and articles soiled thereof. Although transmission from a patient to attending personnel has not been documented, immediate attendants should be warned of the potential hazard of infection from saliva, and should wear rubber gloves, protective gowns, and protection to avoid exposure from a patient coughing saliva in the attendant's face.
- 3) Contacts who have an open wound or mucous membrane exposure to the patient's saliva should receive anti-rabies specific treatment (see section 6).

10.9.8 Monitoring of Rabies Occurrence and Anti-rabies Activities at the Rayon Level

The rayon CPH should prepare an anti-rabies activity report (form CD-4) on a monthly basis and send two copies to the regional CPH along with monthly reports (see Figure 30)

Figure 30. Anti-rabies Activity Report

Vaccine supply (sets)	at the beginning of current month					No. of anti-rabies cabinets functioning		
Immunoglobulin supply (ampoules)	at the beginning of current month					Rabies confirmed in animals		No.
Number of injured individuals by age, animal, health condition	Total	Injured by owned animals (of total)	Number of injured individuals by type of animal	by dogs		dogs	clinically lab.	
				by cats		cats	clinically lab.	
				other (indicate)		other (indicate)	clinically lab.	
		Injured by ownerless animals (of total)		Number of injured individuals by type of animal	by dogs		dogs	clinically lab.
	by cats				cats	clinically lab.		
	other (indicate)				other (indicate)	clinically lab.		
	Of total, no. under 15 years							
	Veterinary supervision during 10 days	Supervision of dog completed			Results	alive		
Total		Among them vaccinated		died				
				euthanized				
Supervision of cat completed			lost					
Total		Among them vaccinated		alive				
				died				
			euthanized					
			lost					
No. of vaccinated individuals			Among them fully immunized					
			Not completed					
			Interrupted					
Immunoglobulin used	No. of ampoules		No. of individuals to whom immunoglobulin was administered					
	IU							

10.9.9 Recommended Scope of Data Analysis at Rayon and Regional Levels

The CPH should perform routine monthly analysis of the following data:

1. Human exposure by
 - △ geographical area
 - △ dates of biting/scratch episode
 - △ type/species of animal
 - △ by outcome in human and animal populations
2. Cases by
 - △ geographical area
 - △ dates of biting/scratch episode
 - △ type of animal
 - △ occupation
 - △ outcome

10.9.10 Principle Uses of Data for Decision Making at Rayon and Regional Levels

Rayon- and regional-level CPHs will use the data primarily to accomplish the following:

1. Detect outbreaks in endemic areas and new cases in rabies-free areas
2. Determine high-risk areas and population groups for intervention

Based on the above, local authorities should:

1. Estimate the amount of rabies vaccines and RIG needed to keep in stock.
2. Evaluate effectiveness of intervention at the level of the animal reservoir and exposed human population
3. Control the number of ownerless animals
4. Plan additional interventions

Annex. Codes for Administrative Levels in Georgia

Instruction for Epidemiological Number

Each CPH that carries out epidemiological investigation of cases and completes investigation forms for rubella, measles, and AFP/polio should give a different code to each case (see specific graph in the forms “epidnumber”)

Rules for defining an epidemiological number:

- ▲ First two letters indicate state code – GE (already indicated in the cards);
- ▲ Following three numbers represent the region (from 3rd including 5th sign);
- ▲ Following three numbers represent the rayon (from 6th including 8th);
- ▲ 9th and 10th numbers mean year;
- ▲ 10th, 11th and 12th numbers represent number in given calendar year, in the rayon.
- ▲ Starting from 13th the signs should be given to AFP/polio contacts if samples are collected (indicated in the form attached to samples for testing) and the 13th sign should be letter “C” (Contact);
- ▲ The 14th sign (presented in increasing numbers: e.g.1 to the first, 2 for second, etc.) should be given to AFP/polio contacts if samples are collected.

For example:

If measles case number 8 was registered in 2005 in Sachkhere rayon, the epidnumber of this case would be as follows: GE (Georgia) 003 (Imereti region) 009 (Sachkhere rayon) 05 (year) 008 (case); accordingly, the epidnumber of this case would be GE 00300905008;

If the first AFP/polio case was registered in Batumi in 2006, the number of this case would be GE (Georgia) 002 (Adjara region) 001 (Batumi) 06 (year) 001 (case); accordingly, the epidnumber of this case would be GE 00200106001.

If sample from the AFP/polio contact was sent for laboratory testing, epidnumber in the **sample lab. form** would be GE 002 (Adjara region, 001 (Batumi) 06 (year) 001 (case) C (contact) 1 (# of contact); accordingly, the epidnumber of this contact person would be GE 00200106001 C1.

List of Codes for Administrative Levels In Georgia

Nº	GE	Georgia			
1	GE001	Abkhazia A/R	44	GE008	Samtskhe Javakheti
2	GE001001	Sukhumi	45	GE008001	Akhaltikhe
3	GE001002	Tkvarcheli	46	GE008002	Adigeni
4	GE001003	Gulripshi	47	GE008003	Aspindza
5	GE001004	Gudauta	48	GE008004	Akhalkalaki
6	GE001005	Gagra	49	GE008005	Borjomi
7	GE001006	Gali	50	GE008006	Ninotsminda
8	GE002	Adjara A/R	51	GE009	Samegrelo
9	GE002001	Batumi	52	GE009001	Mestia
10	GE002002	Kobuleti	53	GE009002	Zugdidi
11	GE002003	Shuakhevi	54	GE009003	Abasha
12	GE002004	Kheda	55	GE009004	Martvili
13	GE002005	Khelvachauri	56	GE009005	Senaki
14	GE002006	Khulo	57	GE009006	Chkhorotsku
15	GE003	Imereti	58	GE009007	Tsalenjikha
16	GE003001	Kutaisi	59	GE009008	Khobi
17	GE003002	Chiatura	60	GE010	Guria
18	GE003003	Tkibuli	61	GE010001	Ozurgeti
19	GE003004	Tskaltubo	62	GE010002	Lanchkhuti
20	GE003005	Bagdadi	63	GE010003	Chokhatauri
21	GE003006	Vani	64	GE011	Poti
22	GE003007	Zestaphoni	65	GE012	Kakheti
23	GE003008	Samtredia	66	GE012001	Telavi
24	GE003009	Sachkhere	67	GE012002	Akhmeta
25	GE003010	Terjola	68	GE012003	Gurjaani
26	GE003011	Kharagauli	69	GE012004	Dedoplistskaro
27	GE003012	Khoni	70	GE012005	Lagodekhi
28	GE004	South Osetia A\O	71	GE012006	Sagarejo
29	GE004001	Tskhinvali	72	GE012007	Signagi
30	GE004002	Znauri	73	GE012008	Kvareli
31	GE004003	Java	74	GE013	Mtsketa Mtianeti
32	GE005	Tbilisi City	75	GE013001	Mtskheta
33	GE006	Racha Lechkhumi	76	GE013002	Akhalgori
34	GE006001	Ambrolauri	77	GE013003	Dusheti
35	GE006002	Lentekhi	78	GE013004	Tianeti
36	GE006003	Oni	79	GE013005	Kazbegi
37	GE006004	Tsageri	80	GE014	Kvemo Kartli
38	GE007	Sh.Kartli	81	GE014001	Rustavi
39	GE007001	Gori	82	GE014002	Bolnisi
40	GE007002	Kaspi	83	GE014003	Gardabani
41	GE007003	Kareli	84	GE014004	Dmanisi
42	GE007004	Khashuri	85	GE014005	Tetritskaro
43	GE007005	Z.Kartli	86	GE014006	Marneuli
			87	GE14007	Tsalka