Surveillance and Control of Communicable Diseases: Handbook for Health Providers in Georgia

With sections on vaccine preventable diseases

Revised October 2004

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Ministry of Labor, Health and Social Affairs of Georgia

National Center for Disease Control

With technical support provided by:

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- *Implementation of appropriate health system reform.*
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- *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 handbook is an abridged and modified version of the *Guidelines for Surveillance and Control of Vaccine Preventable Diseases in Georgia*. The handbook is designed specifically to guide providers of health services at the facility level on all issues related to their day-to-day work in the field of infectious disease surveillance: case detection, laboratory confirmation, case notification/reporting, data analysis, response to cases and outbreaks, and self-monitoring of performance. In addition to discussing the general norms for the surveillance system as a whole, the handbook includes sections devoted to each of the nine vaccine preventable diseases in Georgia. These sections guide health workers through the steps of effective case confirmation and response to cases and outbreaks.

The second edition of the handbook 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
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
DPT	Diphtheria, Pertussis and Tetanus Vaccine
DT	Diphtheria and Tetanus Toxoid Combination
HBsAg	Hepatitis B Surface Antigen
ICD	International Classification of Diseases
IgM	Immunoglobulin 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*	Partnerships for Health Reform*plus* Project
SARS	Severe Acute Respiratory Syndrome
STD	Sexually Transmitted Disease
Td	Diphtheria and Tetanus Toxoid
TT	Tetanus Toxoid
VPD	Vaccine Preventable Disease
USAID	United States Agency for International Development
WHO	World Health Organization

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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.

This handbook is focused on 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
- Poliomyelitis
- Measles
- Mumps
- Rubella
- Pertussis
- Tetanus
- Hepatitis B
- 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 ▲ Increase of the effectiveness of epidemiological surveillance ▲ Strengthening of laboratory services
Measles	Elimination by 2007 and certification by 2010	
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
		▲ Provision of safety of medical manipulations ▲ Public education about individual protection
Mumps, Pertussis	Incidence < 0.1 per 100,000 by 2006	▲ 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	▲ Increase the efficiency of epidemiological surveillance ▲ Begin planned immunization in 2004

2. Identification and Registration of Cases of Infectious 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 VPD surveillance system 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. The Georgian Law "on Health Care" defines rights and responsibilities of any physical or legal body that provides health care services related to infectious diseases regardless of that body's form of ownership, organizational-legislative structure and subordination. The Quotation from the Law presented in Box 1 directly relates to the infectious disease surveillance.

Box 1. Georgian Law on Health Care

Chapter 20, Section 2.

Institutions/ Providers rendering health care activities are responsible for provision of medical statistical information to MoLHSA according to the established rules.

Chapter 20, Section 45.

A health care provider must provide information:

1. when a communicable disease is diagnosed or suspected
2. when physical, chemical, radiological or thermal lesion of body occurs

Chapter 73.

1. Control of communicable (among them zooanthroponotic, zoonotic), endemic diseases and epidemics, as well as widely spread non-communicable diseases is the prerogative of the State central, self-governmental and governmental institutions.
2. The Georgian MoLHSA together with appropriate State governmental institutions implements specific programs and joint activities to prevent especially dangerous zooanthroponotic and other infectious diseases.

Chapter 74.

The Georgian MoLHSA defines a list of communicable and especially dangerous diseases, undertakes their epidemiological investigation, curative and preventive large scale programs, and directs their implementation

Chapter 76.

A person with suspected communicable disease must undertake all required investigations. During investigations dignity and basic rights of the person should be respected.

Responsibilities of health care facilities with regard to the infectious diseases are defined by the existing 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).

A copy of 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.

Completed copies of journal 60A should be kept at the facilities for five years. Detailed instructions for the completion of journal 60/A are provided in Figure 1.

Figure 1. Record Book 60/A

N	Name	Age	Gender	Address	Place of study/ work	Disease onset date	Date of first presenta-tion/ hospitaliza-tion	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.

3. Case Definitions/Case Confirmation and Classification

Diagnosis of an infectious disease is made by health care provider (usually by a physician) based on commonly accepted criteria as described in textbooks/clinical guidelines and applied to clinical practice in Georgia. Initiation and specifics of treatment is **a purely clinical decision**, which is normally made by health care provider once a provisional diagnosis is established.

For epidemiological surveillance purposes only, **public health managers and epidemiologists** divide cases into two categories: probable (clinical) and confirmed using case definitions outlined below. Even though these definitions are, in the first place, designed for CPH staff, they may be also useful for health care providers to determine whether what they are seeing is a case of a notifiable disease. In this situation physicians must notify the rayon CPH, which may lead to an investigation of a case/potential outbreak and initiation of appropriate health action.

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 Corynebacterium diphtheria or C.ulcerans 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 C.diphtheriae or C.ulcerans 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 *in utero* 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 ilnesses 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 *In humans:* ▲ 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 ▲ *In animals:* ▲ 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

For laboratory confirmation of cases, providers should follow the rules as presented in Table 3.

Table 3. Epidemiological 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.

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 in section 9 of *Surveillance and Control of Communicable Diseases: Guidelines*). Twice a year the regional CPHs are required to update lists of laboratories performing surveillance functions.

Sample collection, storage, and transportation guidelines are outlined in disease-specific sections (section 7) of this handbook. Containers for sample storage and transportation are provided to health care facilities by the rayon CPH. Transportation is done in cooperation with the rayon CPH by train or (mini)bus, depending on the means of transport available in the rayon.

The universal laboratory investigation request forms (to accompany specimens) and specimen labels are provided in Figure 2.[1]

[1] There is a specific lab request form for AFP (section 7 of this handbook).

Figure 2. Universal Laboratory Investigation Request Form

Date ___/____/____ Patient name _____ Ref. number___ ○ Male ○ Female
Address: _____
Age ____years or Date of birth___/____/____ (for children under 5)

Preliminary clinical diagnosis_____(if specimen is taken from a contact, state so here)
Date of disease (rash in case of measles) onset ___/____/____
Date of the last dose of vaccine specific for the disease in question ___/____/____(for VPDs only)
Type of specimen (e.g., feces, blood) _____Date collected ___/____/____ Date shipped___/____/____

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

ADHESIVE SPECIMEN LABEL

Patient name _____Identification number_____
Specimen collected on ___/____/_____(date) at _____(time)

4. Notification and Reporting

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

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

All institutions/providers rendering health care services to population, including laboratories and private care providers, have to notify the local public health service whenever they diagnose or suspect, or receive positive laboratory result for any of the diseases or conditions listed in the next section.

The list of notifiable/reportable diseases and conditions is determined and annually updated by the NCDC on the basis of current epidemiological situation.

4.1 Urgent Notification

"Urgent notification" implies urgent (during the same business day, but under no circumstances more than 24 hours from first identification) submission of information about probable (clinical) or laboratory-revealed cases to the next superior level of the public heath service. In such cases, the provider must notify the rayon CPH about such cases with 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 on Table 4 has to be sent through the public health system.

Table 4. List of Urgently Notifiable Diseases and Conditions in Georgia

	Name	ICD-10 Code
1.	Diphtheria	A36
2.	Pertussis	A37
3.	Neonatal tetanus	A33
4.	Tetanus	A34 -35
5.	AFP / Acute poliomyelitis	A80
6.	Measles	B05
7.	Rubella	B06
8.	Congenital rubella syndrome	P.35.0
9.	Mumps	B26
10.	Acute viral hepatitis A	B15
11.	Acute viral hepatitis B	B16
12.	Acute viral hepatitis C	B17.1
13.	Acute viral hepatitis E	B17.2

14.	Cholera	A00
15.	Typhoid fever	A01
16.	Paratyphoid fevers A, B, C;	A01.1-4
17.	Other salmonella infections	A02
18.	Shigellosis	A03
19.	Other bacterial intestinal infections	A04
20.	among them: Esherichiosis	A04.4
21.	Yersiniosis	A04.6
22.	Food-borne bacterial intoxications	A05
23.	among them Botulism	A05.1
24.	Unspecified infectious diarrheal diseases	A09
25.	Tuberculosis meningitis	A17.0
26.	Plague	A20
27.	Tularemia	A21
28.	Anthrax	A22
29.	Brucellosis	A23
30.	Leptospirosis	A27
31.	Listeriosis	A32
32.	Meningococcal Infection	A39
33.	Relapsing fever	A68
34.	Lyme disease (Borelliosis)	A69.2
35.	Flea-borne typhus	A75
36.	Q fever	A78
37.	Rabies	A82
38.	Unconfirmed viral infections of CNS	A89
39.	Arthropods transmitted viral fevers and viral hemorrhagic fevers	A90-A99
40.	Yellow fever	A95
41.	Malaria	B50-54
42.	Trichinosis	B75
43.	Haemophilus Influenza B Pneumonia or Meningitis	J14; G00.0
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.
45.	Fever of unknown etiology (t>38 and lasts more than 5 days)	R - 50.0; 50.1; 50.9.
46.	Radiological lesions	W88; 91
47.	Acute occupational poisonings	Z 57.4 -57.5
48.	Post-vaccination, unusual reactions and complications	Y58–59; 64.1
49.	Intrahospital infections	Y95
50.	Isolations of vancomycin resistant staphylococcus	No ICD-10 Code
51.	Severe acute respiratory syndrome (SARS)	
52.	Fatal cases of acute infectious diseases	
53.	Contact with animals (risk of rabies)	
54.	Group cases of infectious diseases*	

* The rayon CPH (and higher levels) must be urgently notified of group cases of any of the infectious diseases (listed in the table in rows 1-53 as well as group cases of any other infectious diseases (excluding acute respiratory infections and influenza)). Group cases are three or more cases occurring in one or more facilities in one incubation period 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' name, age, and address 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).

Note: 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
    - 4.1.1. CCHF (Crimean-Congo hemorrhagic fever)
    - 4.1.2. Hemorrhagic fever with renal syndrome
    - 4.1.3. Unspecified viral hemorrhagic fever
5. Tularemia
6. Anthrax
7. Rabies
8. SARS
9. Smallpox
10. Tickborne encephalitis A84.0; 84.1; 84.8; 84.9.

The urgent notification card (Figure 3) must be completed by a health practitioner who has detected a probable (clinical) or confirmed case of the above diseases.

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.

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

Figure 3. 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)			

4.2 Monthly Summary Notification

On the basis of case-based information contained in record book 60, health facilities submit monthly one notification covering several diseases and conditions to the rayon CPH by the first day of the next month, as shown in Figure 4. (Note that health facilities are not required to include in the monthly form those diseases subject to urgent notification.)

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

Figure 4. 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										
Leishmaniosis	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 the CPH of the rayon in which the patient is resident about the case within 72 hours. Figure 5 shows an HIV/AIDS Notification Card.

Figure 5. HIV/AIDS Urgent Notification Card

<table>
<tr><td>Confidential</td><td colspan="8">HIV/AIDS Special Urgent Notification Card – #58/4</td></tr>
<tr><td colspan="2">Notification sent to
_____
(rayon, facility)</td><td colspan="7">registration # in 60/A</td></tr>
<tr><td colspan="2" rowspan="4">Notification sent by
_____
(name, position, facility)
_____
(Signature)
contact address, tel., fax, e-mail
_____</td><td colspan="7">Information about the patient:</td></tr>
<tr><td>sex:
(mark with X)</td><td colspan="2">female</td><td colspan="2">male</td><td colspan="2">unknown</td></tr>
<tr><td colspan="7">age group (mark with X)</td></tr>
<tr><td>0-1</td><td>1-4</td><td>5-14</td><td>15-19</td><td>20-29</td><td>30-59</td><td>60+</td><td>unknown</td></tr>
<tr><td colspan="9">Diagnosis: Date of diagnosis: dd/mm/yy</td></tr>
</table>

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 the rayon CPH quarterly. CPHs that receive such notifications should register and use aggregated data for situation analysis. Figure 6 shows a Tuberculosis Summary Notification Card.

Figure 6. Tuberculosis Summary Notification Card- #58/5

Notification sent to :

rayon (town) ---------- facility----------

Notification sent by

---------- facility ----------
(name, position)

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----------

5. Data Analysis

Prompt analysis of the collected data provides information for:

- 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

Analysis of surveillance data (both urgent, e.g., during outbreak investigations, and routine) is performed primarily by the centers of public health and the National Center for Disease Control.

Health care providers are required to perform only two types of analysis with regard to vaccine preventable diseases:

1. Analyze reasons behind fatal cases of infectious diseases to identify exactly what has failed in the disease prevention and control program and take corrective measures
2. Monitor VPD disease morbidity trends to determine abrupt or long-term changes in disease occurrence and adjust the work of their facility accordingly

5.1 Reasons behind VPD Death Cases

This analysis needs to be done within 72 hours. Knowing the reason why a patient with a VPD has died will help facilities choose an appropriate public health response or action to prevent more fatalities in the future. Analysis of reasons behind VPD deaths involves reviewing case information (case histories, notifications, records in journal 60/A) and exploring the possible causes as presented in Table 5.

Table 5. Causes of VPD 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 in a timely manner, 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

During epidemics big regional hospitals are advised to monitor 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:

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

Health managers observing a CFR for a given disease higher than the standards communicated by NCDC at the time of the outbreak need to urgently take measures to improve accessibility of care, timeliness of treatment, and adherence to proper case management protocols/guidelines.

5.2 VPD Morbidity Trends

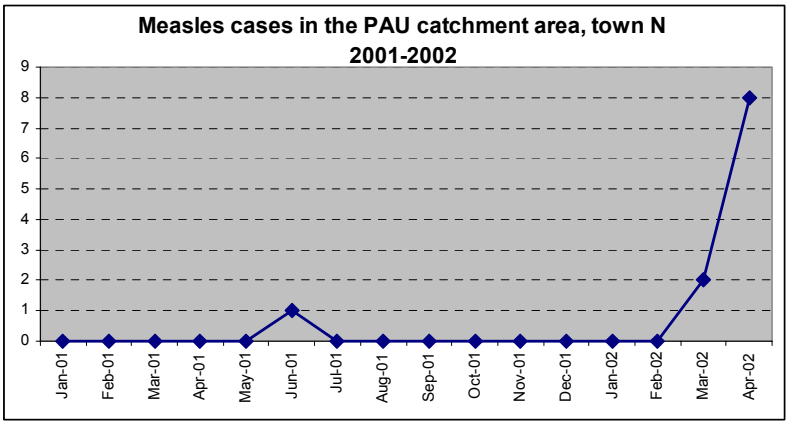
Regular monitoring of priority infectious diseases morbidity is recommended for every health facility involved in the surveillance program that serves 5,000 or more people. The list of priority diseases is normally determined by a respective regional CPH and usually includes many of the VPDs. (Check with the regional CPH for determination.)

The monitoring may be performed by the head of an infectious diseases department department, or a statistician. It is strongly recommended that such an analysis be done in conjunction with analysis of immunization data (vaccination coverage, refusals and contraindications), which is available in immunization MIS working books at every polyclinic. The data should be regularly reviewed by the facility head doctor/manager and shared in this or other forms with the health administration of a given area and other stakeholders who are interested or need this information.

Figure 7. Examples of Morbidity Monitoring Tables and Graph

Cases of Priority Infectious Diseases, 2002, 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
													.



Recommended morbidity monitoring tables are contained in the provided workbooks. However, health workers are encouraged to use any other alternative way, for example to plot them in a chart, if it helps to present or highlight a problem to those who need to know.

6. Supervision and Performance Evaluation to Improve System Functioning

Rayon CPH personnel will periodically (usually twice a year) come to your facility to supervise your performance. Supervisions and evaluations should be carried out in an encouraging atmosphere. Table 6 contains the questions to be asked. 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 also can be used by facilities to self-monitor their work.

Table 6. 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 ☐ No ☐
2. Does the facility have at least one copy of the urgent notification card?	Yes ☐ No ☐
3. Does the facility have at least one copy of the monthly reporting form?	Yes ☐ No ☐
4. Does the facility have the MoLHSA guidelines for surveillance?	Yes ☐ No ☐
5. Does the facility have the MoLHSA lab guidelines for specimen collection and transportation?	Yes ☐ No ☐
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 ☐ No ☐
7. Has submission of an urgent notification been ever delayed for more than 24 hours? Verify using clinical records.	Yes ☐ No ☐
8. Have forms 58/3 for the past 6 months been always submitted prior to the established deadline?	Yes ☐ No ☐
9. Are all the forms 58/3 for the past 6 months complete and accurate? Verify using the clinical records.	Yes ☐ No ☐
Adherence to Laboratory Confirmation Requirements	
10. Is this facility able to collect sputum, stool and blood?	Yes ☐ No ☐
11. Does this facility have the capacity to handle sputum, stool, blood, until shipment?	Yes ☐ No ☐
12. Does this facility have the capacity to ship specimens to a higher level lab (e.g., presence of packing materials and transport media)?	Yes ☐ No ☐
Data Analysis Disease Prevention and Control Activities	
13. Does this facility perform analysis of epidemiological data (observe), for example morbidity trends by time [only for facilities serving more than 5000 people]?	Yes ☐ No ☐
14. Using the VPD surveillance workbook, check the case confirmation status (lab. confirmation or establishment of an epidemiological link) for all VPDs reported by this facility in the past 6 months. Is the case confirmation rate higher than 80%?	Yes ☐ No ☐

7. Disease-Specific VPD Laboratory Confirmation Protocols and Case/Outbreak Control Guidelines

Health care facilities are required to support and facilitate any work carried out by the rayon/regional CPH or NCDC during a case/outbreak investigation and during implementation of response measures in the facility catchment area. Facilities are primarily responsible for the following:

1. Adhering to respective protocols for case confirmation (outlined in detail in the following sections of the handbook), and

2. Initiation of case/outbreak control measures under the guidance of CPH/NCDC as soon as a single case of a communicable disease is detected. **Prior to the arrival of the CPH investigation team, health care facility control measures may be limited** to case isolation and treatment, health education of exposed susceptibles in the patient's family and social circle, provision of specific recommendations (e.g., to get immunization), etc. Please refer to the list of recommended control/response measures in each of the disease sections to determine what can be done immediately.

The following sections provide disease-specific specimen collection and response measures.

7.1 Measles

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 phone: 39 89 46

I. DOCUMENTATION

Supplies needed:

- ○ Journal 60/A
- ○ Marker (water resistant)
- ○ Lab investigation request form
- ○ Specimen label

Steps:

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.

II. COLLECTION AND HANDLING

Note: Collect a single serum within 4-28 days of rash onset.

Supplies needed:

- ○ Gloves
- ○ Pipette
- ○ Vaccutainer tube with needle
- ○ Adhesive tape
- ○ Tourniquet
- ○ Band aid
- ○ Sterilizing swabs

Steps:

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^{0}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.

   * If vaccutainer 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

- ▲ Whole blood may be held at 4-8^{0}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^{0}C until it is ready for shipment for up to 7 days. (Sera must be frozen at -20^{0}C for longer periods of storage; in this case, avoid repeated freezing and thawing.)

IV. TRANSPORTATION

Supplies needed:

- ○ Ziplock plastic bag
- ○ Box label
- ○ Plastic container
- ○ Cold box with ice packs

Steps:

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.

V. COMMUNICATING TEST RESULTS

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.

Steps:

1. Record the results in the case history and Journal 60/A.

Outbreak Control/Response Measures

A single measles case in Georgia is regarded to be 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 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.

7.2 Rubella and Congenital Rubella Syndrome (CRS)

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 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 has just started 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.

7.2.1 Laboratory Testing for Rubella and CRS

Laboratory testing for:

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

CRS is required for every detected case

Even though laboratory testing for rubella is currently not mandatory, 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.

7.2.2 Rubella Outbreak Control/Response Measures

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 five to seven 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 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)

7.2.3 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[2], hearing impairment (the most common defect), pigmentary retinopathy

b) Purpura, splenomegaly, microcephaly, mental retardation, meningoencephalitis, radioolucent 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.

7.2.4 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 ophtalmologists, otologists, cardiologists, and cardiac surgeons should be alerted to the occurrence of an outbreak and its implications, informed of the probable (clinical) 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 immunization visits for signs of CRS and inquire about the maternal history of rubella in pregnancy.

[2] The most common defects are: patent ductus arteriosus and peripheral pulmonary artery sclerosis

- 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, and blood samples should be collected from the infant.[3]

7.2.5 CRS Control Measures

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, they 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.

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

PROTOCOL FOR LABORATORY CONFORMATION OF CONGENITAL RUBELLA

Sampling strategy: Collect specimens from every probable/clinical CRS case (see case definition above)

Confirmation test: Serological assay. Demonstration of rubella specific IgM antibody in an infant under 1 year.

Specimen to be collected: Serum or plasma.

Referral Laboratory: NCDC.

I. DOCUMENTATION

Supplies needed:

- ○ Register 60/A
- ○ Marker (water resistant)
- ○ Lab investigation request form
- ○ Specimen label

Steps:

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.

II. COLLECTION AND HANDLING

Note: collect a single serum at the first contact with patient

Supplies needed:

- ○ Gloves
- ○ Pipette
- ○ Vacutainer tube with needle
- ○ Adhesive tape
- ○ Tourniquet
- ○ Band aid
- ○ Sterilizing swabs

Steps:

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.

   * Blood can be stored at 4-8^{0}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.

   * If vaccutainer 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

- ▲ Whole blood may be held at 4-8^{0}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^{0}C until it is ready for shipment for up to 7 days (Sera must be frozen at -20^{0}C for longer periods of storage; in this case, avoid repeated freezing and thawing).

IV. TRANSPORTATION

Supplies needed:

- ○ Ziplock plastic bag
- ○ Cold box with ice packs
- ○ Plastic container
- ○ Box label

Steps:

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.

V. COMMUNICATING TEST RESULTS

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.

Steps:

1. Record the results in the case history and Journal 60/A.

7.3 Mumps

Laboratory testing is currently not mandatory.

Outbreak Control/Response Measures

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 9 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 workplace 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.

7.4 Tetanus

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.

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.

Such factors may include:

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

The following measures need to be implemented to prevent future cases addressing the cause of this one, e.g.,

- 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.

7.5 Pertussis

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

I. DOCUMENTATION

Supplies needed:

- ○ Journal 60/A
- ○ Marker (water resistant)
- ○ Lab investigation request form
- ○ Specimen label

Steps:

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.

II. COLLECTION AND HANDLING

Note: Collect two specimens (at the same time) preferably during the first 1-2 weeks of cough and before administration of antibiotics

Supplies needed:

- ○ Dacron or calcium alginate swabs (avoid rayon or cotton swabs, because they contain acids toxic to B. pertussis)
- ○ Sterile saline solution
- ○ Regan-Lowe transport medium **or**
- ○ Regan-Lowe agar or Bordet-Gangou media

Steps:

Naso-pharyngeal specimens are obtained under direct light using over-the-shoulder illumination using the aseptic technique to prevent contamination by other micro-organisms.

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.

   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!)
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).

   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.
6. Make sure the medium is properly labeled (see section I).

IV. TRANSPORTATION

Supplies needed:

- ○ Ziplock plastic bag
- ○ Shipping box/container
- ○ Plastic container
- ○ Box label

Steps:

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.

III. STORAGE	V. COMMUNICATING TEST RESULTS
Steps: 1. Specimen inoculated on the transport media can be stored at room temperature (25^{0}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^{0}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.	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. **Steps:** 1. Record the results in the case history and in Journal 60/A

Outbreak Control/Response Measures

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 five days of a minimum 14-day course of antibiotics. Cases that do not receive antibiotics should be isolated for three 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 five 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 six months between the third and fourth dose). Close contacts under 7 years of age that have received four doses of DPT, but have not received a dose within three 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.

7.6 Acute Viral Hepatitis

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

Supplies needed:

- ○ Register 60/A
- ○ Marker (water resistant)
- ○ Lab investigation request form
- ○ Specimen label

Steps:

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.

II. COLLECTION AND HANDLING

Note: collect a single serum at the first contact with patient

Supplies needed:

- ○ Gloves
- ○ Vacutainer tube with needle
- ○ Tourniquet
- ○ Sterilizing swabs
- ○ Pipette
- ○ Adhesive tape
- ○ Band aid

Steps:

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^{0}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.

   * If vaccutainer 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

Store serum at 4-8^{0}C until it is ready for shipment for up to 7 days. (Sera must be frozen at -20^{0}C for longer periods of storage; in this case, avoid repeated freezing and thawing.)

Whole blood may be held at 4-8^{0}C if it can be transported to arrive at the testing lab within 24 hours.

IV. TRANSPORTATION

Supplies needed:

- ○ Ziplock plastic bag
- ○ Cold box with ice packs
- ○ Plastic container
- ○ Box label

Steps:

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-agged 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.

V. COMMUNICATING TEST RESULTS

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.

Steps:

1. Record the results in the case history and the Journal 60/A.

7.6.1 Recommended Acute Viral Hepatitis Case Definitions

Clinical description: Any person who 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

- **Probable** (clinical) (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)[4]

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.

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.

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

Laboratory testing is currently mandated for 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 cannot be established). The regional CPH can be contacted to obtain the most current list of NCDC recognized/recommended laboratories in the area.

7.6.2 Outbreak Control/Response Measures

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 six 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. Susceptible[5] sexual contacts and persons with suspected blood exposure (e.g., sharing razors) to the index case should be given hepatitis B immunoglobulin (5ml) 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.

c. Immunization of all other household contacts of a person with acute of 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.

[5] 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.

7.7 Diphtheria

PROTOCOL FOR LABORATORY CONFORMATION OF DIPHTHERIA

Sampling strategy: Collect specimens from every probable/clinical case of diphtheria.

Confirmation test: Isolation of toxin-producing Corynebacterium diphtheria or C. ulcerans by bacterial culture.

Specimen to be collected: pharyngeal and nasal or naso-pharyngeal swabs (skin lesion swabs in case of skin diphtheria, eye swab in case of eye diphtheria)

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

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

I. DOCUMENTATION

Supplies needed:

- ○ Register 60/A
- ○ Lab investigation request form
- ○ Marker (water resistant)
- ○ Specimen label

Steps:

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.

II. COLLECTION AND HANDLING

Note: Collect both throat and nasal, or naso-pharyngeal swabs, preferably before administration of antibiotics, at the first contact with patient .

Supplies needed:

- ○ Dacron or calcium alginate swabs (rayon or cotton swabs)
- ○ Sterile saline solution
- ○ Blood agar slant
- ○ Amies or Stewart's transport medium

Steps:

Throat swabs:

1. Pharynx should be clearly visible and well illuminated.
2. Depress tongue with an applicator and swab the throat without touching the tongue or inside of check.
3. Rub vigorously over any membrane, white spots or inflamed areas; slight pressure with a rotating movement must be applied to the swab.
4. The swab is extended between the tonsillar pillars and behind the uvula. Care should be taken not to touch the lateral walls of the buccal cavity or the tongue to minimize contamination with commensal bacteria.
5. Having the patient phonate a long "aaah" serves to lift the uvula and helps prevent gagging.
6. The tonsillar areas and the posterior pharynx should be firmly rubbed with the swab.
7. If any membrane is present, swab from the edge of membrane.
8. Any purulent exudate should also be sampled.

IV. TRANSPORTATION

Supplies needed:

- ○ Ziplock plastic bag
- ○ Plastic container
- ○ Shipping box/container
- ○ Box label

Steps:

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.

Nasal swabs

Nasal specimens are obtained under direct light using over-the-shoulder illumination using the aseptic technique to prevent contamination by other micro-organisms.

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.

Naso-pharyngeal swabs

Naso-pharyngeal specimens are obtained under direct light using over-the-shoulder illumination using the aseptic technique to prevent contamination by other micro-organisms

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.

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!)

Skin diphtheria and other lesions

1. Lesions should be cleansed with normal saline and crusted material removed.
2. Press the swab firmly into the lesion.

Note: In case of skin or eye diphtheria the throat and nasal specimens should be taken as well.

After collection, inoculate the specimen on Amies or Stewart's transport medium or Blood agar.

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.

III. STORAGE

Steps:

1. Specimen inoculated on the transport media can be stored at room temperature (25^0C) 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 37^0C (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.

V. COMMUNICATING TEST RESULTS

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.

Steps:

1. Record the results in the case history and Journal 60/A.

Outbreak Control/Response Measures

1. If diphtheria is suspected on the basis of clinical findings, antitoxin[6] 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 7 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*** should do the following:

    - Undergo bacteriological investigation as described above.
    - Remain under clinical surveillance for signs/symptoms specific for diphtheria for 7 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 1 year has 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.

***** A *close contact* is someone having cared for, lived with, or had direct contact with respiratory secretions of a probable (clinical) or confirmed case in the past 7 days. Those are likely to be in the following groups:

- Household members living in the same house or apartment
- Friends, relatives or care takers who regularly visited the patient at home
- Dates or sexual partners
- Classmates in the school or persons working in the same office
- Health workers who were contaminated with the patients oropharyngeal secretes.

[6] 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.

7.8 Poliomyelitis

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 focal person: Tamar Kutateladze

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

I. DOCUMENTATION

Supplies needed:

- ○ Register 60/A
- ○ Marker (water resistant)
- ○ Lab investigation request form
- ○ Specimen label

Steps:

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.

II. COLLECTION AND HANDLING

Supplies needed:

- ○ Sterile container
- ○ Wooden spatula, or plastic spoon
- ○ Viral transport medium

Steps:

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

Steps:

1. Immediately refrigerate at 4-8^{0}C.
2. Keep refrigerated until shipment.

IV. TRANSPORTATION

Supplies needed:

- ○ Ziplock plastic bag
- ○ Cold box with ice packs
- ○ Plastic container
- ○ Box Label

Steps:

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.

V. COMMUNICATING TEST RESULTS

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.

Steps:

1. Record the results in the case history and Journal 60/A.

Figure 8. 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

Outbreak Control/Response Measures

1. Unvaccinated or not fully vaccinated contacts under 15 years of age should be promptly immunized
2. The expert team may consider it necessary to immunize additional cohorts of children.
3. 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.

7.9 Rabies

7.9.1 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. 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 people[7] in Georgia need to receive post-exposure treatment after being exposed to animals suspected of carrying rabies.

7.9.2 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 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
  - 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

[7] 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.

infected area.[8]

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 probable (clinical) case of rabies in animal and humans. At present the only method – detection of rabies viral antigens by direct fluorescent antibody (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.

7.9.3 Case Notification Procedures and Forms

Any probable (clinical) 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.

7.9.4 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; euthanize if required.

3) Educate the public and pet owners to the following:

- ✓ 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 be always leashed in congested areas when not confined on owner's premises

[8] "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."

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/test[9] 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 rabies[10] should be sacrificed[9] and tested for rabies. All wild mammals that have bitten a person should be sacrificed[9] 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.

9) Individuals who previously received full course of pre-exposure 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 rabies immune globuline (RIG) according to the ordinary scheme. See section 6.

7.9.5 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 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***

[9] 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

10 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.

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***[11] 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.

Table 7 is a general guide to rabies 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):

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

Table 7. 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 scratches or bites 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 the 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 the treatment (after giving 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 the 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.

[11] Immunization with rabies vaccine carriers 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 25 percent 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.

7.9.6 Control of Rabies Patients 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).