

Addendum to page 18

Table 1: Syndromes, Characteristics, Agents, Selected Diseases, Specimens and Laboratory Test.

Syndrome	Characteristics	Agents/ priority testing algorithm	Selected Disease	Specimen	Laboratory test
Febrile systemic disease	Sudden onset of fever, headache, muscle and joint pain; occasionally gastrointestinal symptoms, may be biphasic or recurrent	Dengue types 1,2,3,4	Dengue fever	Serum sample at first contact. Second sample on request. Blood smear.	Viral isolation, IgM ELISA Detection of the Plasmodium parasite.
		<i>Plasmodium (vivax or falciparum)</i>	Malaria		
		<i>Leptospira (several serovars)</i>	Leptospirosis		
		<i>Other Arboviruses. Brucella sp. Yersinia pestis</i>	Dengue-like Brucellosis Plague	Serum: acute Serum: acute and convalescent Exudate aspirated from buboes, blood, CSF or sputum	IgM ELISA, MAT ^a and PCR ^a Viral isolation Culture ^a , serology Culture ^a , serology ^a
Fever and rash	Onset with fever and systemic symptoms; generalized eruption (macular, papular, vesicular) in the skin and/or mucous membranes	Dengue	Dengue fever	Serum sample at first contact. Second sample on request. Serum sample at first contact Nasopharyngeal swabs 1-3 days after onset of rash. Urine 7-10 days after onset of rash.	Viral isolation, IgM ELISA IgM ELISA, Viral isolation
		Measles, Rubella	Measles, Rubella,		
		Parvovirus B19 (NOT routinely offered by CAREC), Human Herpes type 6	Erythema infectiosum, Roseola	Serum sample at first contact	IgM ELISA
		Herpes simplex type 1 and 2	Herpes		
		Varicella zoster	Chickenpox/Varicella.	Swabs of the lesions	Viral isolation
		Enterovirus Other arboviruses (e.g. Mayaro, Oropouche)	Foot, hand and mouth disease Dengue like fever	Nasopharyngeal or throat swabs AND stools AND acute serum.	Viral isolation (NOT routinely offered by CAREC) Viral isolation
Group A Streptococci	Scarlet fever	Nasopharyngeal or throat swabs	Culture		

Fever with respiratory symptoms.	Fever with laryngitis, cough, thoracic pain, pulmonary oedema, fatigue, purulent or blood	<i>Corynebacterium diphtheriae</i> .	Diphtheria	Nasal and throat swabs	Culture
		Influenza: A, B, C, RSV	Influenza, Parainfluenza, Respiratory Syncytial Virus	Nasopharyngeal swabs	Viral isolation
		<i>Leptospira</i> (several serovars)	Leptospirosis	Serum sample at first contact. Second sample on request.	IgM ELISA, MAT ^a and PCR ^a
		<i>Mycobacterium tuberculosis</i>	Tuberculosis	Sputum , body fluids, tissue	Smear examination, culture and sensitivity
		<i>Bordetella pertussis</i>	Pertussis	Respiratory secretions, pleural fluid	Culture
		<i>Legionella pneumophila</i>	Legionnaire's disease.	Respiratory secretions, urine, acute and convalescent sera	Serology ^a Antigen detection and culture ^a
		<i>Chlamydia pneumoniae</i>	Pneumonia	Serum sample on first contact	Serology ^a (Only in outbreak situations)
		<i>Mycoplasma pneumoniae</i>	Pneumonia	Serum sample on first contact	Serology ^a (Only in outbreak situations)
		<i>Yersinia pestis</i>	Plague (pneumonic)	Exudate aspirated from buboes, blood, CSF or sputum	Culture ^a , serology ^a
	Hantaviruses	Hantavirus pulmonary syndrome	Respiratory secretions, acute and convalescent sera	Viral isolation ^a , IgM ELISA ^a	
Gastrointestinal symptoms with/without fever	Nausea, vomiting, abdominal cramps, diarrhea with/without blood	Rotavirus, Norwalk like agents ^a	Gastroenteritis	Stools	Antigen detection
		<i>Vibrio cholerae</i> 0:1 and 0:139	Cholera	Stools, rectal swab in Cary Blair medium	Culture
		<i>Salmonella spp. (inc S. typhi)</i> , <i>Shigella spp</i> , <i>Staphylococcus</i> , <i>Clostridium perfringens and botulinum</i> , <i>Campylobacter jejuni</i>	Food borne	Stools, rectal swab in Cary Blair medium	Culture
		GI tract parasites e.g. <i>Entamoeba histolytica</i>	E.g. Amoebiasis	Stool, serum sample at first contact	Microscopy, serology

Fever with jaundice.	Acute or insidious onset of fever, headache, backache, anorexia, malaise, fatigue, nausea, abdominal pain or discomfort, vomiting, jaundice.	Hepatitis A, B, C, D, E viruses (B only for polytransfused patients. D and E are NOT offered by CAREC). <i>Leptospira</i> (several serovars) Yellow fever virus	Viral hepatitis Leptospirosis Yellow fever	Serum Serum sample at first contact. Second sample on request Acute and convalescent sera, fresh autopsy tissues (liver, spleen, heart)	Antigen detection for A and B Serology for C IgM ELISA, MAT ^a and PCR ^a Viral isolation, serology
Haemorrhagic fever	Acute onset of fever, headache of 2-7 day of evolution with haemorrhagic manifestations in skin (petechiae, ecchymoses) internal bleeding (haematemesis, melaena, hematuria) jaundice, shock.	Dengue viruses 1,2,3,4. Yellow fever virus. <i>Leptospira</i> (several serovars) <i>Neisseria meningitidis</i> <i>Plasmodium falciparum</i> Hantaviruses, Arenaviruses Exotic viruses	Dengue haemorrhagic fever. Yellow fever Leptospirosis. Meningococemia Malaria Viral haemorrhagic fevers Haemorrhagic fevers	Serum sample at first contact. Second sample on request Serum: acute and convalescent, fresh autopsy tissues (liver, spleen, heart). Serum sample at first contact. Second sample on request Blood culture, CSF Blood smear. Blood Acute serum, fresh autopsy tissues Blood	Viral isolation. IgM ELISA. Viral isolation or serology IgM ELISA, MAT ^a and PCR ^a Culture, serology Detection of the Plasmodium parasite. Viral isolation. Virus isolation

Fever with neurological symptoms	Fever, headache, vomiting, neck stiffness, paralysis, confusion, disorientation, anxiety, hyperactivity, tremors, spasticity, convulsion, coma.	Enteroviruses, Mumps, Herpes simplex type 1 and 2.	Viral Meningitis	CSF AND Nasopharyngeal swab AND stools AND acute and convalescent sera.	Viral isolation, Serology.
		<i>Haemophilus influenzae</i>	Bacterial meningitis,	CSF, blood culture	Culture, serology
		<i>Neisseria meningitidis</i>	Meningococemia	CSF, blood culture	Culture, serology
		Herpes simplex, Measles, Rabies, West Nile, Equine Encephalitis Viruses.	Viral encephalitis	CSF AND acute and convalescent sera AND fresh autopsy brain tissue.	Antigen detection, viral isolation, serology.
		<i>Plasmodium falciparum</i>	Malaria	Blood smear	Detection of the Plasmodium parasite
		Poliovirus types 1, 2, 3	Poliomyelitis	Stool	Virus Isolation
Genital discharge or ulcer	Urethral or vaginal discharge, itching, burning, dysuria, genital or perianal ulcers in males or females, papula bulbo, skin rash.	Other enterovirus (e.g. Enterovirus 70, 71, Coxsackie A7)	Meningitis	Stool	Virus isolation
		<i>Chlamydia trachomatis</i>	Chlamydia	Urethral or endocervical swabs.	Detection of chlamydia inclusions (NOT routinely offered by CAREC).
		<i>Neisseria gonorrhoeae</i>	Gonorrhoea	Urethral or endocervical swabs.	Culture and serology
		<i>Treponema pallidum.</i>	Syphilis	Serum sample	Serology
		Herpes simplex types 1, and 2	Genital herpes	Urethral, endocervical or lesion swabs	Viral isolation.

Notes:

1. **The column of selected diseases is intended to be used for differential diagnosis.**
2. **To facilitate the selection of appropriate test methods, information on “Date of onset of illness” and “Date of collection of specimen” is critical.**
3. **^a CAREC does not conduct this test, but will receive samples and refer them for testing through established channels. Please contact CAREC laboratories before sending samples.**

Addendum to Page 37

<i>DISEASES</i>	<i>DIAGNOSTIC METHODS</i>
Cryptosporidiosis	Modified ZN stain and microscopy; ELISA IgM
Isosporiasis	Modified ZN stain and microscopy; IFAT
Pneumocystis carinii	Microscopy after Toluidine Blue stain or FA microscopy after FITC stain
Toxoplasmosis	ELISA IgM and IgG
Kaposi's sarcoma lymphoma	Human herpes type 8 antibodies or DNA PCR
Progressive multifocal leukoencephalopathy	DNA PCR
Cytomegalovirus	Viral Isolation or DNA PCR
Herpes simplex virus	Viral Isolation or DNA PCR

Addendum to Page 42

3.2.5 Specimen collection and transport

a) Acute blood sample

Collect 5-10ml of blood as early as possible after the onset of illness.

b) Convalescent blood sample

Collect 5-10 ml of blood two weeks after the first.

Transport both samples on ice packs to the laboratory within 24 hours of collection.

3.2.6 Laboratory diagnosis

- A fourfold rise or greater on paired sera in the *Brucella* agglutination test
- Isolation of *Brucella sp* from blood (requires special media and test is only performed at selected laboratories. Not performed at CAREC)

Addendum to Page 49

3.3.5 Specimen Collection and Transport

Collect a swab of a stool sample (Stool swab) in Cary Blair medium.

- a) Using a swab, take a sample of the stool (a pea sized portion or if liquid immerse the swab in the sample and leave for a few seconds to absorb the faecal material). Place the swab in Cary –Blair transport medium, making sure that the swab is completely immersed in the transport medium.

(delete vomitus)

Transport to the laboratory at ambient temperature.

3.3.6 Laboratory Diagnosis

- Isolation of *Vibrio cholerae* 01 or 0139.
(delete the other two bullets)

- 3.3.7 Replace the bullet point “ Where the likelihood.....household contacts” with “ Where the likelihood of secondary transmission exists within close contacts the decision to give chemoprophylaxis will depend on both the national policy of the country as well as the epidemiologist in charge of the investigation”

3.3.8 Technical notes

Alter last sentence to read – “Strains of *Vibrio cholerae* other than 01 or 0139 should not be reported”.

Insert after page 50, in Section 3, tab C

Ciguatera Poisoning

Internationally notifiable:

Reporting Interval

Report to (country level):

National Epidemiologist

Report to (regional level):

CAREC's Epidemiology Division

Introduction

Ciguatera poisoning is a nonbacterial, fish-borne poisoning that is caused by the consumption of reef fish that feed on certain algae associated with coral reef systems. The ciguatoxins tend to accumulate in larger and older fish higher up the food chain. Species of fish most frequently implicated include groupers, red snapper, eel, barracuda and Spanish mackerel. Fish larger than 2 kg. contain significant amounts of toxin and readily produce toxic effects when ingested. Ciguatera toxin is heat stable and lipid soluble; they are unaffected by temperature, gastric acid, or cooking method. Presence of the toxin does not affect odour, colour or taste of the fish. Effects are most pronounced on neuronal, cardiac and GI tissues.

Ciguatera poisoning is seldom lethal. Typical mortality rate is 0.1%. Death is attributed to cardiovascular depression, respiratory paralysis, or hypovolemic shock. The poisoning is cumulative and repeated ingestion of the toxin can lead to progressive worsening of symptoms.

Agent	Incubation Period	Signs and Symptoms	Transmission
Ciguatoxin	1-48 hours; usually 2-8 hrs.	Usually gastrointestinal symptoms (nausea, vomiting and diarrhoea) followed by neurologic symptoms (including paresthesia of lips, tongue, throat, or extremities), itching and reversal of hot and cold sensation	Ingestion of fish associated with Ciguatera poisoning. Red Snapper, grouper, carite and barracuda.

Case Definition

Clinical syndrome among persons who have eaten a type of fish previously associated with ciguatera fish poisoning (e.g. snapper, grouper, carite or barracuda).

OR

Clinical syndrome and history of ingestion of fish and demonstration of ciguatoxin in epidemiologically implicated fish

Addendum to Page 55

Dengue

Acute blood sample.

A blood sample collected within 3 days of onset of disease is the ideal sample for dengue viral detection by RT-PCR or isolation in tissue culture.

1. Collect 5 to 10 ml of blood sample from the suspected case and place in a sterile tube.
2. Centrifuge and transfer the serum to a sterile vial.
3. Label all tubes and vials with patient's name, specimen and date of collection
4. Store and send to the laboratory, as soon as possible, in a cold box at 4-8°C.
5. Complete a laboratory request form including date of onset of illness, symptoms and date of specimen collection

Convalescent blood sample:

A blood sample collected between six days and 2-3 weeks of onset of disease is the ideal sample for the detection of Dengue IgM antibodies. If the sample was collected in the early convalescent phase (6-days after onset), the laboratory may request for a second serum sample 2 to 3 weeks after the first.

Laboratory diagnosis:

A laboratory confirmed case of a dengue case is a probable case with one of the follow:

- Detection of dengue virus types (1 or 2 or 3 or 4) by RT-PCR or viral isolation and identification confirms an acute viral infection.
- Demonstration of a fourfold or greater increase in antibody titer to dengue between acute and convalescent phase by HAI test is confirms of acute dengue or another flavivirus infection.
- Detection of dengue IgM antibodies by ELISA confirms a recent dengue or another flavivirus infection.

Addendum to Page 63

Diphtheria, Paragraph 3:

Amend the 2nd sentence to read as follows:

Three doses constitute the primary series; The number of booster doses that are administered is dependent on the policy of the country.

Addendum to Page 66

3.6.5. Specimen Collection and Transport

Collect nasopharangeal or throat swabs in standard bacterial transport media **before** antibiotic therapy is initiated.

Transport at ambient temperature to the laboratory.

3.6.6 Laboratory diagnosis

- Isolation of toxigenic *C. diphtheriae*.
(delete the first bullet and “which is diagnostic or non toxigenic”)

3.6.7 Control and Prevention

7th bullet should read “Immunization of those at special risk, e.g. health care workers, and administration of booster doses is dependent on the policy of the country.”

Addendum to Page 69

Agent	Incubation Period	Signs and Symptoms	Transmission
Cryptosporidium parvum	1-12 days	Profuse water diarrhoea, anorexia and vomiting, cramps and abdominal pain	Faecal-oral, water-borne, and food-borne
Cyclospora cayetanensis	1 week	Watery diarrhoea of 6 or more stools a day, nausea, anorexia, abdominal cramping, fatigue and weight loss	Faecal-oral; food-borne and water-borne
Giardia lamblia	3-25 days	Diarrhoea, steatorrhoea, abdominal cramps, frequent loose greasy stools; fatigue and weight loss	Faecal-oral; food-borne and water-borne
Entamoeba histolytica	2-4 weeks	Intestinal disease; acute dysentery with fever, chills and bloody or mucoid diarrhoea; sometimes mild; sometimes amoebic liver abscesses, skin ulceration	Faecal-oral; by contaminated food or water

Addendum to Page 80

3.8.5 Specimen Collection and Transport

Stool specimens

Collect as soon as possible after onset of diarrhoea and prior to antibiotic use.

Collect in a clean, dry, leak proof container with a tightly fitting screw cap. The sample is then treated as follows:

- a) Bacteriology: Using a swab, take a sample of the stool (a pea sized portion or if liquid immerse the swab in the sample and leave for a few seconds to absorb the faecal material). Place the swab in Cary –Blair transport medium, making sure that the swab is completely immersed in the transport medium.
- b) Parasitology: Using a spatula transfer enough sample into the two parasitology containers (PVA and 10% formalin) to reach the mark indicated on the containers i.e. approximately 1 part of stool to 3 parts of preservative.
- c) Virology: Recap the container with the remainder of the sample.

Transfer all samples (a, b and c) to the laboratory within 24 hours. Place sample (c) on ice packs, the others may be transported at ambient temperature.

3.8.6 Laboratory Diagnosis

- Isolation and/or identification of a bacterial, viral or parasitic pathogen

Addendum to page 115

3.14.6 Laboratory diagnosis

Add the following fifth bullet point to the list:

- Modern rapid diagnostic kits (such as Optimal) are very useful for species detection even in the absence of a skilled microbiologist

Addendum to Page 120

Measles:

Replace the case definition of **Suspected measles case** with the Measles/Rubella case definition and investigation forms that are currently being used. All countries should continue to utilize the first contact strategy. The measles/rubella case definition is stated below:

Case definitions for combined measles/rubella surveillance

Suspected measles/rubella case

For surveillance purposes, any patient in whom a healthcare worker suspects measles or rubella infection is considered to be a suspected measles/rubella case. These patients generally have fever and generalized rash illnesses

Addendum to Page 124

Measles

Specimen collection

Urine sample/ Nasopharyngeal swab or throat swab

When measles sporadic cases occur or in outbreak situations urine samples should be collected from the first few cases (5 –10 samples) for viral isolation and genotyping.

The ideal sample for viral isolation is a nasopharyngeal swab (NPS) or a throat swab (TS) collected within 1-3 day after onset of rash, however measles virus can be isolated from urine specimens taken up to 7 days after onset of rash.

- Collect 50-100 ml of urine and store at 4-8°C until it can be centrifuged. If centrifugation is not possible, the urine sample should be shipped to the national laboratory.
- Centrifuge the urine sample at 1,500 rpm (about 500 x g) for 5minutes.
- Re-suspend the pellet in 0.5-2ml in viral transport media (VTM, available in the national Laboratory of each country).
- In case of NPS/TS the specimen should not be centrifuged. The swab is placed in a sterile vial with 0.5-2ml of VTM.

Keep the urine/NPS/TS sample at 4-8°C and send immediately in dry ice to CAREC laboratory.

3.15.6

Replace the third paragraph with "While EIA tests are most sensitive in sera taken on day 3 of rash or later, a single serum sample obtained at the first contact with the health care system, regardless of day following rash onset, is considered adequate for measles surveillance."

3.15.7

2nd Paragraph, 1st Sentence should read:

- "Age group 9 months to 14 years" should replace "Age group 1-14 years."
- Delete the 2nd and 3rd sentences of that paragraph and replace with, "However efficient the "catch-up" and routine immunization efforts are, there will inevitably be an accumulation of measles-susceptible preschool-aged children over time. Two major factors contribute to the build-up of susceptible children. First, measles vaccine is less than 100% effective, thus leaving some children unprotected following vaccination. Second, measles vaccination coverage for each birth cohort will almost always fall short of reaching all children."

2nd Paragraph, 3rd Sentence should read:

- Therefore periodic mass immunization campaigns for a smaller group (possibly 1 to 5 years) is necessary to reduce the number of susceptibles.

Addendum to Page 125

-Spread of measles infection from an imported case can be limited by immediate implementation of control measures. These measures will include vaccination if there is susceptible population.

Performance indicators:

- One indicator is missing - Proportion of blood specimens for which results were received within 7 days of receipt in laboratory.

Addendum to Page 130

3.16.5

a) Cerebrospinal Fluid

Collect before the start of antibiotic therapy and transport to the laboratory at ambient temperature. The sample must reach the laboratory as soon as possible but no longer than one hour after collection.

b) Blood

Collect in blood culture bottles before the start of antibiotic therapy. Transport at ambient temperature to the laboratory. The sample must reach the laboratory as soon as possible but no longer than one hour after collection

3.16.6 Laboratory Diagnosis

Isolation of *H. influenzae* from CSF and blood.

In post antibiotic treatment a latex particle agglutination test may be used. However, many laboratories have discontinued antigen detection in body fluids as testing is expensive, the results have little if any impact on patient management and some positive results are falsely positive.

Addendum to Page 139

Re: Investigation Form, Laboratory Data – Nasopharyngeal swab is not required for a case

Addendum to Page 140

3.18.5

- c) Nasopharyngeal swabs (from close contacts to determine carriers). Close contacts are household contacts of the case, contacts who share sleeping arrangements, child care and/or nursery school contacts and all persons with direct contamination of their nose or mouth with oral and/or nasal secretions of a case.

Addendum to Page 146

3.19.7 – 2nd Paragraph, 2nd Sentence (Mumps)

The sentence should read:

Males with no history of mumps disease or immunization may be vaccinated with the mumps containing vaccine.

Addendum to Page 149

3.20.4

Under Laboratory data – the only specimen to be collected is Nasopharyngeal swab

Addendum to Page 150

3.20.5

delete a-c and replace with:

Collect nasopharyngeal swab and place in *Regan-Lowe transport medium.
Transport swabs to the local laboratory within 24 hours at ambient temperature.

At the local laboratory: If the specimen cannot be sent to the reference laboratory within 24 hours, incubate the specimen in the transport medium at 35⁰C for 48 hours, then transport at ambient temperature to the reference laboratory.

*This is a special transport media that has a shelf life of 2 months. Please contact CAREC laboratory when required.

3.20.6 Laboratory Diagnosis

- Isolation of *Bordetella pertussis* from nasopharyngeal swabs.
- Demonstration of bacterial antigen in cells from the nasopharynx by direct FA (fluorescent antibody test). This test has low sensitivity and specificity and should only be performed by experienced staff. This test is not performed at CAREC.
- Detection of the organism by PCR. This test is not performed at CAREC.

3.20.7

Pertussis Control and Prevention

Bullet #7 should be replaced with:

Children less than 7 years should be immunized if they have not received five doses of pertussis vaccine and the last dose given is more than 3 years ago.

Addendum to page 172

Add the following note to the end of the table:

Fresh brain tissue is the best diagnostic material in order to have reliable laboratory results. Brain in formalin can only be used for PCR, not IFA.

Addendum to Page 173

3.24.6 Laboratory diagnosis

- On the first line, insert the word “animal” before rabies, so that the sentence starts – Test for animal rabies...
- Replace the first bullet point with “Immunofluorescent assay (IFA) for rabies antigen detection on corneal or skin scrapings”
- Replace the note after the bullet points with “Negative results of testing non-brain sites do not rule out rabies infection, because the virus may fail to establish in these sites. IFA is preferred since results available on the same day of receipt of specimen in the laboratory”.

Addendum to Page 181

Rubella:

Blood sample,

Acute post natal infections.

Susceptible pregnant woman in contact with confirmed rubella case, collect a first blood sample as soon as possible and second serum sample 2-3 weeks latter.

Congenital rubella syndrome:

Collect a blood sample between 0-6 months of age to detect specific rubella IgM antibodies.

Samples for viral isolation.

Post natal infection

Nasopharyngeal swab/throat swabs should be collected within 1-3 days after onset and transported in viral transport media (VTM)

Urine sample can be collected up to 7 days of onset.

Congenital rubella syndrome:

Collect throat swab and cerebrospinal fluid or leukocytes of newborn infants with CRS. Urine samples can be collected up to one year.

Urine sample collection.

- Collect 50-100 ml of urine and store at 4-8°C until it can be centrifuged. If centrifugation is not possible, the urine sample should be shipped to the national laboratory.
- Centrifuge the urine sample at 1,500 rpm (about 500 x g) for 5minutes.
- Re-suspend the pellet in 0.5-2ml in viral transport media (VTM, available in the national Laboratory of each country).
- In case of NPS/TS the specimen should not be centrifuged. The swab is placed in a sterile vial with 0.5-2ml of VTM.
- Keep the urine/NPS/TS sample at 4-8°C and send immediately in dry ice to CAREC laboratory.

Criteria for laboratory diagnosis of congenital rubella syndrome

- Presence of rubella specific IgM in the serum within the first week of life that persist up to six months of age confirms rubella infection in uterus.
- Increasing titers of rubella IgG or HIA antibodies in samples collected at birth, 2, 4 and 6 months of age.
- Persistent excretion of rubella virus with the urine as is detected by viral isolation or RT-PCR.

Addendum to Page 182

3.25.8 Rubella/CRS – Technical Notes

Vaccination Strategies recommended by TAG 1999:

- All countries should incorporate rubella-containing vaccine into childhood vaccination programs, both as part of routine childhood immunization at 12 months, and as part of the follow-up campaigns. Moreover, targeted efforts are needed to reduce the number of rubella susceptible women of childbearing age. Strategies, such as post-partum immunization, immunization in family planning clinics, immunization in schools and the workplace can be used to protect these women.
- There are substantial data available documenting the absence of significant risk of rubella vaccination during pregnancy. However, pregnant women are generally not vaccinated. This is to avoid the risk of the vaccine being implicated should there be an unrelated adverse outcome of the pregnancy. For women who are vaccinated and then subsequently found to be pregnant, abortions are not recommended. Finally, it is not necessary to counsel women to avoid pregnancy for 3 months following rubella vaccination because no known risk of adverse fetal outcomes has been established.
- Countries wishing to prevent and control CRS promptly should conduct a one time mass campaign to vaccinate all females 5-39 years of age with measles and rubella containing vaccine.
- Countries wishing to prevent and control both rubella and CRS promptly should conduct a one time mass campaign to vaccinate BOTH males and females 5-39 years of age with measles and rubella containing vaccine.

Addendum to Page 189

Specimen Collection and Transport

- 3.26.5 Stool swab: Using a swab, take a sample of the stool (a pea sized portion or if liquid immerse the swab in the sample and leave for a few seconds to absorb the faecal material). Place the swab in Cary –Blair transport medium, making sure that the swab is completely immersed in the transport medium.

Delete rectal swabs and leftover foods or other foods.
Delete vomitus.

- 3.26.6 Laboratory Diagnosis

Isolation of *Salmonella* species from stool. Delete ‘and from food samples’

Further investigations include serotyping and phage typing which can be done at reference laboratories.

Serotyping is done at CAREC.

Addendum to Page 194

Specimen Collection and Transport From adults

- First bullet point: Replace Thayer Martin medium with selective GC medium or GC transport system.
- Delete bullet point # 3
- Transport rapidly to the laboratory at ambient temperature to preserve bacterial viability.
- If a delay (> 2hours) in transport is anticipated, place inoculated plates in a candle jar.

Addendum to Page 196

Specimen Collection and Transport

a) Collect 5-10 ml of blood in a sterile tube. Transport to laboratory at ambient temperature within 24 hours.

In the tropics if blood is left for prolonged times in closed vehicles it may haemolyse. If excessive heat is anticipated, place samples in a rack in a cooler with ice packs.

b) Collect exudate from lesions for the direct examination of treponemes if this facility is available on site.

Laboratory Diagnosis

Leave first bullet, delete 2nd and 3rd bullets and replace with:

- Positive screening test (VDRL/RPR) confirmed by a treponemal test (TPHA/FTA)

Addendum to Page 204

3.28.5 Specimen Collection and Transport

- a) Stool Swab: Using a swab, take a sample of the stool (a pea sized portion or if liquid immerse the swab in the sample and leave for a few seconds to absorb the faecal material). Place the swab in Cary –Blair transport medium, making sure that the swab is completely immersed in the transport medium
- b) Rectal swabs are acceptable only for culture of diarrhoeal pathogens from infants or from patients who are acutely ill with diarrhoeae. If rectal swabs are collected they must be placed in Cary-Blair transport medium (as for stool swabs)

Transport all specimens to the laboratory on ice packs within 2 hours of collection. Shigella species are fragile.

Addendum to Page 210

(b) Neonatal tetanus

First bullet – The sentence should read:

Ensure that all women of child-bearing age are appropriately vaccinated against tetanus. Pregnant women who are unimmunized should receive dose 1 on contact, 2nd dose a minimum of four (4) weeks later, and dose 3, six to twelve (6-12) months later.

Addendum to Page 220

3.30.5 Specimen Collection and Transport

- Collect sputum specimens **before** chemotherapy is started. Three early morning sputum specimens (before eating or drinking) are to be collected on three consecutive days.
- Instruct patients to rinse their mouths out first with water before collecting the sample.
- Ask patient to cough deeply to produce a sample. 5-10 mls of sputum is required for each collection. Spit or saliva is unsuitable. Samples containing any food particles or other extraneous matter are also unsuitable.
- Collect specimens in sterile, leak-proof, screw-capped container.
- Transport sputum specimens in sealable plastic bags with a separate pouch for completed request forms.
- Transport to the laboratory as soon as possible (within 24 hours). Place samples on ice packs if a delay of more than several hours is anticipated.

Laboratory Diagnosis

- Detection of acid fast bacilli on smear examination and isolation of MTB complex (*M. tuberculosis*, *M. bovis*, *M. africanum*, *M. microti*) from culture.

Addendum to Page 235

3.31.5 Specimen Collection and Transport

- Collect blood specimen in appropriate blood culture bottles (See annex).
- Collect a stool swab in Cary-Blair medium.
(Delete blood clot)

Transport to the laboratory within 24 hours of collection at ambient temperature.

Do not place the blood culture on ice.

3.31.6 Laboratory Diagnosis

- Isolation of *Salmonella* serotype Typhi from blood or stool.

3.32 Waterborne Hepatitis: Hepatitis A/ Hepatitis E

CLASS 3

International notifiable: No
National notifiable: Yes, collective data
Reporting interval: Weekly
Report to (country level): National epidemiologist
Report to (regional level): CAREC's Epidemiology Division

3.32.1 Introduction

Viral hepatitis is a general term for inflammatory disease of the liver caused by at least five different viruses: hepatitis A, B, C, D and E. The waterborne hepatitis viruses: hepatitis A virus (HAV) and hepatitis E virus (HEV) cause acute and generally self-limited infections. However fulminant hepatitis can occur, but patients do not progress to long term carrier status. HAV and HEV are transmitted by fecal oral route. Vehicles for the viruses are water, food contaminated during preparation, and raw shellfish, including cough. Person-to-person spread is common among children who frequently have asymptomatic infections.

HAV and HEV have very different distributions of both diseases in the world: HAV has a worldwide distribution and the patterns of infection is a reflection of sanitation standards, whereas the epidemiology of HEV infections is poorly understood, especially in countries where the disease is not endemic.

The period of maximum transmissibility is at end of the incubation period, which ranges from 15 to 50 days (average 28-30 days). The symptomatic period is one to two weeks, with rare instances of disease lasting more than one month. HEV infection is unique among the hepatitis virus infections, in that is associated with a high mortality during pregnancy. The mayor risk factor in this regard is travel to areas in which HEV is endemic such as India and Pakistan.

The main purpose of surveillance is the detection of outbreaks, which may have the common source or may indicate a microenvironment of very poor hygiene.

3.32.2 Case definition.

- Abrupt onset of fever with jaundice within one week and with one of the following:
 - Anorexia
 - Malaise
 - Fatigue
 - Nausea
 - Abdominal discomfort.

- a) **Suspected Case**
 - A person who meets the clinical case definition above
 - Symptomatic person without jaundice but a history of close contact with a confirmed case within the past week.

- b) **Confirmed case of hepatitis A**
 - A suspected case with a positive laboratory result for HAV (anti- HAV IgM).
Diagnosis of HEV infection is not established and the correct diagnosis must take into account the risk factors for exposure to this virus.

3.32.3 Reporting and investigative procedures:

Level 1

- Report a suspected case to level 2 within 48 hours.
- Initiate the case investigation, noting especially any risk factor for transmission e.g. whether the food handler or day care worker or travel history to HEV endemic countries.

Level 2

- Collate level 1 reports noting any common factors or clusters.
- Collect blood samples and forward to the laboratory.
- Continue case investigations, with emphasis on epidemiological factors.
- Forward a weekly collective report to the national level, including any available laboratory results.

Note: This disease would have been reported as syndrome 5

3.33 Bloodborne hepatitis: Hepatitis B/ Hepatitis C/ Hepatitis D

CLASS 2

International notifiable: No

National notifiable: Yes

Reporting interval: Immediate

Report to (country level): National epidemiologist

Report to (regional level): CAREC's Epidemiology Division

3.33.1 Introduction:

Bloodborne hepatitis viruses include hepatitis B virus (HBV), hepatitis C virus (HCV) and hepatitis D virus (HDV), which collectively infect and produce several million people worldwide. In recent years, the list of viruses transmitted through infected blood and that are implicated in liver disease has expanded to hepatitis G virus (HGV), TT virus and SEN virus (SENV), however the significance and widespread of these novel viruses remains to be defined.

Bloodborne hepatitis viruses are transmitted by parenteral exposure to blood or blood products, by sexual contact. Vertical transmission from HBV-positive mother to child during parturition or perinatally is also frequently observed. Donors of blood for transfusion are screened by interview and all blood and blood products are tested for HBV and HCV. Those at special risk are health workers, dialysis patients and those requiring blood products, patients in mental institutions and drug user who share needles.

Hepatitis B has a moderate prevalence in the Caribbean; infection in early is usually asymptomatic but result in a high rate of development of the permanent carrier state. A high percentage of adult infections are symptomatic but the rate of resolution and antibody development is also high.

Hepatitis C has emerged in recent years as the most common for liver disease worldwide. The prevalence is found higher in the patients at risk for parenteral infections than in the general population and the great majority of infected individuals become virus carries indefinitely.

Hepatitis D has a worldwide distribution but at rates that varies in different geographic regions. In general HDV infects only people infected with HBV and this superimposed infection is often associated with an aggravation of the underlying liver disease and with an increased occurrence of fulminant hepatitis.

3.33.2 Case Definition

Suspected case

a) Self limited acute infections

- Abrupt onset of fever with jaundice within one week and with one of the following:
- Anorexia
- Malaise
- Fatigue
- Nausea
- Abdominal discomfort.

b) **Chronic infection.**

- Chronically infected patients are characterized by the persistence of markers of active virus replication at levels that remain for years (SEE LABORATORY DIAGNOSIS).

- Patients can be asymptomatic or alternate clinical manifestations with variable periods of remission. Spontaneous recovery from chronic HBV infection can occur but is very rare in chronically HCV infected individuals.
- A proportion of patients develops chronic liver disease, ranging from chronic hepatitis to cirrhosis and occasionally to hepatocellular carcinoma.

c) Confirmed Case

A suspected case with a positive diagnostic laboratory test.

Because the clinical presentation of viral hepatitis is quite uniform the differential diagnosis is therefore dependent on specific test for HBV and HCV viruses. Additionally, the markers of virus activity must be studied in positive patients in order to establish their infectious condition.

3.33.3 Reporting and investigative procedures:

Level 1

- Report suspected case within 24 hours to level 2
- Initiate the case investigation
- Collect a blood sample and send to the laboratory with patient clinical data.

Level 2

- Complete the case investigation
- Collect clinical, epidemiological and laboratory data and report the first confirmed case to national level in 48 hours.
- Report subsequent cases by weekly line-listing to the national level

Level 3

Report the aggregated data of confirmed cases from national reports monthly to CAREC Epidemiology.

Note: This disease would have been reported as syndrome 5

3.33.4 Case investigation form

See 3.32.4

3.33.5 Specimen collection and transport

Blood sample.

As soon as the patient present, collect 5 to 10 ml of blood into a sterile tube. Forward to the laboratory on ice within 24 hours.

If immediate shipment is not possible, centrifuge the blood and transfer serum to a sterile tube with a secure cap. Store at -20°C and ship in frozen.

Include patient, clinical and exposure data.

3.33.6 Laboratory diagnosis

There is two setting in which HBV and HCV diagnosis is performed:

- Screening low risk population such as blood donors
- Symptomatic patients or with risk factors for bloodborne hepatitis..

HBV screening and acute hepatitis diagnosis is performed using enzyme immunoassay (EIA) for HBsAg (hepatitis B surface antigen). Markers of virus activity include anti- HBc IgM (hepatitis B core antigen), HBeAg (hepatitis B “e” antigen), anti-HBe, and anti-HBs. When HBsAg is positive and anti- HBc IgM is negative, these results are indicative of active HBV infection. The HBeAg is found in the patient’s blood when the virus is actively replicated and its continuous presence correlates with chronic infection. Conversely disappearance of this antigen and appearance of the corresponding antibodies is indicative of resolution of the infection.

Diagnosis of HCV infection is initially performed using screening of IgM test using EIA –3 format. The recombinant immunoblot assay (RIBA) is recommended for confirmation of EIA-positive sera in low-prevalence populations.

Supplemental assay for HCV relies on detection of viral RNA and viral load are used to confirm active HCV infection, identify the genotype and to monitor response to therapy.

3.33.7 Control and Prevention.

Note: Hepatitis B is targeted by WHO for reduced incidence/prevalence, and WHO has recommended the addition of hepatitis B vaccine in the immunization programs for routine infant and/or adolescent immunization in all countries.

- Enforce strict discipline in blood banks, rejecting high risk donors.
- Offer personal counseling to patients on behaviors likely to transmit the viruses.
- Attempt to trace sexual contacts and counsel. Hepatitis B immunoglobulin and or HCV therapy may be offered.
- Determine, by analysis of surveillance data, the incidence of acute disease in population and the prevalence of the chronic infection and disease.
- Improve HBV vaccine coverage of high risk groups e.g. health workers.
- If necessary implement a programme of infant vaccination, to prevent development of the carrier state. The HBV vaccine should be included as part of the infant immunization schedule.
- Launch a public awareness programme aimed at reducing high-risk behavior.

Addendum to page 251

- a) Acute blood sample

Replace bullet point # 4 with “Store at 4-8°C and ship immediately with frozen icepacks.”

Addendum to Annex on page 299

Collection of Blood for Culture:

Materials: Sterile gloves, 70% alcohol (or commercially prepared alcohol swabs) and tincture of iodine, needles and syringes (20ml), blood culture bottles, tourniquet.

Method;

1. Remove outer seal and cap from each blood culture bottle and swab the rubber stopper with alcohol. Allow the alcohol to dry.
2. Prepare the skin for venipuncture
 - a. Palpate a vein to locate the venipuncture site
 - b. Beginning in the centre of the area and moving outward in concentric circles, swab the site with alcohol.
 - c. Swab the site with the tincture of iodine in the same manner. Allow the iodine to remain for 30sec to 1 min.
 - d. Remove residual iodine with another alcohol swab. This step is optional and is included if the patient is sensitive to iodine.
 - e. Without repalpating for the vein, perform the venipuncture.
 - f. As the needle is removed from the patient's arm, apply pressure with a gauze pad, and ask the patient to hold the pad tightly in place for 2-3 minutes.
 - g. Inoculate 10mls of blood into each blood culture bottle (or amount according to manufacturers recommendation). 10-20 mls of blood is required for each draw.
 - h. Do not recap needles – place syringe and needle in a puncture proof container and return to the lab for decontamination.
 - i. Label the bottles carefully with name, date and time of collection, age, location and requesting doctor

NB. For children, prepare as above, however draw 0.5 to 2mls of blood and inoculate into appropriate paediatric blood culture bottle.