

This document is intended to be a resource for communicable disease outbreaks, especially regarding appropriate specimens for laboratory testing. In most cases, when an outbreak of any communicable disease is suspected, the relevant local or provincial health authority and/or the National Department of Health must be notified as soon as possible. For further advice on the laboratory investigation of outbreaks, contact the relevant **NICD Unit**. Contact numbers and case definitions for outbreaks are listed at the end of the tables.

For certain outbreaks, the primary laboratory investigation is carried out at the local/regional NHLS laboratory, and then the isolate is referred to the NICD reference laboratory

INDEX:

General comments and transport details	Page 1
Acute flaccid paralysis	Page 7
Anthrax exposure	Page 4
Aseptic meningitis	Page 8
Chickenpox	Page 8
Cholera	Page 3
Diarrhoeal disease, including suspected food-borne outbreaks	Page 2
Fungal diseases	Page 5
Hand, foot & mouth	Page 8
Hepatitis	Page 8
Influenza	Page 7
Measles/rubella-like illness	Page 8
Meningitis and meningococcal sepsis	Page 2
Plague	Page 4
Rabies	Page 7
Respiratory - unknown	Page 3
SARS	Page 6
Viral haemorrhagic fevers	Page 6

Outbreak type	Who to contact	Specimens	Transport details	Comments
<p><i>All suspected communicable disease outbreaks</i></p> <p><i>Case definitions may need to be broadly inclusive initially, and be refined as the cause of the outbreak becomes better established – see page 9</i></p>	<p>NICD reference laboratories provide a consultative service, especially in regard to laboratory investigations</p> <p>They must be informed about outbreak specimens before they are dispatched</p> <p>National Department of Health notification and Communicable Disease control sections of local health authorities must always be informed immediately</p>	<p>All specimens must be clearly marked with:</p> <ul style="list-style-type: none"> • patients' and senders' details, including telephone numbers • intended recipients • the required lab test/s • brief clinical history if available (symptoms, date of onset of illness) • date of specimen 	<p>The safety of those obtaining, transporting and testing specimens must always be a high priority.</p> <p>All specimens must be safely contained in a sterile leakproof container (eg blood tube, specimen bottle) with absorptive material (eg paper towel, cotton wool) around this primary container in case of breakage or spillage, which is then enclosed in a secondary protective container (eg a tin or strong plastic vessel) with a tight lid</p> <p>The double container unit should then be placed in a sturdy container, e.g. padded envelope or polystyrene box. Patient details must be attached to the outside of this container.</p> <p>See specific diseases for transport details</p>	<p>All specimens should be regarded as potentially infectious and must be handled as such</p> <p>Primary isolation for certain diseases will be carried out at the local/regional NHLS laboratory, and then the specimens will be referred to the NICD for confirmation, typing and molecular tests</p>

Outbreak type	Who to contact	Specimens	Transport details	Comments
<p><i>Diarrhoeal disease: suspected cholera</i></p>	<p>NICD: EDRU</p>	<p>Stool or rectal swabs</p> <p>Environmental/sewage testing/monitoring: Moore pads should be left in place for 2-5 days</p> <p>Grab samples: collect ≥ 2 L of water in a clean bottle for laboratory testing</p>	<p>Submit stool in leakproof screw-cap containers</p> <p>Submit rectal swabs in suitable transport medium, e.g. Cary-Blair; swab should be pushed completely into the tube of transport medium</p> <p>Send stool and rectal swabs in a cooler box</p> <p>Moore pads are best transported in double-strength alkaline peptone water at room temperature</p> <p>Transport grab samples at room temperature</p>	<p>Primary isolation will be carried out in local/ regional NHLS laboratory Isolates referred to NICD for confirmation and typing</p>
<p><i>Respiratory- unknown (possible influenza, Q fever, SARS, plague, legionella)</i></p>	<p>RMPRU Influenza laboratory SPU SBPRU</p>	<p>5ml clotted blood</p> <p>throat swab plus</p> <p>nasopharyngeal aspirate and/or sputum/.bronchoalveolar lavage/tracheal aspirate</p>	<p>In viral transport medium</p> <p>In viral transport media</p> <p>Submit sputum or lavage for bacterial culture in screw-cap container</p> <p>Transport specimens at 4C</p>	<p>See specific outbreak sections on this document for further information</p>

Outbreak type	Who to contact	Specimens	Transport details	Comments
<i>Anthrax exposure – airborne ('white powder' incident)</i>	Local NHLS or other microbiology laboratory, for referral to SBPRU Lab investigation advice - NICD: SBPRU	If exposure significant: bilateral nasal swabs	Insert nasal swab into transport medium, e.g. Cary-Blair	Notify SA Police Service (primary responders for suspicious parcels) Powder samples will be managed by SAPS/SANDF Only properly equipped and experienced labs should process suspected anthrax specimens
<i>Anthrax exposure: contact with, or consumption of dead animal</i>	Human specimens – NICD: SBPRU Animal/environmental specimens – OVRI or SBPRU	If available obtain blood/meat samples from animal for lab tests Skin lesion: swab edge of lesion for culture & microscopy Blood culture if septicemia suspected	Make lesion smears immediately, and submit slides. Submit swab for culture – ideally in transport medium if delay anticipated	Full postmortem on humans or animals suspected of anthrax should not be done, for safety reasons
<i>Plague:</i> <i>Suspected bubonic plague</i> <i>Suspected plague epizootic, evidenced by rodent die-off</i>	Lab investigation advice - NICD: SBPRU	Depending on clinical presentation: Bubo aspirate Clotted blood (5 or 10 ml) Blood culture Tracheal or lung aspirate Sputum Dead rodents, fleas	Aspirate: stab deeply into Cary Blair transport medium. Rodents: pack in dry salt in closed containers Fleas: in normal saline	Animal and flea collections should ideally be done by trained and equipped environmental health officers, for safety reasons

Outbreak type	Who to contact	Specimens	Transport details	Comments
<p><i>Fungal disease outbreaks:</i></p> <p><i>Suspected nosocomial fungaemia, suspected histoplasmosis or sporotrichosis</i></p>	<p>Lab investigation advice - NICD: MRU</p>	<p>Nosocomial outbreaks: Blood cultures TPN fluid samples Central venous catheters for culture Skin swabs</p> <p>Histoplasmosis: Clotted blood (5 ml) for antibody tests Blood cultures Sputum/bronchial lavage Bone marrow aspirate CSF if indicated</p> <p>Sporotrichosis: Pus, biopsy material for microscopy and culture</p> <p>Nosocomial outbreaks: Staff, uninfected patients, and hospital environment may require screening, e.g. hand and nail scrapings, IV fluid and associated administration sets, catheters, surface swabs etc.</p>	<p>General rules for specimen packing and transport apply (see first page)</p> <p>Transport all specimens at room temperature for processing as soon as possible</p>	<p>All nosocomial outbreak investigations should be done in collaboration with microbiologists, hospital laboratory, and hospital infection control staff</p> <p>Histoplasmosis outbreaks are rare in South Africa and are usually associated with visiting caves, its usual habitat</p> <p>Sporotrichosis outbreaks (rare in South Africa) have been associated with timber and horticultural industries</p>

Outbreak type	Who to contact	Specimens	Transport details	Comments
SARS	NICD: SPU	<p>For PCR, culture (days 1-10 of disease): Tracheal aspirate, or (deep) sputum or bronchoalveolar lavage or nasopharyngeal aspirate (NOT swab) PLUS stool</p> <p>For antibodies (acute and convalescent blood – up to 28 days): clotted blood (10ml)</p>	<p>Transport respiratory specimens in viral transport medium. Wrap specimens separately in absorbent material. Place specimens in secondary container – preferably sturdy plastic or stainless steel with well fitting lid. Place in another container after wrapping in absorbent material. Details of patient should be on the outside of this container. Transport at 4°C (cooler box with frozen ice packs)</p>	Prior arrangements must be made with NICD: SPU
Viral Haemorrhagic Fevers	NICD: SPU	<p>Antemortem: PCR, culture, antibodies: 10ml clotted blood, 5ml blood in EDTA tube</p> <p>Postmortem: liver biopsy or heart blood</p>	As for SARS specimens (above)	Prior arrangements must be made with NICD: SPU Patient details – name, contact number of attending doctor, hospital, patient's clinical details (esp. date of onset of illness); all lab results must be provided

Outbreak type	Who to contact	Specimens	Transport details	Comments
<i>Rabies</i>	NICD: SPU	<p><u>Antemortem:</u> Clotted blood and CSF for antibodies, CSF and saliva for PCR and culture</p> <p><u>Postmortem:</u> Brain tissue – entire brain (in two halves) or chunks of brain <u>or</u></p> <p>Biopsy of brain through superior orbital fissure</p>	<p>Transport at 4 °C Package specimens as per SARS specimens</p> <p>Half the tissue in 50% glycerol-saline (for virology) (at 4°C), half in 10% buffered neutral formalin (for histology). Send in sealed screw topped jars, and pack safely to avoid breakage or leakage (see page 1)</p>	
<i>Influenza</i>	NICD: Influenza Laboratory	<p>Respiratory specimen for isolation of virus: Throat swab(in viral transport medium) Tracheal aspirate Nasopharyngeal aspirate(pediatric patients) Bronchoalveolar lavage</p>	<p>Take within 72 hours of onset Transport in viral transport medium Store in refrigerator Transport in cooler box with frozen ice pack</p>	
<i>Acute Flaccid Paralysis</i>	NICD: Enterovirus Isolation Laboratory	<p>Stool for isolation of virus: Two specimens taken at least 24 hours apart, within 14 days of onset</p>	<p>Store in refrigerator Transport in cooler box with frozen ice pack</p>	Rectal swabs are unsuitable

Outbreak type	Who to contact	Specimens	Transport details	Comments
Measles/Rubella-like illnesses	NICD: Measles Laboratory	Clotted blood specimen for detection of IgM antibodies Submit urine for epidemiology studies(not for diagnostic purposes)	Take within one week of onset Store in refrigerator Transport in cooler box with frozen ice pack	
Chickenpox	NHLS: Serology NICD: General Virus Isolation Laboratory	Clotted blood (5ml) for IgM Vesicle fluid for isolation of virus: use tuberculin syringe & needle, leave in syringe, seal needle with cap, OR break blister, swab area	Place swab in viral transport medium Store in refrigerator Transport in cooler box with frozen ice pack	
Hand, foot and mouth	NICD: Enterovirus Isolation Laboratory	Lesion swab Stool	Place swab in viral transport medium Store in refrigerator Transport in cooler box with frozen ice pack	
Aseptic meningitis	NICD: Enterovirus Isolation Laboratory	CSF and stool specimens for isolation of virus	Store in refrigerator Transport in cooler box with frozen ice pack	
Hepatitis	NHLS : Serology	Clotted blood (5ml) for serological tests		

CASE DEFINITIONS

Acute Flaccid Paralysis

Any case of acute flaccid paralysis, including Guillain-Barre Syndrome, in a child less than 15 years of age for which no other cause is apparent, or a patient of any age diagnosed as polio by a medical officer.

Diarrhoeal Outbreaks

More than 10 cases of diarrhea (>3 unformed stools in a 24 hour period or self-reported diarrhea) which can be linked by place, person and time.

Dysentery Outbreaks

More than 10 cases of diarrhea where there is visible blood in the stool, which can be linked by place, person and time.

Cholera

Sudden onset of profuse painless watery stools with rapid dehydration in a person 5 years of age or older.

Measles

Rash plus pyrexia plus coryza, cough or conjunctivitis.

Plague

Febrile disease with suppurative lymphadenopathy.

Haemorrhagic Fever (viral haemorrhagic fever)

Acute onset of febrile disease with haemorrhage into skin, mucosa or internal organs.

Meningococcal Disease (including Meningitis)

Sudden onset of febrile disease with intense headache and/or stiff neck, with or without a petechial rash.

Adapted from the Outbreak Manual
Mpumalanga Communicable Diseases Control
Editor : D Durrheim; 2000.

NB : Case definitions may need to be broadly inclusive initially, and be refined as the cause of the outbreak becomes better established.

CONTACT DETAILS

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NICD Reference Units

Special Bacterial Pathogens Units (SBPRU)
Enteric Diseases Reference Unit (EDRU)
Mycology Reference Unit (MRU)
Parasitology Reference Unit (PRU)
Respiratory & Meningeal Pathogens Unit (RMPRU)
Sexually Transmitted Infections Ref. Centre (STIRC)
Special Pathogens Unit (SPU)

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Enterovirus Laboratory
NHLS Serology Laboratory
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