NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES
Division of the National Health Laboratory Service

PERTUSSIS PREPAREDNESS

An update for Physicians, Accident & Emergency practitioners and Laboratorians

REVISED DECEMBER 2022

CENTRE FOR RESPIRATORY DISEASES AND MENINGITIS

An increase in pertussis cases has been reported in South Africa among children <5 years of age, and particularly amongst infants <3 months of age. The current increases have mostly been reported in the Western Cape Province. Pertussis, commonly known as 'whooping cough', is a vaccine-preventable disease caused by *Bordetella pertussis* and is a notifiable medical condition (NMC). Immunity following vaccination lasts for approximately 5-6 years. Episodic increases in pertussis cases occur in vaccinated populations every 3-5 years. Completion of childhood primary series (DTaP) and boosters is important for prevention. Clinicians are advised to be on the alert for cases, to conduct diagnostic testing where appropriate, to notify cases on the NMC app, prescribe post-exposure prophylaxis to close and high-risk contacts of suspected or confirmed cases, to vaccinate healthcare workers, and encourage pregnant woman to vaccinate where possible. Vaccination of healthcare workers against pertussis reduces transmission to vulnerable patients (e.g. neonates) and is recommended where resources are available. Maternal immunisation with acellular pertussis-containing vaccines (Tdap) is effective in preventing severe disease and mortality among young infants, before they receive their infant vaccines. See NICD website for guidelines and other resources: www.nicd.ac.za/diseases-a-z-index/pertussis/

Suspected case of pertussis:

Any person with a cough lasting ≥14 days (cough illness of any duration for children aged <1 year), without an apparent cause, plus one or more of the following: paroxysms of coughing, inspiratory whoop, post-tussive vomiting, apnoea (with or without cyanosis for infants aged <1 year only) **OR** any person in whom a clinician suspects pertussis infection

Probable case of pertussis:

A suspected case with signs and symptoms consistent with pertussis **AND** an epidemiological link by contact with a laboratory-confirmed case of pertussis in the 21 days before symptom onset.

Confirmed case of pertussis:

A suspected case with signs and symptoms consistent with pertussis **AND** laboratory confirmation (isolation of *B. pertussis* from a respiratory specimen **OR** PCR-positive respiratory specimen **OR** *B. pertussis*-specific antibody response)

Management of a confirmed or probable case of pertussis:

1. **Isolate:** Prevent transmission of *B. pertussis* by practising contact and droplet precautions
2. **Provide supportive care:** Supportive care aims to monitor the severity of the patient's condition, limit the number of paroxysms and maximise nutrition, rest, and recovery
3. **Treat with antibiotics:** Macrolide or suitable alternative to prevent transmission

Management of contacts of persons with pertussis:

1. Identify close and vulnerable (at-risk of severe disease) contacts including healthcare workers
2. Collect nasopharyngeal swabs in Regan Lowe (for culture and PCR, if not available in UTM/VTM for PCR only) from symptomatic contacts
3. Administer targeted chemoprophylaxis to close and vulnerable contacts
4. Vaccinate close and vulnerable contacts appropriately (depending on vaccination status)
5. Monitor contacts for at least 21 days for typical signs and symptoms
6. Vaccination of healthcare workers is important in prevention and control of pertussis and is recommended where resources allow

Laboratory identification of *B. pertussis*:

1. Sputum samples and/or nasopharyngeal swab/aspirate transported in Regan-Lowe (RL) or Amies charcoal transport medium
   a. Samples are streaked onto Regan-Lowe Charcoal agar containing cephalexin and 10% defibrinated sheep blood
   b. All plates are incubated aerobically for up to 10 days at 35–37°C and inspected at day 3 and 7 after inoculation
   c. Typical colonies appear as small mercury-like glistening droplets. Suspicious colonies should be submitted to CRDM, NICD for confirmation
2. Real-time PCR detection of *B. pertussis* (*IS481* and *ptxS1*) should be conducted on clinical specimens.
3. Paired serum samples for specific anti-PT antibodies collected during the early catarrhal stage (acute serum) and about 1 month later (convalescent serum). Serology should not be used for diagnosis in infants, as (i) their immune system is immature and serology is affected by maternal antibodies, or (ii) in patients vaccinated within one year, since serology does not differentiate between antibodies produced in response to vaccine and natural infection.

Notification of cases and additional support:

Laboratory support: National Institute for Communicable Diseases, Centre for Respiratory Diseases and Meningitis: Linda de Gouveia 011-555-0327 lindad@nicd.ac.za or Nicole Wolter 011-555-0352 nicolew@nicd.ac.za or Mignon du Plessis 011-555-0387 mignond@nicd.ac.za

Clinical support: Sibongile Walaza 011-386-6410 sibongilew@nicd.ac.za or Jocelyn Moyes 082-883-2044 jossmoyes@gmail.com or after-hours the NICD doctor-on-call 0800-212-552

Public health support and notification of cases: Notify the Provincial and District Communicable Diseases Control Officer and NICD as per routine notifiable medical condition notification process (www.nicd.ac.za/nmc-overview/). If the patient is in a healthcare setting, the infection prevention and control practitioner for the facility should be informed.

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