GUIDELINE

Neonatal Viral Infections of Infection Prevention Significance

Scope (Staff):	All Clinical Staff
Scope (Area):	Neonatology (NICU KEMH, NICU 3B PCH, NETS WA)

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

For any uncertainty in the management of an Infection issue, contact the onsite Infection Prevention team in hours, or the On-Call Microbiologist after hours.

Contents

Aim

This guideline outlines the Infection Prevention strategies to screen and manage neonatal patients with the following respiratory viral organisms of infection control significance within the Neonatology Service. This includes screening and prioritisation of single rooms.

Staff caring for neonatal patients within Perth Children's Hospital (PCH) and managed outside of the Neonatology service may refer to this guideline in conjunction with their site-based Infection Prevention team.

This policy covers the following viral organisms:

- Adenovirus
- Coronavirus (COVID-19)
- Enterovirus
- Human Metapneumovirus (hMPV)
- Human Parechovirus
- Influenza A and B
- Para Influenza Virus (PIV 1 - 4)
- Respiratory Syncytial Virus (RSV)
- Rhinovirus (HRV)

If the infant is to be retrieved by Newborn Emergency Transfer Service (NETS WA) also refer to: NETS Bronchiolitis / Viral Respiratory Tract Infections (CAHS Neonatology Manual).

For comprehensive management on bacterial organisms of concern in the Neonatal Unit environment, see Bacterial Organisms (Selected) of Infection Control Significance

For comprehensive information on these and other infections refer to the following CAHS policies: Transmissible Diseases Index and Standard and Transmission based Precautions (CAHS Policy Manual).

Risk

Increased risk of healthcare associated infections to both staff and patients.

Failure to adhere to a coordinated infection prevention and management strategy to effectively identify and investigate possible infections may lead to an outbreak of infection within the Neonatal environment.

Key points

- Effective infection control measures, including use of personal protective equipment (PPE), Standard and Transmission based precautions and appropriate environmental cleaning, active surveillance, and hand hygiene are crucial in preventing the spread of organisms and reducing the incidence of neonatal sepsis.
- Clear communication with parents and caregivers is essential, including education on the organisms and its implications.

Definitions

Cohorting: The grouping of individuals (patients) that have certain factors (such as age, gender, infectious disease status) in common in the same location such as a room or a pod.

Colonisation: Is the presence of microorganisms without clinical signs of infection.

Index Case: The first case of an infectious disease, or other condition, that is noticed by clinicians

Infection: The invasion of microorganisms into tissues with replication of the organism. Infection is characterised by isolation of the organism accompanied by clinical signs of infection (e.g. fever, inflammation, or pus formation).

Isolation: Placing colonised or infected patients in single rooms, cohort rooms/areas or an incubator as a component of a multifaceted infection control process to reduce acquisition rate and infection

Negative Pressure Isolation Room (NPIR): A single-occupancy patient-care room used to isolate persons with a suspected or confirmed airborne infectious disease. Environmental factors are controlled in negative pressure rooms to minimise the transmission of infectious agents that are usually transmitted from person-to-person by droplet nuclei associated with coughing or aerosolisation of contaminated fluids. The air handling system operates at a lower pressure with respect to adjacent areas such as the anteroom and corridor and is exhausted to the outside

Outbreak: A sudden increase in the number of cases of an infection above what is normally expected in the population. Outbreaks are usually limited to specific geographic areas, and are linked by time, person, and/or place.

Polymerase Chain Reaction (PCR): laboratory test to amplify specific sections of genetic material, specifically used for viral illnesses.

Isolation Room Allocation (Single Rooms and NPIR)

- The following isolation rooms are available across Neonatology:
  - **King Edward Memorial Hospital (KEMH)** (total 92 Beds) – 2 single rooms and 2 NPIR
  - **PCH 3B** (total 30 Beds) – 11 single rooms of which 2 are NPIR [Rooms 1 & 16]
- Infants under **Airborne Precautions** require an NPIR and infants under **Droplet Precautions** requiring aerosol generating procedures (AGPs) are preferred to be in an NPIR, however, could be placed in a single room with a Portable HEPA Filter.
- Given there are limited single rooms and NPIR within the Neonatal Units there will be times when this impacts ability to admit infants. Prioritisation of single or NPIR room should be risk assessed and discussed with site-based Infection Prevention (IP) team/neonatology CNC, or on call Clinical Microbiologist. If a NPIR is not deemed clinically required, the infant can be admitted into an incubator.
- The following infections should be prioritised for admission to a single isolation room *(not in priority order):*
  - Influenza-A (INF-A) / Influenza-B (INF-B)
  - Respiratory Syncytial Virus (RSV)
  - Parainfluenza 3 (PIV-3)
  - SARS-CoV2 (COVID-19)

3B Single Room Management

- Rooms 1 – 11 and 16 shall be preferentially used for infants:
  - admitted from the community in the first 24 hours to observe for symptom development.
  - with symptoms suggestive of pathogens with transmission potential, pending microbiological confirming - acute respiratory symptoms including cough and rhinorrhoea; diarrhoea; acute skin lesions.
  - with infections secondary to specific pathogens requiring transmission based precautions
  - colonised with multi-resistant organisms (MRO) e.g., MRSA, VRE, resistant gram-negative bacteria and Serratia) or awaiting clearance screens for MRO Refer to Micro Alerts and Multi-Resistant Organism (CAHS IPC Manual).

Asymptomatic infants awaiting routine microbiological results

- Single rooms are not required for asymptomatic infants awaiting routine microbiological investigations (e.g. blood cultures and CSF cultures, perinatal infections screens including urine CMV studies, syphilis and toxoplasma serology, surface HSV swabs). See Single Isolation Room Prioritisation for exceptions.

Symptomatic infants with Viral Infections

Inpatients

- Should be prioritised for a single room or NPIR, as above. If unavailable, the infant should be moved into an incubator with Droplet Precautions in place. If an infant is unable to be managed in an incubator, contact site-based IP service, Neonatology SRN on-call, or the on-call Clinical Microbiologist.

Infants admitted from home

- If possible, these infants should be admitted to 3B at PCH and should be prioritised for a single room or NPIR, as appropriate. If unable to be admitted to 3B and is admitted at KEMH NICU, the baby should be prioritised for a NPIR or should be placed in an incubator with Droplet Precautions in place if deemed appropriate. If an infant is unable to be managed in an incubator contact site-based IP service, Neonatology SRN on-call or the on-call Clinical Microbiologist.

Specimen Collection

- Obtain a flocked nasopharyngeal swab sample for “Respiratory virus PCR” (Influenza A/B, RSV and SARS-CoV2 [COVID-19]). If additional viruses need to be tested, then request an “extended panel”. The sample will be transferred and processed in the QEII laboratory.
- “Respiratory virus PCR” testing is available on site at KEMH when a laboratory scientist or technician is available (ex 82760) and available seven days at the QEII molecular laboratory.
- Urgent requests should be marked **“URGENT”**, and the microbiology registrar or clinical microbiologist should be contacted to expedite testing. If notification of the result is required urgently, add a contact phone number into the Clinical Notes section.
- Where there is a known pathogen and PCR is performed on contacts or the specimen is taken to obtain a “proof of clearance” from an infected neonate, request a PCR for the specific pathogen.
- Further investigations may be needed following the initial microbiological results and further management of the index case depends upon the specific viral

diagnosis. Refer to the following virus specific tables below and the CAHS Transmissible Diseases Index (TDI) (CAHS Policy Manual).

Cohorting

- At times of high prevalence where there is a lack of single rooms or following a significant exposure event, infants with the same organism or patient contacts may be considered for cohorting. This must be discussed with site-based Infection Prevention service or the on-call Clinical Microbiologist after business hours.

Clearance from Isolation

- Periods of viral shedding may be prolonged in infants who may also be immunocompromised. There is limited data on incubation periods and infectivity conferred by viral shedding in premature infants.
- At the conclusion of the virus-specific isolation periods, a further swab may be required (e.g. SARS-CoV2). This must be discussed with site-based IP team or the on call Clinical Microbiologist after business hours.
- For less virulent viruses (e.g. rhinovirus), a risk assessment may be taken to remove precautions if the infant is asymptomatic but still within their period of potential infectivity if not co-located with high-risk infants. Discuss with site-based IP team or the on-call Clinical Microbiologist after business hours.
- Ensure clearance is documented in the clinical record.

Management of Contacts in the Neonatal Unit

- The management of contacts of neonates with an acute viral infection is primarily dependent upon the virus-specific diagnosis of the index case. Refer to Management of Common Viral Infection Tables and Appendix 1: Quick Reference Guide Management of an infant with suspected respiratory virus infection.
- Contacts must not be moved until the end of the incubation period.
- If staffing issues arise or medical condition of any of the contacts changes, necessitating movement within the cohort, or if discharge to another ward or hospital is required, discuss with the site-based IP team or the on-call Clinical Microbiologist **prior** to any bed movements.

Parent and Visitors Management

- Parents and visitors with symptoms of a respiratory viral infection are not to visit until all symptoms resolve.
    - Symptomatic parents/family may be allowed on compassionate grounds to visit the patient as agreed by Co-Directors/HOD of Neonatology services on a case-by-case basis. A risk management plan must be implemented

following discussion with site-based IP team or the on-call Clinical Microbiologist.

Management of Specific Infections

- The following tables outline the required management for possible viral infections found in neonatal patients within PCH and KEMH.
    - Adenovirus
    - Coronavirus (SARS CoV2 [COVID-19])
    - Enterovirus
    - Human Metapneumovirus (hMPV)
    - Human Parechovirus
    - Influenza A and B
    - Para Influenza Virus (PIV 1 - 4)
    - Respiratory Syncytial Virus (RSV)
    - Rhinovirus (HRV)

<table>
<tr><th colspan="3">Adenovirus</th></tr>
<tr><td>Description</td><td colspan="2">Responsible for 5-10% of acute respiratory tract infections particularly croup, conjunctivitis, pharyngitis, tonsillitis and pharyngoconjunctival fever. Enteric adenoviruses are an important cause of childhood gastroenteritis. Some virulent strains cause hepatitis in infants.
Adenoviruses do not have a marked seasonal prevalence. May remain infectious on fomites for up to 7-10 days.</td></tr>
<tr><td>Incubation Period</td><td colspan="2">2 – 14 days for respiratory tract infections
3 to 10 days for gastroenteritis</td></tr>
<tr><td>Average Period of Viral Shedding</td><td colspan="2">Average is up to 14 days after symptom onset</td></tr>
<tr><td>Mode of Transmission</td><td colspan="2">Respiratory droplets, fomites and hands</td></tr>
<tr><td rowspan="4">Diagnostic Test</td><td>Sample Type</td><td>Request</td></tr>
<tr><td>Nasopharyngeal flocked swab
Endotracheal aspirate</td><td>Respiratory virus PCR, OR
Adenovirus PCR (for clearance purposes)</td></tr>
<tr><td>Conjunctival swab (dry swab only)</td><td>Adenovirus PCR</td></tr>
<tr><td>Faeces (for the detection of Adenovirus Types 40 & 41)</td><td>Enteric PCR – Viral PCR</td></tr>
<tr><td>Transmission Risk</td><td colspan="2">Intermediate</td></tr>
<tr><td>Transmission based Precautions</td><td colspan="2">Droplet precautions as per the TDI.
3B: Admit to a single room.
KEMH NICU: admit to an incubator
DURATION: is for 14 days and until symptom resolution (whichever is longer)</td></tr>
<tr><td>Nosocomial Contact definition</td><td colspan="2">Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period.</td></tr>
<tr><td>Asymptomatic Contacts in a multi-bed room</td><td colspan="2">Place in an incubator with Droplet precautions in place.
Continue isolation for a period of 14 days and monitor for symptoms.</td></tr>
<tr><td>Symptomatic Contacts</td><td colspan="2">Admit to a single room if available (preferred) with Droplet precautions in place OR place in an incubator if clinically appropriate with Droplet Precautions in place.
Perform a nasopharyngeal swab for respiratory virus PCR when symptoms identified. Follow guidance for identified respiratory virus if a different respiratory pathogen is detected. Otherwise, Droplet precautions can be discontinued following completion of 14 days isolation if symptoms have resolved.</td></tr>
</table>

<table>
<tr><th colspan="3">SARS CoV2 (COVID-19)</th></tr>
<tr><td>Description</td><td colspan="2">The novel coronavirus SARS-CoV-2 was identified in December 2019 and is the cause of COVID-19 disease.</td></tr>
<tr><td>Incubation Period</td><td colspan="2">Average 3 days, range 0-8 days (Omicron variant)</td></tr>
<tr><td>Average Period of Viral Shedding</td><td colspan="2">Up to 2 days prior to median of 6 days (range 3-14 days) after symptom onset depending on disease severity, but highly variable.</td></tr>
<tr><td>Mode of Transmission</td><td colspan="2">Predominantly respiratory droplets. Respiratory aerosols may contribute, including those produced during aerosol generating procedures. Fomites and hands</td></tr>
<tr><td rowspan="3">Diagnostic Test</td><td>Sample Type</td><td>Request</td></tr>
<tr><td>Nasopharyngeal flocked swab</td><td>Respiratory virus PCR or
COVID-19 RAT or PCR (for clearance purposes)</td></tr>
<tr><td>Endotracheal aspirate</td><td>Respiratory virus PCR</td></tr>
<tr><td>Transmission Risk</td><td colspan="2">High</td></tr>
<tr><td>Transmission based Precautions</td><td colspan="2">Airborne Precautions as per the TDI.
Admit to an NPIR if available (preferred). Otherwise admit to a single room with HEPA filter.
KEMH: If NPIR not available, admit to an incubator following discussion with Infection Prevention or on-call Clinical Microbiologist</td></tr>
<tr><td>Duration of Transmission based Precautions</td><td colspan="2">All confirmed COVID-19 patients are to remain under transmission-based precautions until the patient is discharged or the criteria for clearance are met.
Release from isolation in the neonatal unit setting may be considered when a minimum of 7 days of isolation have been completed, symptoms have resolved, and a COVID-19 RAT is negative.
If unable to perform a RAT, discuss with the on-call Microbiologist regarding COVID-19 GeneXpert PCR.
Discontinuation of precautions must be discussed with Infection Prevention.</td></tr>
<tr><td>Nosocomial Contact Definition</td><td colspan="2">A newborn close contact is defined by:
- Birth to a COVID-19 positive mother &/or direct contact with a COVID-19 positive parent
- Household contact with a COVID-19 positive person (if admitted from the community)
Nosocomial contact:
• Received direct care from a COVID-19 positive parent during their infective period who was not wearing a mask at the time</td></tr>
</table>

SARS CoV2 (COVID-19)	
	• Cared for by a COVID-19 positive HCW for a period of ≥ 4 hours; or intermittent contact over a full shift as the primary patient carer and not wearing a mask. • A baby situated in the cot(s) immediately adjacent or opposite a COVID-19 baby where an incubator has not been used during their infective period.
Asymptomatic Contacts	**3B**: Admit to an NPIR if available (preferred). Otherwise admit to a single room with HEPA filter under Respiratory precautions. **KEMH**: If NPIR not available, admit to an incubator following discussion with Infection Prevention or on-call Clinical Microbiologist with Droplet Precautions in place. Multiple contacts may need to be cohorted. Perform a nasopharyngeal swab for COVID-19 PCR on days 2 and 7 (or earlier if symptoms develop). Additional precautions can be discontinued following completion of 7 days isolation if the baby remains asymptomatic and returns a negative day 7 test.
Symptomatic Contacts	Admit to an NPIR if available (preferred). Otherwise admit to a single room with HEPA filter. **KEMH:** If NPIR not available, admit to an incubator following discussion with Infection Control or on-call Clinical Microbiologist with Airborne precautions in place Perform a nasopharyngeal swab for respiratory virus PCR on days 2 and 7. Airborne precautions can be discontinued following completion of 7 days isolation if COVID-19 testing is negative. Otherwise follow guidance for identified respiratory virus if a different respiratory pathogen is detected.
Visitors	It is preferred that COVID-19 positive visitors are excluded from the nurseries for a period of 7 days and until symptom resolution unless their baby/infants are acutely unwell. Discuss with Infection Prevention or on-call Clinical Microbiologist regarding risk mitigation strategies for visitation in this circumstance. Asymptomatic close contacts may be permitted to visit providing the following is adhered for a period of 7 days: • Daily COVID-19 RAT testing prior to visit • Surgical mask is worn whilst visiting • Monitoring for the development of symptoms

<table>
<tr><th colspan="3">Enterovirus</th></tr>
<tr><td>Description</td><td colspan="2">Nonpolio enteroviral infections are a common cause of nonspecific febrile and/or respiratory illness. Infants can be at risk of severe disease including viral sepsis, meningoencephalitis, hepatitis and pneumonitis.

Enterovirus A71 (EV71) is a viral pathogen associated with diarrhoea; rash; hand, foot and mouth disease (HFMD) and occasionally with severe central nervous system infection, including encephalomyelitis and acute flaccid paralysis.</td></tr>
<tr><td>Incubation Period</td><td colspan="2">3 – 6 days</td></tr>
<tr><td>Average Period of Viral Shedding</td><td colspan="2">1 – 3 weeks if respiratory illness</td></tr>
<tr><td>Mode of Transmission</td><td colspan="2">Respiratory droplets, fomites and hands</td></tr>
<tr><td rowspan="4">Diagnostic Test</td><td>Sample Type</td><td>Request</td></tr>
<tr><td>Nasopharyngeal flocked swab</td><td>Enterovirus PCR OR

Respiratory virus PCR (Rhinovirus/enterovirus included on the Biofire® respiratory panel)</td></tr>
<tr><td><u>Dry swabs</u>:

Throat and rectal swabs (paired)

Vesicle/skin swab

Conjunctival swab</td><td>Enterovirus PCR</td></tr>
<tr><td>CSF</td><td>Enterovirus PCR OR

Biofire® Meningitis/Encephalitis PCR (Enterovirus included but of reduced sensitivity for locally circulating enterovirus strains).</td></tr>
<tr><td>Transmission Risk</td><td colspan="2">High</td></tr>
<tr><td>Transmission based Precautions</td><td colspan="2">Contact Precautions as per the TDI.

3B: Admit to a single room.

KEMH NICU: Admit to an incubator if clinically appropriate.</td></tr>
<tr><td>Duration of Transmission based Precautions</td><td colspan="2">21 days and until symptom resolution (whichever is longer)</td></tr>
</table>

Enterovirus	
Nosocomial Contact Definition	Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period.
Management of Asymptomatic Contacts in a multi-bed room/unit	Admit to an incubator if clinically appropriate with Contact precautions in place. Continue isolation for a period of 6 days.
Symptomatic Contacts	Admit to a single room if available (preferred) with Droplet precautions in place. **KEMH NICU:** Admit to an incubator if clinically appropriate with Droplet precautions in place. When symptoms are identified, collect a nasopharyngeal swab for Enterovirus PCR and respiratory virus PCR and pair with a rectal swab for Enterovirus PCR. Droplet precautions can be discontinued following completion of 6 days isolation if symptoms have resolved.

<table>
<tr><th colspan="3">Human Metapneumovirus (hMPV)</th></tr>
<tr><td>Description</td><td colspan="2">hMPV causes acute respiratory tract illness and is one of the leading causes of bronchiolitis in infants. Children with a history of preterm birth and/or underlying cardiopulmonary disease are at highest risk for severe disease.</td></tr>
<tr><td>Incubation Period</td><td colspan="2">3 - 7 days</td></tr>
<tr><td>Average Period of Viral Shedding</td><td colspan="2">7 to 14 days after symptom onset</td></tr>
<tr><td rowspan="3">Diagnostic Test</td><td>Sample type</td><td>Request</td></tr>
<tr><td>Nasopharyngeal flocked swab</td><td>Respiratory virus PCR (includes hMPV PCR)</td></tr>
<tr><td>Endotracheal aspirate</td><td>Respiratory virus PCR</td></tr>
<tr><td>Mode of Transmission</td><td colspan="2">Respiratory droplets, fomites and hands</td></tr>
<tr><td>Transmission Risk</td><td colspan="2">High</td></tr>
<tr><td>Transmission based Precautions</td><td colspan="2">Droplet Precautions as per the TDI
3B: Admit to a single room.
KEMH NICU: Admit to an incubator if clinically appropriate with Droplet precautions in place.</td></tr>
<tr><td>Duration of Transmission Based Precautions</td><td colspan="2">14 days from onset of symptoms and is asymptomatic</td></tr>
<tr><td>Nosocomial Contact Definition</td><td colspan="2">Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period</td></tr>
<tr><td>Management of Asymptomatic Contacts in a multi-bed room/unit</td><td colspan="2">Admit to an incubator if clinically appropriate with Droplet Precautions in place.
Continue isolation for a period of 7 days.</td></tr>
<tr><td>Symptomatic Contacts</td><td colspan="2">3B: Admit to a single room if available (preferred) with Droplet precautions in place.
KEMH NICU: Admit to an incubator if clinically appropriate with Droplet precautions in place.
Perform a nasopharyngeal swab for respiratory virus PCR when symptoms identified. Follow guidance for identified respiratory virus if a different respiratory pathogen is detected. Otherwise, Droplet precautions can be discontinued following completion of 7 days isolation if symptoms have resolved.</td></tr>
</table>

<table>
<tr><th colspan="3">Human Parechovirus (HPeV)</th></tr>
<tr><td>Description</td><td colspan="2">Human parechoviruses primarily cause disease in young infants characterised by fever and exanthem. Severe disease, particularly associated with PeV-A3, can present with generalised erythema or erythroderma, sepsis-like syndrome and/or central nervous system manifestations.</td></tr>
<tr><td>Incubation Period</td><td colspan="2">Has not been defined</td></tr>
<tr><td>Average Period of Viral Shedding</td><td colspan="2">1-3 weeks from the upper respiratory tract</td></tr>
<tr><td rowspan="4">Diagnostic Test</td><td>Sample Type</td><td>Request</td></tr>
<tr><td>Nasopharyngeal flocked swab</td><td>Parechovirus PCR</td></tr>
<tr><td>Dry swabs:
Throat and rectal swabs (paired)</td><td>Parechovirus PCR</td></tr>
<tr><td>CSF</td><td>Parechovirus PCR OR
Biofire® Meningitis/Encephalitis PCR</td></tr>
<tr><td>Mode of Transmission</td><td colspan="2">Respiratory droplets, fomites and hands</td></tr>
<tr><td>Transmission Risk</td><td colspan="2">Intermediate</td></tr>
<tr><td>Transmission based Precautions</td><td colspan="2">Droplet Precautions as per the TDI.
Admit to a single room if available.
KEMH NICU: Admit to an incubator if clinically appropriate.
Duration: 21 days and until symptom resolution (whichever is longer)</td></tr>
<tr><td>Nosocomial Contact Definition</td><td colspan="2">Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period.</td></tr>
<tr><td>Asymptomatic Contacts in a multi-bed room/unit</td><td colspan="2">Admit to an incubator if clinically appropriate with Droplet Precautions in place. Continue isolation for a period of 7 days.</td></tr>
<tr><td>Symptomatic Contacts</td><td colspan="2">3B: Admit to a single room with Droplet precautions in place.
KEMH NICU: Admit to an incubator if clinically appropriate with Droplet precautions in place.
When symptoms are identified, collect a nasopharyngeal swab for Parechovirus PCR and respiratory virus PCR and pair with a rectal swab for Parechovirus PCR.
Droplet precautions can be discontinued following completion of 7 days isolation if symptoms have resolved.</td></tr>
</table>

<table>
<tr><th colspan="3">Influenza A and B</th></tr>
<tr><td>Description</td><td colspan="2">Influenza types A and B (INF-A, INF-B) causes an illness that begins with sudden onset fever and can be accompanied by fever, headache, sore throat, nasal congestion, rhinitis and cough. In young infants influenza can be complicated by otitis media and pneumonia with infants and children less than 2 years at substantially higher risk of hospitalisation and severe morbidity.

Influenza viruses can cause explosive epidemics</td></tr>
<tr><td>Incubation Period</td><td colspan="2">1 - 4 days (mean 2 days)</td></tr>
<tr><td>Average Period of Viral Shedding</td><td colspan="2">24 hours before to 10 days after symptom onset in young infants</td></tr>
<tr><td rowspan="3">Diagnostic Test</td><td>Sample Type</td><td>Request</td></tr>
<tr><td>Nasopharyngeal flocked swab</td><td>Respiratory virus PCR

OR

Rapid GeneXpert® Influenza/RSV/SARS CoV-2 PCR available onsite to KEMH NICU patients</td></tr>
<tr><td>Endotracheal aspirate</td><td>Respiratory virus PCR</td></tr>
<tr><td>Mode of Transmission</td><td colspan="2">Respiratory droplets, fomites and hands</td></tr>
<tr><td>Transmission Risk</td><td colspan="2">High</td></tr>
<tr><td>Transmission based Precautions</td><td colspan="2">Droplet Precautions as per the TDI.

Admit to a single room if available.

KEMH NICU: Patient should be prioritised for admission to a single room. If unavailable, admit to an incubator if clinically appropriate with Droplet Precautions in place.</td></tr>
<tr><td>Duration of Precautions</td><td colspan="2">10 days and until symptom resolution (whichever is longer)</td></tr>
<tr><td>Nosocomial Contact Definition</td><td colspan="2">Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period.

Note that chemoprophylaxis with oseltamivir is not routinely recommended for infants < 3 months old unless the situation is deemed critical due to lack of safety data in this age group.</td></tr>
<tr><td>Management of Asymptomatic</td><td colspan="2">Admit to an incubator if clinically appropriate with Droplet Precautions in place.

Continue isolation for a period of 4 days.</td></tr>
</table>

Contacts in a multi-bed room/unit	
Symptomatic Contacts	Admit to a single room if available (preferred) with Droplet Precautions in place. **KEMH NICU:** Patient should be prioritised for admission to a single room. Admit to an incubator if clinically appropriate with Droplet precautions in place. Perform a nasopharyngeal swab for respiratory virus PCR when symptoms identified. Follow guidance for identified respiratory virus if a different respiratory pathogen is detected. Otherwise, Droplet precautions can be discontinued following completion of 4 days isolation if symptoms have resolved.
Patient Information	Influenza, Healthy WA; Influenza Vaccine for Children, PCH

Parainfluenza Viruses (PIV 1 - 4)

Description	Parainfluenza viruses are the major cause of laryngotracheobronchitis (croup), especially PIV-1 and PIV-2. PIV-3 and PIV-4 have been associated with upper respiratory tract infections, bronchiolitis and pneumonia in young children.	
Incubation Period	2 – 6 days	
Average Period of Viral Shedding	Up to 3 weeks after symptom onset, depending on serotype	
Diagnostic Test	**Sample Type**	**Request**
	Nasopharyngeal flocked swab.	Respiratory Virus PCR (PIV 1-4 included on the Biofire® respiratory panel)
	Endotracheal aspirate	Respiratory virus PCR
Mode of Transmission	Respiratory droplets, Fomites and hands	
Transmission Risk	Intermediate	
Transmission based Precautions	Droplet Precautions as per the TDI. Admit to a single room if available. **KEMH NICU**: Admit to an incubator if clinically appropriate with Droplet Precautions in place.	
Duration of Precautions	21 days and until symptom resolution (whichever is longer)	
Nosocomial Contact Definition	Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period	

Management of Asymptomatic Contacts in a multi-bed room	Admit to an incubator if clinically appropriate with Droplet Precautions in place. Continue isolation for a period of 6 days.
Symptomatic Contacts	Droplet Precautions as per the TDI Admit to a single room if available. Perform a nasopharyngeal swab for respiratory virus PCR when symptoms identified. Follow guidance for identified respiratory virus if a different respiratory pathogen is detected. Otherwise, Droplet precautions can be discontinued following completion of 6 days isolation if symptoms have resolved.
Patient Information Sheet	Human Parainfluenza Viruses, CDC

<table>
<tr><th colspan="3">Respiratory Syncytial Virus (RSV)</th></tr>
<tr><td>Description</td><td colspan="2">Most infants infected with RSV experience upper respiratory tract symptoms with 20-30% going on to develop bronchiolitis or pneumonia with their first infection.</td></tr>
<tr><td>Incubation Period</td><td colspan="2">4 – 6 days most common</td></tr>
<tr><td>Average Period of Viral Shedding</td><td colspan="2">3 to 8 days after symptom onset</td></tr>
<tr><td rowspan="3">Diagnostic Test</td><td>Sample Type</td><td>Request</td></tr>
<tr><td>Nasopharyngeal flocked swab</td><td>Respiratory virus PCR
OR
Rapid GeneXpert® Influenza/RSV/SARS CoV-2 PCR available onsite to KEMH NICU patients</td></tr>
<tr><td>Endotracheal aspirate</td><td>Respiratory virus PCR</td></tr>
<tr><td>Mode of Transmission</td><td colspan="2">Respiratory droplets, fomites and hands</td></tr>
<tr><td>Transmission Risk</td><td colspan="2">High</td></tr>
<tr><td>Transmission based Precautions</td><td colspan="2">Droplet Precautions as per the TDI.
Admit to a single room if available.
KEMH NICU: Patient should be prioritised for admission to a NPIR. If unavailable, admit to an incubator if clinically appropriate with Droplet Precautions in place.</td></tr>
<tr><td>Duration of Precautions</td><td colspan="2">8 days and until symptom resolution (whichever is longer)</td></tr>
<tr><td>Nosocomial Contact Definition</td><td colspan="2">Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period.</td></tr>
<tr><td>Management of Asymptomatic Contacts in a multi-bed room/unit</td><td colspan="2">Admit to an incubator if clinically appropriate with Droplet precautions in place.
Continue isolation for a period of 6 days.</td></tr>
<tr><td>Symptomatic Contacts</td><td colspan="2">Admit to a single room if available (preferred) with Droplet Precautions in place.
KEMH NICU: Patient should be prioritised for admission to a NPIR. Admit to an incubator if clinically appropriate with Droplet precautions in place.</td></tr>
</table>

	Perform a nasopharyngeal swab for respiratory virus PCR when symptoms identified. Follow guidance for identified respiratory virus if a different respiratory pathogen is detected. Otherwise, Droplet Precautions can be discontinued following completion of 6 days isolation if symptoms have resolved.
Patient Information	RSV, Centre for Disease Control and Prevention

Rhinovirus (RV)		
Description	RVs are prevalent throughout the year. RVs are the major cause of the "common cold" or rhinosinusitis. RV infection is also strongly linked to exacerbations of acute asthma in school aged children and pneumonia in immunocompromised individuals.	
Incubation Period	2 – 3 days	
Average Period of Viral Shedding	Most abundant in the first 2-3 days after symptom onset and usually ceased by 7-10 days.	
Diagnostic Test	**Sample Type**	**Request**
	Nasopharyngeal flocked swab	Respiratory virus PCR (Rhinovirus /enterovirus included on the Biofire® respiratory panel)
	Endotracheal aspirate	Respiratory virus PCR
Mode of Transmission	Respiratory droplets, fomites and hands	
Transmission Risk	Low	
Transmission based Precautions	Droplet Precautions as per the TDI. Admit to a single room if available. **KEMH NICU:** Admit to an incubator if clinically appropriate with Droplet Precautions in place.	
Duration of Precautions	10 days and until symptom resolution (whichever is longer)	
Nosocomial Contact Definition	Any infant nursed in the cot(s) immediately adjacent to the index patient where an incubator has not been used from symptom onset until completion of the infective period.	
Management of Asymptomatic Contacts in a multi-bed room/unit	Admit to an incubator if clinically appropriate with Droplet precautions in place. Continue isolation for a period of 3 days.	

Rhinovirus (RV)	
Symptomatic Contacts	Admit to a single room if available (preferred) with Droplet precautions in place. **KEMH NICU:** Patient should be prioritised for admission to a NPIR. Admit to an incubator if clinically appropriate with Droplet precautions in place. Perform a nasopharyngeal swab for respiratory virus PCR when symptoms identified. Follow guidance for identified respiratory virus if a different respiratory pathogen is detected. Otherwise, Droplet precautions can be discontinued following completion of 3 days isolation if symptoms have resolved.

References and related external legislation, guidelines and policies
American Academy of Pediatrics. In : Kimberlin DW, Barnett ED, Lynfield R, Sawyer MH, eds. Red Book: 2021 - 2024 Report of the Committee on Infectious Diseases (32nd edition) Itasca, IL: American Academy of Pediatrics 2021.
Department of Health, Coronavirus Disease - 2019 (COVID-19) Infection Prevention and Control in Western Australian Healthcare Facilities, V17 (10 March 2023).
Communicable Diseases Network Australia (CDNA). Coronavirus Disease 2019 (COVID-19): CDNA National Guidelines for Public Health Units, V7.4 [Internet]. Revised 14 October 2022

Related CAHS internal policies, procedures and guidelines
Bacterial Organisms (Selected) of Infection Control Significance (CAHS Neonatology Manual)
Bronchiolitis / Viral Respiratory Tract Infections (CAHS Neonatology Manual)
Environmental Cleaning (CAHS Infection Prevention and Control Manual)
Hand Hygiene (CAHS Infection Prevention and Control Manual)
Healthcare Worker Immunisation and Health (CAHS Infection Prevention and Control Manual)
Micro Alerts and Multi-Resistant Organisms (CAHS Infection Prevention and Control Policy Manual)
Microbiological Diagnostic Testing for Infections in Infants (previously TORCH) (CAHS Neonatology Manual)
Sepsis: Neonatal (CAHS Neonatal Clinical Guideline)

Specimen Collection and Transport (PCH Operational Manual)
Standard and Transmission Based Precautions (CAHS Infection Prevention and Control Manual)
Transmissible Diseases Index (CAHS Infection Prevention and Control Manual)
Water Safety in the NICU at KEMH (CAHS Neonatology Manual)

Useful resources (including related forms)
Influenza (Department of Health)
Influenza Vaccine for Children (PCH)
Parainfluenza (CDC)
PathWest Test Directory
Respiratory Syncytial Virus Infection (RSV) (CDC)

This document can be made available in alternative formats on request.

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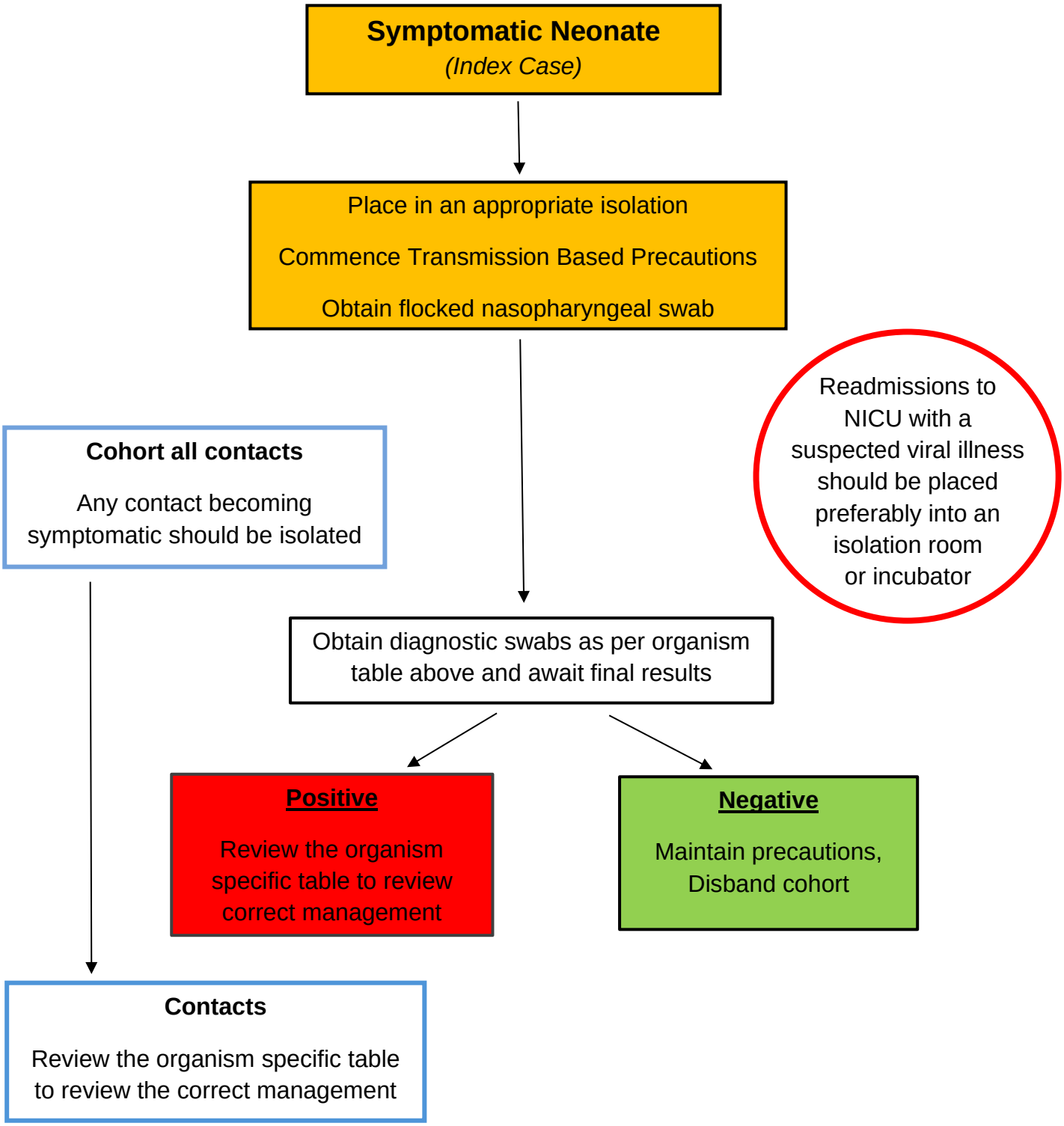
Appendix 1: Quick Reference Guide for Management of Infants with a Suspected Respiratory Virus Infection



If a neonate is unable to go into an incubator (e.g. term baby) contact the on-call Clinical Microbiologist or Infection Prevention CNC.

Note: Even with negative results, a discussion with IPC/Clinical Micro is required if patients are still symptomatic. There is a chance that there is an infection which is not detected in the screening tests and additional tests man need to be organised.