Safety Notice 006/20

Use of Viral Filters for Respiratory Care in Neonates

25 June 2020

Distributed to:

- Chief Executives
- Directors of Clinical Governance
- Director Regulation & Compliance Unit

Action required by:

- Chief Executives
- Directors of Clinical Governance

We recommend you also inform:

Directors and managers of

- Nursing and Midwifery
- Emergency Departments
- Anaesthetics
- Neonatal Units
- Obstetric Services
- Paediatrics

- Anaesthetic staff
- Emergency Department staff
- Staff involved in neonatal resuscitation

Expert Reference Group

Content reviewed by:

- COVID-19 CoP Neonatal working group
- COVID-19 CoP Paediatric Clinical lead
- NETS
- ACC
- NSW Ambulance

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Review date
June 2021

Background

The basic principles of airway management of neonates are not changed by the presence of COVID-19 but require careful adaptation and application of PPE to maintain patient and staff safety. As in adults, safety is critical, and neonatal staff should avoid unreliable or unfamiliar techniques during airway management.

To mitigate the airborne spread of COVID-19, babies with suspected or confirmed COVID- 19 who require respiratory support should be nursed in closed cribs with airborne precautions. However, there is debate about the need to take additional measures to reduce airborne spread by using viral filters while providing direct care to the infant during ventilation.

Air dispersion (aerosol spread) in an adult with normal breathing is up to 35 cm (a scale length).[1-4] This can be extrapolated to a term neonate of 3 kg to being no more than 2 cm. Therefore, risk of aerosol spread from an infected neonate to a health care worker is negligible, which can be further avoided by wearing appropriate PPE.

Issues

- All heat and moisture exchanger (HME) filters for use in neonates have similar dead space of around 10 mL with a resistance of 0.6 cm H20 at 5 L/m and 2.5 cm H20 at 15 L/m.
- Dead space of 10 mL could be detrimental to a small preterm infant if kept in place for an extended period.

The use of viral filters is *not recommended* in the following circumstances

- Do not use for the resuscitation at birth
- Do not use in the first 14 days of life in neonates born to women with COVID-19.
- Do not add an external viral filter to either the inspiratory or expiratory humidified circuit of a ventilated neonate as the system is a closed circuit.
- Do not use at the Neopuff 'T piece' at any stage in the neonatal period.

The use of viral filters *may be considered* in the following circumstances

- An external filter can be added to the exhaust vent of a ventilator where possible to avoid aerosol spread to staff from the gases expelled out of the ventilator.
- In the scenario of a neonate re-presenting unwell with COVID-19 suspected respiratory illness to emergency departments, wards, outpatient and other similar settings, it is recommended that HME filters with smallest possible dead space are used at the self-inflating bag-mask interface. **If resuscitation efforts are unsuccessful or if there is a persisting respiratory acidosis in the neonate the filter should be removed.**
- Respiratory support practices in settings that provide care for children in all age groups should otherwise continue unchanged to ensure consistency and avoid ambiguity among staff'.

See page 2 for required actions and references

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Actions required by Local Health Districts/Networks

1. Distribute this safety notice to all relevant clinical staff and departments.
2. Each health facility is to undertake a local risk assessment using QARS in any areas that use neonatal resuscitation equipment to ensure they are not adding an external viral filter to either the inspiratory or expiratory humidified circuit of a ventilated infant.
3. Complete the Neonatal Viral Filter QARS survey by 1 July 2020.

References

1. Tran K, Cimon K, Severn M, Pessoa-Silva CL, Conly J. Aerosol generating procedures and risk of transmission of acute respiratory infections to healthcare workers: a systematic review. PLoS One 2012;7(04):e35797.

2. Chan MTV, Chow BK, Lo T, et al. Exhaled air dispersion during bag-mask ventilation and sputum suctioning - Implications for infection control. Sci Rep 2018;8(01):198.

3. Chan MT, Chow BK, Chu L, Hui DS. Mask ventilation and dispersion of exhaled air. Am J Respir Crit Care Med 2013;187(07):e12–e14

4. Shalish W, Lakshminrusimha S, Manzoni P, Keszler M, Sant'Anna GM. COVID-19 and Neonatal Respiratory Care: Current Evidence and Practical Approach. Am J Perinatol. 2020 May 2. doi: 10.1055/s-0040-1710522.