

GUIDELINE FOR MANAGING THE NEONATAL UNIT DURING THE PANDEMIC AND CARING FOR A SUSPECTED/CONFIRMED COVID-19 NEONATE

Clinical Guideline MCSA.C.N.MC.1.8

PURPOSE

The purpose of this guideline is to describe the management of neonatal units during the pandemic, and the process to be followed when admitting and caring for a baby born to a woman with suspected or confirmed COVID-19 disease in the neonatal units.

APPLICABILITY

This guideline applies to

- Medical Practitioners
- Professional Nurses/Midwives
- Enrolled Nurses and ENAs
- All ancillary and support staff working in the units

GUIDELINE STATEMENT

Coronavirus disease 2019 (COVID-19) is a respiratory tract infection caused by a newly emergent coronavirus, that was first recognized in Wuhan, China, in December 2019.

To date, there are limited data on clinical presentation and perinatal outcomes after COVID-19 during pregnancy or the puerperium. There are 3 cases of reported vertical transmission, however due to the small numbers it still said to be probable only. Many studies are still in progress to find out whether this is significant or not. In addition there is still no documented growth from amniotic fluid, cord blood, vaginal discharge, neonatal throat swabs or breastmilk. Data from China showed some infected woman presented with premature rupture of membranes, fetal distress, and preterm birth, however the number was small, and there is not enough data to report this as a significant complication. Data from Italy did not show similar trends though, with a lower Caeser rate and no significant increase in preterm births.

Current information shows that most people with COVID-19 develop only mild or uncomplicated illness, approximately 14% develop severe disease that require hospitalization and oxygen support, and 5% require admission to an intensive care unit. Relatively few cases have been reported of infants confirmed with COVID-19, and all experienced mild illness.

Early recognition of suspected patients and managing of patients with COVID-19 allows for effective infection prevention and control principles to prevent spread and ensure staff safety.

This guideline will cover protecting the neonatal environment and the management of the neonate who has been either exposed to or diagnosed with COVID-19. During the pandemic the neonatal unit focus must be on protecting staff, parents and infants. The baby from a confirmed COVID-19 positive mother is still considered a very low risk, as long as all normal standard, contact and droplet precautions are taken.

The British Association of Perinatal Medicine (BAPM) stated in their guidance *“Due to a combination of likely low or undetectable viral load (even if the baby is infected) and small tidal volumes, resuscitation of the newborn, although an AGP, is not considered to carry a high risk of infection”*.12/5/2020

DEFINITIONS

TERM, ACRONYM OR ABBREVIATION	DEFINITION
AGP	Aerosol generating procedure
COVID-19	Disease caused by the SARS-CoV-2 virus first identified in 2019
EBM	Expressed Breast Milk
IPC	Infection Prevention and Control
Neonatal Units	This includes all areas in a Mediclinic hospital where a preterm or sick neonate is cared for. The layout is dependent on the individual hospital.
PPE	Personal Protective Equipment
PUI	Person under investigation/suspected COVID-19 case

RESPONSIBILITIES

PERSON	RESPONSIBILITIES
Unit Manager	Ensures the staff are updated with current COVID-19 information Ensures the staff are aware of IPC principles and adhere to them Ensures that all patients in the ward are cared for and additional staff is arranged to care for potential COVID-19 cases
Neonatologist/ Paediatrician	Informs unit of potential case or confirmed case of COVID-19 for admission Follows all IPC principles Supports staff in educating parents
Infection Prevention and Control Manager	Monitors compliance to IPC principles Addresses areas of non-compliance
Patient Experience Manager	Assists in taking pictures of the baby for the parents if required

COVID-19 PREPARATION FOR NEONATAL UNITS

All IPC principles must be followed according to the Mediclinic Corporate Policies.

During the pandemic the neonatal units must adhere to strict visitor controls to protect both the nursing staff, the patient and the parents.

- Only 'well' parents who have been risk assessed at the access control point on each visit may be allowed in and depending on low community transmission may both be allowed to visit together – there are no restrictions on time
- Social distancing must be maintained, the number of parents and their interaction with each other in the neonatal unit limited
- No additional visitors allowed
- If a mother is COVID-19 positive or a PUI – even if she is asymptomatic - she and her partner will not be allowed access to the neonatal unit and may only enter after 10 days from positive result
- Each time the parents enter the hospital they must be screened at the access point
- Staff from other areas of the hospital may not visit the neonatal unit
- Staff must ideally stay in the unit for the duration of their shift
- Dietician may again enter the unit but always remember to keep the number of people in the unit at any time to a manageable amount with adequate spacing and strict mask wearing and handwashing by all.

The obstetric unit must inform the neonatal unit of any admission of a COVID-19 positive or suspected case, regardless of gestation or reason for admission, to ensure adequate preparation.

All neonatal units must have plans for an isolation room/area for babies born to mothers that have tested positive, or are awaiting test results and are ill, and those awaiting test results with no symptoms.

All equipment should be dedicated for this isolation area and nothing to be shared between this area and the rest of the unit. If an isolation area is possible the equipment should be kept outside the room in a readily available area and only brought in as needed to prevent contamination.

Nursing Staff should be dedicated for the isolation area if possible.

- The baby should be looked after by a dedicated professional nurse for the first 12-24 hours after admission to the unit – this is to prevent change of staff if the baby's condition changes – e.g. Baby has mild respiratory distress initially and EN is allocated to look after baby, then baby deteriorates and requires intubation and ventilation and staff needs to be changed to a PN – this means two staff are now potentially exposed
- If there is more than one COVID-19 confirmed baby then the babies can be cohorted
- A baby born to a COVID-19 positive mother or mother who is a symptomatic suspected maternal infection, with an unknown COVID-19 status - this baby must be treated as a PUI and they should not be cohorted. They should be isolated separately or in an incubator until maternal testing results are available
- A baby born to an unknown COVID-19 maternal status with a low risk screen but an unknown maternal test should still be isolated in an incubator until maternal results are available
- Beware of complacency from staff when handling the 'well' PUI baby
- All babies born to a COVID-19 positive mother should ideally be nursed in a closed incubator even if in isolation

CARE OF THE PREMATURE OR SICK BABY OF A COVID POSITIVE/PUI MOTHER

The baby must be treated as a PUI and isolated, with contact and droplet precautions in place. Care and management should continue as for any premature/sick baby with the appropriate PPE worn according to the type of procedure/contact.

PPE considerations:

- Intubation is an aerosol generating procedure (AGP), and, although the risk of coronavirus transmission soon after birth is thought to be low, it is recommended that airborne precautions are taken for this procedure.
- If the baby is ventilated care must be taken not to break the circuit, and the ventilator should be paused during any disconnection with the airflow to zero.
- While CPAP and High Flow nasal cannula are associated with aerolisation in adult studies – in the absence of evidence in neonates - it is reasonable to continue to treat the baby's respiratory illness with these modalities. However these babies should be nursed in a closed incubator in isolation.
- WHO recommends breastfeeding as protecting against morbidity and death in the post-neonatal period and throughout infancy and childhood. The protective effect is particularly strong against infectious diseases that are prevented through both direct transfer of antibodies and other anti-infective factors and long-lasting transfer of immunological competence and memory. Infants born to mothers with suspected, probable, or confirmed COVID-19 should still receive their mother's breastmilk
- Breastmilk should be expressed by the mother and an arrangement made at the various units for how the milk will be delivered. (There is currently no proven transmission of the virus to breastmilk. The mother should be educated with regards to hand hygiene and normal requirements for expressing of breastmilk. When receiving the EBM, the bottle/container must be wiped down and then handled as normal)
- The COVID-19 suspected or confirmed parents will not be allowed into the unit while they are ill, or remain contacts, and no substitution may be made
- The parents may enter the unit after 10 days of being symptom free
- In the event that the mother is too unwell to express breastmilk, explore the viability of donor human milk or appropriate breastmilk substitutes, informed by cultural context, acceptability to the mother, and service availability.

TESTING OF NEWBORNS

- Performing nasal swabs on asymptomatic babies may cause false negatives and the optimal timing of testing is unclear – in most articles the first swab should not be taken prior to 24 hours of age
- Routine testing of all newborns regardless of maternal status is not advocated by the NICD, however for babies admitted to the NICU from a positive mother a PCR can be taken at 24 hours of age
- Baby born to a mother who is still waiting for results should not be tested prior to mothers test becoming available and only tested if mother positive
- Asymptomatic babies, even if positive, are unlikely to transmit the virus, providing everyone adheres to basic hygiene and isolation principles
- PPE must be kept to the current PPE guidelines for Mediclinic
- All staff will be wearing a surgical mask and visor for the duration of their shift
- Parents are to wear a cloth mask for the duration of their visit
- As testing materials become scarce they may not be beneficial in the neonatal environment and should be kept for the adult population

PPE GUIDELINES

<p>AEROSOL GENERATING PROCEDURES (AGP)</p> <ul style="list-style-type: none"> • Intubation, extubation and all related procedures. • Less invasive administration of surfactant (LISA). • Non-invasive ventilation (NIV) e.g. SiPAP, CPAP • High Frequency Oscillatory Ventilation (HFOV) • High flow nasal oxygen (HFNO) <i>Do not place mask over babies face</i> <p style="text-align: center;"><i>NB Passing an OGT/NGT is not an AGP</i></p>	<p>PPE REQUIRED FOR BABY WITH AGP PROCEDURES</p> <p>I.E. CPAP, SIPAP, VENT & HFOV AND HFNC >2L</p> <ul style="list-style-type: none"> • N95 respirator • Visor • Gown and Apron • Gloves 	<p>PPE REQUIRED FOR BABY ON NASAL CANULA AND ALL OTHER NORMAL NEONATAL CARE</p> <ul style="list-style-type: none"> • Surgical mask • Visor • Apron • Gloves
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VENTILATOR FILTERS

- Bacterial/Viral filters are routinely not used on a humidified circuit. Any filter added beyond the dry limb increases inspiration resistance exponentially.
- The neonatal ventilator circuits all use heated humidity and therefore the addition of a filter is not recommended by the manufacturers.
- No HME filter is required on NeoPuff or bag/mask
- When ventilating a newborn of a mother with confirmed COVID positive or a symptomatic PUI – it is important that the circuit is not broken – the inline suction catheter should be placed on immediately after intubation, and care must be taken not to break the circuit.
- The AVEA® ventilator has an internal filter that can be removed and sterilised using steam autoclaving only and replaced – each filter can be sterilised 25 cycles. The ventilator cannot be used until the filter is replaced again. This change can only be done by the technical department.
- The Sensormedics Oscillator actively ‘blows’ out air and there is a potential of aerolisation from the circuit. A scavenger can be placed on the circuit – please see addendum A.

ASSOCIATED DOCUMENTS AND RECORDS

TITLE OF APPLICABLE IPC POLICIES	NUMBER	LOCATION
<ul style="list-style-type: none"> • Hand Hygiene • Notifiable Medical Condition Reporting • Surveillance • Isolation: Standard and Transmission Based Precautions • Cleaning and Disinfection: Bed and Patient Environment • Disinfection Guidelines • Suspected or confirmed novel influenza 	N/A	Intranet

REFERENCES

1. Coronavirus in Pregnancy. RCOG guideline Version 10. Published 4th June 2020.
<https://www.rcog.org.uk/globalassets/documents/guidelines/2020-06-04-coronavirus-covid-19-infection-in-pregnancy.pdf>
2. Coronavirus Disease 2019 (COVID-19) **Update—Information for Clinicians Caring for Children and Pregnant Women**
https://emergency.cdc.gov/coca/calls/2020/callinfo_031220.asp?deliveryName=USCDC_1052%20DM22171
3. Interim Considerations for Infection Prevention and Control of Coronavirus Disease 2019 (COVID-19) in Inpatient Obstetric Healthcare Settings https://www.cdc.gov/coronavirus/2019-ncov/hcp/inpatient-obstetric-healthcare-guidance.html?deliveryName=USCDC_1052%20DM22171
4. COVID-19 – guidance for paediatric and Neonatal services. RCPCH Updated daily. Published 3rd June 2020. <https://www.rcpch.ac.uk/sites/default/files/generated-pdf/document/COVID-19---guidance-for-neonatal-settings.pdf>
5. Neonatal Resuscitation where mother has a suspected or confirmed novel coronavirus (SARS-CoV-2) Infection. Published 24 April 2020 <https://www.karger.com/Article/FullText/507935>
6. European Resuscitation Council COVID-19 Guidelines. Section 5 Newborn Life Support. Published 24th April 2020
https://erc.edu/sites/5714e77d5e615861f00f7d18/content_entry5ea884fa4c84867335e4d1ff/5ea886964c84867421e4d1f4/files/ERC_covid19_pages_section5.pdf?1588257399

ADDENDUM A

1. Bacterial/Viral Small Neonatal Paediatric filter (OPTIONAL – Be aware of filter becoming wet)

FILTER BARRIERBAC
FILT900 03 AIR
MEDT01 MEDT01 0583278
3505879

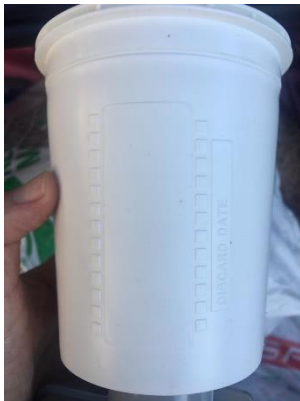
Electrostatic Filter Small Paediatric-Neonatal



2. AVEA® VENTILATOR EXHALATION FILTER

Stock Code BIR33987 (COST ± R3500.00)

Can be removed and steam autoclaved 25 times – machine cannot be used without it, and therefore would be out of use for the duration of the autoclave cycle.



3. Scavenger for Sensor Medics Oscillator

Supplier: RESP01 RESPIRATORY CARE AFRICA Country: ZA

Description: SENSORMEDICS SCAVENGING SYSTEM

Nappi code : 0205623001

Supplier ref: SEN770150

Catalogue no: SEN770150



Scavenger

Instructions for use with models 3100A/3100B high frequency oscillatory ventilators

1. Attach a 12-inch (30.5 cm) length of 7/8-inch (2.2 cm) disposable corrugated tubing to the outlet of the scavenger elbow.
2. Connect a vacuum line to the 1/4-inch (0.63 cm) hose nipple on the elbow.
3. Disconnect the green control line from the Luer fitting on the cap/diaphragm.
4. Remove the scavenger cap and slip the scavenger body over the stem of the mean airway pressure control valve (Figure 1). If necessary, apply slight pressure to the sides of the scavenger body to increase the body height so that the body clears the Luer fitting on the cap/diaphragm.
5. Extend the Luer fitting from the cap diaphragm through the hole on the top of the scavenger body and replace the green control line to the Luer fitting. (Be certain that the Luer fitting twists on completely.)
6. Close the scavenger with its cap and snap the latches closed (Figure 2).
7. Orient the elbow so that the tubing faces toward the floor.
8. Turn on the vacuum source to a level that exceeds the bias flow plus injector flow of the ventilator.
9. Test the effectiveness of the scavenger and vacuum flow setting by sampling for scavenged gases at the end of the disposable tubing.

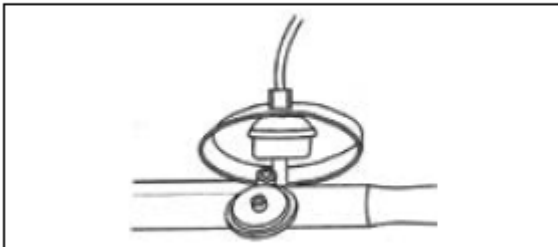


Figure 1. Scavenger mounted on the control valve stem, cap Luer fitting extended through the Scavenger top hole, and locked in place with the green control line

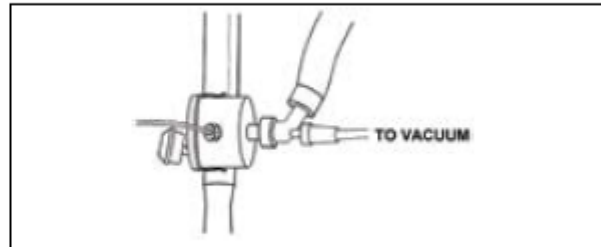


Figure 2. Scavenger closed, plus elbow, 12-inch overflow tube, and suction line

STANDARD OPERATING PROCEDURE

Assembling a Scavenger system for the Sensomedics Oscillator

Department

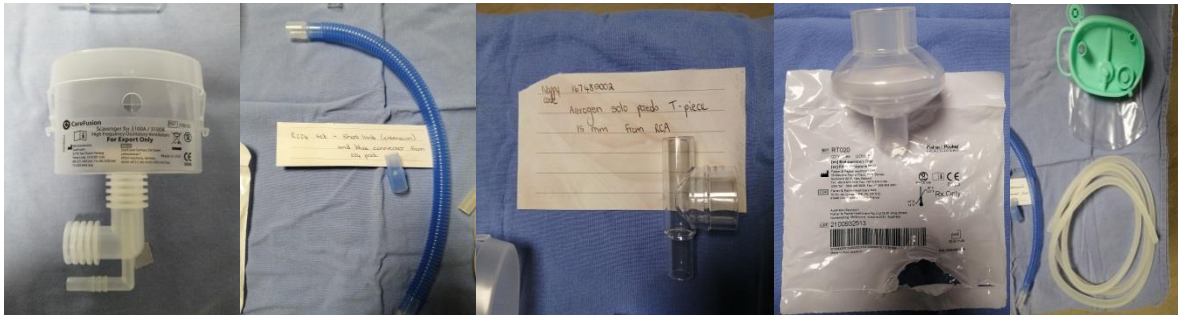
NICU

Scope

Professional Nurse/Neonatologist/Paediatricians

Scavenger system for the Sensomedics

PARTS YOU WILL NEED:







Parts needed:

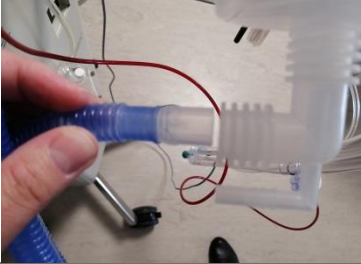




- 2m suction tubing
- Suction series bags 1000ml
- R224 (CPAP circuit) short extension limb and blue connector
- T-piece Aerogen solo paed 15mm (nappicode 167485002)
- Bacterial filter RT020 Fisher&Paykel



STEP 1

- Slide scavenger system over the expiratory limb control valve (cap with green tubing)

	<p>STEP 2</p> <ul style="list-style-type: none"> • Push the caps long white connection through the hole
	<p>STEP 3</p> <ul style="list-style-type: none"> • Connect the green tubing
	<p>STEP 4</p> <ul style="list-style-type: none"> • Close the scavenger systems cap on the side
	<p>STEP 5</p> <ul style="list-style-type: none"> • Take the extension limb (short limb) from the R224 (CPAP pack)
	<p>STEP 6</p>

	<ul style="list-style-type: none"> • Connect the large side to the scavenger system at the scavenger elbow
	<p>STEP 7</p> <ul style="list-style-type: none"> • Connect a 2m suction tubing to the small connection on the scavenger elbow
	<p>STEP 8</p> <ul style="list-style-type: none"> • Take your suction bag and connect the t-piece as in the picture
	<p>STEP 9</p> <ul style="list-style-type: none"> • Take the blue connector from the R224 pack and connect to the t-piece at the top
	<p>STEP 10</p> <ul style="list-style-type: none"> • Connect the bacterial filter



STEP 11

- Connect the extension limb from the R224 pack to the blue connector on the suction bag



STEP 12

- It should now look like this



STEP 13

- Take cable ties to tie the suction bag to the water trap to secure it through the loops on the suction bag



STEP 14

- Connect suction tubing to the wall suction unit.
- Only switch on suction to deflate bag – but do not keep on

HISTORY AND VERSION CONTROL

CONTRIBUTORS	NAME	DESIGNATION
	Aliné Hall	Clinical Quality Specialist: Mother and Child
	Christine Smedley	IPC Coordinator: Operational
Author	Aliné Hall	Clinical Quality Specialist: Mother and Child
Details of update	Fifth Release	
Version number	1.8	
Effective date	2020 12 11	

VERSION	Changes (Highlighted in blue)
1.2	Clarification on PUI isolation Breastmilk handling Parents to wear cloth mask Clarity on ventilator filters
1.3	Filter clarification
1.4	Clarity on testing of the neonate PPE Guidelines added
1.5	Testing of neonates admitted to NICU and born to positive mothers should have a PCR test at 24 hours of age Clarity on scavenger circuit for oscillator See Neonatal Flow diagram V2
1.6	Positive Parents returning to the NICU confirmed for 10 days
1.8	Number of 1,7 inadvertently used in error. Visitation changed according to community transmission