

Administering nebuliser for infant on ventilator or CPAP in Newborn Intensive Care Unit (NICU)

Procedure Responsibilities and Authorisation

Department Responsible for Procedure	Newborn Intensive Care Unit
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Document Owner Title	Charge Nurse Manager
Target Audience	Nurses
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Procedure Review History

Version	Updated by	Date Updated	Summary of Changes	
3	Joyce Mok	Mar 2015	Due for review	
4	Richard Pagdanganan	Sep 2019	3 yearly review	
4.1	Richard Pagdanganan	Sept 2021	New Nebuliser Circuit	
5	Richard Pagdanganan	Feb 2023	3 yearly review	

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1 Overview

1.1 Purpose

To deliver aerosol treatment by a nebuliser for infants on mechanical ventilation or CPAP. This procedure is based on the best practice guidelines according to Lippincott Procedures.

1.2 Scope

Te Whatu Ora Waikato staff working in Newborn Intensive Care Unit (NICU)

1.3 Patient / client group

Neonates and infants in NICU

1.4 Definitions

Aerosol Treatment	Delivers medication directly into the lungs. When gas from the respiratory circuit is mixed with medication in the nebuliser medicine chamber, the medicine breaks into small particles, creating a fine mist that infant inhales via the inspiratory limb of the respiratory circuit. It allows rapid achievement of high concentration of therapeutic agents in the pulmonary epithelial lining and bronchial field.
CPAP	Continuous Positive Airway Pressure
Nebulisation	A method of converting a medicine or solution into an aerosol which is inhaled directly into the lungs. Nebulisers use compressed gas (from a wall outlet, canister or compressor) to produce a fine mist of droplets containing active drug. This mist can be delivered deep into the patient's lungs to help with the presenting condition.

2 Clinical Management

2.1 Competency required

- Registered Nurse who has completed Level 2 orientation and obtained competency.

2.2 Equipment

- Aerogen™ USB Controller and Powerpoint cable and adapter
- Aerogen™ Nebuliser medication chamber
- T-Piece & Silicon Plug
- Cable Management Clips
- Aerogen™ USB Controller AC/DC Adapter
- Prescribed medication

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- Syringes
- Gloves

Note:

- For some medications, e.g. antibiotics, special mask and nebuliser and filter may be provided by Respiratory Nurse Specialist (Waikids Clinic): send referral and call them to request their support and instructions for administration.
- Precautionary measure with nebulised antibiotics includes the need to filter the exhaled gas to prevent the nebulised antibiotic circulating in the room air to avoid antibiotic resistance developing.

2.3 Procedure

2.3.1 Prepare equipment

- Collect the nebuliser and set up the circuit as per the Aerogen™ Instruction Manual
- Perform a safety check prior to use as per manual.
- Ensure all connections are secure.

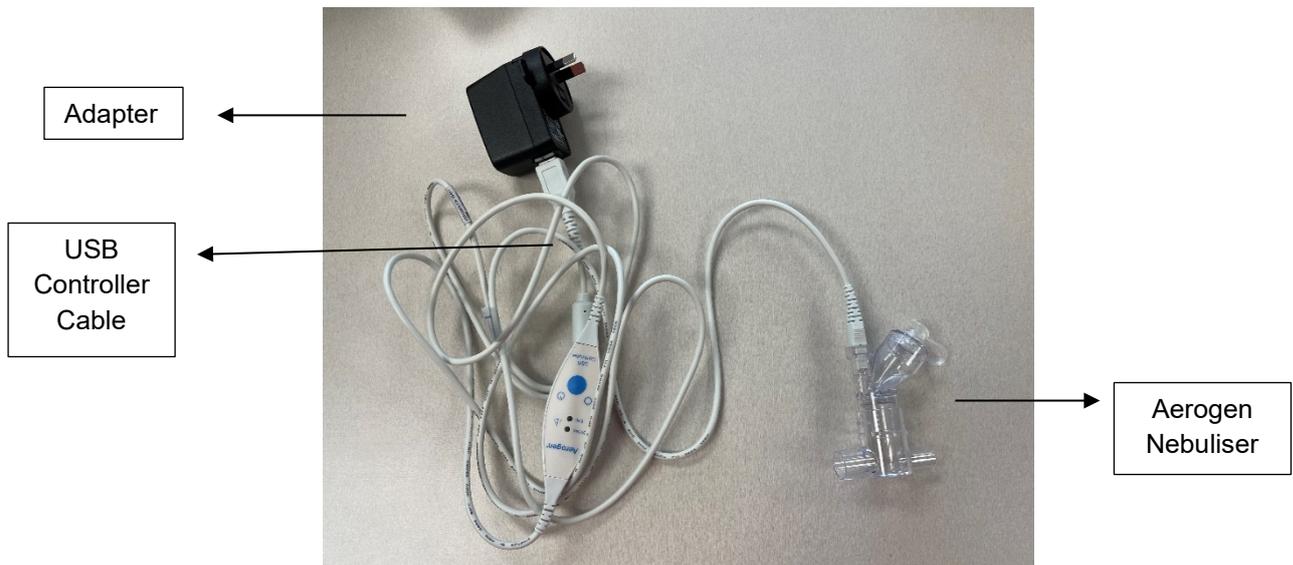


Figure 1

2.3.2 Preparations

- Perform hand hygiene.
- Put on gloves to prevent exposure to aerosols, medications, and patient-generated droplets.

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2.3.3 Nebuliser for ventilated patients

- Check, administer and document the medication according to [Medicines Management](#) policy (0138).
- Remove the flow sensor. Attach the in line nebuliser kit on both ends of the nebuliser T-piece and insert into the inhalation tubing. If inserting into ventilator tubing, ensure yellow flow restrictor is behind the Aerogen™ nebuliser.

Alternative Set Up: The Aerogen™ Solo can be placed between the ventilator tubing and humidifier.

- Open the plug and fill the nebuliser with medication, using a syringe to measure the amount of prescribed medication and isotonic diluent, e.g. sodium chloride 0.9%.
NOTE: Do not use a syringe with needle to avoid damage to the Aerogen™ Solo.
- Close the chamber using the silicone plug.
- To operate in 30 minutes press the blue On/Off button on the USB Controller once. Check that the aerosol is visible.



Figure 2

NOTE: Verify the correct mode of operation is selected and visually verify that aerosol is visible.

- When the aerosol treatment has finished, restore the ventilator circuit to its original configuration.
- Refer to 2.3.7 for cleaning the nebuliser kit.

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2.3.4 Nebuliser for patients on CPAP

- Check, administer and document the medication according to [Medicines Management](#) policy (0138).
- Attach the in line nebuliser kit on both ends of the nebuliser T-piece and insert in the inspiratory arm trunk.

Alternative Set Up: The Aerogen™ Solo can be placed between the CPAP tubing and humidifier.

- Open the plug and fill the nebuliser with medication, using a syringe to measure the amount of prescribed medication and isotonic diluent, e.g. sodium chloride 0.9%.
NOTE: Do not use a syringe with needle to avoid damage to the Aerogen™ Solo.
- Close the chamber using the silicone plug.
- To operate in 30 minutes press the blue On/Off button on the USB Controller once. Check that the aerosol is visible.



Figure 3

- When the aerosol treatment has finished, restore the CPAP circuit to its original configuration.
- Refer to 2.3.7 for cleaning the nebuliser kit.

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2.3.5 Nebuliser for patients on Nasal Flow

- Check, administer and document the medication according to [Medicines Management](#) policy (0138).
- Attach the in line medication nebuliser kit into both ends of the nebuliser T-piece and insert in the inhalation tubing.

Alternative Set Up: The Aerogen™ Solo can be placed between the nasal flow tubing and humidifier.

- Open the plug and fill the nebuliser with medication, using a syringe to measure the amount of prescribed medication and isotonic diluent, e.g. sodium chloride 0.9%.
NOTE: Do not use a syringe with needle to avoid damage to the Aerogen™ Solo.
- Close the chamber using the silicone plug.
- To operate in 30 minutes press the blue On/Off button on the USB Controller once. Check that the aerosol is visible.



Figure 4

- When the aerosol treatment has finished, restore the Nasal Flow circuit to its original configuration.
- Refer to 2.3.7 for cleaning the nebuliser kit.

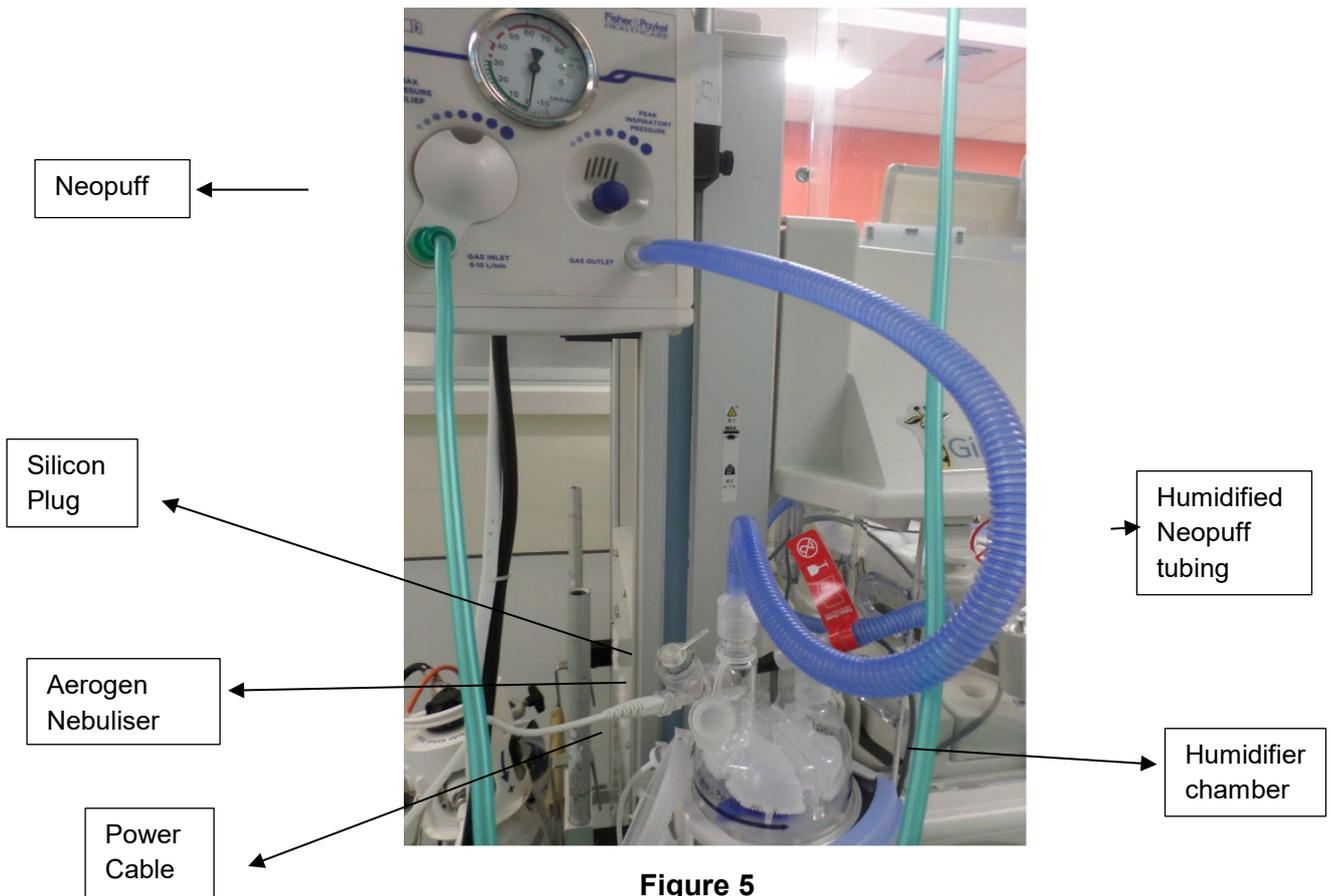
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2.3.6 Nebuliser for patients using Humidified Neopuff™

- Check, administer and document the medication according [Medicines Management](#) policy (0138).
- Attach the in line nebuliser kit on both ends of the nebuliser T-piece and insert in the inhalation tubing.

Alternative Set Up: The Aerogen™ Solo can be placed between the Neopuff™ tubing and humidifier.

- Open the plug and fill the nebuliser with medication, using a syringe to measure the amount of prescribed medication and isotonic diluent, e.g. sodium chloride 0.9%. NOTE: Do not use a syringe with needle to avoid damage to the Aerogen™ Solo.
- Close the chamber using the silicone plug.
- To operate in 30 minutes press the On/Off button once. Check that the aerosol is visible.



- When the aerosol treatment has finished, restore the Neopuff™ circuit to its original configuration.
- Refer to 2.3.7 for cleaning the nebuliser kit.

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2.3.7 Cleaning the Nebuliser Kit

- For reusable kit, clean nebuliser with mild soap and rinse with warm running water as necessary.
- Wash the nebuliser with warm running water, rinse the equipment with sterile water, shake off excess water and dry it by oxygen or air.
- Store the equipment in a clean tray, covered by paper guard.
- The nebuliser circuit may be reused for the same patient. It must be cleaned, dried and covered between uses.
- The nebuliser circuit can be used for 4 treatments per day, or earlier if nebuliser performance declines.
- Clean the Aerogen™ USB controller, controller cables and Aerogen™ USB controller AC/Adapter with disinfectant wipes.

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3 Evidence base

3.1 References

- Bianco, F., Salomone, F., Milesi, I. Murgia, X., Bonelli, S., Pasini, E., Dellaca, R., Ventura, M. & Pillow, J. (2021). Aerosol drug delivery to spontaneously-breathing preterm neonates: lessons learned. Retrieved from <https://doi.org/10.1186/s12931-020-01585-9>
- DiBlase, R. (2015). Clinical controversies in aerosol therapy in infants and children. Retrieved from <http://rc.rcjournal.com/content/60/6/894>
- Gardenhire, D. S., et al. (2017). A guide to aerosol delivery devices for respiratory therapists (4th ed.). Irving, TX: American Association for Respiratory Therapists. Retrieved from <https://www.aarc.org/wp-content/uploads/2018/03/aersol-guides-for-rts.pdf>
- Leeds Teaching Hospital NHS Trust (2020). Paediatric nebuliser guidelines and monographs. Retrieved from <http://www.lhp.leedsth.nhs.uk/detail.aspx?id=4768>
- Wolters Kluwer (2023). Aerosol treatment, pediatric. Lippincott Procedures. <https://procedures.lww.com/lmp/view.do?pld=728846>

3.2 Associated Te Whatu Ora Waikato Documents

- NICU Drug Manual
- [Adrenaline for neonates](#) drug guideline (0559)
- [Salbutamol for NICU](#) drug guideline (2960)
- [Medicines Management](#) policy (0138)
- [Care of Ventilated Infant](#) procedure (0432)
- [CPAP – Continuous Positive Airway Pressure Nursing Management in Newborn Intensive Care Unit \(NICU\)](#) procedure (4939)
- [Nasal Flow blended oxygen/air therapy in Newborn Intensive Care Unit \(NICU\)](#) procedure (2770)

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Appendix A – Aerogen USB Controller

Aerogen USB Controller

Aerogen

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P/N 30-764 Rev B Aerogen, Galway Business Park, Dangan, Galway, Ireland.