

CLINICAL GUIDELINE · PEDIATRIC COMPLEX CARE PLATFORM

Pediatric Tracheostomy Suctioning

Indications, suctioning parameters, technique, complications and suction equipment care for children with a tracheostomy

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APPLIES TO

Pediatric patients

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Intended for healthcare professionals as a clinical reference. Apply with clinical judgment and in line with local protocols.

CONTENTS

- 1 Indications
- 2 Suctioning Parameters
- 3 Preoxygenation
- 4 Technique
- 5 Complications
- 6 Equipment Care
- 7 Contingency Plan
- 8 References

1 Indications for Suctioning

As needed (PRN), based on clinical assessment — **not routinely scheduled.**

Indications

Visible / audible secretions

Respiratory distress

Desaturation

Suspected obstruction

Increased ventilator pressures / resistance

Tracheal secretion sample required for microbiological testing

2 Suctioning Parameters

2.1 Suction depth

- Use **pre-measured shallow suctioning**.
- Advance the catheter to the pre-measured depth, **up to 0.5 cm beyond the distal end** of the tracheostomy tube.
- Document the patient's prescribed suction depth.
- **Deep suction only if shallow suction is ineffective.**

2.2 Suction pressure

Neonate

60–80

mmHg

Infant / child

80–100

mmHg

Adolescent

80–120

mmHg

Use the **lowest effective suction pressure** and do not exceed 120 mmHg.

2.3 Duration

5–10 seconds per pass

- Allow recovery between passes; repeat only if indicated.
- Maximum recommended suction duration: **15 seconds**.

2.4 Catheter size

- Catheter should occupy **<50%** of the tracheostomy tube lumen (**<70% in neonates**).

Maximum suction catheter size

$$\text{Fr} = (\text{Trach ID [mm]} \div 2) \times 3$$

or Trach ID $\times$ 1.5

3 Preoxygenation

- ✓ **Preoxygenate** pediatric patients before suctioning.
- ✓ Increase FiO₂ according to clinical status; **100% O₂ is not routinely required**.
- ✓ In ventilated patients, provide preoxygenation **via the ventilator**; routine manual bagging is not recommended.

i **Neonates:** evidence is insufficient to make a specific preoxygenation recommendation.

4 Technique

- 1 Hand hygiene + appropriate PPE.
- 2 Confirm catheter size, suction depth and pressure.
- 3 Insert catheter **without suction** to the prescribed depth.
- 4 Apply suction while **gently withdrawing** the catheter.
- 5 Do not exceed **5–10 seconds** per pass.
- 6 Allow recovery between passes; repeat only if clinically indicated.
- 7 Monitor respiratory status and HR/SpO₂ as appropriate.
- 8 **Do not routinely instill normal saline.**

5 Common Complications

Hypoxemia / desaturation

Bradycardia or arrhythmia

Due to hypoxemia / vagal stimulation.

Airway trauma, bleeding or edema

Bronchospasm / excessive coughing

Atelectasis

Pain, distress or agitation

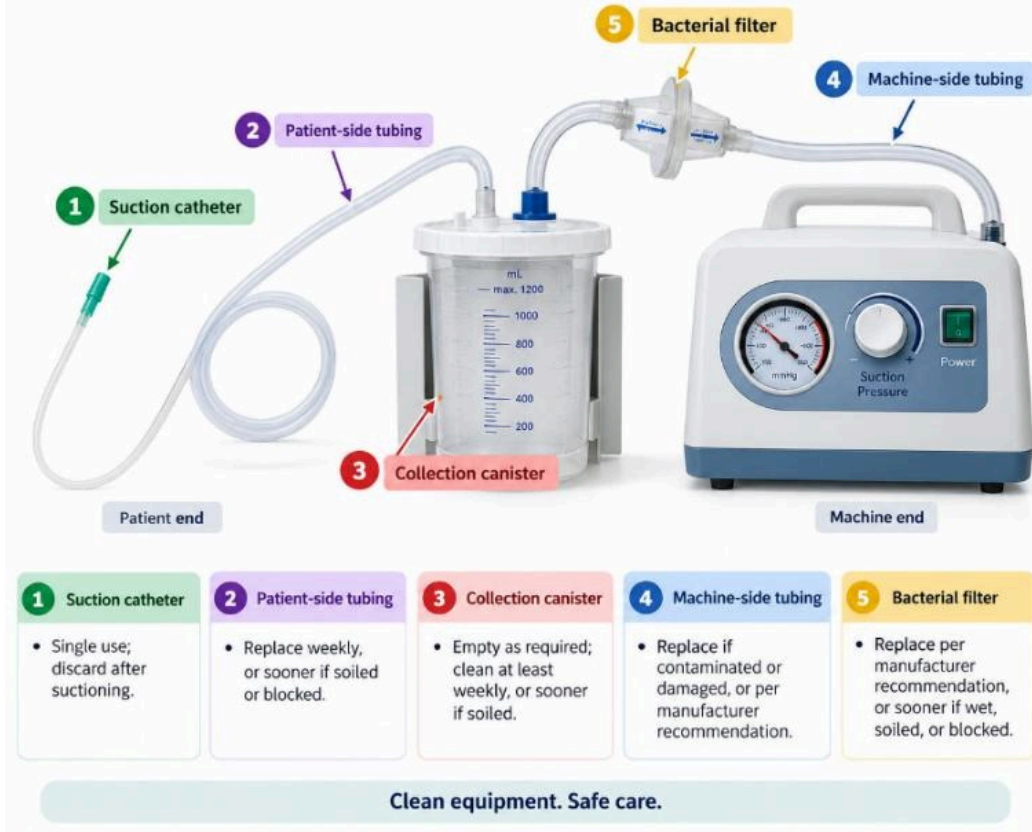
- ✓ Risk is reduced by appropriate **catheter size and depth**, the **lowest effective suction pressure**, and **limiting suction duration**.

6 Suction Equipment Care

Component	Care
Suction machine	Wipe exterior with a damp, soapy cloth; dry.
Battery	Check monthly; replace approximately yearly or sooner if needed.
Suction catheter	Single session use ; discard after each suctioning session.
Patient-side tubing	Replace weekly, or sooner if soiled/blocked.
Collection canister	Empty as needed; wash daily with soap and water; deep-clean weekly. Replace per manufacturer.
Machine-side tubing	Replace if contaminated/damaged or per manufacturer.
Bacterial filter	Replace per manufacturer, or sooner if wet/soiled/blocked.

Suction Equipment and Components

Know the parts. Keep them clean, Replace as recommended.



7 Contingency Plan: Suction Catheter Reuse

If single-use catheters are temporarily unavailable:

- ✓ Reuse for the **same child only**, for up to **24 hours**.
- ✓ After each use, suction sterile water through the catheter to clear secretions.
- ✓ Store in the original packaging or a clean, dry container.

- **Discard immediately** if contaminated, dropped, blocked, damaged, or cannot be cleared.
- **Do not reuse during respiratory infection**; use a new catheter for each suction.
- Resume single-use practice as soon as supplies are available.

8 References

- 1 Blakeman TC, Scott JB, Yoder MA, Capellari E, Strickland SL. AARC Clinical Practice Guidelines: Artificial Airway Suctioning. *Respir Care*. 2022;67(2):258–271. doi:10.4187/respcare.09548
- 2 Royal Children's Hospital Melbourne. Tracheostomy Management: Clinical Nursing Guideline. Accessed September 2026.
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