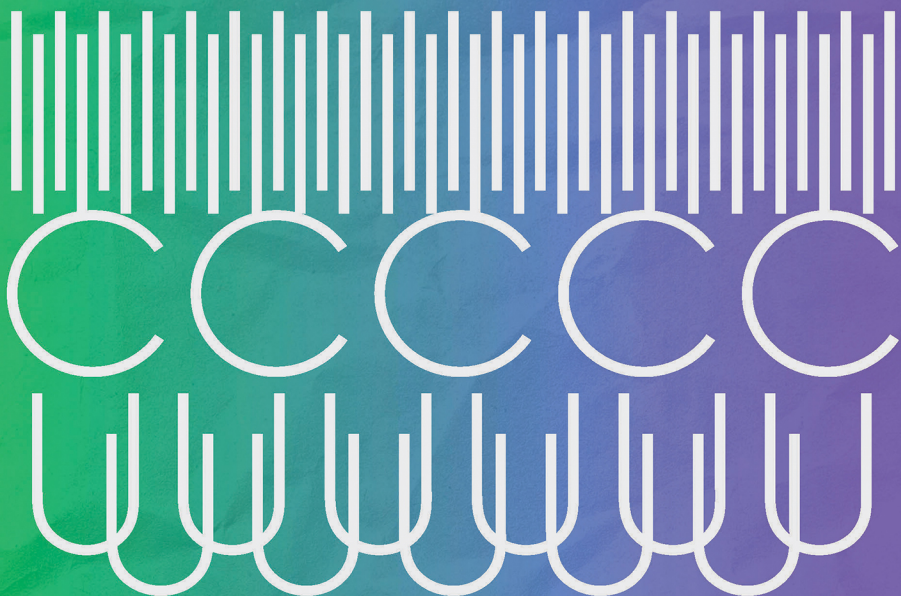


# Handbook of ICU Protocols



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*Foreword*  
**Muralidhar K**



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## Protocol for Endotracheal Suctioning

### CLINICAL INDICATIONS FOR ENDOTRACHEAL TUBE SUCTION

- Desaturation
- Bradycardia
- Tachycardia
- Absent or decreased chest movement
- Visible secretions in endotracheal tube (ETT)
- Increased end-tidal carbon dioxide (EtCO<sub>2</sub>)
- Irritability
- Coarse or decreased breath sounds
- Increased work of breathing
- Blood pressure fluctuations
- Recent history of large amounts of thick/tenacious secretions

### EQUIPMENT

Functioning wall suction unit with suction tubing connected

Suction catheter for open suction (see Table below for appropriate sizes for adult patients)

| Endotracheal tube size | Size of suction catheter (Fr) |
|------------------------|-------------------------------|
| 6 – 7                  | 10                            |
| 7.5 – 8                | 12                            |
| 8 – 8.5                | 14                            |
| 9 – 10                 | 16                            |

Diameter of the catheter should be approximately **one third** the diameter of the ETT and should be of length to **extend 5 cm beyond the distal** end of the ETT.

Nonsterile gloves

Normal saline ampoule and syringe (if normal saline lavage required)

## TECHNIQUE

- Strict asepsis
- Amount of negative pressure in suction should be adjusted to **100–150 mm Hg**
- Preoxygenate with 100% O<sub>2</sub>. Fraction of inspired oxygen (FiO<sub>2</sub>) should be decreased as soon as possible after suction is complete. **Oxygenation and hyperventilation** pre-/postsuction may **NOT** be routine but, may reduce the incidence of suction related hypoxemia and bradycardia.

- Insert the catheter gently until resistance is met and then withdraw the catheter **1 cm before** applying suction.
- **No suction** should be applied during insertion of the catheter.
- Suction application should be limited to **10–15 seconds**.
- While the catheter is being removed, it should be **twirled** between the thumb and index finger so that the catheter is exposed to larger surface areas.
- Perform **hyperoxygenation** and **hyperinflation** between suctioning.
- After the endotracheal suctioning is over, the catheter is **rinsed in sterile water** and used for oropharyngeal suctioning.
- Two persons should be involved during the endotracheal suctioning procedure.
- **Monitor** SpO<sub>2</sub>, hemodynamic, and intracranial pressure (ICP).

## RELATIVE CONTRAINDICATIONS

- Pulmonary edema.

## COMPLICATIONS OF ETT SUCTION

- Hypoxemia
- Atelectasis
- Bradycardia
- Tachycardia
- Increased ETT CO<sub>2</sub> and transcutaneous CO<sub>2</sub>

- Blood pressure fluctuations
- Decreased tidal volume
- Airway mucosal trauma
- ETT dislodgement
- Pneumothorax
- Pneumomediastinum
- Bacteremia
- Pneumonia
- Fluctuations in intracranial pressure and cerebral blood flow velocity

**Lavage by instillation of normal saline into the ETT immediately prior to ETT suction:**

- May aid in the removal of thick, tenacious secretions by thinning, loosening, and dislodging these secretions
- Makes the patient cough, which may loosen and dislodge secretions
- May lubricate the ETT
- May have detrimental effects on the patient, damages airway mucosa, and contributes to lower airway colonization

Normal saline **should not** be routinely instilled prior to ETT suction. It should only be instilled in patients who have thick, tenacious secretions. The amount of normal saline to use is **0.1–0.2 mL/kg**.

**Document clearly:**

- ETT suctioned
- Airway secretion amount and color
- Suction tolerance and significant events

**Effectiveness of ETT suction** should be assessed after the procedure by observing:

- Improvement in breath sounds on auscultation
- Removal of secretions
- Improved oxygen saturation, EtCO<sub>2</sub>, heart rate, blood pressure, and respiratory rate
- Decreased work of breathing and improved chest rise

# Handbook of ICU Protocols

## Salient Features

- **Concise, simple and handy** companion providing **evidence-based information**, beneficial for **intensivists, ICU doctors, trainees and postgraduate students and nurses** working in an intensive care setup to provide guidance in managing critically ill patients right from the **time of admission**, directs in conducting daily rounds for **patient assessment**, and serves as a **quick reference manual**
- Not only clinical, but also topics related to **documentation** and **administration** of the critical care unit are **highlighted**
- **Reader-friendly**, having point-wise summarized information with **numerous tables**.

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A **voracious speaker and excellent teacher** she has been a faculty at several national and international conferences including the prestigious ISACON, SAARC AA conferences.

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