Supplementary Online Content


This supplementary material has been provided by the authors to give readers additional information about their work.
An "ENCOUNTER" of advanced airway management refers to complete sequence of events leading to a placement of an advanced airway.

A "COURSE" of advanced airway management refers to ONE method or approach to secure an airway AND ONE set of medications (including premedication and induction). Each course may include one or several "attempts" by one or several providers.

An "ATTEMPT" is a single advanced airway maneuver (e.g. tracheal intubation, LMA placement), beginning with the insertion of a device, e.g. laryngoscope (or LMA device) into patient's mouth or nose, and ending when the device (laryngoscope), LMA or tube is removed.

### Patient Information
- **Date:** __________
- **Time:** __________
- **Location:** __________
- **# of Courses:** __________
- **Patient Initials:** __________ (for QI purpose only)
- **Patient Age:** __________ y __________ m
- **Patient Dosing Weight (kg):** __________
- **Patient Gender:** M F
- **NIV/CPAP/HFNC used immediately prior to intubation:** YES / NO

### Initial Intubation
- **Check as many as apply:**
  - Oxygen Failure (e.g. PaO2 <60 mmHg in FiO2 >0.6 in absence of cyanotic heart disease)
  - Procedure (e.g. IR or MRI)
  - Ventilation Failure (e.g. PaCO2 > 50 mmHg in the absence of chronic lung disease)
  - Frequent Apeana and Bradycardia
  - Upper Airway obstruction
  - Therapeutic hyperventilation (e.g. intracranial hypertension, pulmonary hypertension)
  - Pulmonary toilet
  - Neuromuscular weakness (e.g. Max. negative inspiratory pressure > -20 cm H2O; vital capacity < 12 – 15 ml/kg)
  - Emergency drug administration
  - Unstable Hemodynamics (e.g. shock, CPR)
  - Absent protective airway reflexes (e.g. cough, gag)
  - Reintubation after unplanned extubation
  - Others:

### Change-of-Tube
- **Type of Change:**
  - From: □ Oral □ Nasal □ Tracheostomy
  - To: □ Oral □ Nasal □ Tracheostomy

- **Nature of Change:**
  - □ Clinical Condition
  - □ Immediate after Previous Intubation (Exclude routine Trach Change)

- **Check as many as apply:**
  - □ Tube too small
  - □ Tube too big
  - □ Tube changed to cuffed tube
  - □ Tube changed to uncuffed tube
  - □ Previous tube blocked or defective
  - □ For more stable airway management
  - □ For procedure (e.g. bronchoscopy, etc.)
  - □ Others:
Participant Data Collection Form for NEAR
(Please capture all PICU intubations)
This data should be collected within 24 hours after intubation

Date of Intubation: Room:
Time of Intubation: AM / PM Patient Initials:

Personnel Present
(In the patient room and actively participating in airway management)

Physician
Resident: Name______________________________
Name______________________________
Fellow: Name______________________________
Name______________________________Attending:
Name______________________________
Name______________________________

Nurses
Charge Nurse/CRN: Name______________________________
NP: Name______________________________Bedside Nurse:
Name______________________________
Name______________________________
Assistant Nurse: Name______________________________
Name______________________________

Respiratory Therapists
Name______________________________
Name______________________________
Name______________________________

Who attempted the Intubation
(Note: Insertion of Laryngoscope/Device in Oral/Nasal cavity=1 attempt):

1st attempt: Name __ Success? (Yes / No) | Oral? (Yes / No)
2nd attempt: Name __ Success? (Yes / No) | Oral? (Yes / No)
3rd attempt: Name ______________________ Success? (Yes / No) | Oral? (Yes / No)

Comments:
**Attempts for this COURSE**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who intubated (Fellow, Resident, etc)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Discipline (ICU, ENT, Surgery, etc)</td>
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<tr>
<td>PGY level (3rd year resident = PL3, 1st year fellow = PL4, NP-yrs as NP, etc.)</td>
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<tr>
<td>ETT (or LMA) size</td>
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<tr>
<td>ETT type: cuffed/uncuffed/ NA</td>
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</tbody>
</table>

Immediately prior to this attempt was cricoid pressure/external laryngeal manipulation provided?  
During this attempt, was cricoid pressure/external laryngeal manipulation provided?  
Attempt Successful:  Yes / No

**Personnel present throughout intubation (Check as many as possible):**

- Attending
- Fellow
- NP
- Hospitalist
- Resident
- Respiratory Therapist
- Nurses (2 or more)

**Difficult to Bag – Mask Ventilate?** (Circle ONE only)  
Yes / No / Not applicable (bag-mask ventilation not given)

**Difficult Airway Evaluations (Choose/Circle one in each category):**

1. Evaluation done before or after this course is completed?  
   - BEFORE
   - AFTER
2. Known prior history of difficult airway?  
   - YES
   - NO
3. Any Limited Neck Extension or (Maximal with or without sedation/paralytics)  
   - YES
   - NO
4. Widest Mouth Opening – How many Patient’s fingers between gum/incisors  
   - 0 – 2
   - ≥ 3
5. Thyromental space – Patient’s fingers between chin and thyroid cartilage  
   - 0 - 2
   - ≥ 3
6. Evidence of Upper Airway Obstruction or Anatomical Barrier to visualize glottic opening (Subjective assessment before looking)?  
   - YES
   - NO
7. Midfacial Hypoplasia?  
   - YES
   - NO
8. Any other signs of difficult airway exist?  
   - YES
   - NO

If YES Please Explain:

**Known cyanotic heart disease (R to L shunt)?** (Circle ONE only)  
Yes / No

**Medications:**

- NO DRUGS USED (If no drugs used, select box and go to next section)

<table>
<thead>
<tr>
<th>Pretreatment Dosage</th>
<th>Paralysis Dosage</th>
<th>Induction Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] mg Atropine (check unit!)</td>
<td>[ ] mg Rocuronium</td>
<td>[ ] mg Propofol</td>
</tr>
<tr>
<td>[ ] mcg Glycopyrrolate</td>
<td>[ ] mg Succinylcholine</td>
<td>[ ] mg Etomidate</td>
</tr>
<tr>
<td>[ ] mcg Fentanyl</td>
<td>[ ] mg Vecuronium</td>
<td>[ ] mg Ketamine</td>
</tr>
<tr>
<td>[ ] mg Lidocaine</td>
<td>[ ] mg Pancuronium</td>
<td>[ ] mg Midazolam</td>
</tr>
<tr>
<td>[ ] mg Vecuronium</td>
<td>[ ] mg Cisatracurium</td>
<td>[ ] mg Thiopental</td>
</tr>
</tbody>
</table>

Others:  

Others:  

Others:

**Method (Check only ONE) Begin NEW course if NEW method / device used (please use new form):**

- Oral – Rapid Sequence requiring positive pressure ventilation (PPV) (simultaneous administration of sedatives and paralytics)  
- Nasal (no oral) – No meds
- Oral – Rapid Sequence without PPV  
- Nasal (no oral) – Topical or sedation only
- Oral – Standard Sequence (administration of induction meds, PPV, then paralysis)  
- Nasal (no oral) – Full sedation AND paralysis (e.g. CICU)
- Oral – Sedation w/o paralysis  
- Surgical – Cricothyrotomy
- Oral – No medications  
- Tracheostomy – Specify OLD / NEW
- Oral – Awake, topical  
- Others (Specify):
## Apenic Oxygenation Use

1. Was Oxygen provided **DURING** any TI attempts for this course?  
   YES / NO

2. If Yes, How was the oxygen provided:

<table>
<thead>
<tr>
<th>Device</th>
<th>Liter Flow</th>
<th>FiO2</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC with nasal airway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC without nasal airway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral airway with oxygen port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through LMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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## Device (Check only ONE) Begin NEW course if NEW method / device used.

- Laryngoscope
- LMA (Laryngeal mask airway) only
- Intubation through LMA
- Video laryngoscope - Unguided (e.g. Glidescope)
- Video laryngoscope – Guided (e.g. Airtraq with video)
- Video laryngoscope – CMAC View FOR INTUBATOR: Direct / Indirect (Pls circle)
- Other (please describe):

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## Tracheal Intubation Confirmation [Check ALL that apply]

- Adequate and equal chest rise
- Appropriate breath sounds heard (Auscultation)
- Humidity seen in endotracheal tube
- Second independent laryngoscopy

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## Glottic Exposure During Intubation [Check only ONE]:

- I = Visualized entire vocal cords
- II = Visualized part of cords
- III = Visualized epiglottis only
- IV = Non visualized epiglottis
- V = Not Applicable (e.g. blind nasotracheal)

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## Tracheal Intubation Associated Events (Check ALL that apply: LINK it to attempt #):

<table>
<thead>
<tr>
<th>EVENTS</th>
<th>ATTEMPT #</th>
<th>EVENTS</th>
<th>ATTEMPT #</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>Epistaxis</td>
<td>Dental trauma</td>
<td></td>
</tr>
<tr>
<td>Cardiac arrest – patient died</td>
<td></td>
<td>Lip trauma</td>
<td></td>
</tr>
<tr>
<td>Cardiac arrest – patient survived</td>
<td></td>
<td>Laryngospasm</td>
<td></td>
</tr>
<tr>
<td>Main stem intubation</td>
<td></td>
<td>Malignant hyperthermia</td>
<td></td>
</tr>
<tr>
<td>Esophageal intubation, immediate recognition</td>
<td></td>
<td>Medication error</td>
<td></td>
</tr>
<tr>
<td>Esophageal intubation, delayed recognition</td>
<td></td>
<td>Pneumothorax / pneumonmediastinum</td>
<td></td>
</tr>
<tr>
<td>Vomit with aspiration</td>
<td></td>
<td>Direct airway injury</td>
<td></td>
</tr>
<tr>
<td>Vomit but No aspiration</td>
<td></td>
<td>Dysrhythmia (includes Bradycardia&lt;60/min)</td>
<td></td>
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<tr>
<td>Hypotension, needs intervention (fluids/pressors)</td>
<td></td>
<td>Pain/Agitation, req’d additional meds AND delay in intubation</td>
<td></td>
</tr>
<tr>
<td>Hypertension, requiring therapy</td>
<td></td>
<td>Others:</td>
<td></td>
</tr>
</tbody>
</table>

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## Monitoring Of Vital Signs (Confirm with telemetry / monitoring records):

<table>
<thead>
<tr>
<th>Pulse oximetry (%)</th>
<th>Highest Value immediately prior to course of intubation (e.g. <strong>after pre-oxygenation</strong>)</th>
<th>%</th>
<th>Lowest value during the course of intubation, even transiently</th>
<th>%</th>
</tr>
</thead>
</table>

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## Course Success:

- Successful tracheal intubation/advanced airway management: YES / NO

- If course failed, please explain briefly:
  - Cannot visualize vocal cords
  - Unstable hemodynamics
  - Cannot place device into trachea
  - Other (please explain):
Disposition:

Stay in PICU/NICU/CICU/ED  |  Transferred to  □ PICU  □ NICU  □ CICU
Died – due to failed airway management  |  Others (Specify):
Died – other causes  |  

Other Comments (e.g. the use of higher dose of vecuronium, choice of drugs used) please explain:

Rating of this Encounter:
(Please circle the individual who completes the rating – only individuals listed below should rate)
1. Charge/Resource RN
2. Attending Physician (non-intubating)
3. Senior RRT (not primary RRT)
4. Fellow (non-intubating)

<table>
<thead>
<tr>
<th>1=very poor, 4=average, 7=excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teamwork = 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>2. Communication = 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>3. Situation Awareness = 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>4. Clear Roles and Responsibilities = 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>5. Knowledge Sharing = 1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>

6. Stress Level of Team Members 1 2 3 4 5 6 7

1=extremely high stress level, 4=average stress level, 7=extremely low stress level

Any issues with the following?

<table>
<thead>
<tr>
<th>a) Monitoring:</th>
<th>Yes / No</th>
<th>Describe:</th>
</tr>
</thead>
<tbody>
<tr>
<td>b) Medication preparation and administration:</td>
<td>Yes / No</td>
<td>Describe:</td>
</tr>
<tr>
<td>c) Preparation of intubation equipment:</td>
<td>Yes / No</td>
<td>Describe:</td>
</tr>
<tr>
<td>d) Other Issues?</td>
<td>Yes / No</td>
<td>Describe:</td>
</tr>
</tbody>
</table>

Family member present? Yes / No

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