Airway management for critically ill children with suspected/confirmed COVID-19

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Disclosure

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Disclaimer

- This presentation reflects the NEAR4KIDS airway management guide for COVID-19 suspected/confirmed patients (endorsed by NEAR4KIDS QI Committee)

- Key points in this recommendation should be discussed with your key stake holders and infectious control team (e.g., High flow nasal cannula does/does not meet the criteria for Aerosol Generating Procedure) before adapting to local practice.

- Local pediatric airway management varies across the ICUs, and customization will be needed.
Goals

• Highlight the key points to be considered for airway management in COVID-19 children

• Provide a concise airway management guides consistent with existing evidence
Source of information

- CHOP Pediatric ICU in-situ simulation
- CHOP local guide: aerosol generating procedure (AGP)
- Surviving Sepsis Campaign guidelines
FACTS

• Tracheal Intubation is an aerosol generating procedure
  ➢ Bag mask ventilation (BVM) is an aerosol generating procedure

• Emergent intubation may increase risk of transmission

• Children with suspected/diagnosed COVID-19 may require intubation because of lung disease or for other reasons
Lesson learned from simulation

• Minimize # of clinicians (1 RT, 1 Physician, 2 RNs in the room)
• Challenges in communication, Pulse oximetry sounds are difficult to hear
• Consideration for classic rapid sequence induction (without BVM)
• Use of Apneic oxygenation + Video laryngoscope
• Additional equipment/medications
• Most qualified laryngoscopist
• Early use of Laryngeal Mask Airway (LMA)
• Early ‘Airway Emergency’ activation – additional time for Anesthesiologist to wear PPE
Surviving Sepsis Guidelines for COVID-19

**Recommendation:**
5. For healthcare workers performing **endotracheal intubation** on patients with COVID-19, we **suggest** using video-guided laryngoscopy, over direct laryngoscopy, if available (weak recommendation, low quality evidence).

Conditional recommendation: Equipment is available and clinicians are trained to use

6. For COVID-19 patients requiring **endotracheal intubation**, we **recommend** that endotracheal intubation be performed by the healthcare worker who is most experienced with airway management in order to minimize the number of attempts and risk of transmission (best practice statement).

Best practice statement

## Anticipation and planning

<table>
<thead>
<tr>
<th>Standard airway practice</th>
<th>COVID-19 practice</th>
</tr>
</thead>
</table>
| **Standard protection** | Intubation/NIV are considered as aerosol generating procedure (AGP). Appropriate PPE (PAPR or N95+ eye shields) recommended  
*Patient’s cough is also aerosol generating |
| **High flow nasal cannula (HFNC)** | HFNC **not considered** as an AGP |
| **Escalation with NIV** | Consider **early** tracheal intubation  
    *Avoid high risk emergency intubation with high FiO2, High BiPAP settings* |
<table>
<thead>
<tr>
<th>Standard airway practice</th>
<th>COVID-19 practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard intubation equipment</td>
<td><strong>Cuffed</strong> ETT with planned size and $\frac{1}{2}$ size both styletted <strong>AirQ</strong> (intubating) LMA in the room(^\wedge)</td>
</tr>
<tr>
<td>Flow inflating bag use</td>
<td>Flow inflating bag with <strong>filter</strong> in place between mask and valve*</td>
</tr>
<tr>
<td>Appropriate pre-oxygenation (3-5 min)</td>
<td>Appropriate pre-oxygenation (3-5 min) is crucial when rapid sequence intubation (RSI) is planned</td>
</tr>
<tr>
<td>Apneic oxygenation</td>
<td>Apneic oxygenation with regular nasal cannula is recommended (5L/min for infants, 10L/min for 1-7y, 15L/min for 8 or older)</td>
</tr>
<tr>
<td>Video laryngoscope with direct view</td>
<td>Video laryngoscope <strong>with indirect (video) view</strong></td>
</tr>
</tbody>
</table>
## Time out/Procedure

<table>
<thead>
<tr>
<th>Standard airway practice</th>
<th>COVID-19 practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of airway provider is not limited</td>
<td>Limit to a minimum number of providers (1RT, 1 Physician, 2 RN) in addition at least 1RN, 1RT, 1 Physician outside the room</td>
</tr>
<tr>
<td>Standard induction (sedation, bag mask ventilation, paralysis) is most commonly practiced</td>
<td>When appropriate, consider RSI (sedation/paralysis, no bag mask ventilation)—children with lung disease, small FRC or increased O2 consumption may not tolerate RSI</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; attempt provider is often a trainee</td>
<td>Most experienced provider should perform first attempt</td>
</tr>
<tr>
<td>Bag mask ventilation for rescue breath after failed 1&lt;sup&gt;st&lt;/sup&gt; attempt</td>
<td>Consider LMA insertion for rescue breath to minimize aerozolization</td>
</tr>
<tr>
<td><strong>Standard airway practice</strong></td>
<td><strong>COVID-19 practice</strong></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Anesthesia/ENT notified for anticipated difficult airway</td>
<td>Consider calling Anesthesia or ENT early (Donning may take ~5 min)</td>
</tr>
</tbody>
</table>
| Use x ray to detect tube depth | Use x ray to detect tube depth
If not readily available, consider use of ultrasound to detect tube depth |
| Use airway bundle checklist to guide intubation process | Use COVID-19 airway bundle checklist to guide intubation process |
| Post-intubation huddle | Post-intubation huddle (hot-debrief) and document/share lesson learned |
Conclusion

• Tracheal Intubation is an aerosol generating procedure

• Avoidance of emergent tracheal intubation if possible

• Children with suspected/diagnosed COVID-19 may require intubation because of lung disease or for other reasons

• Modified airway management plans for children with COVID-19 are required