Impact of Simulation-Based Mastery Learning on Massive Hemoptysis Management for PCCM fellows and Advanced Practice Providers

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We have employed our institutional bias checklist to review this presentation and mitigate bias and have to the best of our abilities used inclusive language and images

We have no relevant commercial or financial conflicts of interest to disclose

Learning Objectives

• Describe gaps in training for massive hemoptysis management
• List strengths of interprofessional Simulation-Based Mastery Learning (SBML)
• Explore the role of a validated assessment tool
Massive hemoptysis training

- Massive hemoptysis carries 14-18% mortality
- High risk, low volume (HRLV) procedures lack formal training
- Exposure to HRLV procedures is variable
- Difficult to ensure trainee competence

Cognitive frameworks assist in emergencies

- ABCDE approach – a new framework for massive hemoptysis mgmt
- No standardized curricula or assessment tool exists

Simulation-Based Mastery Learning (SBML)

A rigorous, competency-based model

- Time varies, outcomes are uniform
- MPS met (Mastery)
- MPS not met
- Repeat assessment
- Baseline assessment
- Deliberate practice & feedback
- Set standards (MPS)
### Bronchoscopy in management of airway bleeding (B-MAB)

<table>
<thead>
<tr>
<th>Step</th>
<th>Correct or Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases amount of O2 support before initiating bronchoscopy</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Saturation must be &gt;90% before starting procedure</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Directs patient positioning appropriately</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Verify patient secured to bed</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Airplane bed with bleeding side down</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Step 2: Preparation for intervention</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Ice cooled saline, 10-20 cc aliquots</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>OR Fogarty (maintain balloon seal during intervention)</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Prepares bronchial blocker (performs or directs the following)</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Loading of bronchoscope and blocker loop into adapter</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Securing blocker to bronchoscope</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Attaching adapter to ventilator circuit</td>
<td>✔️ (√)</td>
</tr>
<tr>
<td>Verbalizes contingency plan in case of re-bleeding</td>
<td>✔️ (√)</td>
</tr>
</tbody>
</table>

**Minimum passing standard:**
89%, or 23/26 items performed correctly

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### A look ahead...

- Evaluate impact of curriculum on PCCM c/o 2026
- Follow longitudinally for skill retention
- Expand pool of trainees
- Publish curriculum, collaborate with other institutions

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### Questions?
Sources cited