Medical simulation (MS) is commonly used as an adjunct to clinical and didactic experiences.

The main benefits of MS include using active learning exercises, with targeted learning objectives and exposure to rare and critical events, in a learner-centered and psychologically safe environment.

The main challenges in using MS include significant development time, limited administrative/technical resources, and competing efforts to acquire instructors and learners.

MS can be used to facilitate sessions with many types of learners at different levels of training, on several topics, and to address all six ACGME Core Competencies [Table 1].

MS can also be used to introduce and/or test current workflow processes and assist with the effective design of new workspaces.

MS sessions can be facilitated using low-fidelity equipment [i.e., simple task trainer for performing intubation], or high-fidelity equipment [i.e., automated manikin with ability to defibrillate].

MS sessions can be held in a simulation center with a simulation room, a separate observation area, and a distinct area for debriefing and teaching. MS sessions can also be held in actual patient care environments, which are referred to as “in-situ” simulations.

The debriefing session is considered the most critical portion of the MS session; it allows the learner to develop areas for future improvement.

MS sessions should be strategically designed [Table 2].

While formative evaluations of learner progress are commonly used in MS, summative assessments that focus on measurement of outcomes or achievement of objectives can also be used.

Table 1: Examples of Pediatric Anesthesia MS scenario topics and the related ACGME Core Competencies

<table>
<thead>
<tr>
<th>ACGME competency</th>
<th>MS scenario focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Knowledge</td>
<td>Detection of correct arrhythmia [i.e., SVT]</td>
</tr>
<tr>
<td>Patient Care</td>
<td>Treatment of respiratory event [i.e., laryngospasm]</td>
</tr>
<tr>
<td>Interpersonal and Communication</td>
<td>Delivery of news to a family member [i.e., bad prognosis]</td>
</tr>
<tr>
<td>Professionalism</td>
<td>Discussion of ethical perioperative considerations [i.e., Jehovah’s Witnesses]</td>
</tr>
<tr>
<td>Practice-Based Learning and</td>
<td>Recognition of a near-miss event [i.e., medication error]</td>
</tr>
<tr>
<td>Improvement</td>
<td>Systems-Based Practice</td>
</tr>
<tr>
<td></td>
<td>Arrangement of care [i.e., ICU transfer after an unplanned adverse event]</td>
</tr>
</tbody>
</table>

Table 2: Strategies for creating a MS scenario

Determine SMART learning objectives.
Identify the learner type[s].
Establish the staffing of instructor[s].
Categorize facility/equipment requirements.
Create a scenario storyboard.
Develop the debriefing session.
Characterize the evaluation format[s].

References: