Simulation Formats and Fidelity

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Objectives

Two parts

Simulator types:
• Recognise the breadth of simulator use in training
• Define the differences, benefits or disadvantages broadly of each

Fidelity:
• Recognise different aspects of fidelity
• Consider what the most important aspects of fidelity are
Examples of the simplest and most complex formats of simulation?
Classification of Simulators

Small group discussion – “around the table”
Part task trainers
Computer based systems
Virtual reality and haptic systems
Simulated patients
Simulated environments
Integrated simulators
  Instructor driven simulators
  Model driven simulators
Part-task trainers
Computer based simulation
Simulated patients
Simulated environments
Integrated simulators
Classification of Simulators

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  Instructor driven simulators
  Model driven simulators
Which method is best?

Brainstorm five factors (plus) that distinguish these simulator methods and help highlight the best method....
Factors that distinguish simulator methods

• Intended learning objectives
  e.g. competence training and testing, teamworking, testing clinical systems
• Cost of equipment (consumables and non-consuming)
• Faculty availability
• Instructor expertise
• Automated feedback
• Fidelity
Matching learning outcomes to method:

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Method</th>
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<tbody>
<tr>
<td>Teaching junior and senior GP trainees how to recognise and manage anaphylaxis (in an education centre)</td>
<td>Simulated environment</td>
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<tr>
<td>Teaching ward nurses about the complications of NGT insertion and how to respond</td>
<td>Part task trainers</td>
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<tr>
<td>Training nurses and doctors in protocols for requesting and giving blood</td>
<td>Simulated patients</td>
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<tr>
<td>Communicating with an angry patient relative in a waiting room</td>
<td>Integrated simulator</td>
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<tr>
<td>Practising interaction between surgeon and theatre nurses</td>
<td>Small group discussion “around the table”</td>
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<td></td>
<td>Computer Based Systems</td>
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Take home message 1:

• No ‘best method’ for simulation
• Need to consider learning objectives carefully
• The ‘most complex’ format for simulation isn’t always the best format
Fidelity: a definition

The extent to which the appearance or environment and behaviour of the simulator/simulation match the appearance and behaviour of the simulated system
Aspects of fidelity

• Physical fidelity: degree of visual and spatial accuracy
• Task fidelity: degree to which specific tasks are realistic
• Sociological fidelity: degree to which interpersonal interactions are realistic

• Psychological fidelity: perceived realism; “suspending disbelief”
  • Key component in transferability
Achieving high fidelity across the board?

Which type of fidelity is the most important?....
And so do we define LFS and HFS...:
  In terms of the tools/mannequin?
  In terms of the whole scenario?

Is high fidelity always better?
  - In part task?
  - In full-immersion?
Take home message 2:

- No ‘best method’ for simulation
- The ‘highest fidelity’ format for simulation isn’t always the best format
- Need to prioritise learning objectives carefully - difficult to satisfy all aspects of fidelity


Questions, discussion, comment....