Peer-to-Peer Simulation-Based Education for Non-Invasive Ventilation; Bridging the Knowledge Gap

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**Background**

- Peer-to-peer learning is an educational concept where colleagues of similar professional levels can teach and learn complex topics.
- It provides a less intimidating learning environment and facilitates a collaborative approach to learning.
- Junior doctors feel inadequately prepared to deliver safe effective NIV, despite current guidelines recommending that all staff involved in NIV delivery must have achieved defined competencies.
- Simulation-based learning has been proven to improve trainee confidence in delivering NIV, however there is little evidence evaluating the impact of peer-to-peer simulation-based education for NIV teaching and training.

**Aim**

- To evaluate the impact of peer-to-peer simulation-based teaching in NIV-based competencies
- To improve trainees confidence with NIV
- To improve patient safety
- To promote peer-to-peer learning as a way of facilitating further learning opportunities

**Methods**

- **Design:** Creation of Simulation Scenarios: Participants complete e-learning module on Acute NIV
- **Intervention:** Respiratory Senior Clinical Fellow to deliver NIV Simulation Session
- **Data Collection:** Pre and Post Course questionnaire (Numerical analogue 'Likert' scale 1-5)
- **Data Analysis:**

  - GIM medical registrars undertaking respiratory medicine out-of-hours shifts were invited to take part in the course (n=3).
  - Participants completed 4 scenarios formulated by respiratory specialist trainees addressing ventilator set up and interface problems, and communication/ethical dilemmas surrounding NIV.

**Results**

- Participants completed pre and post course questionnaires to obtain related ordinal non-parametric data via numerical analogue ‘Likert’-scale rating 1-5 (Table 1).
- Confidence in communication surrounding NIV increased for all participants, both with patients and their families and other healthcare professionals.
- Participants felt more able to recognise a deteriorating patient on NIV, promoting patient safety.
- 100% participants would recommend peer-to-peer teaching on NIV implementation and practical deliver and all participants felt able to teach other health-care professionals about NIV care and management.

**Conclusions and Future Work**

- Peer-to-peer simulation-based training in NIV is well received, improving trainee confidence and facilitates practical skill learning through a hands on approach.
- Peer-to-peer teaching and training addresses training gaps due to reduced faculty available to teach, potentially inspiring further peer-to-peer learning opportunities.
- Given small sample size, further sessions are planned extending to GIM trainees who look after patients receiving NIV out of hours.
- Course will be extended to Emergency Medicine and Intensive-Care Trainees.

**Table 1: Summary of Likert-scale mean values pre vs post peer-to-peer simulation-based training course**

<table>
<thead>
<tr>
<th>Likert scale domain</th>
<th>Pre (mean)</th>
<th>Post (mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel comfortable talking to patients and their families about NIV management</td>
<td>3.0</td>
<td>4.7</td>
</tr>
<tr>
<td>I find it easy to talk to other team members about NIV management</td>
<td>1.3</td>
<td>2.7</td>
</tr>
<tr>
<td>I know how to manage interface problems</td>
<td>3.3</td>
<td>3.7</td>
</tr>
<tr>
<td>I am about to construct, carry out and amend an NIV weaning plan</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>I am able to assess the effectiveness of NIV that a patient is receiving</td>
<td>4.3</td>
<td>4.7</td>
</tr>
<tr>
<td>I feel able to recognise a deterioration in a patient receiving NIV</td>
<td>4.0</td>
<td>5.0</td>
</tr>
<tr>
<td>I know how to manage ventilator alarms</td>
<td>3.3</td>
<td>4.7</td>
</tr>
<tr>
<td>I know how to adjust the ventilator settings to optimise the NIV that a patient is receiving</td>
<td>4.0</td>
<td>4.3</td>
</tr>
<tr>
<td>I feel comfortable teaching others about NIV care and management</td>
<td>2.3</td>
<td>4.3</td>
</tr>
</tbody>
</table>

**References**

- Alanna Hare, Lydia Spurr, Debbie Field, et al. Late Breaking Abstract - Simulation-based training (SBT) in non-invasive ventilation (NIV) for multiprofessional learners improves confidence in NIV practice. European Respiratory Journal Sep 2017

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