Improving Lung Protective Ventilation Compliance Across Lancashire and South Cumbria Critical Care Network

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Across Lancashire and South Cumbria Critical Care Network

Background:
Current literature supports the use of low tidal volume ventilation strategies (6 ml/kg Ideal Body Weight) in order to reduce the risk of developing acute lung injury (ALI) and furthermore reduce mortality (ARDSnet, 2000 and Faculty of Intensive Care Medicine (FICM) and Intensive Care Society (ICS), 2015).

During March 2015, a case note review was performed of patients admitted to critical care with severe sepsis across 4 units in Lancashire and South Cumbria (n=35), this identified some areas for improvement, notably mechanical ventilation strategies.

Aims and Objectives:
The Critical Care Network established a multi professional group consisting of medical, nursing and pharmacy representatives. The group utilised quality improvement methodologies to implement improvements in relation to lung protective ventilation strategies within adult critical care units across the Network.

Methods:
The group reviewed national recommendations and local audit data to inform improvements. Through achievement of consensus, identification of local unit quality improvement leads and a programme of regular audit and feedback, members have developed and shared various resources to support improvements.

Results:
Baseline data indicated that only 31% of tidal volumes recorded were 7ml/kg of ideal body weight or below. 49% of recorded tidal volumes were above 7ml/kg, with 20% having no data recorded or being related to augmented tidal volumes.

Chart 1: Tidal Volumes for Ventilated Patients Admitted to CRCU

Through consensus achievement, the group has developed a variety of resources to support improvements in relation to lung protective ventilation. Activities and resources include;

• Poster campaign – ‘Blow Low’
• Monthly audit programme – see Chart 2
• Development of a ‘Tidal Tape’ to provide instant tidal volume requirements.
• Feedback at network forums
• Education
• Quality Improvement methodology training
• Presentation at local conference

Discussion:
Quality improvement can often be challenging and this project has encountered a number of hurdles which have hampered progress. Units utilised different modes of ventilation which required adaptation of the audit tool, and with poor clinical engagement, some quality improvement lead nurses have struggled to drive improvements. The context within which quality improvement projects are carried out can also be an influential factor of success. With changes in equipment and patient information systems, there is an acknowledgement that the timing of such projects can affect engagement. One unit adopted a phased approach to reducing the target tidal volumes, and have demonstrated the greatest success; this in part is due to the enthusiasm and determination of those leading the improvement project. Supporting clinicians to automatically ‘do the right thing’ is essential to promote compliance with target tidal volumes. Technology to support automated ventilator settings according to patient height can enhance compliance, however, current practice relies on individuals performing a number of steps in order to determine the required target tidal volume. This complicated process reduces the likelihood of success. Appropriate patient selection is also a crucial factor in assessing compliance with lung protective ventilation particularly in smaller units where numbers of fully ventilated patients are small, this can occasionally result in data being collected that may not appropriate, as tidal volumes can appear to be erratic. Despite these challenges, the Network has supported a group of enthusiastic individuals to develop local strategies for improvement and sharing those elements that have proved influential in changing behaviour.

Conclusion:
Through the establishment of a multi professional group of critical care practitioners, and utilising quality improvement methodologies, the group has applied a multi-faceted approach in order to drive improvements in relation to lung protective ventilation. Despite a number of challenges, the Network has taken crucial steps towards highlighting and addressing the need to promote lung protective ventilation strategies in every day practice.

References:

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Interventions

- People
- Programme of Audit and Feedback (PDSA)
- Increased awareness /prompts
Results

Lung Protection Ventilation Compliance
Summary Chart Aug 2016 - Jun 2017

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Recipe for Success

• Enthusiasm for Improvement
• No ‘I’ in team
• Start small
• Regular feedback
• Make it easy to ‘do the right thing’
• One size doesn’t fit all
• Links to other outcomes
• Share, share, share!
• Remember to ‘Blow Low’!
References


4. Determann R. et.al. (2010) Ventilation with lower tidal volumes as compared with conventional tidal volumes for patients without acute lung injury: a preventive randomized controlled trial. Critical Care Open Access available at: http://ccforum.com/content/14/1/R1


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