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A survey of hyperinflation techniques in ICU based physiotherapists in the UK

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Purpose: Physiotherapists have a key role to play in Intensive Care Units (ICU) as respiratory pathologies continue to be one of the most common reasons for admission to ICU. Manual Hyperinflation (MHI) is a commonly used technique by physiotherapists in ICU with evidence has shown that MHI is effective in treating pulmonary complications. The biggest issue surrounding MHI in current literature is whether it should be delivered manually or through the ventilator. It is currently thought that Ventilator Hyperinflation (VHI) will prevent loss of Positive End Expiratory Pressure - ensuring delivery of accurate volumes and pressures - previous literature in Australia has found that only 52% of physiotherapists deliver the correct volume when carrying out MHI raising questions about the effectiveness of the treatment. In the UK, there are no guidelines for the use of MHI or VHI for a ventilated and sedated patient. The aim of this study is to determine the current practice within ICU based practicing physiotherapists in the UK and the factors impacting practice.

Methods: A 9 item mixed methods questionnaire was designed. It was delivered via the Internet through the ACPRC twitter page, and emailed out to local ICU physiotherapists. A coding manual was created prior to coding open ended questions to undertake content analysis. No statistical analysis was undertaken as the purpose of the research was to determine current practice and not any differences between regions.

Results: The response rate was 44%. The majority of responses came from the South East (31%) and North West of England (23.8%) with primarily band 7s responding (53%). The proportions of MHI without a manometer, MHI with manometer and VHI were 32%, 41% and 27% respectively. 56% of participants reported that they were delivering an unknown volume to the patient and only 40% delivering 1.5 times the patients tidal volume. The content analysis suggests that the majority of participants had an ICU based role (44%) and would use MHI/VHI to help clear secretions, particularly retained or hard to clear secretions (55%) or to reverse Atelectasis (26%). In determining volume delivered, it is clear from the content analysis that MHI does not allow for accurate volumes to be delivered and that other patient parameters like visualising the chest wall (22%) and feedback from the circuit (14%) are used. Similarly, in determining pressure delivered, manometer (42%), ventilator (33%) or feedback from the circuit (12%) were common responses. 28% of responses indicated clinical experience is the biggest impact on practice - other common responses included the patient's condition (21.6%), evidence base (14%) and training (14%). 86% of participants felt guidelines would be useful for practice.

Conclusion(s): There is a large variation in current practice of MHI with the majority of therapists not knowing the volume they are delivering to the patients and subjective measures being used. Clinical experience and the stability of the patient are important in determining when MHI could be used.

Implications: Guidelines are needed to standardise practice of MHI and VHI in critically ill patients to prevent adverse effects and ensure effective practice.