Reducing the incidence of Endotracheal related pressure ulcers in the critical care setting: The Four Step Technique

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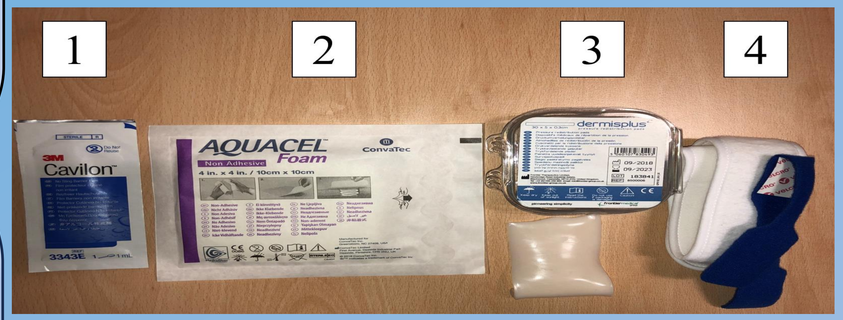
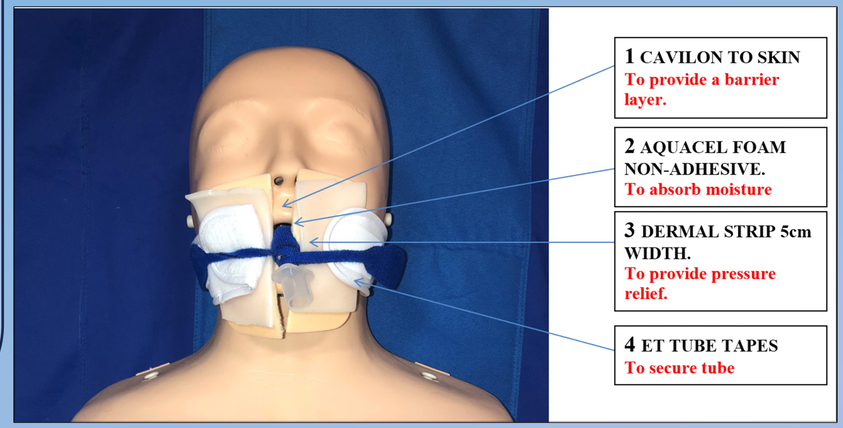
Introduction:

The General Critical Care Unit (GCCU) has consistently been the highest reporting area for pressure ulcers at University Hospitals of Coventry and Warwickshire (UHCW). The incidence of pressure ulcers (PU's) increased significantly during the peak of the global Covid 19 pandemic between 2020-2021, likely due to the increased need for invasive ventilation and high complexity of illness. Internal reviews related to these PU's identified a consistent theme of Endo Tracheal (ET) tube related skin damage, with staff identifying challenges in minimising moisture around the oral cavity underneath the ET tapes and protecting the skin from pressure whilst still maintaining a secure airway. Due to the significant pressures within the unit, we needed the collaboration of Critical care staff to ensure that any interventions were well accepted and embedded. The close partnership between the Tissue Viability nurses and the Critical care team was vital to this.

Method:

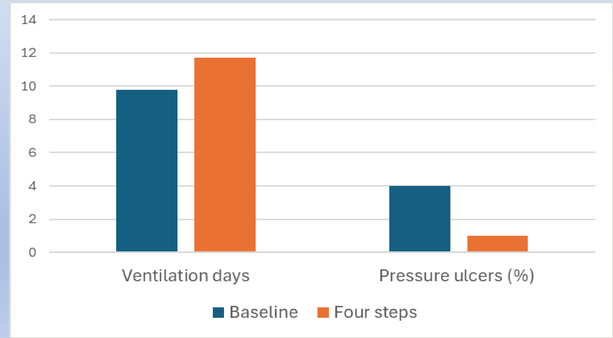
Using a PDSA cycle and based on feedback provided by the Critical care team, we devised 'The Four step Technique'. This consisted of skin protection using a barrier film, a borderless foam dressing to absorb secretions and a polymer gel pad to redistribute pressure before applying the ET tapes. To speed up the process and support implementation, health care assistants created ready-made packs of the necessary equipment for each bed space, ensuring consistency and reducing the time spent searching for resources. Posters were displayed at each bedspace which included clear images of each product and their usage. Training was initiated in mid-December 2020 and packs were made available for use in January 2021. Ongoing support was provided by the Tissue Viability team, with link nurses helping to monitor the process. Baseline data was captured for patients invasively ventilated between 1st October and 31st December 2020. This was then compared to data obtained from 201 invasively ventilated patients after the introduction of the four-step technique from 1st January to 31st March 2021.





Results:

A total of **362** patients were included in the analysis (**161** in the baseline period and **201** in the intervention period. Following the introduction of the four-step technique, a significant reduction was seen in the rate of ET tube related pressure **ulcers (1% vs 4%, p<0.05).** This reduction was seen despite an increased duration of invasive ventilation days during the intervention period (**11.7 vs 9.8 days).**



Discussion:

The implementation of the Four step Technique reduced the incidence of ET tube related pressure damage in the GCCU. This occurred despite an increase in the number of patients who were invasively ventilated and a longer duration of ventilation in the intervention period.

There was some initial hesitancy from staff in the early phases of implementation, concerns were voiced around impact on workload in a very busy environment. However, these concerns were quickly allayed when staff saw how easy the process was and the positive impact it had. The combination of collaborative working with Critical care staff and clear visual instruction ensured that the practice became embedded in the unit and remains standard practice today improving the outcomes for patients who undergo invasive ventilation.

Conclusion:

The four steps technique was a quick and simple method of reducing the incidence of ET tube related pressure injury in critical care. The benefits have continued to be seen within the department, and we are now looking at next steps in making the process more environmentally friendly and cost effective whilst ensuring high levels of patient protection are maintained.