Evaluation of medstrom aria & medstrom aria PRO in a Ventilation Unit

Introduction

Aintree University Hospital is a large teaching hospital in Liverpool. The hospital offers specialist services with a world-class reputation to a population of 1.5m residents across the North West.[1]

For several years, Aintree has delivered a ventilation service. The ventilation unit is a large, modern, eight bedded facility. The ventilation team is a multidisciplinary group of experts which includes specialist doctors, highly trained nursing staff, physiotherapists, speech and language therapists, matron and a ventilation business manager.

This team provide care to those who are failing to wean from ventilation following a critical care admission, who require long term ventilation, or non-invasive ventilation.

As well as inpatient beds, the unit has approximately 700 patients using long term NIV in the community. Patients requiring this specialist support may have a variety of health concerns such as: Neuromuscular diseases such as Duchene Muscular Dystrophy, Myotonic Dystrophy, Motor Neurone Disease, Charcot Marie - Tooth, Spina Bifida and Post-Polio Disorders, restrictive respiratory disorders such as Kyphoscoliosis and Post Tuberculosis Thoracoplasty, Obesity Hypoventilation Syndrome, COPD, Bronchiectasis in Type 2 Respiratory Failure[2].

In the UK 184,000 patients will be admitted to a critical care unit[3]. 80% of patients will successfully wean from mechanical ventilation once the original cause of respiratory failure has improved. The remaining cases will require a more gradual method of withdrawing ventilation[4]. However, 5-10% of admissions will still require mechanical ventilation beyond 30 days. There is emerging evidence to suggest that dedicated weaning facilities can assist in increasing critical care capacity across networks and potentially reduce overall cost of care[5].

Challenges caring for this group of patient's pressure areas are immobility, nutritionally compromised and inability to reposition frequently.

References:
1. (https://www.nhs.uk/Services/Trusts/Overview/DefaultView.aspx?id=818).
2. (https://www.aintreehospital.nhs.uk/our-services/a-z-of-services/sleep-and-ventilation/ventilation-service/)
3. (https://www.icnarc.org/Our-Audit/Audits/Cmp/Our-National-Analyses/2018/12/4/Press-Release-4-December-2018-Intensive-Care-National-Audit-Research-Centre-Welcomes-A-New-Chair).
4. (Lermitte J, Garfield M J. Weaning from mechanical ventilation. Continuing Education in Anaesthesia, Critical Care & Pain | Volume 5 Number 4 2005. (https://academic.oup.com/bjaed/article/5/4/113/475175).
5. (Crit Care 2011;15R102). (https://www.ics.ac.uk/ics/Blogs/Weaning_Centres_an_unfashionable_necessity_.aspx)

Purpose of study:

The ventilation service currently uses foam and two dynamic systems which are selected according to patient assessment and vulnerability. The evaluation aims to assess the clinical outcomes of a new step up/step down dynamic therapy with this complex group of patients.

Study:

The evaluation commenced in December 2019 and ended February 2020. For purposes of the evaluation, the existing dynamic mattress protocol was replaced with Aria and Aria PRO. This meant any patients that would normally be nursed on the lower specification of dynamic mattress received Aria, and any patients normally nursed on the higher specification of mattress received Aria PRO. The Dolphin Therapy fluid immersion simulation surface still remained in place for the most complex of patients on the ward.

Staff were trained on the new dynamic systems, and supported throughout the evaluation to ensure data was collected.

Design

A data collection tool was used for the Aria and the Aria PRO so the patient's journey could be documented. This included patient conditions, risk factors and features of the surface utilised. Staff thoughts on the benefits from their perspective and patient's perspective were also collected.

Sample of patients:

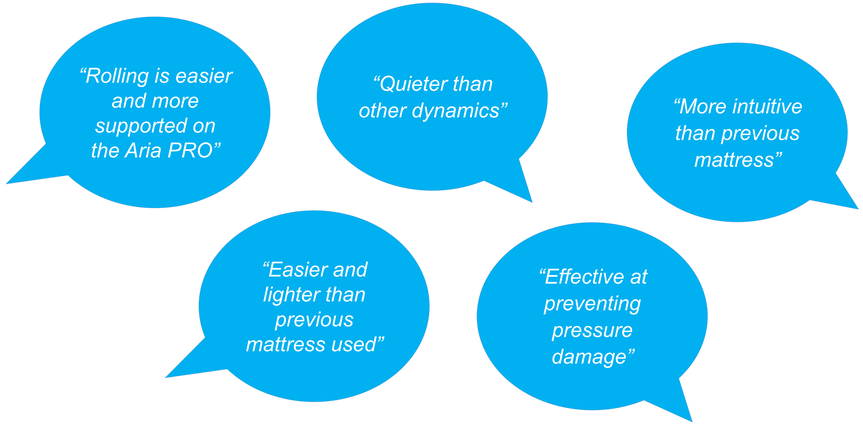
Over the evaluation period, a sample of patients were assessed using the new mattress protocol. Of these patients, all were male with an average Waterlow score of 20 (very high risk) and an average age of 58.

Patient conditions included type 2 respiratory failure, community acquired pneumonia, aspiration pneumonia, ischaemic pancreatitis, Spina Bifida, Myotonic Muscular Dystrophy and Motor Neurone Disease.

Most of the patient treatment aims were to prevent damage due to high risk factors and underlying conditions. Risk factors included lack of mobility, friable skin, previous skin damage/scarring and marking easily on foam surfaces. Only one patient required therapy for treatment of an existing Category II pressure ulcer located on the sacrum. All patients had 2-4 hourly repositioning regimes.

Results:

Despite complex cases, no new pressure ulcers developed in this group of high-risk patients and no further deterioration of the existing Category II pressure ulcer was documented. Staff commented that all objectives were met. The features that were thought most useful by staff was the ability to reduce cells in heel section to off-load on the Aria PRO, and 12-hour transport mode on both new mattresses. Staff feedback was extremely positive, with comments including:



Conclusion:

Both the Aria and the Aria PRO performed the same as the ward's previous mattress protocol, with additional benefits noted. The Aria and Aria PRO fulfilled the outcomes desired for this complex group of patients.

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