

Category : **Respiratory: mechanical ventilation**

A262 - Preventing accidental heat and moisture exchanger obstruction with the humidicare

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Introduction:

The accidental use of a heat and moisture exchanger (HME) in a heated and humidified ventilatory circuit causes sudden and catastrophic obstruction of the HME in hours. Water saturates the filter and blockage is usually sudden with average time to occlusion between twelve and twenty four hours [1]. An NHS safety alert (2015) identified 76 reported incidents in England [2]. The Humidicare (Medovate, Cambridge, UK) warns of an impending problem by reacting to the heated humidifier (HH) with a colour change and caution message. Removal of the Humidicare is prompted before waterlogging occurs. We evaluated device ability to deliver warning within the relevant timeframe and to ensure immunity to heat and humidity from a simulated patient

Methods:

We performed a randomised study in a simulated ICU environment using a Maquet ventilator and mechanical lung. Time to Humidicare warning delivery in a HH circuit (n=10) was compared to behaviour in a control circuit without HH (n=10). Fisher & Paykel HHs were used. A secondary HH on the lung side emulated patient behaviour to demonstrate no confounding factors

Results:

All HMEs activated in HH arm. Colour change started after a mean of 31.4 seconds +/- 2.76s (95% CI). The warning message was fully developed after a mean of 93.6s +/- 8.09s (95% CI). No HMEs were triggered in the control arm after five minutes

Conclusion:

The Humidicare HME seems to reliably indicate the problem in a timely manner. It does not register false positive with the heat and humidity coming off a patient equivalent. Occasional errors are hard to eliminate with traditional information dissemination techniques and training; improved response is achieved with engineered solutions [3]. The Humidicare protects staff and patients by helping comply with NHS safety standards to prevent errors

References:

[1] Doyle A et al, J Crit Care 30(4):863, 2015

[2] (NHS/PSA/W/2015/012)

[3] Patel V et al, J Crit Care 47:159-163, 2018

COI: Young: share of patent ownership