

COMPARISON OF LONG TERM USE OF A HYGROSCOPIC CONDENSING HUMIDIFIER VERSUS HEATED WIRE CIRCUIT Sharon Day, RRT, Robert McConnell, RRT, Heather Fredericksen, RRT, Neil R. MacIntyre, MD, Duke University Medical Center, Durham, NC

BACKGROUND: A hygroscopic condensing humidifier (HCH) is a passive humidification device that collects heat and humidity from expired gas of a patient on a mechanical ventilator and conditions inspired gas as it passes back through the device. A heated wire circuit (HWC) actively adds heat and humidification to the inspiratory limb of a warmed circuit after passing through a heated water canister.

METHODS All patients requiring mechanical ventilation between 2/22/96 and 4/24/96 were eligible for the study. Patients were randomly assigned to receive either a hygroscopic condensing humidifier (ThermoFlo™ ARC Medical, Inc) or a heated wire circuit (Bear 5 circuit by Marquest). Sputum was categorized on each day of the mechanical ventilation as: watery (sputum that can be suctioned like water, after suction is terminated no secretions remain attached to the inner surface of the suction catheter), moderate (sputum of moderate viscosity, after suction is terminated, some secretions remain attached to the inner surface of the suction catheter) or tenacious (thick sputum, after suction is terminated, most secretions are still attached to the inner surface of the Catheter, and they cannot be easily removed by suctioning water through the catheter). If during different suctioning episodes on the same day, sputum was judged differently, both categories were used. Chi square analysis was used to compare sputum categories in each group with $P < .05$ taken as significant.

RESULTS: Fifty eight patients were recruited and 286 patient-days of sputum categorization were performed (125 in the HWC group, 161 in the HCH group). Sputum categories in each group (percentage of patient-days):

	Watery	Moderate	Tenacious
HCH	12.4%	79.5%	11.2%
HWC	11.2%	88%	13.6%

There was no significant difference in sputum categories between the two groups.

CONCLUSION: Sputum consistency was similar using either HCH or HWC humidification systems.

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