Letters

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Effects of HME on Aerosol Administration

I read with interest the June 2004 issue of RESPIRATORY CARE, which had several articles on delivering medications during mechanical ventilation.[1–6] One thing that I thought lacking was any information about the amount of medication that gets past a heat-and-moisture exchanger. Do any institutions give aerosol treatments through HMEs? Are you aware of any data about the efficacy of giving treatments through HMEs?

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One of the authors replies:

I am aware of no published data on administration of aerosol through a heat-and-moisture exchanger (HME). Most authors advise removing the HME prior to administering an aerosol (via either nebulizer or metered-dose inhaler). Based on design, most HMEs would act as filters. Reports of effective bacteria filtration with HMEs suggest that they are substantial barriers to aerosols.[1,2] Although you can see light through some HME models, I believe the assumption has been that an HME would eliminate or drastically reduce aerosol delivery to the patient.

A second issue is placing the nebulizer between the patient and the HME. In that case, the concern is the volume of drug that deposits on the HME between inspirations. We do know that aerosolized drugs (from albuterol to ribavirin) can load a filter in the expiratory limb and dramatically increase resistance in the ventilator circuit.[1,2] It may be a reasonable assumption that this is true with HMEs. I have heard anecdotal reports to that effect, but am unaware of published data.

Both issues could be addressed in an in vitro study, which would be relatively easy to do.

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2. Lee MG, Ford JL, Hunt PB, Ireland DS, Swanson PW. Bacterial retention properties of heat and moisture exchange filters. Br J Anaesth 1992;69(5):522–525.

CORRECTION:

The city location of co-author Bart K Holland PhD in "The Effect of Body Mass Index on Outcomes of Patients Receiving Noninvasive Positive-Pressure Ventilation in Acute Respiratory Failure" by Hutter et al (Respir Care 2004;49[11]:1320–1325) was incorrectly stated. Dr Holland is affiliated with the Division of Biostatistics, University of Medicine and Dentistry of New Jersey, Newark, New Jersey.

We regret the error.