Bye-Bye, Blow-By

The term “blow-by” is used to describe the administration of medication from a jet nebulizer when the aerosol is directed toward the patient’s face, using either a mask or tubing attached to the nebulization port. The rationale is that it can be difficult to get children to cooperate, so if the aerosol is blown towards the child’s face, they should be able to inhale enough medication for a therapeutic effect. A number of studies have shown that, even under ideal circumstances in vitro, there is a 40–85% decrease in aerosol delivery when the mask is held 2 cm away from the child’s face.1–5 These studies have generally been done with a mannequin head, held absolutely still, with the face mask placed in an optimal orientation, up to 2 cm from the mannequin, with no circulating air currents in the room, and with the nebulizer properly used. For the North American who may be metrically challenged, 1 inch is 2.54 cm or roughly the diameter of Canadian or American quarter dollar coin. In the clinic a child will probably not hold still, so it will probably not be possible to keep the mask directly in front of the nose and mouth. In some cases a tube is used to blow the medication toward the patient, with no aerosol entrainment, and room air currents disperse the aerosol. Add to this the poor efficiency of jet nebulization and it is safe to say that there is no effective drug deposition with blow-by.

REFERENCES

4. Shah SA, Berlinski AB, Rubin BK. Force-dependent static dead space of face masks used with holding chambers. Respir Care 2006; 51(2):140–144.