

experience would suggest that any further airway obstruction, further increasing respiratory effort is detrimental, and that removal of a nasogastric tube may prevent the need to ventilate an infant with developing respiratory failure.

The World Health Organisation acute respiratory infection programme includes an inability to feed, as well as the presence of cyanosis, subcostal recession, and increased respiratory rate as criteria for hospitalisation.¹¹ In these infants although a nasogastric feeding tube is convenient, their use, especially in white infants, should be questioned. If they are used, Stocks' recommendations are still valid: the smallest tube, passed down the smallest nostril, should be employed and removed before the child deteriorates. Ideally an intravenous infusion should be established. As the first step of resuscitation is to protect the airway – why block it?

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Commentary

Inability to feed is a common reason for hospitalisation in acute bronchiolitis, particularly in those under the age of 4–5 months. For many years it has been standard practice to maintain hydration and nutrition during the acute phase of the illness, usually less than five days, by initiating nasogastric feeding. The spectre has now been raised that we have been doing these sick infants a major disservice by adding significantly to their work of breathing.

This hypothesis is based on two concepts. Firstly, that the infant has difficulty adapting to nasal breathing in the presence of total or partial nasal obstruction. There is increasing evidence that the ability to commence oral breathing is a maturation factor. A recent study has shown that preterm babies show an increasing ability to adapt so that whereas only 8% commenced mouth breathing after nasal obstruction at 32 weeks,¹ this has risen to 28% at 35–36 weeks and to 40% at term.² Information on infants aged 3–6 months is more limited, but certainly suggests that the ability to commence oral breathing in response to total nasal obstruction is very common and that nasal breathing should be considered to be preferential rather than obligatory in infancy, a situation which persists into

adult life. The second hypothesis is that the presence of the nasogastric tube will greatly increase upper airway resistance in infants. Although measurements have indicated that in health, the nasal resistance may represent 40% of the total respiratory resistance,³ a recent study using forced oscillation technique in infants with asthma has found that the nasal component represented only 16% of the total.⁴ It is claimed in the accompanying paper that the use of nasogastric tubes significantly increase the resistance of babies <2000 g in body weight.⁵ It should perhaps be pointed out that the same authors could find no evidence of increased work of breathing or resistance in preterm babies over 2000 g in weight, suggesting that even in these relatively small babies, the presence of a nasogastric tube does not have a significant effect.⁵

It may be that in bronchiolitis the presence of secretions in the upper airways may alter the situation so that the nasal airway becomes more critical. We are exhorted to select the smallest nostril if nasogastric tubes are passed. This would appear to be an unrealistic approach in acute bronchiolitis. A recent study has shown that in infancy a dominant nasal airway is present in only approximately 60% of individuals.⁶ The most important factor in determining obstruction to breathing in the upper airway in bronchiolitis is likely to be the presence of the secretions.

Obviously, one could pass a nasogastric tube down the nostril that exhibited the least airflow using a strand of cottonwool or tissue paper, but it is a common observation that the pattern of obstruction from secretion can also alter within a few minutes. Should we be continually replacing the nasogastric tubes, chasing the secretions from one nostril to the other?

The two alternative methods for maintaining hydration and nutrition are either to use an orogastric tube or to revert to the intravenous route. Although many newborn babies tolerate oral tubes satisfactorily, most older infants tend to retch and vomit, presumably due to pressure of the tube on the fauces. Orogastric tubes are also more difficult to stabilise so that the risk of aspiration will be greater. The intravenous route does provide a practical alternative, but is more invasive, will not satisfy the infant's hunger and is more likely to lead to over hydration.

In conclusion, I would claim that the case against nasogastric tubes in bronchiolitis is not proved. Obviously, as small a tube as possible should be selected, but it would seem to be appropriate that more studies should be carried out before a form of treatment that has proved satisfactory for many years is rejected.

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