COST-BENEFIT ANALYSIS FOR DIRECT VISUAL OBSERVATION OF NASOGASTRIC ENTERAL FEEDING TUBE PLACEMENT

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OBJECTIVES: Requirement for assisted nutrition is common in healthcare and is often achieved via an enteral feeding tube (EFT). Misplacement and use of an EFT in the respiratory tract can lead to serious patient harm and is a ‘never event’ for certain national health services. Standard EFTs are placed ‘blind’ and must be confirmed by X-ray. Here, cost-benefit of an EFT with a built-in camera is estimated.

Methods: Comparison of direct visual observation (DVO) and blind EFT tube placement was performed using a decision tree. For each EFT procedure, the EFT was placed correctly (surgical, pyloric, or postpyloric) or otherwise misplaced in the gastric tract. Misplaced EFTs were replaced, with replacement occurring after a tracheal insertion having a misplacement rate of 13%. A mean of 1.4 and 1.8 X-rays per EFT were required to confirm pyloric and postpyloric placement, respectively. Pneumothorax incidence was 10.2% (9.3%–13.1%) after tracheal placement, with associated mortality being 4.3% (0.0%–4.4%). The DVO and standard EFT costs were $15 and $5, respectively, per tube placed.

RESULTS: Comparison of direct visual observation (DVO) and blind EFT tube placement via a camera and external monitor (Figure 1) showed a cost-saving of $163, with DVO having a cost-benefit in 96.9% of simulations. Sensitivity analysis revealed a cost-saving reached $163, with DVO having a cost-benefit in 97.8% of simulations.

CONCLUSIONS: Our estimates indicate that compared with blind placement, DVO reduces the incidence of pneumothorax by 90.8% and is a cost-benefit in 97.8% of simulations. A reduction in X-rays required with DVO results in savings in the USA setting, Will likely reduce the incidence of pneumothorax.

REFERENCES
1. http://www.helpinghealthworkers.org/tube-feeding-basics/hos-tips-conditions/conditions/10-
3. National Institute for Health and Care Excellence, National Institute for Health and Care Excellence, UK
6. Data from University of Colorado on file with Medtronic Inc.