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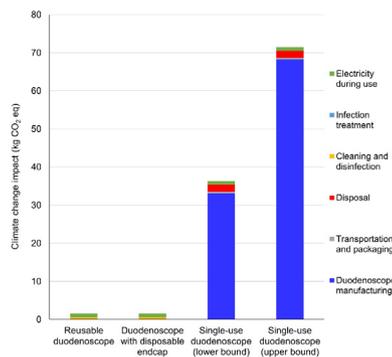
ORIGINAL ARTICLE

Improving 30-day mortality after PEG tube placement in England from 2007 to 2019: a retrospective national cohort analysis of 87,862 patients

Umair Kamran, MRCP, ESEGH, Pui Chi Lee, MBBCh, BA, Ben Coupland, MSc, Abdullah Abbasi, MRCP, ESEGH, Helen Steed, MD, Sissi Ispoglou, MBA, Fumi Varyani, PhD, Nigel Trudgill, MD

Percutaneous endoscopic gastrostomy (PEG) has been associated with poor case selection and high mortality. The authors examined indications, 30-day mortality, and 7-day adverse events in a national cohort undergoing PEG insertion. Adults undergoing their first PEG insertion from 2007 to 2019 were identified in Hospital Episode Statistics. The indications and adverse events were identified using ICD-10 codes. Multivariable logistic regression modeling examined factors associated with mortality. In total, 87,682 patients were identified, 58% were male with a median age of 69 (interquartile range [IQR], 57-79 years). The number of patients with dementia or stroke as indications for PEG decreased from 2007 to 2019: 147 to 28 for dementia ($P < .001$) and 2851 to 1781 for stroke ($P < .001$). The median interval from stroke admission to PEG insertion increased from 21 days (IQR, 12-36 days) to 28 days (IQR, 13-45 days) ($P < .001$). Aspiration pneumonia within 7 days of PEG fell from 10.2% to 8.6% ($P = .04$). In addition, 30-day mortality declined from 13.2% to 5.3% ($P < .001$), and factors associated included increasing age (≥ 82 years quintile odds ratio [OR], 4.44; 95% confidence interval [CI], 4.01-4.92); PEG insertion during emergency admission (OR, 2.10; CI, 1.97-2.25); Charlson comorbidity index score ≥ 5 (OR, 1.67; CI, 1.53-1.82); and dementia (OR, 1.46; CI, 1.26-1.71). Female sex (OR, 0.81; CI, 0.77-0.85), least-deprived quintile (OR, 0.88; CI, 0.81-0.95), and more recent years of PEG insertion (2019; OR, 0.44; CI, 0.39-0.51) were negatively associated with mortality. Thirty-day mortality after PEG insertion decreased 60% over 13 years. Dementia or stroke as a PEG indication fell, and the time interval from stroke to PEG insertion increased. These findings may be attributable to improved patient selection and timing for PEG insertion.

Read this article on pages 943-53 in this issue.



ORIGINAL ARTICLE

Environmental and health outcomes of single-use versus reusable duodenoscopes

Nguyen Nhat Thu Le, BA, Lyndon V. Hernandez, MD, MPH, Nimish Vakil, MD, Nalini Guda, MD, Casey Patnode, MD, MPH, Olivier Jolliet, PhD

The large-scale effects of duodenoscopes on the environment and public health have not been quantified. The authors' aim was to perform an exploratory life-cycle assessment comparing environmental and human health effects of single-use duodenoscopes (SDs) and reusable duodenoscopes (RDs). The authors evaluated 3 duodenoscopes: (1) conventional RDs, (2) RDs with disposable endcaps, and (3) SDs. The primary outcomes were impacts on climate change and human health, complemented by multiple environmental impacts. Performing ERCP with an SD releases between 36.3 kg and 71.5 kg of CO₂ equivalent, which is 24 to 47 times greater than using an RD (1.53 kg CO₂) or an RD with disposable endcaps (1.54 kg CO₂). Most of the impact of SDs comes from manufacturing, which accounts for 91% to 96% of their greenhouse gas emission. The human health impact of RDs

becomes comparable to SDs' lower bound if disposable endcaps or other design modifications can reduce serious infection rates below a target rate of 23 cases per year (0.0046%). The authors' model was based on several assumptions that will require real-world validation. Although SDs may provide incremental public health benefit compared with RDs, it comes at a substantially higher cost to the environment. As infection rates continue to decrease from more regimented cleaning protocols and enhanced designs such as disposable endcaps to facilitate cleaning, the negative impact to human health from contaminated RDs could be comparable with SDs.

Read this article on pages 1002-8 in this issue.