

Sustainable surgery and the use of consumables.

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Healthcare has a significant environmental impact (1, 2), the operating theatre, in particular, has a high carbon footprint (3). A large volume of waste is generated in the operating theatre and a proportion of this waste is single-use plastic (4). This brief article will focus upon the use of single-use gowns and drapes, as where used they contribute a significant volume to operating theatre waste.

Gowns and drapes are used to create a sterile field for surgery and evidence for their use is irrefutable (6). A detailed life-cycle analysis, comparing all aspects of environmental impact from the use of a single-use disposable gown versus a reusable gown, has been performed (5) and provides strong evidence that use of re-usable textiles has a significantly lower environmental impact, even when laundering, repackaging and re-sterilisation is taken into account. There is a range of gown materials available, however in broad terms, reusable gowns are made of a woven material and single-use gowns are made of a synthetic non-woven material (6). The re-usable woven material performs well to ensure that the surgeon is sterile, unless there is significant wetting of the fabric, when the barrier properties become compromised and microbial strike-through from the surgeon's

scrubs to the sterile field becomes possible (6). Single-use textiles that are made of non-woven material (typically synthetic fibres, such as polypropylene) do have superior impermeability when wet, but again this depends upon the performance of the particular gown utilized (6). Re-usable surgical textiles should be monitored for number of uses and for signs of wear as they barrier function reduces after a certain number of washes without appropriate maintenance (6).

Whilst we must strive to reduce our environmental impact, maintaining outstanding levels of patient care and outcomes is our priority. Changes that may be made in use of surgical textiles must not risk an increase in surgical site infection. Systematic review of the literature comparing surgical site infection when single-use textiles versus re-usable textiles were used concludes that there is no difference (7, 8), however it is recognized that further studies would be valuable. Each surgical procedure varies in terms of the risk of fluid contamination on the gowns or drapes and the anticipated risk to the patient should a wound infection develop (e.g., if an implant is used the risk is greater) and therefore the selection of surgical textiles for a particular procedure and patient can be made on a rational basis (9). A switch to single-use synthetic gowns in the human field has been driven largely by the need for robust barrier properties to protect the surgeon from contamination with blood-borne disease, such as Human immunodeficiency virus (HIV) (9), however disease transmission is not typically an issue in routine veterinary surgery.

It is common place for re-usable surgical textiles to be used exclusively in some veterinary practices but some practices do not have re-usable textiles available (10) and there has been a trend to switch to single-use textiles over the past decade. During the COVID pandemic, however, diversion of single-use personal protective equipment (PPE) to the NHS led to a supply disruption to veterinary practices (11). Those practices

without access to re-usable surgical textiles risk operational disruption due to supply chain issues, whilst those with re-usable surgical textiles routinely available have greater business resilience. A rational approach to the use of single-use and reusable surgical textiles would allow a significant reduction in environmental impact, in addition to affording operational resilience to allow provision of outstanding veterinary care into the future.

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