

How single-use is your bronchoscope? Contamination of single-use bronchoscopes following diagnostic and therapeutic procedures in critically ill ventilated patients.

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Bronchoscopy is a common procedure in the Intensive Care Unit (ICU). Disposable bronchoscopes such as the Ambu aScope3™ have been recently introduced, designed and marketed as ‘single use.’ Beyond this statement, there is currently no guidance concerning how long this single episode may last and anecdotal reports of use as single *patient* devices. Whilst not recommended, duration of storage and potential problems from prolonged device storage prior to possible re-use are unknown. Re-use may be particularly problematic in the ICU patient and bronchoscopes are at a greater risk of residual contamination due to their relatively small working channel size. To examine these issues, we aimed to subject aScope3’s to microbiological analysis up to 48 hours after clinical use in ICU patients undergoing bronchoscopy.

The study did not require formal ethical approval but was subject to internal R&D governance procedures. Unselected patients underwent bronchoscopy at the discretion of the attending clinician at our tertiary ICU. The used aScope3’s received a standard ‘social clean’ comprising flushing of the working channel with 20mls of sterile saline, followed by external decontamination with non-enzymatic detergent fluid (UNO-FLUSH®, Medical Innovations Group, UK) before storage in their (originally sterile) packaging. Subsequent paired 20ml saline flush and swab samples were taken at time zero (immediately following social clean), at 24 and 48 hours.

Complete microbiological results from 20 aScope3’s were obtained. Interestingly 3 swabs and 10 flushes were ‘positive’ for microbiological growth at time zero, which did not always lead to further positive bronchoscope samples, nor represent the microbiology of the sputum samples obtained from the patient (via the bronchoscope). At 48 hours, 7 swabs and 8 flushes were positive with a mixture of normal respiratory tract flora, significant pathogens and fungi. Nine patients had contemporaneous respiratory samples that were positive, including 5 organisms that matched that grown from the bronchoscope used to collect the sample.

With pathogens cultured in 11/20 used bronchoscopes immediately after social cleaning and 10/20 bronchoscopes at 48 hours, our findings suggest that sScope3’s should not be re-used. Cross contamination has been reported with re-useable bronchoscopes and our results indicate prolonged bedside storage may encourage microbiological growth.[1] Culture of bronchoscopes themselves may be a potentially useful diagnostic tool, and further work should examine the

clinical significance of pathogens isolated from bronchoscopes, but not patients, at different post-use timeframes.

Reference

1. Culver DA *et al.* Am J Respir Crit Care Med 2003, 167:1050-6.