



BBIC, Innovation Way, Barnsley  
South Yorkshire S75 1JL UK

Telephone +44 (0)1226 732 333  
Facsimile +44 (0)1226 785 386

Email [info@susl.co.uk](mailto:info@susl.co.uk)  
Website [www.susl.co.uk](http://www.susl.co.uk)

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Contact: Alycia Burton  
Tel: +44 1226 732 333  
Email: [a.burton@susl.co.uk](mailto:a.burton@susl.co.uk)

## DIRTY SURGICAL INSTRUMENTS PUTTING PATIENTS AT RISK

Reports by The Center for Public Integrity (CPI) and NBC News suggest surgeons are using medical instruments contaminated with hidden tissue, blood and debris. Single Use Surgical recommends replacing difficult-to-clean devices with single-use to protect patients from hospital acquired infection

It started with the case of John Harrison, a 63 year-old from Texas, who experienced severe complications two weeks after what should have been a routine operation on his shoulder. During emergency surgery doctors discovered that Harrison had been infected with *P.aeruginosa*, a potentially lethal bacterium that had eaten away part of the bone in his shoulder and rotator cuff.

And this was not an isolated incident; Harrison was one of seven joint surgery patients who had also contracted infections during a two week period at The Methodist Hospital in Houston. This outbreak stimulated the hospital and the Centers for Disease Control and Prevention (CDC) to launch an inquiry into how the bacteria had survived the cleaning and sterilisation process.

The results revealed that there were two likely sources of the infection: from an arthroscopic shaver, a power tool used to shave away bone; and the inside of a long narrow cannula used for irrigation and suction of the surgical site.

As part of the investigation, they also inspected areas of these surgical instruments that are invisible to the naked eye using a small camera. The findings showed that although the tools appeared clean on the outside, the internal picture was much different, with human tissue and bone found in the devices.

Additionally sterilisation staff had not been cleaning cannulae using brushes but simply by running tap water through the instruments.

### The Tip of the Iceberg

Some may argue that the Methodist case was a one off. However when Joe Eaton, an investigative reporter at CPI, chose to explore the wider picture in the US, the results were shocking.

Eaton found that the Methodist incident is one of many where the use of improperly cleaned instruments has led to patient infection. One such case was brought to light in 2009 when the Department of Veterans Affairs issued a statement that 10,737 US veterans may have been infected by dirty endoscopes. A number of those patients have since tested positive for HIV, hepatitis B and hepatitis C.

Furthermore Eaton brought to light the findings of Jahan Azizi, a Risk Management Clinical Engineer at the University of Michigan Health System. Azizi inspected the inside of 350 suction tips after cleaning and sterilization and found that all of the suction tubes contained blood, bone, tissue and even rust.

It could be said that the instruments had not been cleaned properly. However Azizi tested this theory by then cleaning all the instruments following manufacturer's instructions and inspecting them again. Reexamination showed only 7 of the 350 suctions were free from debris.

Azizi chose to investigate suction tubes as they are used in almost every surgical procedure. Following his research he said "I don't know who approved this [suction tubes] or who made this a reusable item, but this is not a reusable or cleanable item...there are a lot of them that are difficult or impossible to clean."

The CPI report added to this, commenting on how surgical advancement has led to the demand for more intricate instruments with narrow channels amongst the features; "those tiny channels become clogged with unseen blood and tissue" Eaton said.



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Eaton also spoke to Charles Hancock, an independent medical device sterilization consultant who commented on how the time constraints put on sterilization staff could also be contributing to improperly cleaned devices. Instruments are often cleaned too rapidly but Hancock also said that they can often sit around for hours, even days, before cleaning which allows blood and debris to dry. If an instrument is then improperly cleaned, heat from sterilization can “bake” the debris onto surgical tools; creating hardened deposits that are very difficult to remove. Like when you bake a pot pie but do not wash the dish until the next day, the debris can set like concrete.

Hancock’s views are also supported by the comments that Eaton heard from Sterile Processing Staff. Robert Tremblay, a Technician at Boston Hospital, described how complex the job is and that if one step is missed then the device is dirty. When Eaton asked him if that happens, Tremblay said “all the time.”

There is also scientific evidence that there are abnormal proteins associated with rare prion diseases, such as CJD, that form a special resistance to conventional methods of decontamination. Experts at the University of Southampton, in the UK, found that “currently marketed cleaning chemistries and recent decontamination protocols do not completely suppress the threat from iatrogenic CJD” (Herve *et al.*, 2010). Giving evidence that if an instrument, such as a suction tube, cannot be inspected after cleaning, then it cannot be guaranteed clean and may pose a cross contamination risk to patients.

However it is difficult to link lapses in reprocessing to surgical site infections. With this in mind, plus the fact that only 25 US states are required to report surgical site infections “the cases that we hear about are only the tip of the iceberg” said Dr Melissa Schaefer, a CDC Officer.

## Lessons from Across the Pond

In the UK many hospitals addressed concerns over dirty surgical instruments, in particular, suction tubes over a decade ago by switching to single-use. One of the first hospitals to do this was the Royal Hallamshire Hospital (RHH) in Sheffield.

In an interview with a UK Journal Tess Morris, Assistant Sterile Processing Manager at RHH, explained why they made the change: “the problem with fine lumen instruments is that we never knew how clean they were...we used to run water through them and poke them with a pipe cleaner to get as much out as possible. Then we cut a couple open and it was disgusting with all the debris inside”.

Morris’ team highlighted their concerns over suction with narrow channels to Christine Bates, RHH’s Microbiologist who setup a decontamination group to address the concerns that Sterile Processing had. According to Bates the group was “mindful of the difficulty in cleaning these instruments and the fact that gross debris was often apparent even after the item had gone through the whole decontamination process. This was of obvious concern to the users as well as to us. We felt that we had no option but to move to single-use.”

Morris introduced specialist manufacturer Single Use Surgical to the lead practitioners and says that “everything happened fairly quickly after that”. She added “we did a paper to explain why certain instruments are difficult-to-clean and the surgeons appreciated the problem that SSD faced in cleaning suction. All cannulated instruments that were a problem in...[sterile processing]...are now single-use.”

Single Use Surgical recently opened an office in the US with the aim of educating American hospitals on the benefits of replacing difficult-to-clean instruments with single-use. Matthew Tulley, Single Use Surgical’s Director, commented on the CPI report “it’s shocking but sometimes this is the only way to bring about a change. Eaton’s report has opened people’s eyes to the infection risks of dirty instruments. We hope that this will encourage action so that cases like John Harrison’s can become a thing of the past”

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## About Single Use Surgical, Inc.

Single Use Surgical provides an alternative to reprocessing instruments with narrow channels. It offers a wide range of disposable suction tube instruments for use in surgical procedures across several specialties. The company's focus on high quality, ergonomic design and customer support provides hospitals with a cost-effective alternative to reprocessing difficult-to-clean instruments. Switching to single-use also reduces the volume of complex devices that pass through Central Sterile, helping to alleviate time constraints and ultimately reduce Hospital-Acquired Infection rates.

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