

HOLES IN STERILE WRAPPING – AN UNSEEN RISK

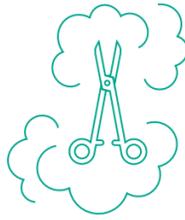
SCIENTIFIC INFORMATION



In the US, about 40% of all healthcare-associated infections (HAIs) are surgical site infections (SSIs)¹



In low- and middle-income countries, approximately 10% of surgical patients will acquire SSIs²



Reliable sterilization techniques for reusable instruments are vital to prevent SSIs

If holes in sterilized surgical wraps are **identified**, the impact on the hospital can be huge



Delayed or cancelled surgery



Cost impact due to resterilization of trays

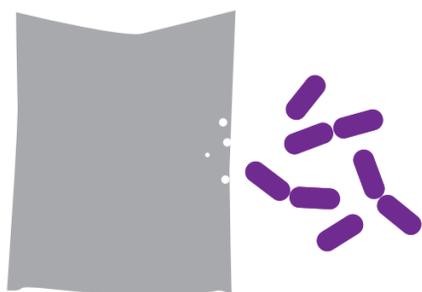


Longer anesthesia times for the patient

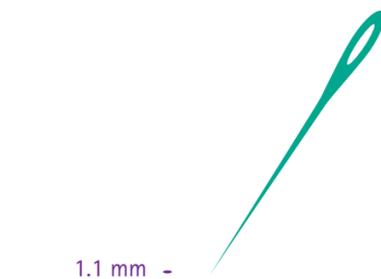


Decreased physician satisfaction

If holes in sterilized surgical wraps are **NOT identified**, the patient can be exposed to dangerous pathogens



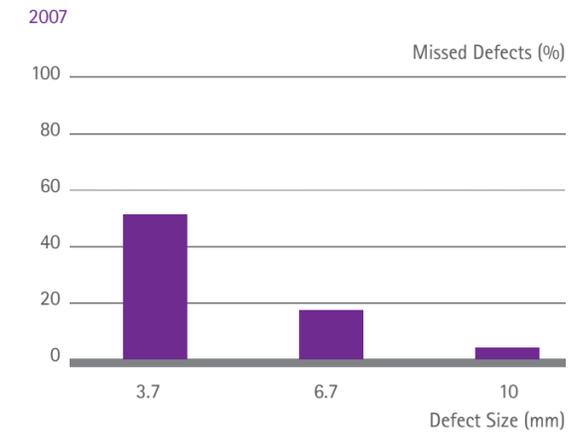
Even the smallest perforations allow bacterial contamination¹



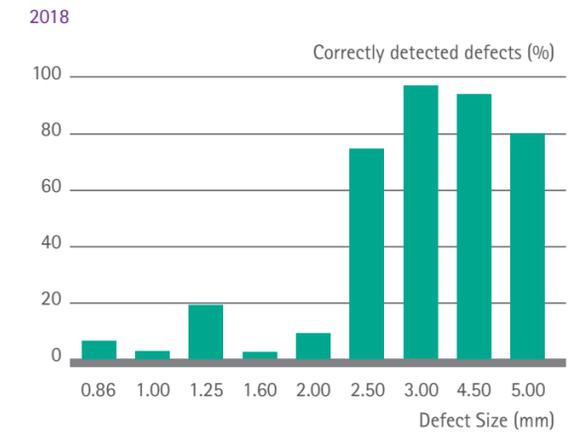
Contamination can be transmitted by a pin with a diameter of 1.1 mm¹

Defects in sterile wraps are not always detected

Sterile wraps are routinely inspected by operating room (OR) personnel

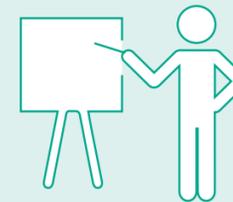


In a study from 2007, **defects** with a diameter approximately corresponding to that of a pencil (**6.7 mm**) were **missed 18% of the time**¹

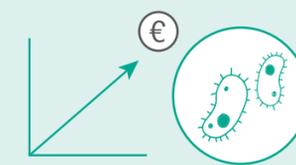


In 2018, Rashidifard and colleagues³ repeated the study of detection sensitivity, and concluded: **Defects with a diameter of ≤ 2 mm were not reliably detected**

How to overcome the risk revealed by Rashidifard and colleagues?^{4,5}



More **detailed training** for detecting compromised wraps or modified wrapping



Double-wrapping increases costs and does **NOT** reduce the risk for tray contamination



Investment costs



Operating costs

Despite higher investment costs, **sterile containers** catch up with the soft packaging at a certain timepoint due to **lower operating costs**

The goal should be to define an efficient and reliable process that aids to provide:



Consistent patient care



Smooth operating room processes without interruptions/additional stress



No need for unnecessary reprocessing of instruments

1 Waked WR, Simpson AK, Miller CP, Magit DP, Grauer JN. Sterilization wrap inspections do not adequately evaluate instrument sterility. Clin Orthop Relat Res. 2007;462:207–211.
2 WHO Protocol for surgical site infection surveillance with a focus on settings with limited resources, 2018; www.who.int/infection-prevention/en.
3 Rashidifard CH, Mayassi HA, Bush CM, Looking for Holes in Sterile Wrapping: How Accurate Are We? Clin Orthop Relat Res (2018) 476:1076–1080.

4 Webster J, Radke E, George N, Faoagali J, Harris M. Barrier properties and cost implications of a single versus a double wrap for storing sterile instrument packs. Am J Infect Control. 2005; 33:348–352.
5 Krohn et al., Analysis of processes and costs of alternative packaging options of sterile goods in hospitals – a case study in two German hospitals. Health Econ Rev. 2019 Jan 17;9(1):1.