

## Optimizing reprocessing

# New developments to enhance hygiene safety of endoscopic interventions

**Endoscopic procedures, such as Endoscopic Retrograde Cholangio-Pancreato-graphy (ERCP), are the least-invasive ways of diagnosing and treating many biliopancreatic disorders and conditions. However, the risks of infection are likely to be underestimated in gastrointestinal endoscopy. In order to avoid infections, the advice of experts is clear: follow not only the hygiene guidelines for endoscopy, but also the manufacturer's instructions for use (IFU). New developments in endoscopy and reprocessing technology can help increase patient safety.**

„The Human factor is important“, said Marjon de Pater-Godthelp, Head Nurse Endoscopy in Amsterdam and President of ESGENA (European Society of Gastroenterology and Endoscopy Nurses and Associates). Manual pre-cleaning and endoscope drying are the most important reprocessing steps to avoid contamination and prevent transmission of microorganisms. However, certain aspects of complex reprocessing can be challenging in daily practice. For example, the recommended duration of manual cleaning of duodenoscopes is 25 minutes [1], but in daily practice manual cleaning takes only 6,5 minutes. “Comprehensive training of staff involved in reprocessing and regular refreshing courses are mandatory.”

## More often than expected

“Until a few years ago we were ignorant to the problem of endoscope contamination and patient infection”, admitted Prof. Marco Bruno, Rotterdam. The incidence of infectious ERCP complications is reported between 2–4% [2] – very likely an underestimation in his opinion. The number of endoscopic interventions has increased steadily in recent years, and patients are getting older and more comorbid. In addition, there is growing threat of MultiDrug Resistant Organisms (MDROs). To date more than 40 outbreaks of infections due to contaminated ERCP scopes, including outbreaks of a VIM-2-producing *Pseudomonas aeruginosa* [3] and of MDR *Klebsiella pneumoniae* [4], and over 35 deaths have been reported. “These figures

represent only the tip of the iceberg”, emphasized Bruno. Prevention of scope related infections requires dedicated teamwork and systematic monitoring of contamination, at least once a month, Bruno continues.

## The importance of manual cleaning

“We need to optimize and validate the different reprocessing steps”, said Paul Caesar, Reprocessing and Infection Control Leader EMEA at PENTAX Medical Europe. Bedside and manual cleaning of the scopes, which precedes automated cleaning and disinfection, remains one of the most important steps in reprocessing. You must strictly follow the IFU's. “Check, check and double check”, he said, “this is the daily challenge”.

The ESGENA/ESGE guidelines recommends how to improve safety in endoscopy reprocessing [1]. Reusable flexible endoscopes, such as the DEC™ Video Duodenoscope ED34-i10T2, in combination with the disposable elevator cap (DEC™), designed to be the best solution for routine biliopancreatic interventions, said Gilles Sauvanaud, Director of Operations and Services at PENTAX Medical France. The challenge is to maintain the disinfected state of the endoscope after reprocessing for an optimized workflow. Pentax Medical developed a Ready-to-Scope™-Concept that includes after the repairs

- reinforced manual cleaning,
- automated endoscope reprocessing,
- PlasmaTYPHOON perfect channel drying,
- PlasmaBAG active storage and
- Bacteriologic sampling with compliant results (France only).

## Drying prevents biofilm formation

The importance of efficient drying is often underestimated, said Prof. Didier Lepelletier, Nantes (Frankreich). Bacteria, fungi, and other microorganisms adhere to moist, inert or living surfaces – forming a biofilm composed mainly of sugars, proteins, and nucleic acids, that acts as a protective matrix. “Drying protects against biofilm formation”, he stated.

In a drying cabinet it takes at least 2 hours to dry an endoscope efficiently, in contrast to 1–5 minutes (depending on endoscope type)\* in the PlasmaTYPHOON, a device for ultra-fast drying of endoscope channels, Caesar reported. The unit uses a laminar flow to eliminate water and a turbulent, heated flow to dry the endoscope channels. For storage one can use the single use PlasmaBAG, in which the completely dried endoscope can be stored up to 31 days‡(depending on the local regulations) in a fully controlled environment of ozone and medical air. Therefore, the clean and reprocessed condition of the endoscope can be maintained during the entire storage period.

Roland Fath, Hamburg

## References

- [1] Beilenhoff U et al. Endoscopy 2018; 50: 1205–1234. doi: 10.1055/a-0759-1629
- [2] Kovaleva J et al. Clin Microbiol Rev 2013; 26: 231–254. doi: 10.1128/CMR.00085-12
- [3] Verfaillie Cj et al. Endoscopy 2015; 47: 493–502. doi: 10.1055/s-0034-1391886
- [4] Rauwers AW et al. Gastrointest Endosc 2019; 90: 793–804. doi: 10.1016/j.gie.2019.05.016

## Publication Reference

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Roland Fath is medical writer.

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- \* Evaluation of the efficacy of a drying unit for internal channels of endoscopes according to NF S98-030- Test Report by Biotech-Germande February 2015
  - # Evaluation of the ability of a storage system (plasmabiotics) to maintain the microbiological quality of heat sensitive endoscope. Report by Biotech-Germande April 2017
  - ‡ The maximum storage time may be subject to local regulations on endoscope storage. The country regulation can restrict the maximum storage time to 7 days. Please refer to the relevant regulations or recommendation of your country.