



Dear readers

Why is the correct water quality so important in the reprocessing of endoscopes? We addressed this question in a webinar on 14 April 2021 in tandem with the German Society of Endoscopy Nurses and Associates (DEGEA) and other experts. Valuable information and experiences relating to water quality and requirements were shared here, along with useful practical advice on monitoring water quality with specific reference to the reprocessing of flexible endoscopes. We have provided a summary of some of the most interesting questions and answers on pages 1–2.

Hand disinfection is a crucial part of the reprocessing of endoscopes. Gloves alone do not provide full protection. Safe reprocessing is ensured only with the right blend of hand disinfection, gloves and correct handling of the endoscopes. With the help of Professor Günter Kampf, we describe a few scenarios step by step on pages 3–4. We are keen to continue helping you to achieve optimum reprocessing of endoscopes with important tips and useful aids, so we've already planned the next webinar. For details on how to register, go to page 4.

Enjoy the newsletter!

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Systematic Hygiene

Water Quality in Endoscopy

Webinar held by Dr. Weigert in collaboration with the DEGEA

The DEGEA and Dr. Weigert jointly held the webinar 'Water quality in endoscopy' on 14 April 2021. It provided an overview of chemical and microbiological water quality as well as the various technical methods available for ensuring the required quality. A total of 630 people attended. We were supported by experts such as Ulrike Beilenhoff from the DEGEA, Daniela Schrickler and Verona Schmidt from Chemische Fabrik Dr. Weigert GmbH & Co. KG, Marcus Arnold from Hartmann GmbH and Patricia Müller from Aqua free GmbH. The webinar is available to view on demand on the endoscopy campus and Dr. Weigert sites. Due to time constraints, it was not possible to answer all the questions posted in the chat box during the webinar, so our experts have instead taken the time to answer some of the other questions below:

Why is it important to use fully demineralised water for the wash cycle?

Daniela Schrickler, Dr. Weigert GmbH & Co. KG: As water hardness increases, the cleaning effect can decrease. Similar to contaminants, the dissolved substances in the water can be absorbed by and bound to the constituents of the cleaning agent. This is why we advise using at least softened water or, ideally, fully demineralised water (also known as deionised water) in the cleaning stage.

In our department, we encounter the phenomenon of the endoscope sheath turning rainbow-coloured. The effect is more pronounced at the distal end. Is this a known problem?

Daniela Schrickler, Dr. Weigert GmbH & Co. KG: Rainbow-coloured surface changes can have various causes. To identify the precise cause on site, we recommend performing a systematic analysis of the reprocessing procedure. Of particular



Not all water is the same

interest here are aspects such as when the changes first started and whether they are related to a change in the reprocessing procedure at the time. Chemical and physical analyses of the surface changes may also help to identify the cause. Of course, we support our customers in finding the cause and resolving the problem. Feel free to contact our local technical support staff or us if required.

Is it necessary to take a water sample for examination from every tap in the endoscopy and examination rooms?

Verona Schmidt, Dr. Weigert GmbH & Co. KG: It is always the operator's duty to ensure that the water in the respective facility meets the requirements for drinking water. Suitable measures and sampling plans must be prepared for this purpose and also include the endoscopy and the examination rooms. This is not a specific requirement of endoscope reprocessing – rather, it is a fundamental duty of the operator.

The sample for examining the water in the WD (washer disinfectant for endoscopes). Is to be taken at the entry point into the WD. But this is often hard to access. Can I also take the water sample from the machine (e.g. the sump)?

Verona Schmidt, Dr. Weigert GmbH & Co.

KG: DIN EN ISO 15883-4 states that the water is to be extracted for microbiological sampling at the inlet into the washing chamber of the WD. This is because this is the only place where the quality of the water used for the final rinse can be checked. If the water is extracted upstream of the washing chamber, the water in the washing chamber can still be contaminated by, for example, biofilms, meaning that the endoscopes would also be contaminated in the final rinse.

If the water is extracted from the sump, the water quality in the sump is analysed. But in addition also effects of the reprocessing cycle itself and other parts of the WD are noticed. However this sampling process is actually often performed in practice. In this case it is important to take into account all possible sources of contamination in the WD and due to inadequate reprocessing. This can be done for example by identifying the microorganisms, which gives hints to their possible origin.

Is it necessary to validate the water treatment systems? If so, how often? What are the costs involved in validation?

Marcus Arnold, Hartmann GmbH: There is no general obligation to validate treatment systems for fully demineralised water. In the annual revalidation, however, it is advisable to include the water treatment process and to check the quality of the fully demineralised water produced for supply to the WD. Depending on the scope and size of the system, the costs for validation are around € 1,000.

It is a known fact that ion exchangers for fully demineralised water can become contaminated if they are used for too long. What about water softening systems? Can they become contaminated, too? How often and in what way should a water softening system be maintained in order to prevent contamination?

Marcus Arnold, Hartmann GmbH: Like ion exchangers, water softening systems can become contaminated – especially if they have not been in operation for a while. But water softening systems regenerate themselves automatically, and contamination can be prevented by means of chlorine electrolysis (option). Annual maintenance of the water softening system is advisable, whereby

microbiological contamination can also be determined with a water sample. If excessive contamination is noticed, the resin in the water softener can be renewed, just like with ion exchangers.

The water for the manual final rinse must be sterile-filtered. Should water for the pre-cleaning basin also be sterile-filtered?

Verona Schmidt, Dr. Weigert GmbH & Co.

KG: The water for final rinsing must be microbiologically perfect in order to preclude recontamination of the cleaned and disinfected endoscope. During pre-cleaning, the endoscopes are still contaminated and will be reprocessed further. Microbiological drinking-water quality is sufficient for application of the cleaning solution here.

What is the average service life of the sterile filter?

Patricia Müller, Aqua free GmbH: The service life of a sterile filter depends on the quantity of water that flows through it. As the quantity of water increases, the flow rate decreases because the pores in the sterile filter gradually are blocked. The service life varies depending on the application area and, in turn, the quantity of water required. For endoscopy, Aqua free provides sterile filters with a service life of four weeks for the WD and for the manual final rinse. In semi-automatic machines, the service life can be as long as eight weeks.

What is the correct way to dispose of the filter? It is 'polluted', after all...

Patricia Müller, Aqua free GmbH: Aqua free provides an innovative reusable filter system with reprocessing and a replacement service. After the service life has expired, the filter is removed, placed in a ziplock bag and sent to the company's headquarters in Hamburg, where it is reprocessed in a validated, multi-stage process (rinsing, alkaline and acid pre-cleaning, chemical and thermal disinfection (> 10 minutes, > 93°C), drying). Next, the membrane function of each filter is individually tested, and the filter is then repackaged and sent to the customer. This reprocessing procedure reduces plastic waste by more than 90% compared with disposable filters.

Disposable filters do not pose any risk and can be disposed of as household waste. If the customer is a user of the replacement

service, disposal is possible on request via Aqua free.

What water quality is required for the optical glass rinsing bottle? Is there a difference between sterile-filtered water and sterile water?

Ulrike Beilenhoff, DEGEA: The HYGEA study clearly showed what happens when optical glass rinsing bottles are filled with tap water and not sterilised. When they are filled with tap water, contamination of up to 75% of cases was detected. This is why sterilisation of the optical glass rinsing bottles and the use of sterile water have been recommended since 2002 (KRINKO). Optical glass rinsing bottles must be replaced at least every working day, preferably reprocessed in the WD and sterilised. Disposable systems are now available, too.

Sterile or sterile-filtered water is to be used for filling. Sterile water is available in the form of sterile, pyrogen-free rinsing solutions (e.g. Ampuwa rinsing solution). Alternatively, sterile-filtered water – obtained by using terminal sterile-water filters – can also be used. The pore size of 0.2 µm ensures microbial retention of log 7 = 99.99999% of the test bacterium *Brevundimonas diminuta*, the smallest water-borne germ. This ensures exceptionally pure water quality. These filters are suitable for temperatures of up to 60°C and pressures of up to 5 bar – in other words, the kinds of temperatures and pressures found in the pipework. Sterile water filters have to be maintained and regularly replaced (see above).

Webinar moderators:
Jacqueline Treutner, Guido Merk

Further information is available at:
<https://www.endoscopy-campus.com/live-events/degea-live-wasserqualitaet-in-der-endoskopie/>
<https://www.drweigert.com/de/aktuell/webinar-archiv>
<https://www.hartmann-gmbh.eu/home.html>
<https://www.aqua-free.com/de/>

Hand Disinfection in the Reprocessing of Flexible Endoscopes

Gloves alone do not provide full protection

During reprocessing of flexible endoscopes, special hand disinfection measures play a key role in clean and unclean areas. Hand disinfection is intended to prevent contamination from unclean to clean areas via the hands; to prevent fully reprocessed endoscopes from being recontaminated by the hands; and to protect endoscopy staff in unclean areas from potentially infectious flora. Gloves alone do not provide full protection against hand-borne contamination.

Firstly, gloves are not completely impermeable and may develop microperforations during use, especially if exposed to heavy mechanical stress [1]. Secondly, the hands can become contaminated during the process of removing the gloves [1]. Products suitable for hand disinfection are those based on ethanol, isopropyl alcohol or n-propanol, which have been proven to provide effective protection against bacteria and yeast fungi in just 30 seconds (see e.g. VAH list).

Since gloves are worn for long periods, formulations with a good skin-care complex are recommended in order to prevent skin irritations [2].

A procedure that can be applied in most clinics with central reprocessing of the endoscope is described below.

1. In the examination room

After the endoscopic examination is complete, the used endoscope is sent for pre-cleaning. The employee usually wears medical examination gloves here because this is an 'unclean' activity. Once all pre-cleaning activities have been completed (Figures 1–3), the endoscope is placed in a transport container.

- Remove the gloves
- Disinfect the hands
- Cover/close the transport container

2. In the reprocessing room

2.1. Automated reprocessing

The employees performing reprocessing are to wear sufficiently long gloves during all 'unclean' activities.

Practical tip for protective gloves: In the safety data sheet under 8.2, the cleaning agent and instrument disinfectant manufacturers usually state which protective gloves are suitable for minimising skin exposure.

After completion of the leak test (Figure 5) and the various stages of manual cleaning (Figures 6–9), the WD is opened and the endoscope is brought into the WD for automatic reprocessing (Figure 10).

Once the WD is loaded:

- Close the door of the WD and start the reprocessing program
- Remove the gloves
- Disinfect the hands
- Disinfect the WD surfaces exposed to hand contact (touchscreens, handles)

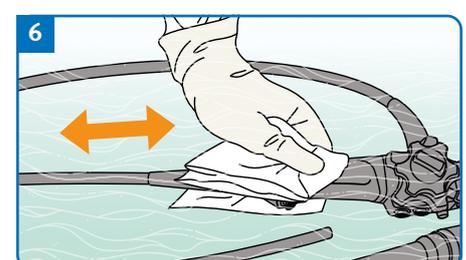
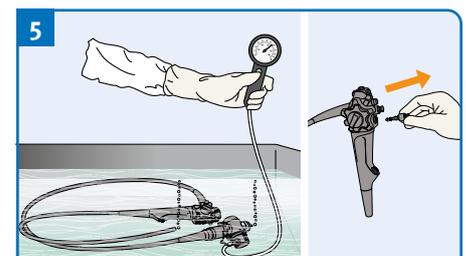
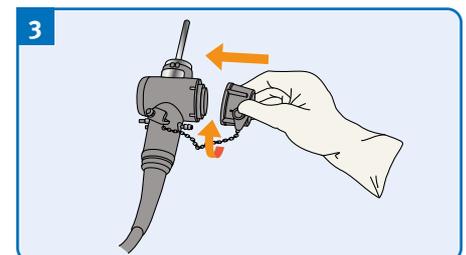
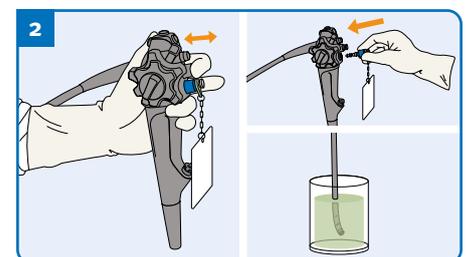
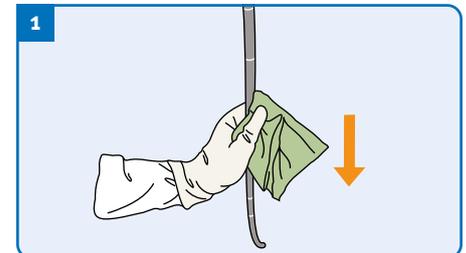
Disinfection of these WD surfaces, which are exposed to hand contact is recommended. Reason: Depending on the organ system, which had been examined a heavy contamination of the cleaning solution has to be expected. Accordingly also the gloves will be contaminated and transfer the contamination onto the surfaces of the WD. If then, after the reprocessing cycle, the WD is opened with new gloves, this could lead to a recontamination of the endoscope. A degree of contamination could therefore be transferred to the contact surface by means of touch and, when the WD is opened after reprocessing, be transferred to the reprocessed endoscope via the freshly gloved hands.

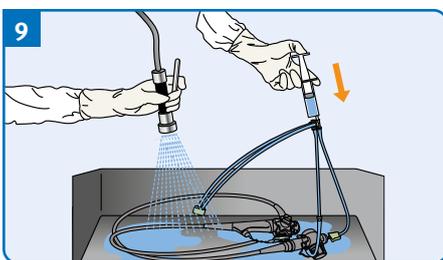
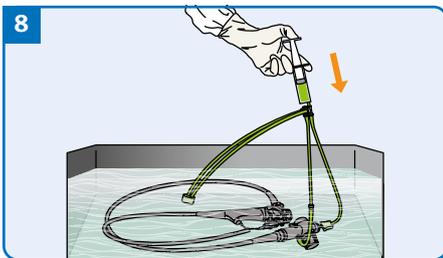
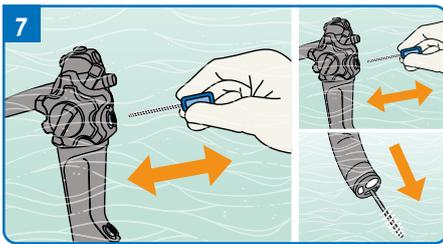
Practical tip: Pre-soaked disinfection wipes with rapid bactericidal and yeast-icidal activity (< 5 minutes) are ideal for disinfecting small surfaces on the WD.

After reprocessing is complete, the WD is first opened with disinfected or gloved hands and the endoscope is sent, if necessary, for manual drying (Figure 11) and then placed in a drying storage cabinet or stored in a closed container for transportation.

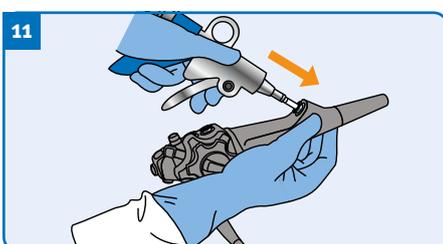
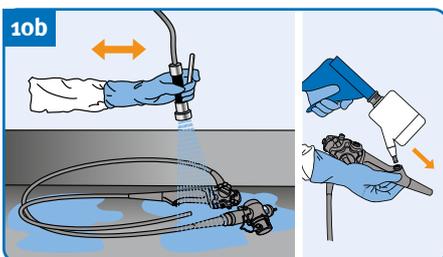
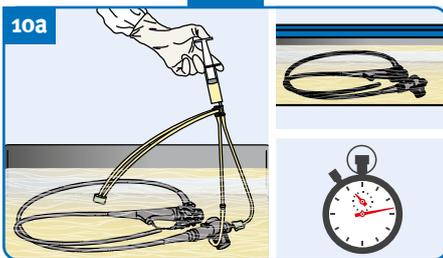
If necessary, the gloves are then removed and the hands are disinfected. The decision on whether to perform this final step with disinfected or gloved hands is made after a local risk assessment.

Relevant images from the poster





OR



2.2. Manual reprocessing

Since there is a risk of direct skin contact with reprocessing chemicals, the employees should wear gloves for the ‘unclean’ activities. After completion of the leak test (Figure 5) and the various stages of manual cleaning (Figures 6–9), the endoscope is placed in the basin with the disinfectant solution and the basin is covered with the lid (Figure 10a). Next:

- Remove the gloves containing disinfectant residue
- Disinfect the hands
- Disinfect the cover surfaces exposed to hand contact

New gloves are worn for the manual final rinse and for drying (Figures 10b and 11). After reprocessing is complete, the endoscope is placed in a drying storage cabinet or closed container. If further manual reprocessing is to be performed straight afterwards, the gloves can continue to be worn for this ‘unclean’ work. Alternatively, depending on the location, the hands can be disinfected and new gloves worn.

If no further manual reprocessing is to be performed:

- Remove the gloves
- Disinfect the hands

Practical tip: The hand disinfectant dispenser should be located in a place that all employees can access directly at all times.

Author: Professor Dr. Günter Kampf



Professor Dr. Günter Kampf, consultant in hygiene and environmental medicine

References:

- [1] Kampf G, Assadian O, Kramer A. Untersuchungshandschuhe (examination gloves). In: Kampf G, Ed. Kompendium Händehygiene Wiesbaden (Wiesbaden hand hygiene compendium): mhp-Verlag 2017; 126-45.
- [2] Kampf G, Löffler H. Hautgesundheit der Mitarbeiter (employee skin health). In: Kampf G, Ed. Kompendium Händehygiene Wiesbaden (Wiesbaden hand hygiene compendium): mhp-Verlag 2017; 163-96.

Dr. Weigert addendum:

An overview of available hand disinfectants whose disinfection performance has been tested and proven in line with the current EN methods can be found in the IHO disinfectants list at: www.desinfektionsmittelliste.de.

The illustrations are taken from the new Dr. Weigert poster **‘Expert reprocessing of flexible endoscopes’**.

Do you want to use the poster in your endoscopy? Thank you for your interest! Contact your expert neodisher advisor. They will get in touch with you as soon as possible. Alternatively, e-mail us at: info@drweigert.de

Dates June–October 2021

(As at: 26 June 2021)

- Online seminar in cooperation with the DEGEA, IVEPA and SVEP: **‘Help! I’m struggling with endoscope reprocessing – fault tracking, fault rectification and contingency plans’** 28 July 2021, 6:30 p.m.–8 p.m.

You can register now via the Dr. Weigert website or the websites of the DEGEA, IVEPA and SVEP.

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