

# Hygiene in Endoscopy units

## Reprocessing Endoscopes

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## Goals of Hygiene in Endoscopy Units:

1. Protection of our patients (patients safety)
2. Protection of the staff

# Patients safety

**In international studies, transmission of pathogens is rare (fortunately),  
but there might be a high level of underreporting**

Bacterial Infections	Chronic viral infections	Parasites, Fungi, Prions
Salmonella spp	Hepatitis C	Strongyloides
Pseudomonas spp	Hepatitis B	(fungi)
Helicobacter pylorii	(HIV)	Prions
Klebsiella spp		
Enterobacter spp		
Staphylococci		

Adopted from:  
Infection control during GI endoscopy, Copyright © 2008 by the American Society for Gastrointestinal Endoscopy, Volume 67, No. 6 : 2008 GASTROINTESTINAL  
ENDOSCOPY

# Pathogens that are difficult to eliminate\*

- Prions – e.g., Creutzfeld-Jakob prion
- Bacterial spores – e.g., *Clostridium difficile*
- Coccidia – e.g., *Cryptosporidium parvum*
- Mycobacteria – e.g., *Mycobacterium tuberculosis*, *Mycobacterium terrae*
- Nonlipid/nonenveloped viruses – e. g., Norovirus
- Fungi – e.g., *Aspergillus* spp, *Candida* spp
- Vegetative Bacteria – e.g., *Staphylococcus aureus*, *Pseudomonas aeruginosa*
- Lipid/enveloped Viruses – e.g. HIV, Hepatitis B Virus, Herpesviridae

\*in decreasing order of resistance to disinfectants/sterilization

WGO/WEO Global Guideline

[http://www.google.de/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&cad=rja&uact=8&ved=0CDYQFjAB&url=http%3A%2F%2Fwww.worldendo.org%2Fassets%2Fdownloads%2Fpdf%2Fguidelines%2Fwgo\\_weo\\_endoscope\\_disinfection.pdf&ei=WqqNU\\_6vNaiB4gT3hIDgDQ&usg=AFQjCNHeMYa-elehaHmEw6WJo9hGHDjGfQ](http://www.google.de/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&cad=rja&uact=8&ved=0CDYQFjAB&url=http%3A%2F%2Fwww.worldendo.org%2Fassets%2Fdownloads%2Fpdf%2Fguidelines%2Fwgo_weo_endoscope_disinfection.pdf&ei=WqqNU_6vNaiB4gT3hIDgDQ&usg=AFQjCNHeMYa-elehaHmEw6WJo9hGHDjGfQ)



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## Principles of hygiene in Endoscopy

- Every patient must be considered a potential source of infection
- So all endoscopes and accessory devices must be decontaminated following every endoscopic procedure
- Compliance with guidelines is the chief factor compromising the safety of endoscope reprocessing
- All staff in endoscopy units should be trained in and adhere to standard infection control procedures for protection of both: patient and personnel



## Hand Hygiene transferred to endoscopy units means disinfection:

- prior to removal of the cabinet
- prior to the preparation of intravenous drugs
- before and after the examination
- after precleaning
- after the reprocessing procedure
- after removing gloves
- Before and after touching a patient



## **Personal protective equipment for examination and cleaning procedure**

Hand hygiene

Protective gloves (long enough to cover forearms)

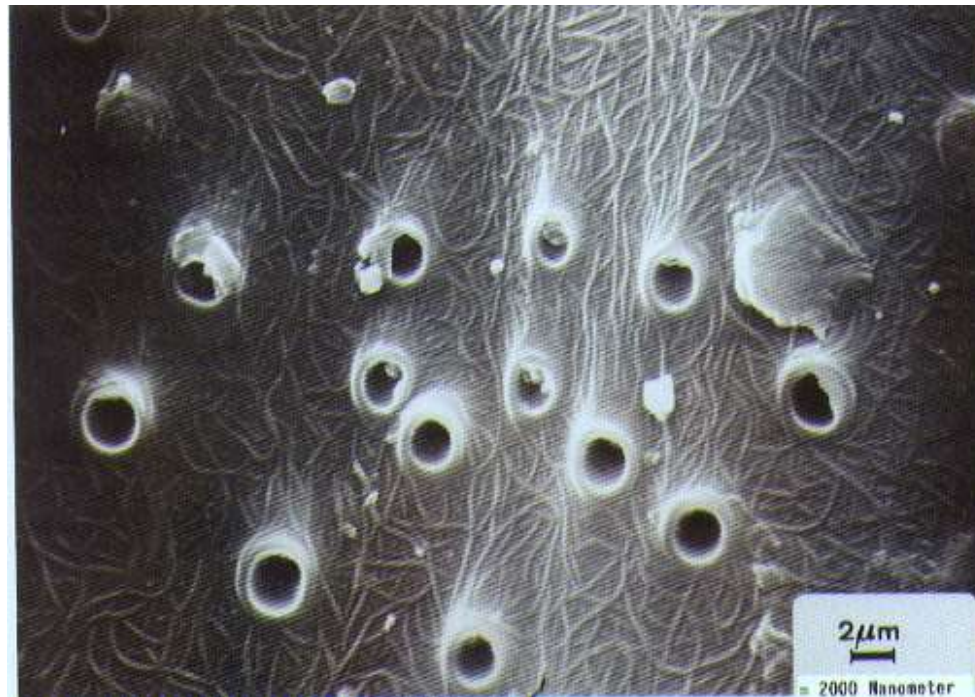
Aprons (waterproof gowns)

Goggles (when splashing is suspected)

Face mask (particularly if tuberculosis is suspected)

## Protective gloves:

Gloves are not a replacement for disinfection of the hands.

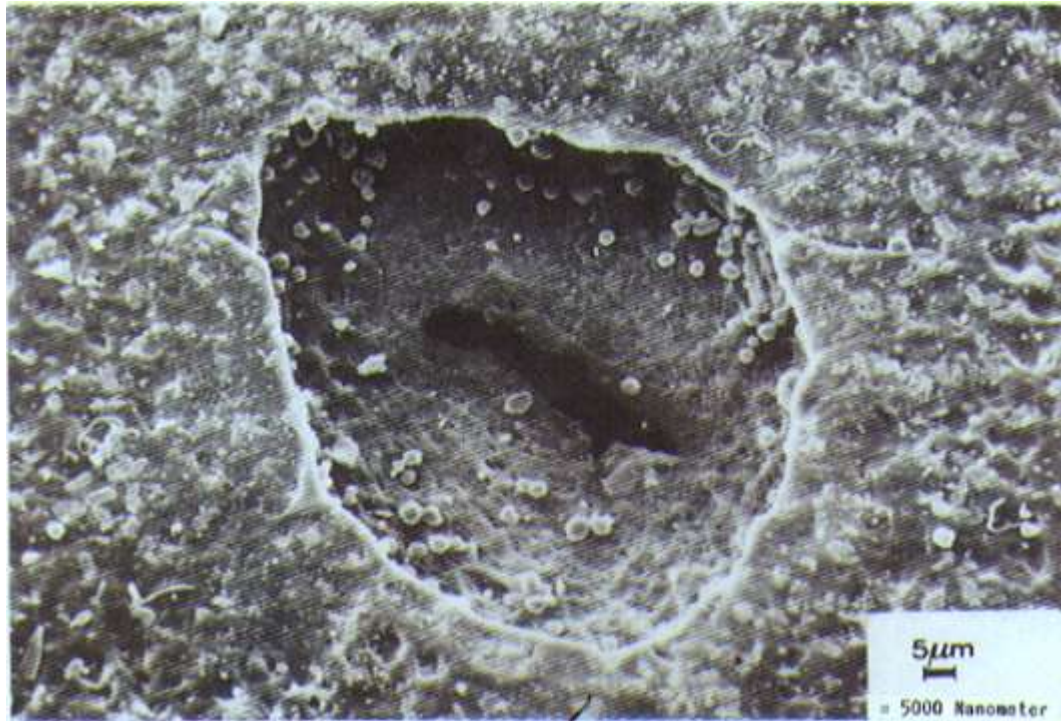


Electron microscopy of vinyl gloves (finger tip)



## Protective gloves:

Gloves are not a replacement for disinfection of the hands



Electron microscopy of latex gloves (inside)

## Remove gloves before:

- Opening drawers
- Opening cabinets
- Choosing bougies



... and do not forget disinfection of the hands!



## Cleaning process

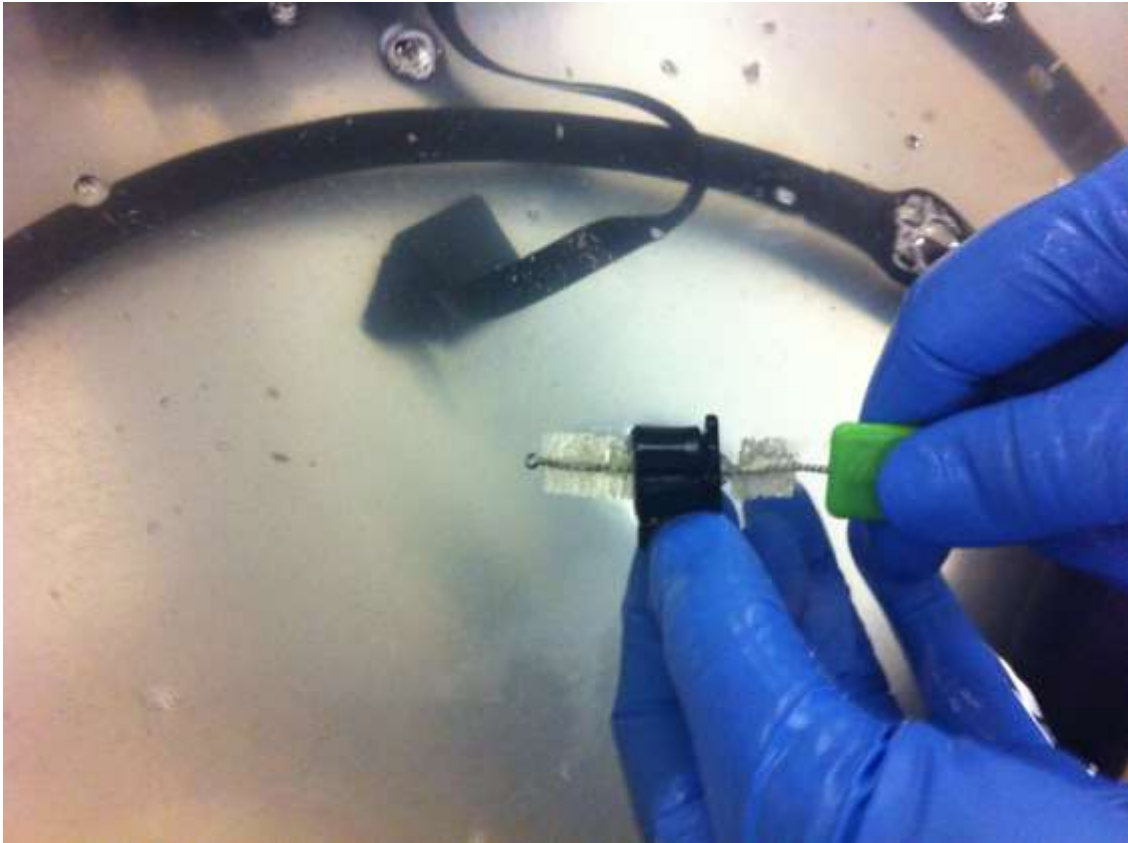






















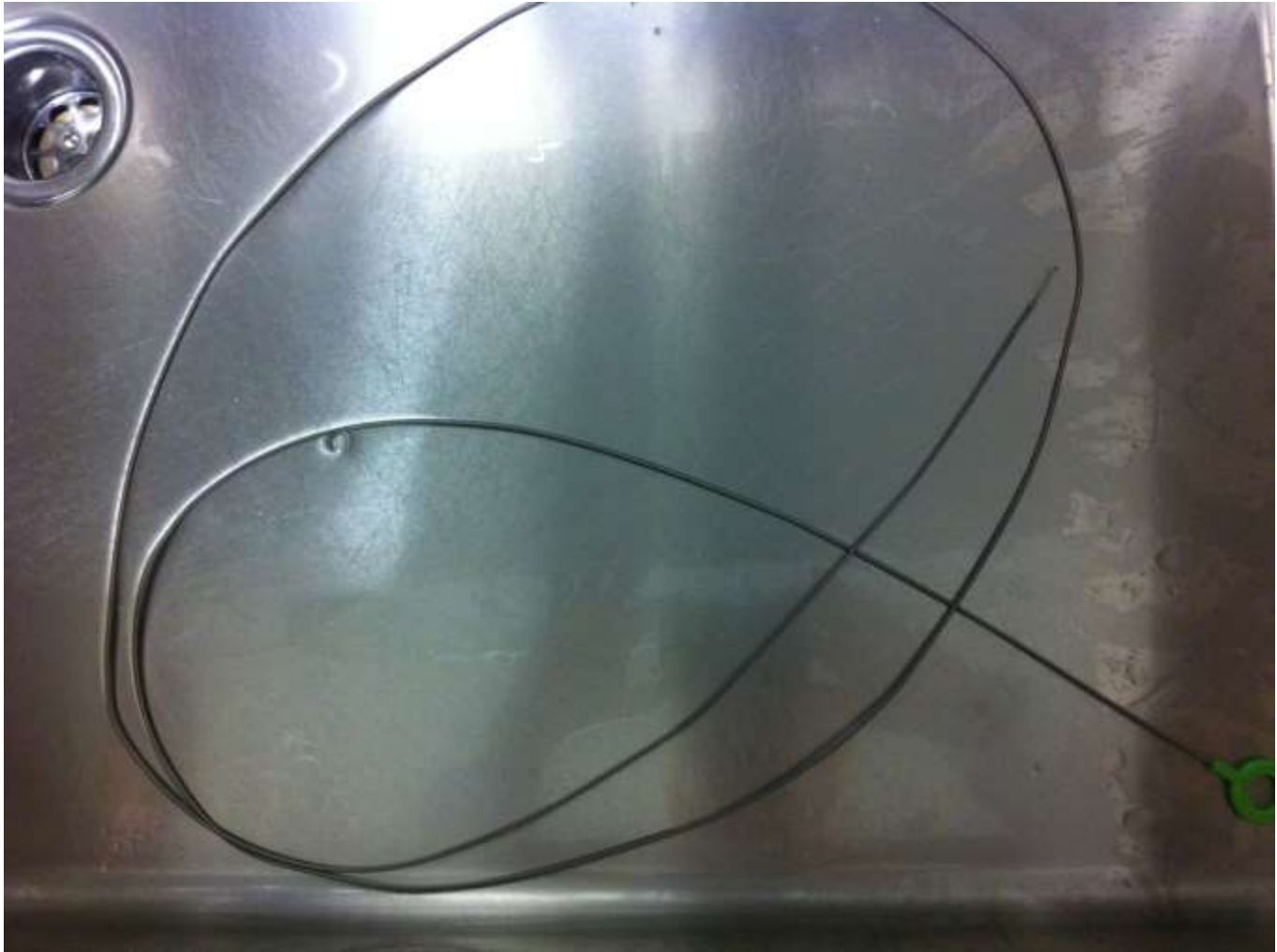








































# Endoscope Accessories

- Disposable accessories should not generally be used more than once.
- If they are to be used more than once due to limited resources, it is imperative that they should be subjected to a complete cleaning, disinfection, and sterilization cycle between each use.
- Accessories that penetrate the mucosal barrier (biopsy forceps, guide wires, cytology brushes, other cutting instruments
  - use once only                      **or**
  - clean mechanically and then sterilize/autoclave between each patient use
- Accessories that are not passed through the working channel (water bottles, bougies, etc) should be autoclaved for 20 minutes at 134 °C
- Rubber valves should be changed after the passage of biopsy forceps, guide wires, and/or other accessories

# Personnel training

- Train all health-care staff in an endoscopy unit in standard infection control measures
- Provide personnel assigned to reprocess endoscopes with device-specific reprocessing instructions to carry out cleaning and high-level disinfection or sterilization procedures
- Test the competency of personnel reprocessing endoscopes on a regular basis
- Provide information to all personnel handling chemicals on the biological and chemical hazards associated with procedures using disinfectant
- Protective equipment should be readily available to protect staff
- Design facilities in which endoscopes are used and disinfected in such a way as to provide a safe environment for healthcare workers and patients

## Water Quality

Water used for rinsing disinfected endoscopes and bronchoscopes should have been boiled or filtered through 0,1 – 0,2  $\mu\text{m}$  filters

Internal channels of reprocessed endoscopes or bronchoscopes should be dried.

(e.g. using 70% Alcohol followed by forced-air treatment)

## Structural measures for endoscopic units

- **Seperate rooms for examinations of**
  - contaminated cavities (e.g. Gastroscopy, bronchoscopy,..)
  - non-contaminated cavities (e.g. laparoscopy, arthroscopy...)
- **Reprocessing rooms with clean/unclean zone**
  - ventilation required (disinfectants, steam, water)
- **Waiting rooms for patients**
- **Endoscopic should not be a passageway for staff or material**
- **Furniture should be easy to disinfect**





## Structural measures for endoscopic units

Floor coveries should be easy to  
Clean and disinfect

Floor coveries should be liquid – tight

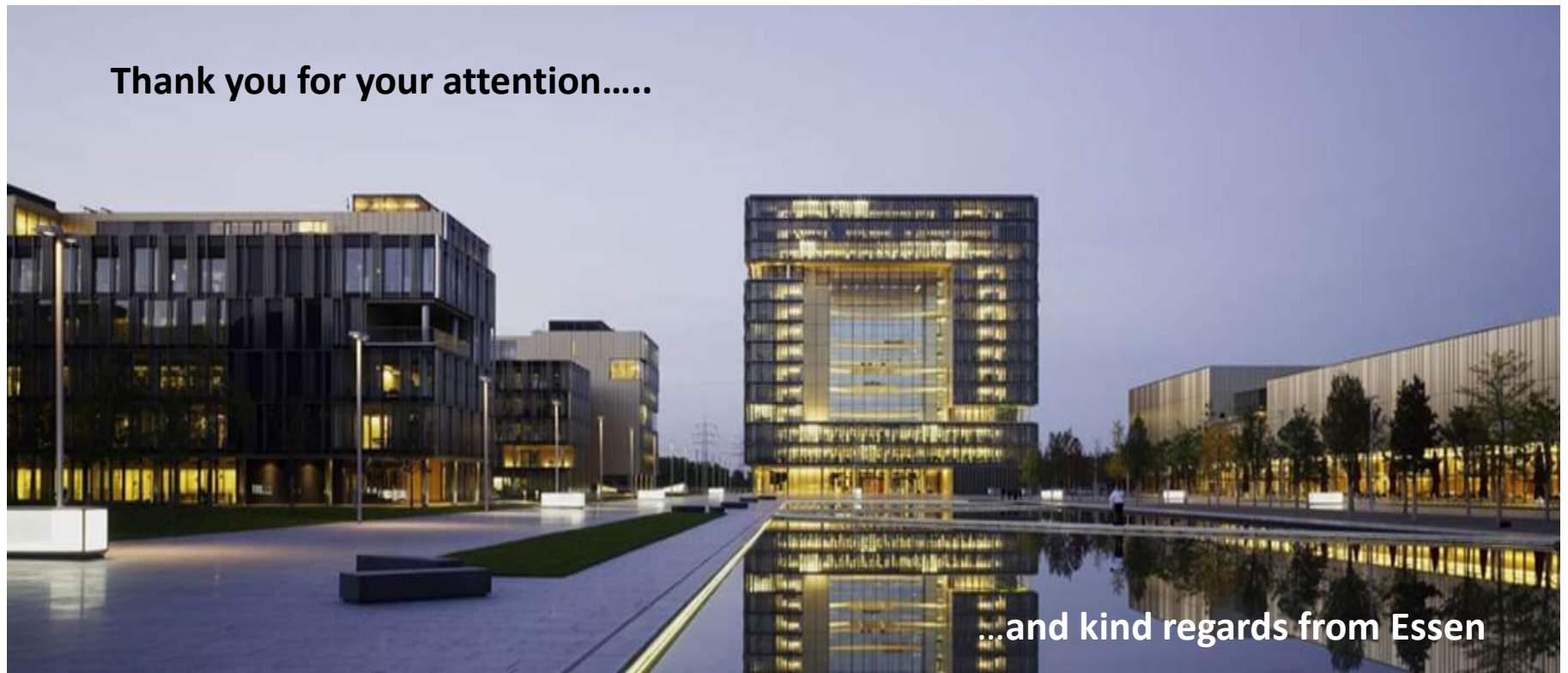


Thank you for your attention!





**Thank you for your attention.....**



**...and kind regards from Essen**