



Welcome

to the 20th World Sterilization Congress

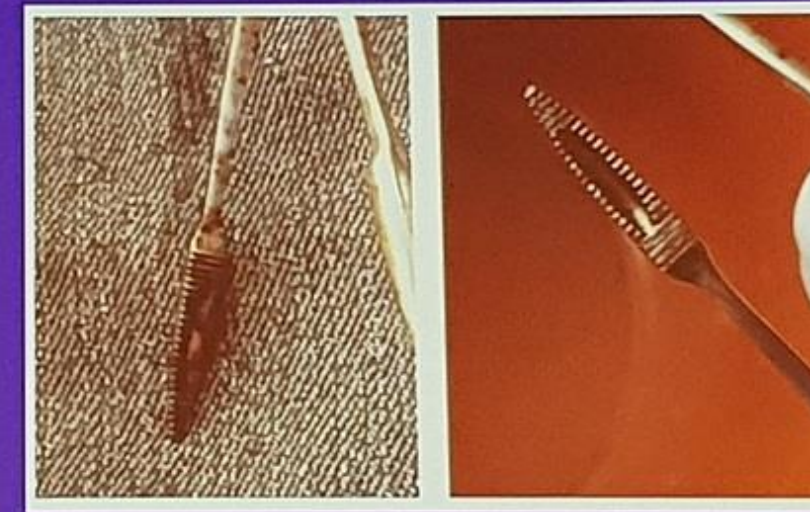


Eliminating Decontamination of Surgical Instruments with 0.5% Sodium Hypochlorite Solution: Implementing Evidence-Based Change in Low- to Middle-Income Country (LMIC) Sterilization Practices

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World Federation for
Hospital Sterilisation Sciences



Introduction

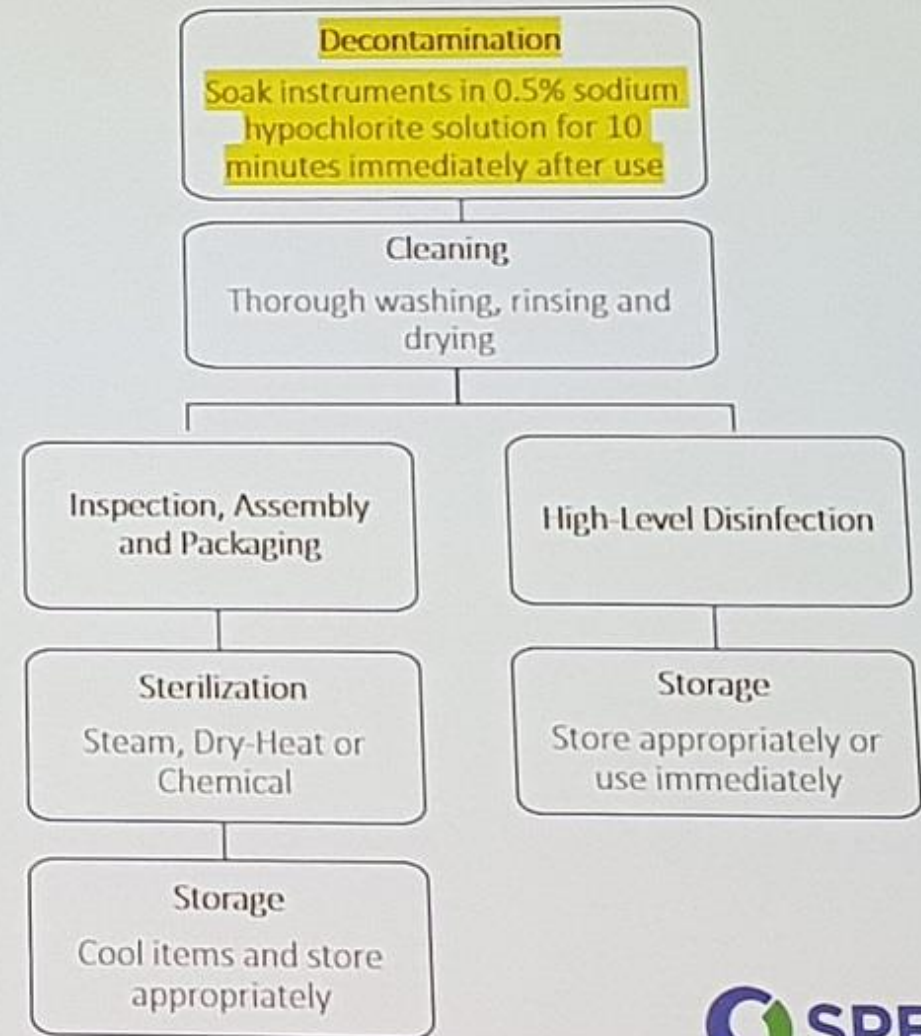
- Over 30+ years national guidelines in many LMICs have included the recommendation to soak used surgical instruments in 0.5% sodium hypochlorite solution as the first reprocessing step – commonly referred to as ‘decontamination’.
- There’s been confusion over the origin of this practice and no evidence found to support its use.
- In 2016, the WHO published new guidelines that do not recommend soaking instruments in 0.5% sodium hypochlorite.

Cause for Concern in LMICs

- In the 1980s, HIV was of great concern for health care workers (HCWs) - testing and treatment was not available in LMICs.
- Access to prevention, testing, and treatment for HBV and HCV were also not widely available.
- HCWs commonly used their bare hands for handling and processing used surgical instruments.
- Risk of developing HBV among unvaccinated HCWs following a single needle stick with HBV-infected blood ranged from 6% - 30% (CDC 2013).
- The risk of HCV was 1.8% - 3% and for HIV was 0.3% (CDC 2013).

Origin of the Recommendation

- In 1981 Bertil Nystrom concluded that surgical instruments cleaned by hand should first be disinfected using an effective disinfectant-detergent solution.
- Several US government organizations working in LMICs recommended soaking instruments in 0.5% sodium hypochlorite solution for 10 minutes before further processing in order to protect HCWs.
- More than 35 LMICs adapted this method of decontamination as the first step in their instrument processing guidelines.



Sodium Hypochlorite

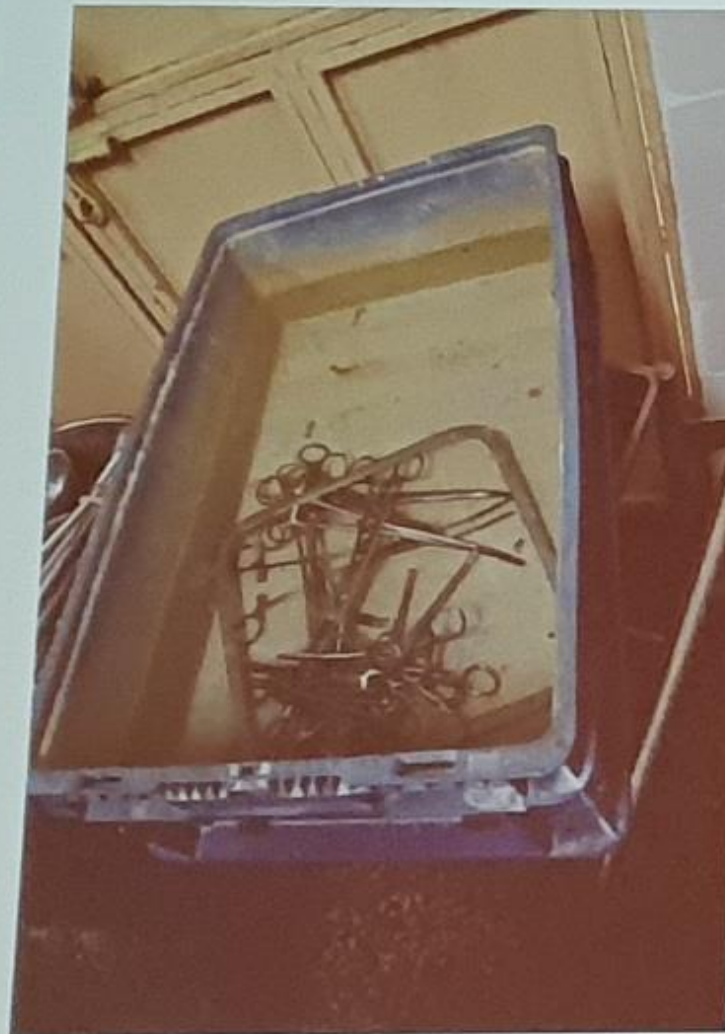
- Widely used disinfectant – accessible & affordable.
- Contains 5% sodium hypochlorite (pH >8) as a bleach.
- Commercially prepared by mixing chlorine gas with sodium hydroxide (NaOH).
- Classified as an intermediate-level disinfectant, *not* high-level disinfectant (CDC 2008, Revised in Feb. 2017).
- Quickly inactivated by organic matter.
- Corrosive to metal in concentrations of more than 500 ppm (0.05%).
- Causes harm to endoscopes and to certain plastic equipment.



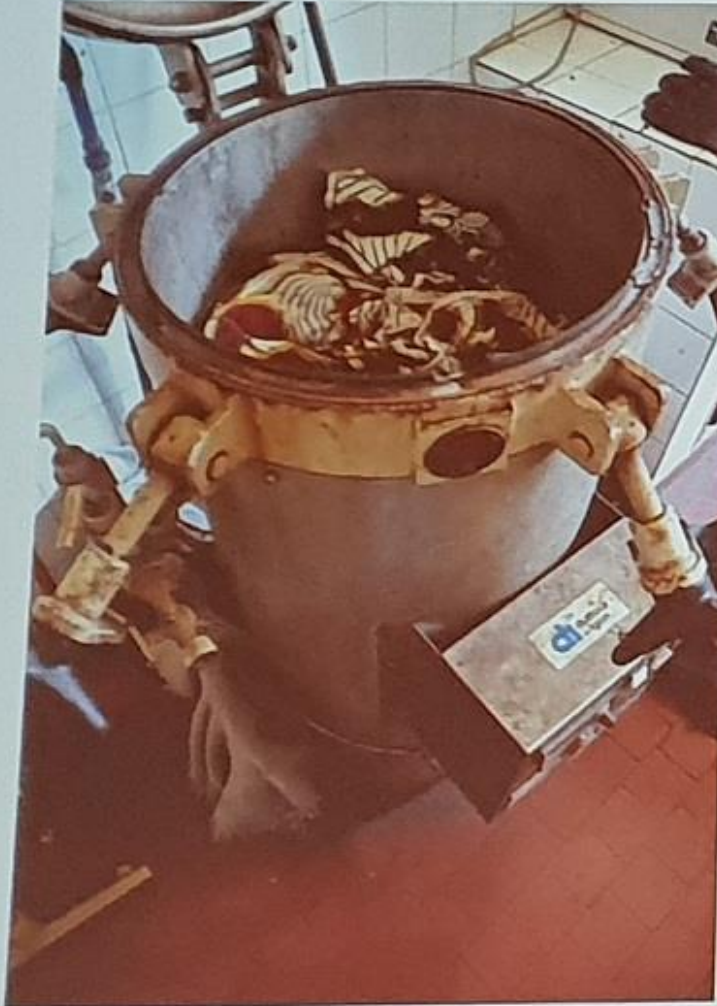
Decontamination

Organization	Definition of Decontamination
OSHA, USA	A process of removing or neutralizing contaminants that have accumulated on personnel and equipment.
WHO (2016)	Removes soil and pathogenic microorganisms from objects so that they are safe to handle, subject to further processing, use or discard (CDC 2008). Decontamination includes cleaning, disinfection, and sterilization functions.
CDC (2008)	Removes pathogenic microorganisms from objects so they are safe to handle, use, or discard.
NHS, UK (2015)	A process (or combination of processes), which removes or destroys contamination and thereby prevents microorganisms or other contaminants reaching a susceptible site in sufficient quantities to cause infection or other harmful effects (it includes cleaning, disinfection, and sterilization).
Jhpiego (1989, 2003)	Process that makes inanimate objects safer to handle by staff before cleaning.

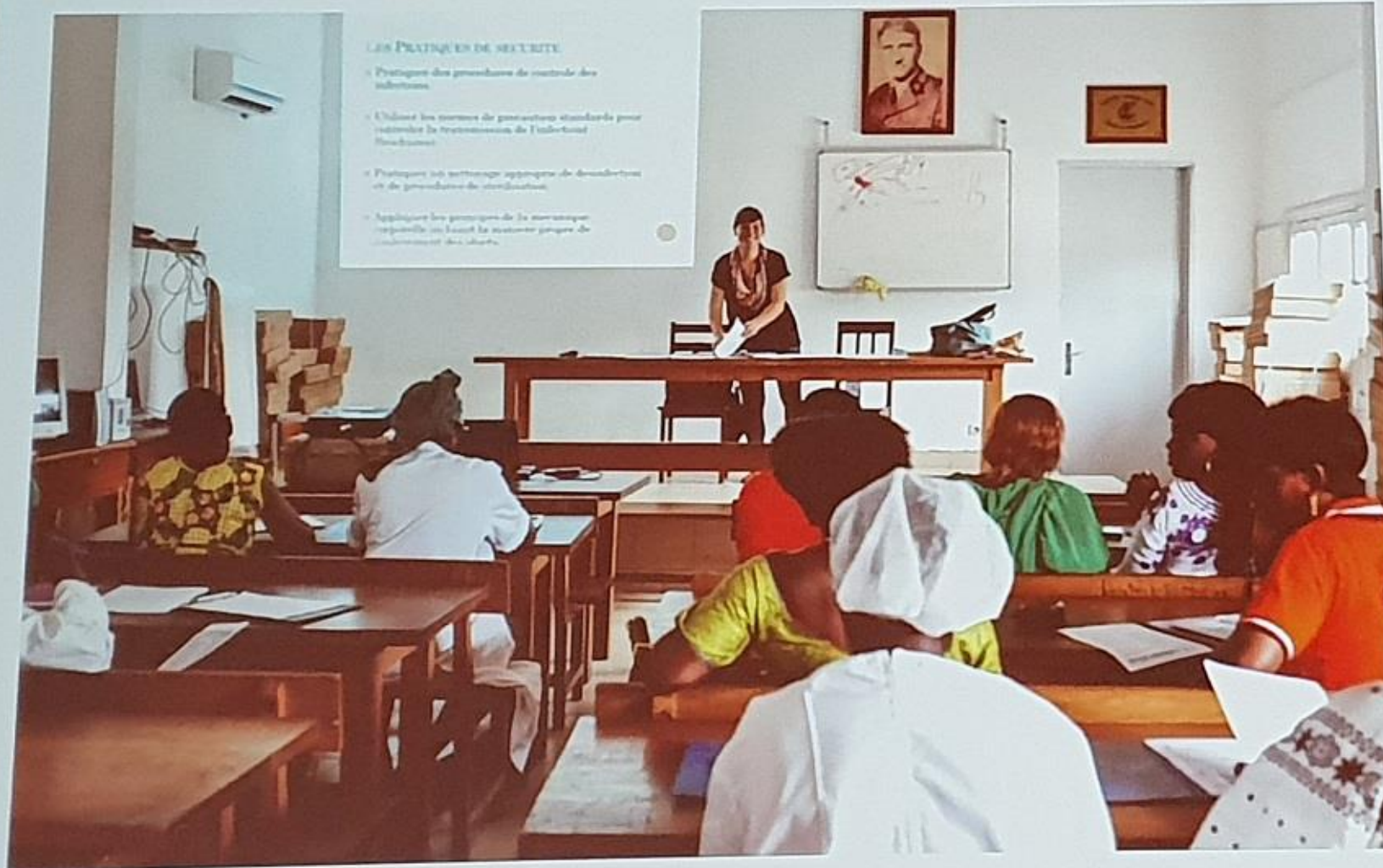
Sierra Leone 2011



Guinea 2012

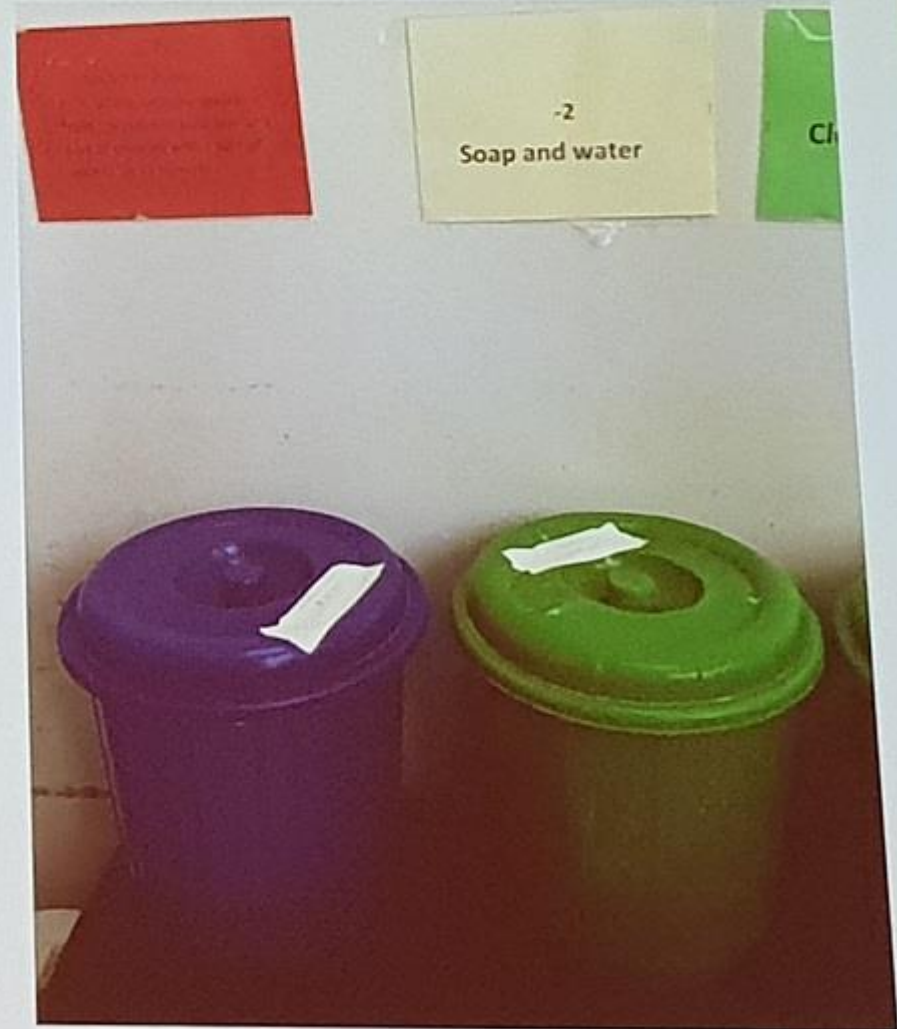


Congo 2013



The Question

- Assume that soaking used instruments in 0.5% sodium hypochlorite solution for 10 minutes reduces the risk of exposure to infectious pathogens.
- Do HCWs in LMICs have a decreased risk of exposure while using this method as the first step before cleaning used surgical instruments?
- A team from Jhpiego (Johns Hopkins) conducted a thorough review of available literature and did not find any specific evidence that this practice protects HCWs from bloodborne pathogens.



2016 WHO Recommendations

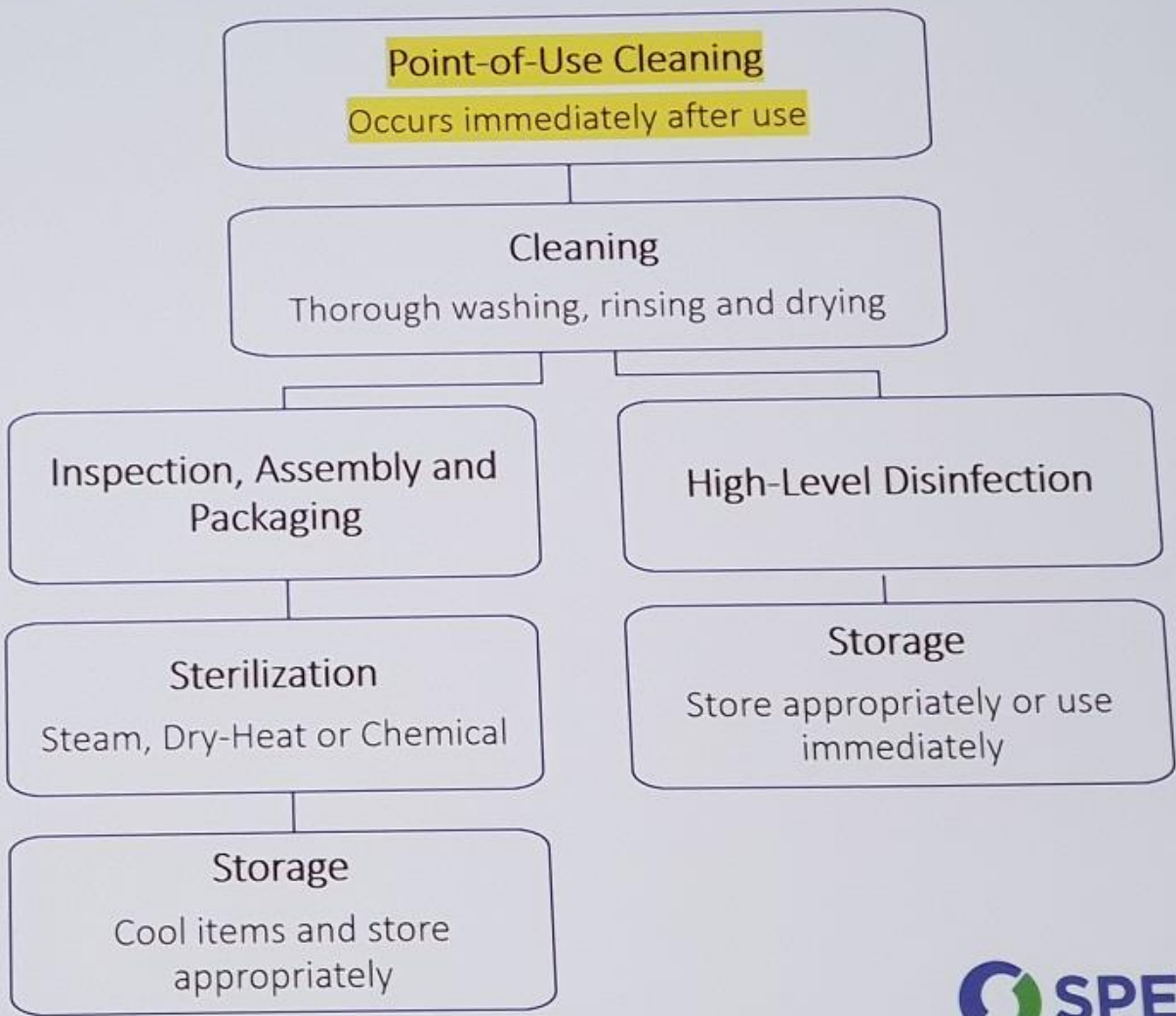
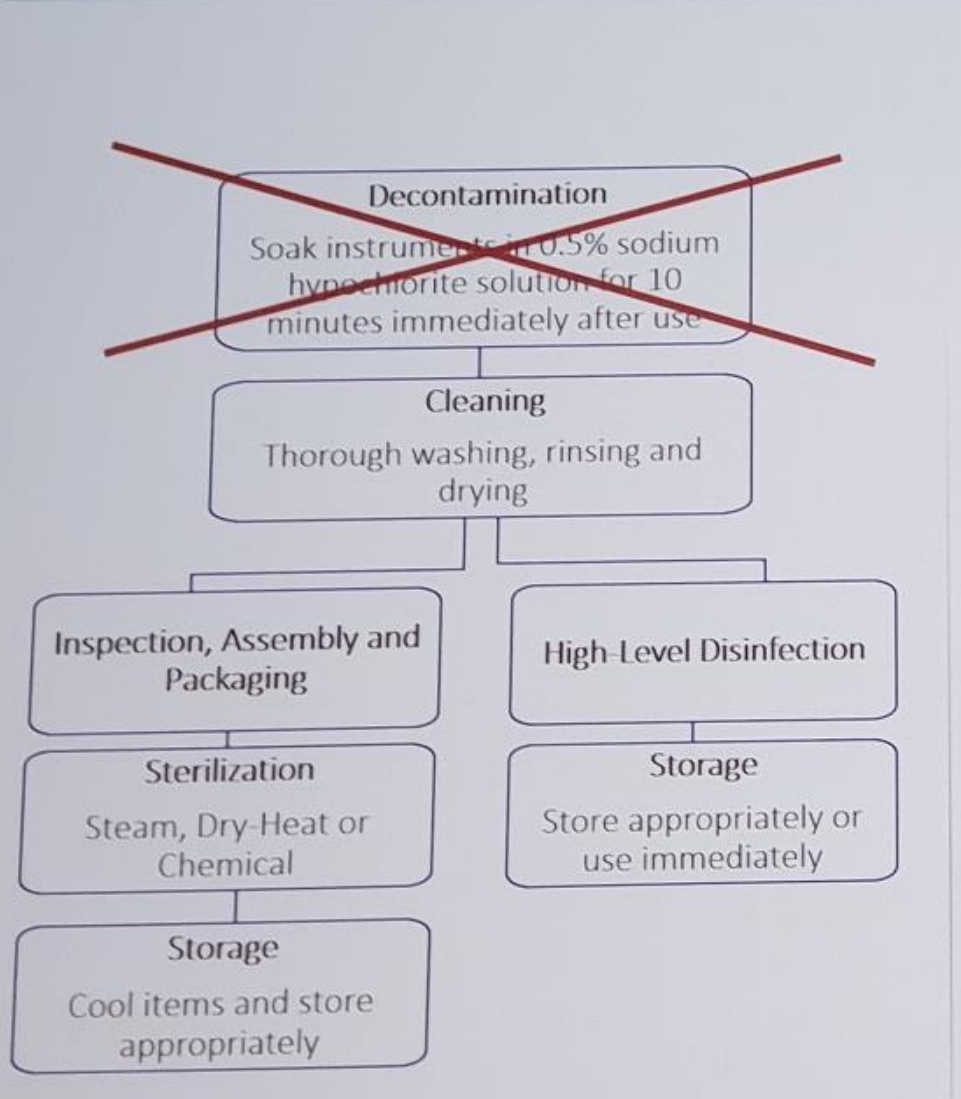
Decontamination and Reprocessing of for Fac

Soaking of instruments in disinfectant prior to cleaning

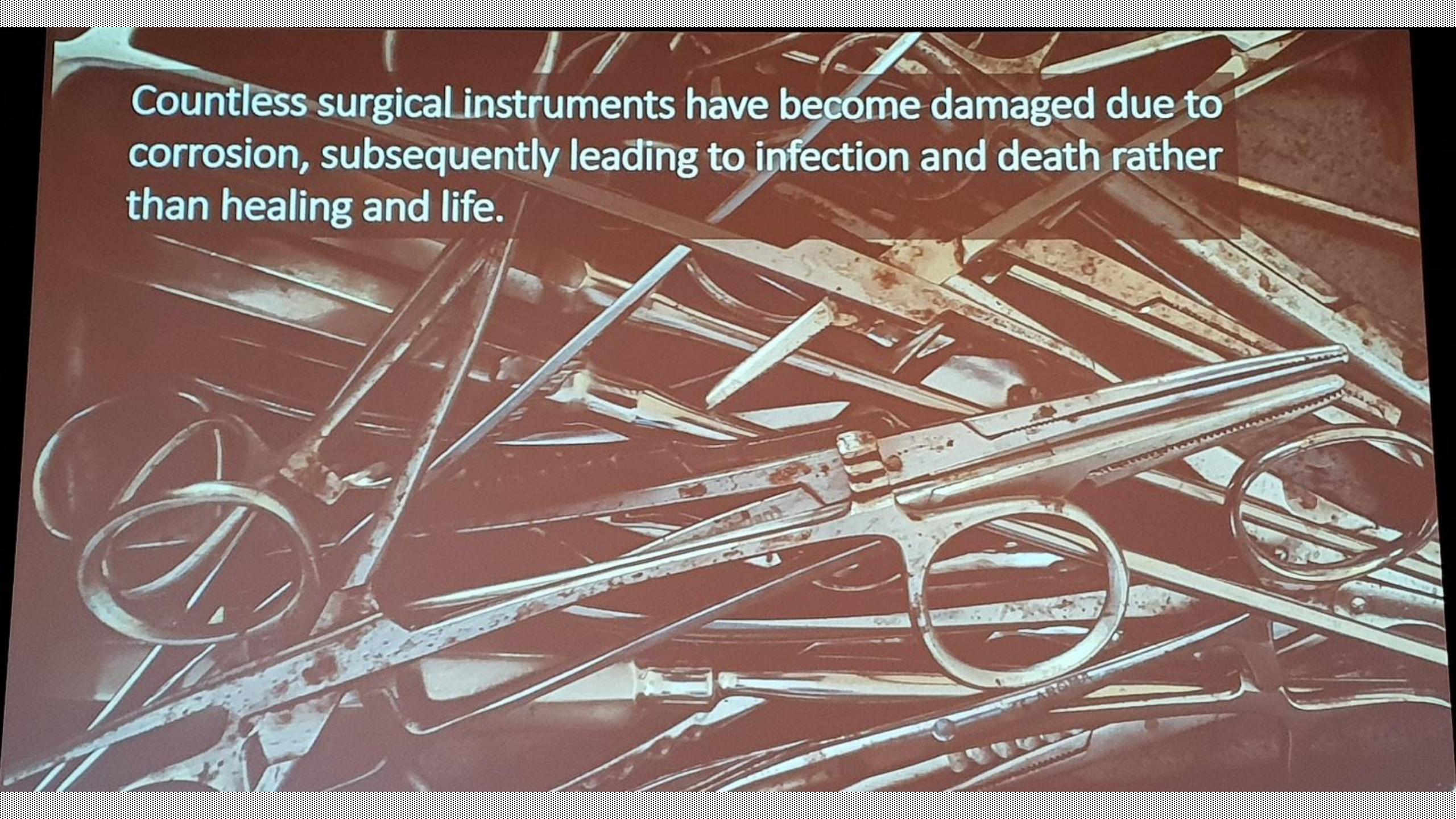
Soaking of instruments in 0.5% chlorine solution or any other disinfectant before cleaning is *not recommended* for the following reasons:

- It may damage/corrode the instruments
- The disinfectant may be inactivated by blood and body fluids, which could become a source of microbial contamination and formation of biofilm
- Transportation of contaminated items soaked in chemical disinfectant to the decontamination area may pose a risk to health-care workers and result in inappropriate handling and accidental damage
- May contribute to the development of antimicrobial resistance to disinfectants

New Recommended Practice



Countless surgical instruments have become damaged due to corrosion, subsequently leading to infection and death rather than healing and life.



Safe Surgery 2020 (SS2020) Initiative

- Since 2017, SPECT has been involved with SS2020, funded by the GE Foundation.
- Together with Jhpiego, Assist International, Dalberg, PGSSC (Harvard), the G4 Alliance, and National Ministries of Health, SPECT has provided training in Ethiopia, Tanzania, and Cambodia.



Research

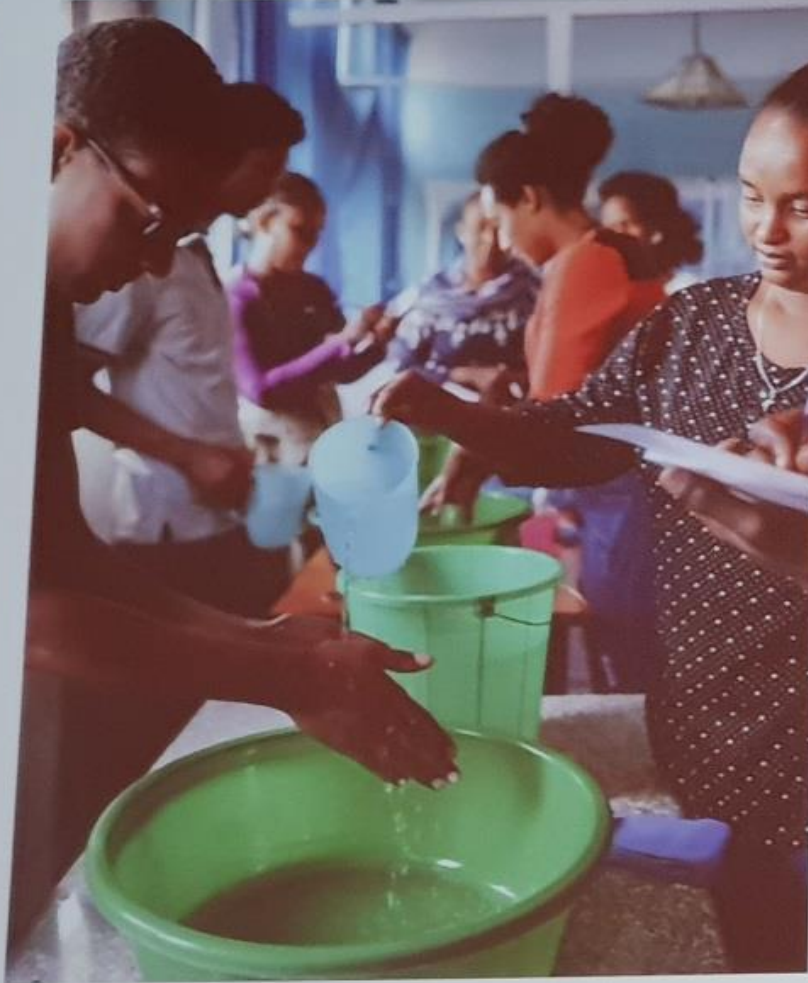
- Sterile processing practices at 10 hospitals in Ethiopia and 10 in Tanzania, were assessed prior to training provided by SPECT.
- During training, SPECT recommended removing 0.5% sodium hypochlorite from reprocessing practices and that proper personal protective equipment (PPE) be used.
- 3-4 months post training, assessments were again conducted to identify change in practice.



Education and Training



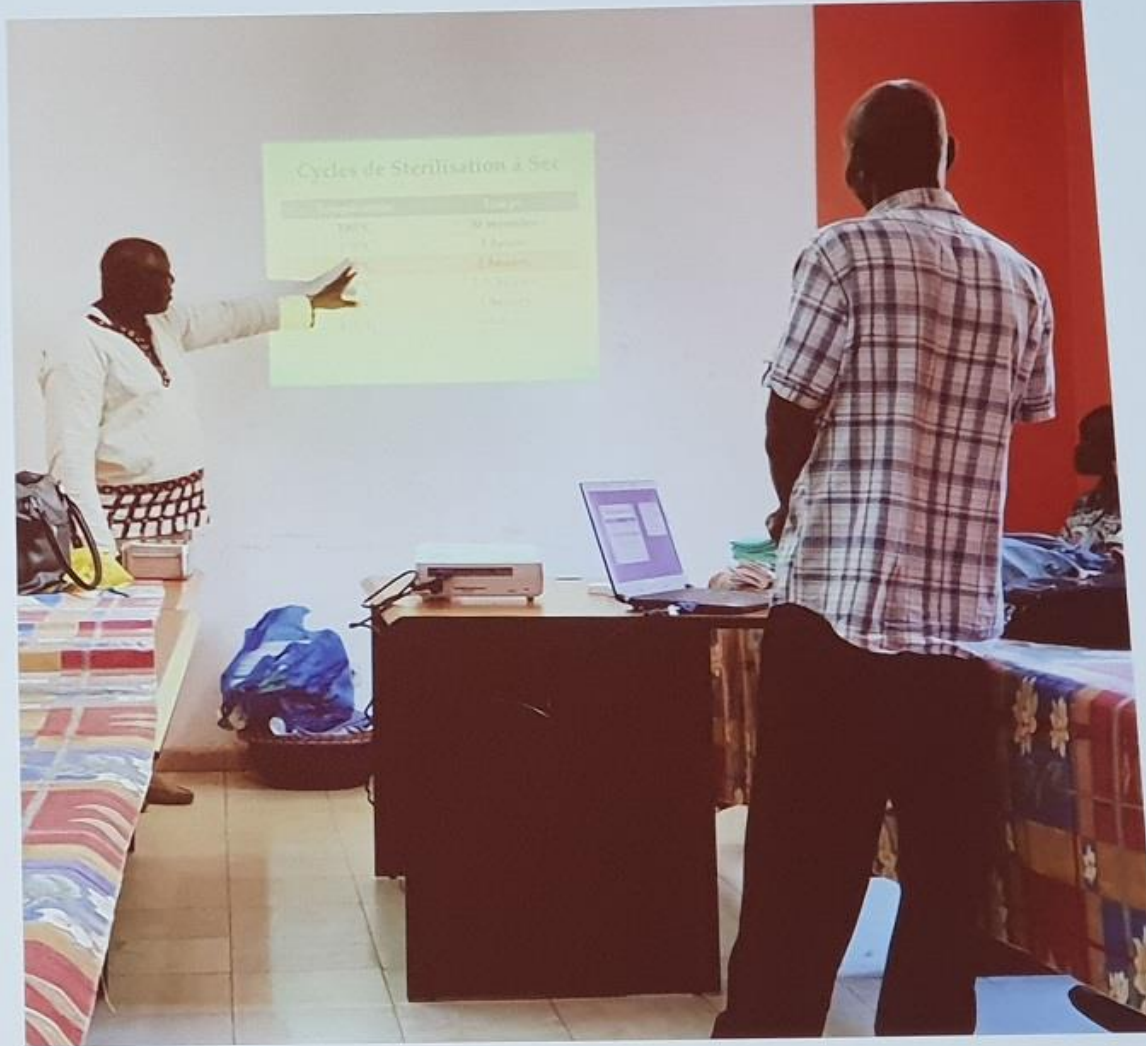
Hands-On Practice



Peer Teaching



Training of Trainers



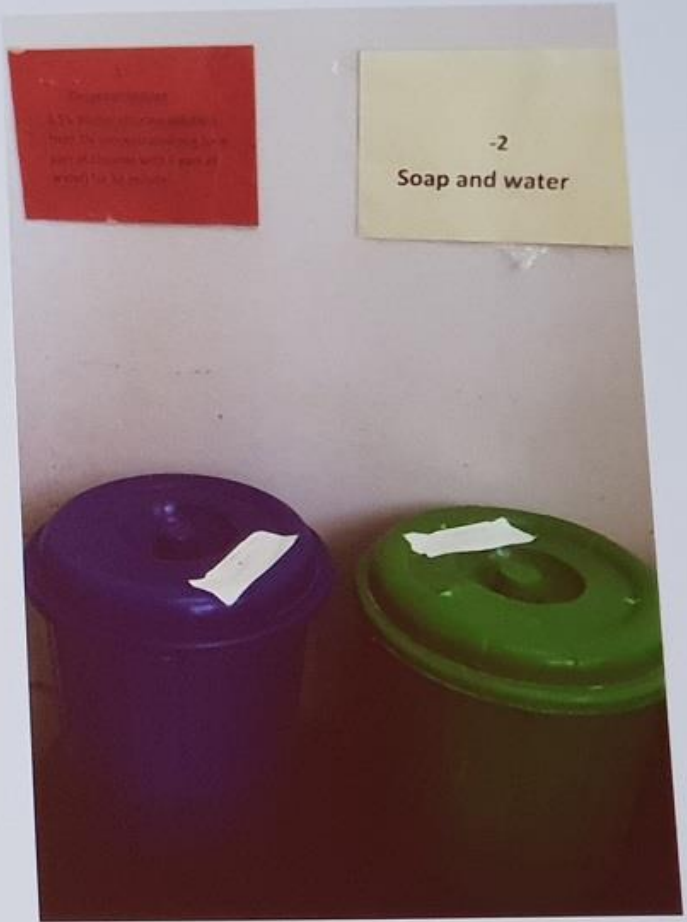
Results

- In Ethiopia, 8 of 10 hospitals stopped soaking instruments in 0.5% sodium hypochlorite following SPECT's training.
- In Tanzania, 7 of 10 hospitals removed the practice.
- The other 3 hospitals decreased immersion time to 10 minutes maximum, when they had previously been soaking instruments much longer.



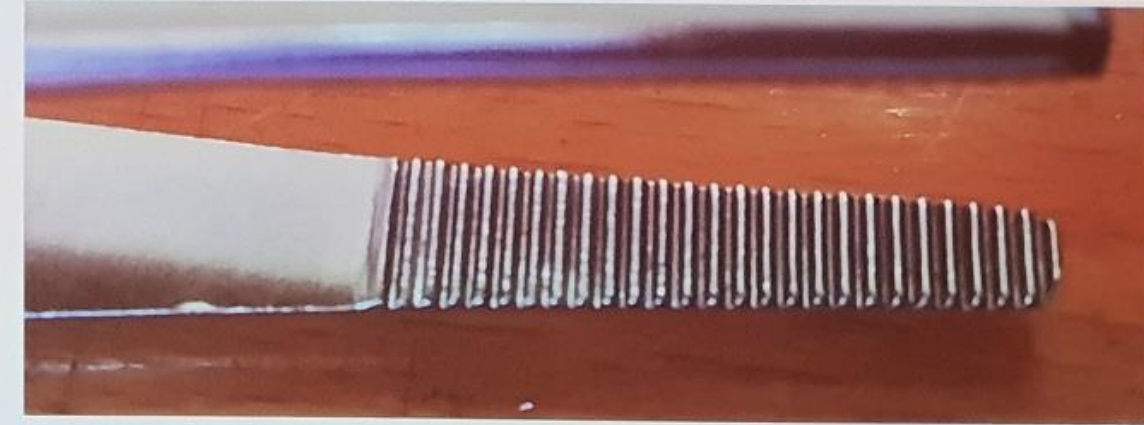
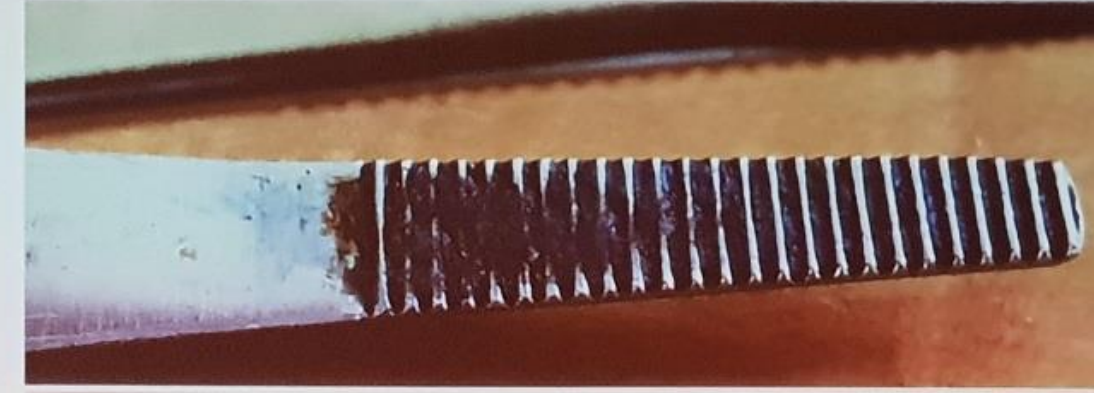
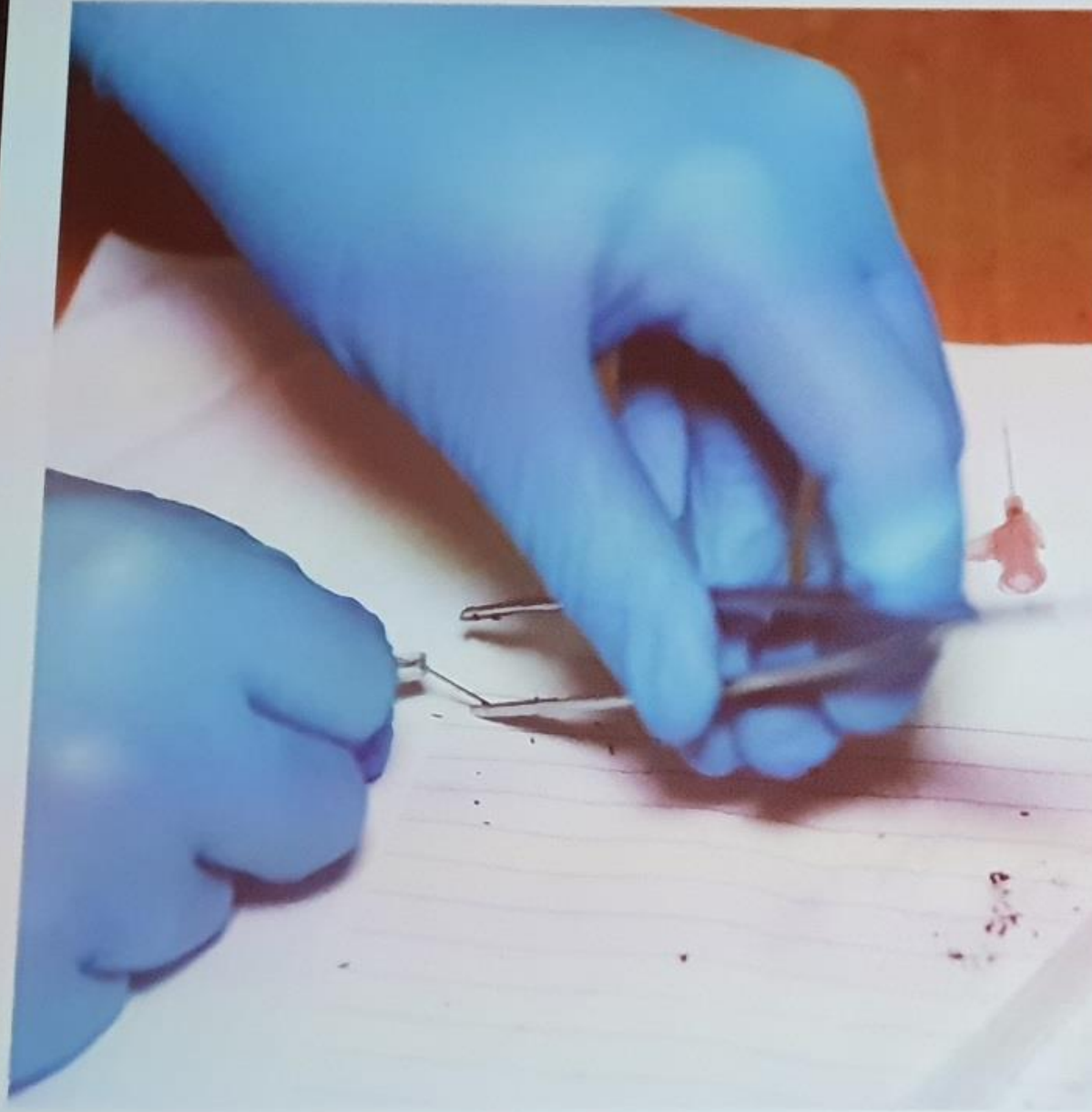
Challenges

- After the change of practice in Ethiopian hospitals, HCWs were subsequently required to use it again due to outdated national guidelines.
- SPECT and Jhpiego worked with the Ethiopian MoH to update national reprocessing guidelines.
- SPECT requested letters be sent to hospitals by MoH authorizing the removal of this practice until new guidelines were disseminated.
- The Tanzanian government had updated their national guidelines prior to SPECT's training, but had not yet found a way to disseminate 4-months post training.



Motivation to Change Practice







Impact of SPECT's training

- Since 2013, SPECT has worked with 12 countries across Africa, Central American and South East Asia.
- Trained 500+ HCW's from over 200 healthcare facilities.
- Our Trainers have gone on to train over 600 other HCW's on new recommendations for sterile processing.



Recommendations for Change

- National Instrument Processing Guidelines need updating throughout LMICs to prevent harms caused to surgical instruments and save the cost incurred of procuring 0.5% sodium hypochlorite.
- Ministries of Health and Hospital Administrations need to ensure programs and protocols are implemented for management of accidental exposure to bloodborne pathogens, and
- Ensure HCWs have access to PPE and effective cleaning materials to prevent transmission of infection to workers and patients alike.



Conclusion

- Providing education and follow-up support for HCWs results in increased knowledge of best practices, application of knowledge in practice settings, and awareness of issues that need to be overcome to decrease risks.
- Ensuring HCWs are supported to improve sterile processing practices with education and training is a key step in supporting safer surgery in LMICs.
- Increasing the focus on surgical support systems, such as sterile processing and related IP&C areas needs to be part of any safe surgical initiative to keep patients, visitors and HCWs safe.



References

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