Recommendations by the Quality Task Group (67): Using Ultrasonic Basins to Reprocess Medical Devices – Part 2

1. Cleaning

Ultrasonic treatment is used

1. to preclean certain medical devices prior to automated reprocessing
2. during manual cleaning of certain medical devices before subsequent immersion disinfection
3. for recleaning purposes.

The detergents used in ultrasonic basins should preferably be neutral, enzymatic or mildly alkaline products with or without disinfectant properties.

Risk analysis must be conducted before ➔ **CHOOSING PRODUCTS**. In the interest of personnel protection, it is recommended that, in the case of instruments needing further manual treatment, disinfectant cleaning be used. If further manual treatment is not needed, the use of just a detergent suffices.

➔ **BEFORE CHOOSING PRODUCTS,** risk analysis must be performed.

Detergents that are able to reduce surface tension, e.g. by means of surfactants, should generate only very little foam, in particular if followed by automated reprocessing in a washer-disinfector (WD). The process chemicals used in an ultrasonic basin should be tailored to the detergent used in the WD. Otherwise, the medical devices (MDs) must be thoroughly rinsed when withdrawn from the ultrasonic basin to prevent foam formation in the WD due to sequestration of residues.

In the case of subsequent manual disinfection in an immersion basin, too, the MDs must be thoroughly rinsed because residues of soils and detergents could detract from the ➔ **DISINFECTION RESULTS** (protein and soap effects).

➔ **DISINFECTION RESULTS** of subsequent disinfection may be compromised by residues of soils and detergents.

Under no circumstances should detergents containing sodium chloride (table salt) be used. Liquid household detergents may contain sodium chloride to control viscosity. Dishwasher tablets may contain activated chlorine to remove tanning agent deposits. Activated chlorine can give rise to corrosion of stainless steel instruments. Therefore only detergents recommended by the manufacturer for ultrasonic basins should be used.

2. Detergents with disinfectant action

Ultrasound per se is not endowed with any ➔ **DISINFECTANT ACTION**. To prevent microbial growth in the solution, it is recommended that in the interest of personnel protection combination products endowed with at least limited virucidal action should be used (HBV, HCV, HIV). A precondition for disinfectant action is that the disinfectant substances come into ➔ **CONTACT WITH THE MICROORGANISMS**. But the likelihood that adequate disinfectant action will not, or only to a limited extent, be assured, because of a high bioburden, after one or several loads must be borne in mind.

➔ Ultrasound per se does not have any **DISINFECTANT ACTION**.

➔ **CONTACT OF THE DISINFECTANT SUBSTANCES WITH THE MICROORGANISMS** is a precondition for disinfectant action.

Final disinfection must be conducted with standardized or validated processes as a further step in the reprocessing chain.

Since temperatures can reach 40 °C or more in ultrasonic basins, detergents with disinfectant substances, which become volatile at such temperatures, are unsuitable.

Instrument disinfectants featured on the official list compiled by the German Association of Applied Hygiene (VAH) were tested for their suitability for use in an immersion basin at room temperature and are not necessarily suitable for use in ultrasonic basins. Under no circumstances should a protein-fixing effect be generated. That rules out products containing aldehyde substances.

The instructions supplied by the manufacturers of the different process chemicals must be observed.

3. Working procedure

3.1 Fill the basin

- Water of microbiological "drinking quality" is adequate (unless the manufacturers recommend softened or demineralised water for their product)
- Note filling level
- Add the process chemicals in the requisite concentration (if necessary, use a dosing unit)
- Degas as per the instructions of the ultrasonic basin manufacturer

3.2 Operating the ultrasonic basin

- Make sure that the specified distance from the base of the basin is observed
- Place devices on suitable trays (arrange instruments in a single layer to gain maximum benefit from ultrasonic action)
- Avoid spray shadowing
- Open jointed instruments before placing them in basin
- Avoid air bubbles when arranging instruments; fill cavities with the solution. In the interest of personnel protection, measures must be taken to protect against splashing, e. g. rinse/fill instrument cavaties below the liquid level. Wear personal protective equipment.
- To reduce aerosol-mediated pollution of the room air, fit an extractor device to the ultrasonic basin or, at the very least, close it with a lid.
- Set sonication duration as instructed by the manufacturer
- Do not reach into the basin while it is in operation
- Monitor temperature during operation (too high temperatures can adversely affect the process chemicals)
- Check filling level each time the basin is filled and during operation

3.3 Replenishing the ultrasonic basin

➔ **DAILY REPLENISHMENT** of the ultrasonic basin is recommended.

In general, it is recommended that the basin be replenished at least ➔ **DAILY**. In practice how often this is done will depend on the use frequency and on the extent of contamination. Bearing in mind the practical experiences, the replenishment intervals must be set out in standard operating procedures for the respective establishment.

➔ **THOROUGH SURFACE DISINFECTION** must be carried out before refilling the ultrasonic basin.

Before refilling the ultrasonic basin, ➔ **THOROUGH SURFACE DISINFECTION** must be carried out since growth of microorganisms takes place in the basin when not in use.

It is recommended that the ultrasonic basin be emptied at the end of the working day and surface disinfection carried out. The next working day, it can be refilled. This ensures that the exposure time specified for the surface disinfectant will be observed.

4. Routine checks

When the unloaded basin is switched on the transducers will generate movements at the surface of the liquid. Based on the liquid movement one can assess whether all transducers are working.

A local check of energy distribution can be carried out by means of:

- Aluminium foil test
- Indicators or test instruments designed for ultrasonic basins
- The results must be documented.

5. Personnel protection

➔ **RELIABLE BACTERICIDAL, FUNGICIDAL AND VIRUCIDAL ACTION** cannot be guaranteed during precleaning in the ultrasonic basin.

➔ **ALL OCCUPATIONAL PROTECTION MEASURES** must therefore be taken.

Cleaning or precleaning in the ultrasonic basin is carried out for potentially contaminated instruments. ➔ **RELIABLE BACTERICIDAL, FUNGICIDAL AND VIRUCIDAL ACTION** cannot be guaranteed during precleaning in the ultrasonic basin. Therefore all ➔ **OCCUPATIONAL PROTECTION MEASURES** must be taken such as avoidance of unnecessary handling of instruments, the use of suitable gloves, protection against splashing, etc. ✦

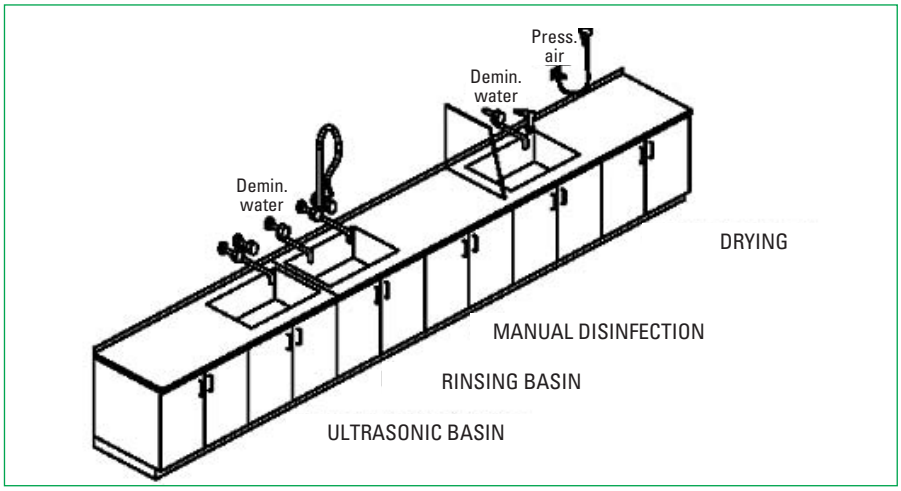

Fig. 1: Example of an ideal unclean processing area (may be reduced according to the number of goods to be processed)