



Water Disinfection – practical recommendation for resource-limited setting

Target group & disclaimer: The recommendation first and foremost targets non-professional caregivers and health care professionals without wound expertise. Professional caregivers may benefit additionally from the publications referenced below. The recommendations and guidelines will be chosen by a select group of EWMA experts with experience in wound management from war, crisis and emergency aid contexts. The guidelines are thus not based on a broad consensus.

Practical file inspired by the:

Wilderness Medical Society Clinical Practice Guidelines for Water Disinfection for Wilderness, International Travel, and Austere Situations

Full text: [https://www.wemjournal.org/article/S1080-6032\(19\)30116-4/fulltext](https://www.wemjournal.org/article/S1080-6032(19)30116-4/fulltext)

PDF: <https://www.wemjournal.org/action/showPdf?pii=S1080-6032%2819%2930116-4>

Clean and clear water is very important for the treatment of most wounds.

Soaking the dressing with water will make it easier to remove.

Washing wounds (both acute and chronic) will help clean them from debris but also germs.

When no cleansing solution is available, simple tap water or bottled water is enough.

Normal soap can be used in conjunction to clean the wound and periwound skin.

If you have no access to such water, here are a few tips to obtain reasonably clear and safe water.

More details are included in the above-mentioned document.

First step, water clarification.

If your water is not very clear (cloudy), you must filter it. It will not remove germs but make the second step, water disinfection, more efficient

If you have no dedicated filters (charcoal, ceramics,..), you can use a few layers of cotton cloth (or other permeable fabrics, you can use layers of paper towel to filter the bigger particles. Bleaching powder, baking powder, or even the fine white ash from a campfire can be used to flocculate the bigger particles.



Second step, water disinfection.

At this stage we tend at reducing the microorganism load.

a) Heat disinfection

Boiling the water has a very potent effect and has been used for centuries.

It's useful to know that taking the water to boiling point (98° C) and boiling one minute is enough to inactivate most germs.

Preparation: If your heat source is not powerful enough you can elevate temperature until you cannot put your finger in it for more than 5 seconds. This indicates the temperature to be over 55-65° C. The water should be kept at that temperature for 30 minutes to clear most germs.

b) Chemical disinfection

I. **Chlorine** is the most known, if you have no specific chlorine water treatment you can use household **bleach**.

- Household bleach with 5% sodium hypochlorite solution 1 to 2 drops (0.1 mL) per liter of water

- Household bleach with 8,25% sodium hypochlorite: 0.5 to 1 drops (0.05 to 0.1 mL) per liter of water

Note: if cloudy water is used (no filtration) double the dose of bleach as part of it will be fixed on the particles floating in the water.

Preparation: Water temperature is important. 30 degrees Celsius seems optimal. At the higher bleach concentration (1, respectively 2 drops per liter), it will take 15 minutes for the solution to be efficient. At lower temperatures preparation time will be longer, for example 60 minutes at 5 degrees Celsius for the same concentration (for other concentrations or temperatures, please refer to document).

II. **Iodine** is not as popular but can also give good results

- 2% iodine solution (tincture): 5 to 10 drops, (0.2 to 0.4 mL) per liter of water

- 10% povidone-iodine solution: 8 to 16 drops, (0.35 to 0.70 mL) per liter of water

Note: if cloudy water is used (no filtration) double the dose of iodine as part of it will be fixed on the particles floating in the water.

Preparation: Water temperature is important. 30 degrees Celsius seems optimal. At the higher iodine concentration (0.4, respectively 0.7 mL per liter), it will take 15 minutes for the solution to be efficient. At lower temperatures preparation time will be longer, for example 60 minutes at 5



degrees Celsius for the same concentration (for other concentrations or temperatures, please refer to document).

c) Ultraviolet (UV) sun radiation

- The water should be kept in a transparent plastic container/bottle (no glass as it filters part of the UV).
- The water must be filtered, not to be cloudy.
- It must be exposed to full sunlight.
- For at least 4 hours
- It must be shaken regularly

Storage: Unless used immediately, the water should be kept in a closed container/bottle