

Disinfection of the Sink Drains to Reduce a Source of *Serratia marcescens* During Infection Outbreaks in a Neonatal Intensive Care Unit

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Introduction

- Newborns in neonatal intensive care units (NICU) are at risk for acquiring nosocomial infection.
- Sink drains are known reservoirs of opportunistic pathogens (OPs) and have been linked to multiple nosocomial outbreaks.
- Splashing and aerosols coming from the drain can contaminate nearby material, surfaces, healthcare personnel and patients.
- Drain disinfection is a strategy used to limit OPs transmission but the effectiveness of the different disinfection methods remains unclear.

Context:

- > A NICU had multiple *Serratia marcescens* outbreaks over two years.
- > Eliminating the possible sources of *S. marcescens* was needed to limit transmission to patients.
- > Sampling of sink drains revealed the presence of *S. marcescens*.

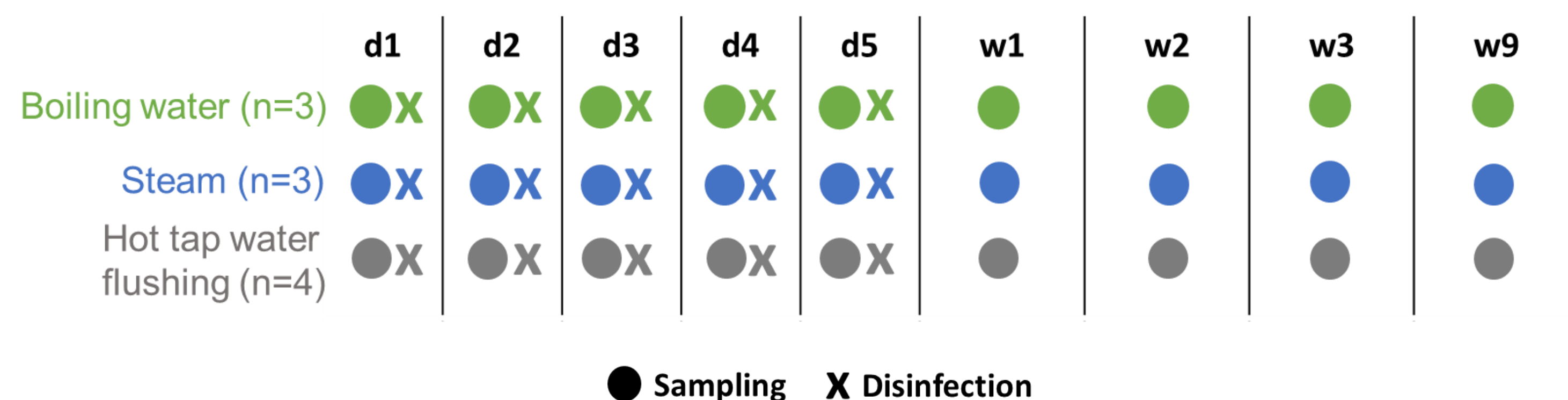
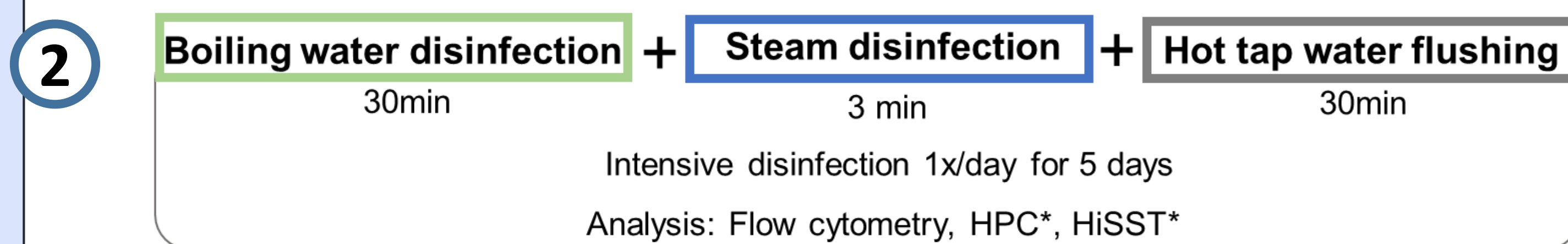
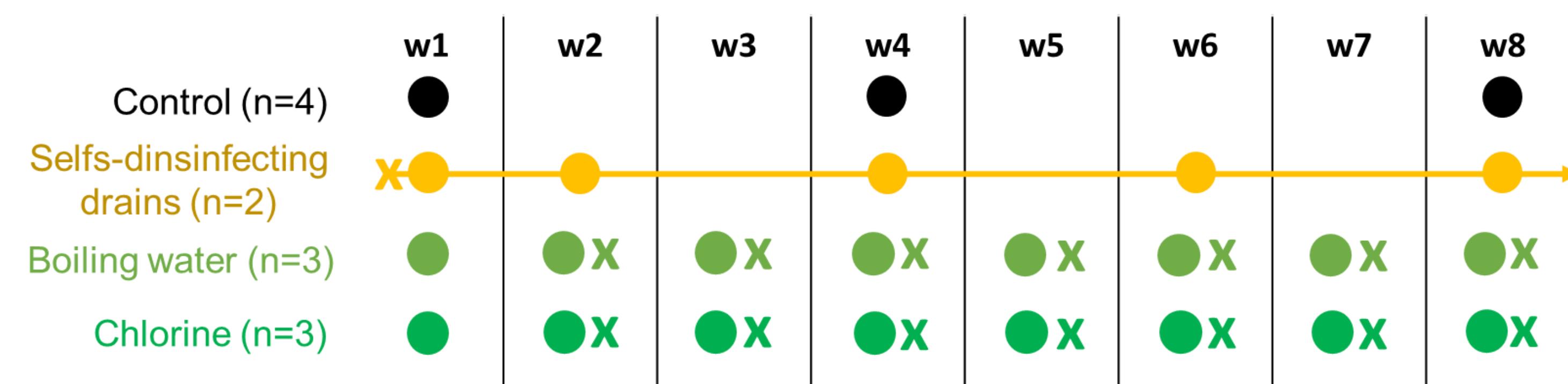
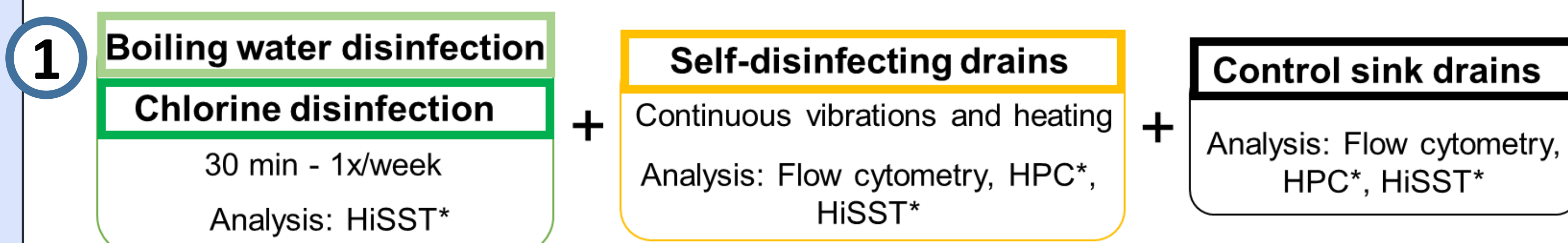
Objectives:

Evaluate the effect of different drain disinfections on :

- The total bacterial concentration
- The presence of *S. marcescens*

Methodology

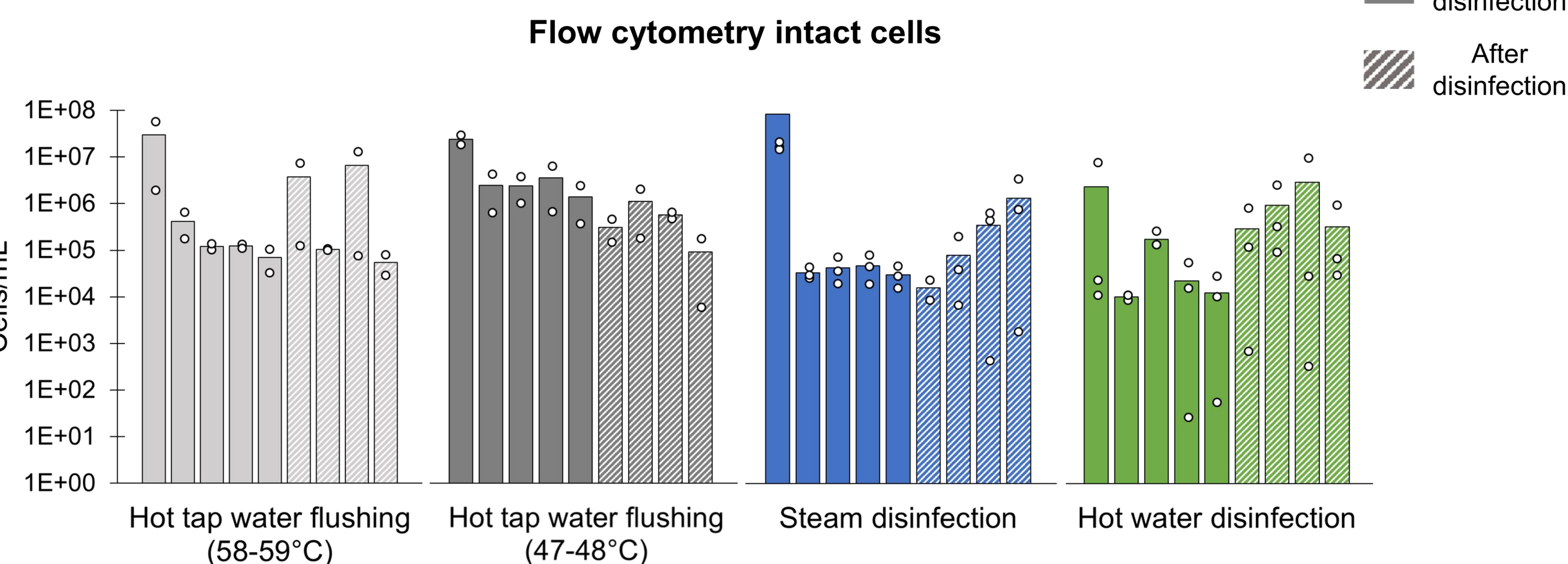
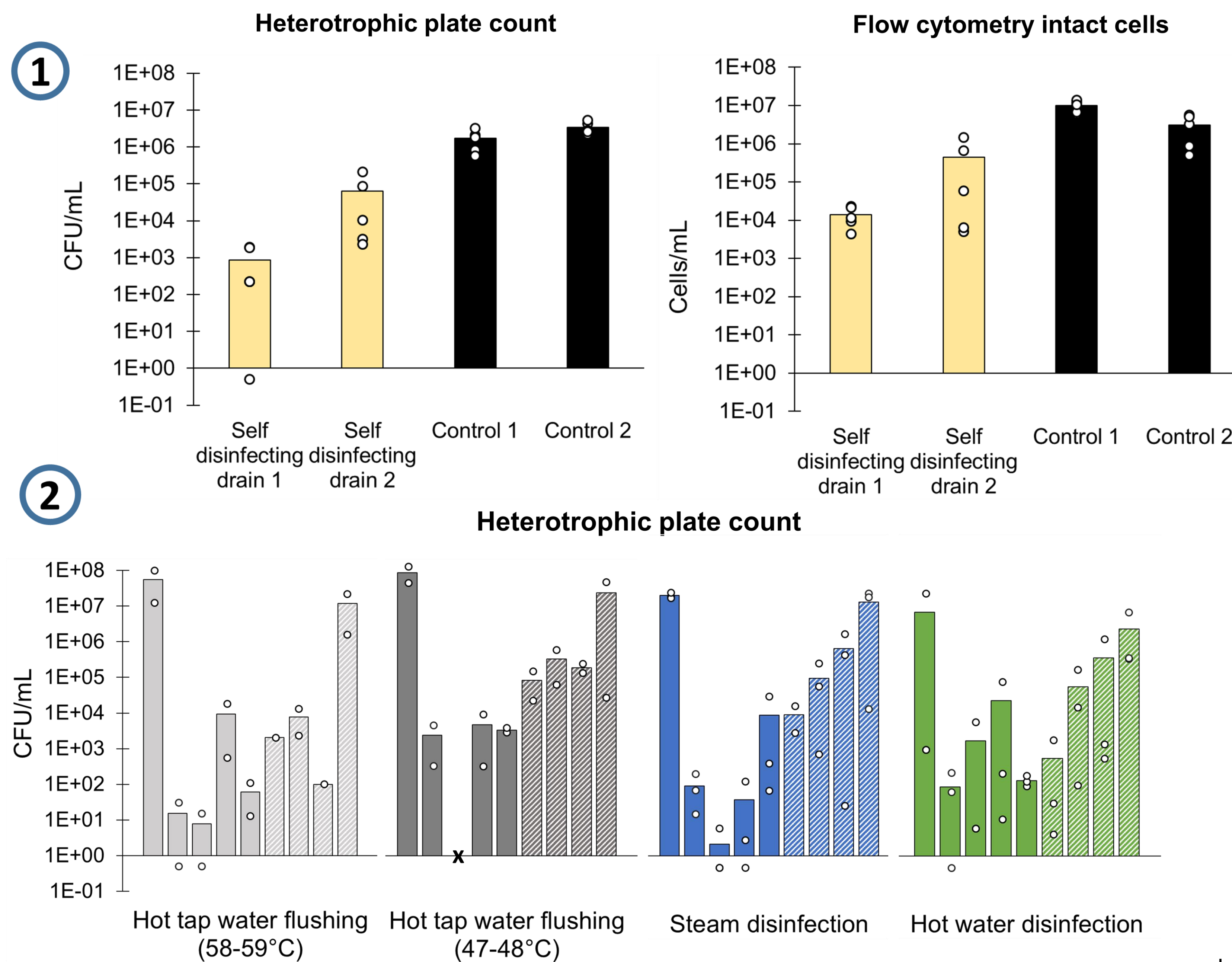
> Drain water and biofilm were sampled during two sampling campaigns:



*HiSST: Genotyping by High-throughput Short Sequence Typing; HPC: Heterotrophic plate count

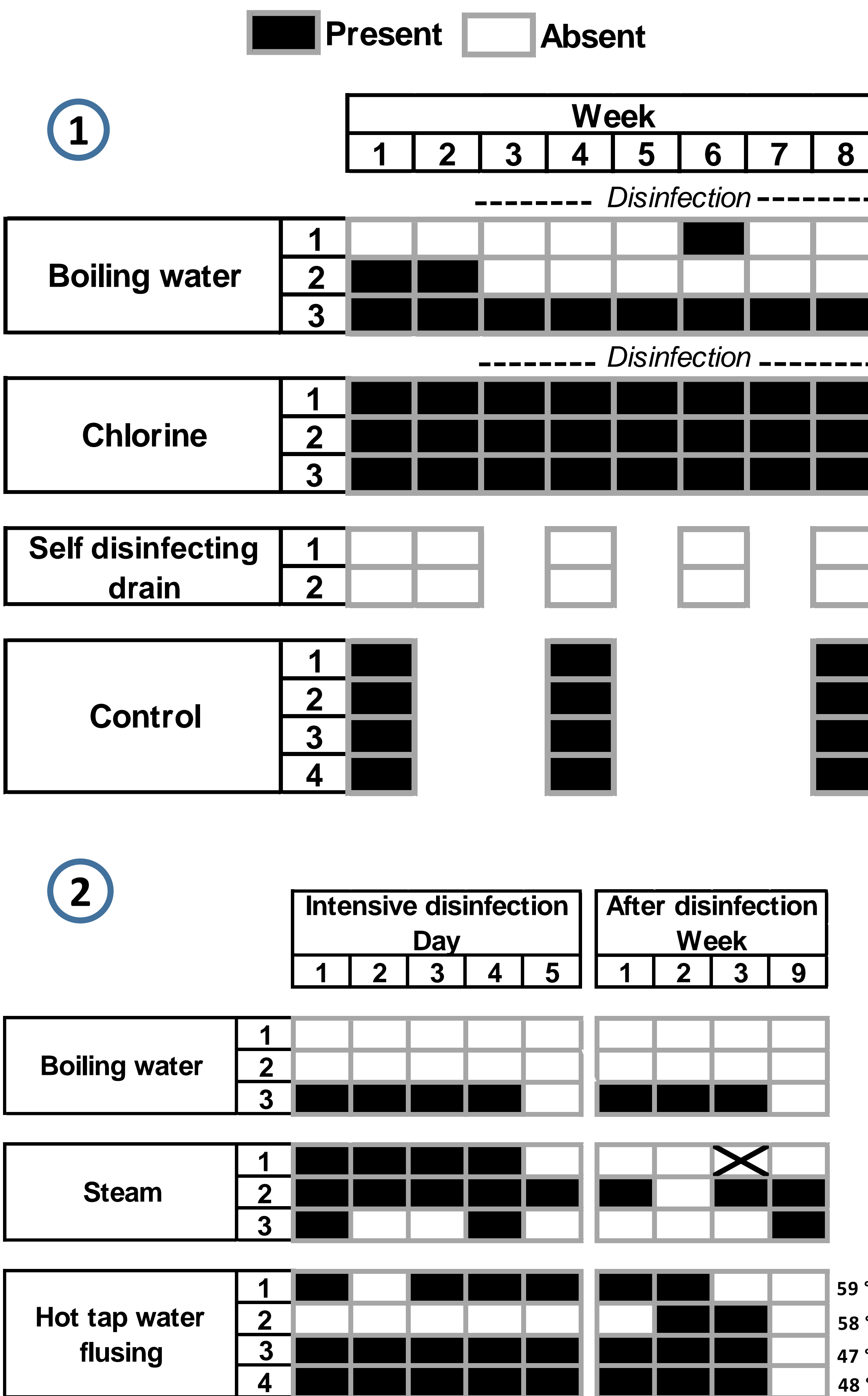
Results

A The effect of drain interventions on the bacterial concentration



→ bars represent mean values

B The effect of drain interventions on the presence and absence of *S. marcescens*



Conclusion

- Each drain intervention reduced culturable and viable bacteria.
- Culturable bacteria in drains return to its initial level 9 weeks after stopping disinfection.
- Self-disinfecting drains, boiling water and steam disinfection can remove *S. marcescens* from the drains.
- Hot tap water flushing seems to have an effect over time on the presence of *S. marcescens* and bacterial concentration with flow cytometry.
- Sink drains are an important reservoir of *S. marcescens* and could likely cause nosocomial infection outbreaks.