Reviewer’s report

Title: Influence of pre- and post-usage flushing frequencies on bacterial water quality of non-touch water fittings

Version: 2 Date: 28 June 2013

Reviewer: Joanne O’Toole

Reviewer’s report:

- Major Compulsory Revisions

1. Paragraph 3, Background:
   Suggest that the following paragraph replace existing one (changes denoted with * *). NOTE that the change involves deleting the aim to investigate ‘the influence of brass valve blocks instead of plastic material’. The authors themselves are suggesting that this is something to be investigated in future – see last sentence Discussion paragraph 3. The current study cannot achieve this aim as all valves are brass ones. This study does not assess the impact of the brass valves per se. The only comparison that can be undertaken is an indirect one – i.e. comparison with reported results for plastic valves in the literature but even then the effect of brass versus plastic material has to be disentangled from flushing and stagnation effects investigated in the study -therefore this aim cannot be achieved.

   Aside from the materials used, easily modifiable factors that may influence the *prevalence and extent of microbial contamination and accumulation* of non-touch-fitting-systems are the frequency of usage and the duration of water flow during and after hand washing. Because of this, water-fitting manufacturers have started to provide programmable non-touch fittings that allow regular automated post-flushing with cold water to prevent water stagnation. However, the ideal duration of post-flushing is unknown. Therefore, the aim of this experimental laboratory based study was to investigate the frequency of usage, the duration of water stagnation and various post-flushing times after use of non-touch fittings *which incorporate brass valve blocks instead of plastic material,* on the total bacterial count/mL waters. Additionally, the effect of pre-rinsing with cold water before use was explored.

- Minor Essential Revisions

1. Experimental setting paragraph 2
   The use of the word ‘faith’ in the following sentence is somewhat unusual. This fitting served also to investigate the faith of the water quality in terms of total cfu count/mL from an unused water fitting.
   I suggest that the sentence be changed. The following is suggested or something similar:
‘This fitting also served as a ‘control’, representing bacterial accumulation (total cfu count/mL) occurring at the site of an unused (low frequency use?) water fitting’.

2. Water collection and microbiological analysis, paragraph 1, sentence 3

The following sentence is ambiguous: ‘Water was collected directly from the fittings without any manipulation by using sterile flasks without pre-rinsing (except for fitting no. 8) and without removing or disinfecting the aerator.’

This ambiguity arises because it implies that the sterile flasks were pre-rinsed for fitting no 8.

Don’t the authors really mean: ‘Water was collected directly into sterile flasks from the fittings without any manipulation or pre-rinsing (except for fitting no 8) and without removing or disinfection the aerator’

3. Discussion, paragraph 1, 4th sentence:

The presence of outbreak strains in tap water, not including only P. aeruginosa but also other species, seems to be an important factor in subsequent spread in healthcare facilities.

I suggest that it is clarified whether spread refers to the organism and/or to infection/disease:

‘The presence of outbreak strains in tap water, not including only P. aeruginosa but also other (bacteria or species?), seems to be an important factor in subsequent dispersion of bacteria and potential disease transmission within a healthcare setting.’

- Discretionary Revisions

None

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

‘I declare that I have no competing interests’