

# Infection Control:

## A Research on the Potential Risk of Therapeutic Radiographer's Multi-use Marker Pens as Fomites and the Perception of Multi-use Marker Pens in Terms of Infection Control.

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### 1. Rationale and Aims

Healthcare-associated infections (HCAI) contributed to more than 2% of all deaths in NHS general hospitals between 2003–2007 (ONS, 2008, p.58-70) and result in an estimated cost of £1 billion additional cost to the NHS annually (NAO, 2009, p.5).

This is relevant in radiotherapy as cancer patients have reduced immune function from both the disease and treatment, hence they are particularly susceptible to infections and at risk of more severe symptoms and prolonged infection (Thom, Kleinberg & Roghmann, 2013, p.579).

Transmission of HCAs can occur fomite to person (Solon & Killeen, 2015, p.572); numerous studies have been conducted on a variety of inanimate objects, including pens which have indicated that objects can harbour harmful bacteria (Fomites and Infection Transmission, 2006).

Whilst it is accepted that not all HCAs can be avoided, the prevalence can be reduced by simple appropriate decontamination processes (Solon & Killeen, 2015, p.572). However, studies have shown that staff may adjust infection control protocols to what they regard as appropriate in terms of perceived risk, availability of resources and the “local norms”, usually emulating the practice of seniors (Shah, Castro-Sánchez, Charani, Drumright & Holmes, p.132-133).

This poster aims to draw attention to the potential contamination risk of multi-use marker pens and explore the attitudes and perceptions held by radiographers which may affect their compliance and consideration of infection control.

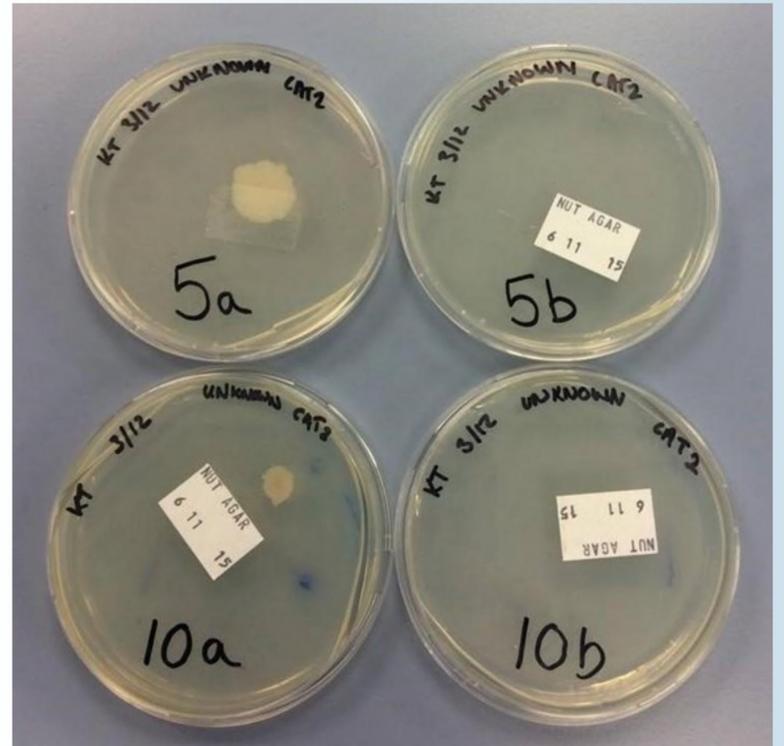


Figure 1: Photograph of the positive “dirty” samples 5a and 10a and their corresponding “clean” samples 5b and 10b. The photo illustrates the visual change in bacterial presence, showing that the clean versions of the sample have no growth.

### 2. Methodology

25 therapeutic radiographers were asked to provide their multi-use marker pen for laboratory testing and to participate in a structured interview.

The uncleaned pens were streaked across nutrient agar (“a”), then cleaned and applied to a second Petri-dish (“b”) and incubated. Any subsequent growth would be identified and used to indicate the value of decontamination (figure 1).

A structured interview was completed by each participant to provide demographic information for comparison of the contamination levels of samples. The qualitative information from the 15 questions were interpreted subjectively to provide an insight into the perceptions of the significance and roles infection control held by radiographers (figure 2), particularly regarding the multi-use marker pens.



Figure 2: Responses to “As a radiographer, how important is infection control to you and why?”

A visual display to show the frequency of words used to describe why infection control is important.

### 3. Results

8% of the samples taken pre-decontamination were positive for bacteria whilst no samples yielded growth after decontamination (figure 1).

The structured interview demonstrated that staff valued the importance of infection control and as a group held a comprehensive understanding (figure 2). The answers indicate that staff do not clean multi-use marker pens (figure 3) and that there is a degree of non-compliance in terms of hand washing.

Responses indicated that the majority of radiographers perceive the pen as an infection control risk, however, this is not reflected in the actions taken to decontaminate pens (figure 3).

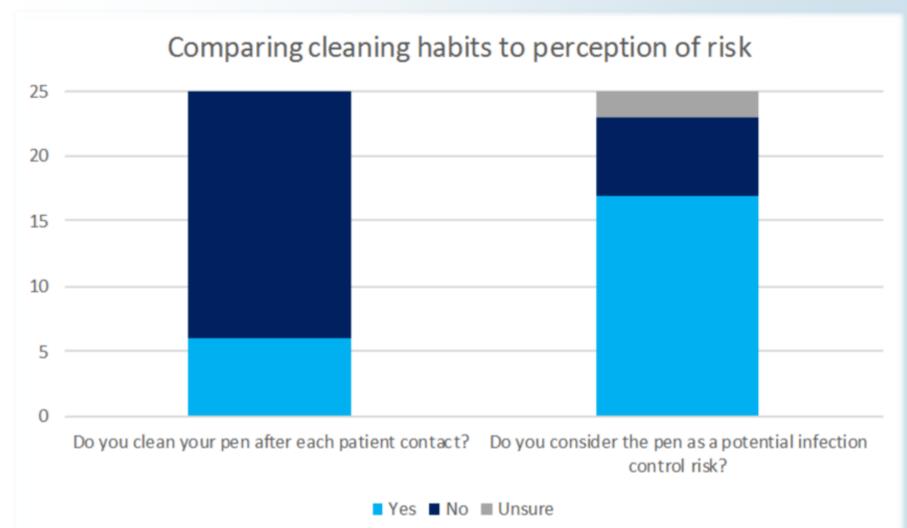


Figure 3: A chart comparing the responses to “Do you clean your pen after each patient contact?” and “Do you consider the pen as a potential infection control risk?”

### 4. Conclusions and Recommendations

Few pens tested positive for bacteria but wiping was found to reduce the prevalence of bacteria, so cleaning between each patient contact is recommended.

The responses given to the interview suggested that improved training for staff, including active discussion, may increase their adherence with current infection control protocols and enhance their awareness of when patient contact occurs.

#### References

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