What lies beneath?

Do Emergency Department (ED) patient trolleys present an infection risk?

Chris Paterson, Infection Prevention and Control Nurse

Introduction

One of the most commonly used pieces of equipment in an ED is a patient trolley, and both announced and unannounced inspections by the Healthcare Environmental Inspectorate (HEI) identified major concerns regarding the cleanliness of ED patient trolleys contaminated with blood (Healthcare Improvement Scotland, 2015). The inspectorate also found that, while “time to clean” in such a demanding environment could prove extremely challenging, clean equipment and safe patient care is a fundamental priority in reducing Healthcare Associated Infection (HAI) (Healthcare Improvement Scotland, 2015). According to Walker (2014), visual inspection of hospital equipment may perform well for measuring the aesthetic quality of cleaning, but does little to measure microbiological contamination.

Results

According to Dancer (2004), the criteria for a clean surface is a total colony count (TCC) of <5cfu/cm², whereas Walker (2014) suggests that healthcare should be setting the standard for cleanliness, and therefore TCCs should be <2.5 cfu/cm². Of the eighteen swabs obtained, seventeen had higher TCCs than both Dancer’s and Walker’s recommendations. One of the swabs had a TCC of zero – from the trolley witnessed being decontaminated. This colony count may be due to effective decontamination, moisture from the trolley’s recent cleaning affecting the pickup of the swab, or a potential flaw in the sampling method (such as failing to dip the swab in saline). A patient was also waiting to occupy this trolley while swabs were being obtained. The hand rails had the highest colony count (5cfu/cm² – >450cfu/cm²) followed by the bed frames (0cfu/cm² – 154cfu/cm²) then the headrests (9cfu/cm² – 70cfu/cm²). Organisms included; Staphylococcus aureus, Staph sp., Bacillus cereus, Bacillus sp., Dermacoccus nishinomiyaensis, Micrococcus luteus and Kocuria rhizophila.

No antimicrobial sensitivities or viral testing were conducted.

Methods

A small pilot study of three ED patient trolleys from two acute University Hospitals (n=6) was conducted to visually assess and microbiologically swab for potential contamination. The trolleys were randomly selected by the ED nurse in charge, and deemed clean and ready for next patient use - with the only visual assurance that they were ready for next patient use being the mattresses’ location (n=5). Decontamination was witnessed on the remaining trolley. Of the six trolleys inspected, three had visible blood contamination (hand rail n=1, trolley frame n=2) and, following visual inspection, three swabs were obtained from all six (handrail n=1, trolley frame n=1, head rest n=1). Hand hygiene, with alcohol based hand rub prior to sampling, was undertaken. Swabs were dipped into normal saline and a symmetrical 10-15cm section of the handrail, trolley frame and head rest were swabbed. The swabs were immediately plated onto pre-labelled blood agar plates, sealed, then sent for an incubation period of 48 hours.

Discussion

The number of HAIs and outbreaks originating within an ED is largely unknown. Nonetheless, due to the nature of patient presentation, potential for cross transmission of pathogens from unclean patient trolleys exists. Link et al. (2016) studied high touch areas and levels of contamination within an operating room, and a similar study within an ED could quantify high touch surfaces and identify elevated areas of risk. The prospect of cross transmission within EDs will always exist and, according to Smith et al. (2012), staff touching contaminated equipment will pose a significant risk of cross transmission to other patients and equipment. The nature of the patient trolley’s complex design – with many moving components, hinges, rivets and near impossible to clean areas - are presenting staff with an enormous challenge, and predisposing our patients to the risks of HAI. Therefore a more robust solution to minimising patient trolley contamination is required.

References

- Healthcare Improvement Scotland (2015), Ensuring Your Hospital is Safe and Clean, HIE Annual report 2013-14