

Dictaphones in orthopaedic surgery: A Reservoir For Hospital-Acquired Infection?

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Citation

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Abstract

Environmental sources of pathogenic bacteria, particularly antibiotic resistant nosocomial infections e.g. Methicillin Resistant Staphylococcus Aureus (MRSA) have become a familiar topic of discussion. It is the aim of this investigation to examine the possible role that the ward based Dictaphones may play in harbouring hospital acquired infection, particularly MRSA, within orthopaedic practice Prince Charles Hospital, Merthyr Tydfil, Wales. The 4 Dictaphones used regularly within both outpatients and inpatient ward settings were labelled A to D at random (with the labeller blinded to the identity of the consultant user), and swabs taken for culture from three specific areas with high potential for contamination. Repeat cultures were then taken 4 weeks from baseline. The No pathogen associated with resistant hospital acquired infection was isolated on any of the Dictaphones examined. During the period of observation the units were used within the presence of patients both infected with and carrying MRSA and other resistant hospital pathogens

BACKGROUND

The Dictaphone is an invaluable tool of clinical practice in any medical specialty, and this is especially true of orthopaedic surgery where in many units its uses extend to the documentation of ward rounds, as well as traditional use in busy fracture clinics. In these cases the traditional handwritten notes are replaced with a contemporaneous recorded dictation, to be typed by secretarial staff and placed appropriately within the medical notes within 24 hours.

Within the current climate of increasing vigilance towards hospital acquired infection the focus of attention has shifted towards identifying significant reservoirs of infection within the patient/clinical environment. Their significance has been broadly debated, with hand-to-hand physical contact being identified as the most significant mode of avoidable transmission by a substantial margin^{1,2,3,4}. This considered, environmental sources of hospital-acquired infection are still thought to represent a significant threat to health.

Numerous such reservoirs and vectors of infection have been implicated in recent years, including aurioscope pieces⁵, television sets¹, beds and chairs⁶, and even orthopaedic skin marking pens⁷.

It was hypothesised by us that despite strict hand washing before and after patient contact, the ward based Dictaphone

which is handled before and after visiting each patient could indeed harbour pathogenic bacteria associated with hospital acquired infection (e.g. MRSA).

AIMS

It is the aim of this investigation to examine the possible role that the ward based Dictaphones may play in harbouring hospital acquired infection, particularly MRSA, within orthopaedic practice Prince Charles Hospital, Merthyr Tydfil, Wales.

Current standard practice within the department is for the clinician to disinfect his hands with simple alcohol gel/foam prior to examining the patient, and then again before picking up their Dictaphone to record their notes. This same practice is followed in the outpatient clinic setting. Dictaphones are not cleaned routinely within the department. This investigation may shed light on the adequacy of this method in preventing the Dictaphone becoming a reservoir of communicable pathogens.

METHODS

Within the department of Trauma and Orthopaedics at Prince Charles Hospital, Merthyr Tydfil there are four consultant surgeons each of whom use a dedicated Dictaphone for ward round and clinic notes. When not in use these are kept in draws within the offices of each consultant. They are all of

the same make and model, and have been in circulation for approximately the same amount of time (2-3 years).

Each Dictaphone was collected and labelled A to D at random (with the labeller blinded to the identity of the consultant user), and swabs taken for culture from three specific areas with high potential for contamination. A senior microbiologist was consulted as to the most appropriate sites to swab for culture, considering where on the Dictaphone had the highest potential for harbouring pathogenic bacteria. These sites selected were the same on each Dictaphone and were labelled 1 to 3.

1. Speaker
2. Microphone / mouthpiece
3. Play / Record button

An individual charcoal swab moistened in sterile 0.9% saline was used to swab each area; these samples were then spread onto both MRSA media and an agar base Columbia (horse) blood plate. These were then incubated for 48hrs, and identification performed on any colonies grown.

This process was then repeated four weeks later on the same Dictaphones (A to D), with samples taken from identical sites. No additional cleaning or maintenance regime was employed with any of the units.

With regard to MRSA, during the course of this investigation the estimated combined ward exposure to infected or colonised patients of these Dictaphones was 12. This data was acquired by reviewing infection control records for the number of patients who was either had a proven MRSA infection or were simply colonised with the pathogen (on any site), that were treated on orthopaedic wards under the care of an orthopaedic surgeon.

RESULTS

Of all the samples taken from the 4 Dictaphones on both occasions three organisms were isolated; coagulase negative staphylococcus, bacillus species, and staphylococcus aureus (Table. I).

Figure 1

Table 1

Dictaphone	Site 1	Site 2	Site 3
A			
First	Bacillus Sp	Bacillus Sp Coag -ive Staph	Bacillus Sp Coag -ive Staph
Second	No Growth	Coag -ive staph	No growth
B			
First	Bacillus Sp	Staph aureus Coag -ive staph	Staph aureus Coag -ive staph
Second	Coag -ive staph	Coag -ive staph	Coag -ive staph
C			
First	Bacillus Sp Coag -ive Staph	Coag -ive staph	Coag -ive staph
Second	Coag -ive staph	Coag -ive staph	No growth
D			
First	Coag -ive staph	Bacillus Sp Coag -ive Staph	Coag -ive staph
Second	Bacillus Sp Coag -ive Staph	Staph aureus Coag -ive staph	Coag -ive staph

DISCUSSION

No pathogen associated with resistant hospital acquired infection was isolated on any of the Dictaphones examined, despite regular use in clinical situations involving patients colonised with MRSA, and wounds infected by this and other resistant pathogens. It is unclear from this study whether or not this can be directly attributed to hand washing practices or any other precautionary measure employed to prevent contamination of clinical apparatus, although we can observe that within the context of this investigation the ward Dictaphone is unlikely to be a hazardous environmental reservoir of resistant pathogens.

The role that environmental reservoirs play in the transmission of hospital acquired infection is not well documented, and smaller still is the body of evidence supporting infection linked to contaminated devices used by medical staff^{1, 5,6,7,8}. Although this evidence is sufficient to suggest a likelihood that colonisation of the patients immediate environment may play a significant role in actual infection. There are although some small published studies demonstrating small numbers of patients infected with strains of MRSA identical to those cultured from surfaces and items within the clinical area (keyboards, water taps etc)^{4,8,9}, although cause and effect, and the role that this plays in increasing the likelihood of nosocomial infection is not clearly demonstrated in such examples.

Although poorly understood the role of the patient's immediate environment and the spread of hospital acquired pathogens (in particular MRSA) is of growing clinical

interest with many experts believing it plays a significant role in infection spread which must be fully investigated and addressed¹⁰. The numbers used within this study are unfortunately small, and data regarding the precise numbers of patients with either MRSA infection or colonisation who encountered each specific Dictaphone would have been useful. This considered our investigation gives an indication that (in conjunction with careful hand hygiene during contact with patients) ward/clinic based Dictaphones are unlikely to play a significant role in the transmission and colonisation of pathogens associated with hospital acquired infection (particularly MRSA).

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