

## Infection control: 1044–1057

## 1044

## A RANDOMIZED CONTROLLED CROSSOVER STUDY TO COMPARE FILTRATION FACTOR OF A NOVEL NON FIT TESTED HEPA FILTERING FACEMASK WITH A FIT-TESTED N95 MASK

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## 1045

## PULSE-OXIMETRY IN INTENSIVE CARE: HAZARD WARNING OR POTENTIAL HAZARD?

J. R. Goodall<sup>1</sup>, W. B. D. Allan<sup>1</sup><sup>1</sup>Salford Royal NHS Foundation Trust, Intensive Care Unit, Manchester, UK**INTRODUCTION.** In the UK, nosocomial infections affect 1 in 10 patients admitted to hospital, resulting in 5,000 deaths annually<sup>1</sup>, and are an important cause of patient morbidity and mortality on ICU. Any personnel or equipment encountered by a patient during treatment is a potential vector for infection transmission.

This audit was conducted on the 16 bedded mixed general/neuroscience ICU at Salford Royal NHS Foundation Trust, between May and July 2008. It aimed to assess the adequacy of the current method of cleaning pulse oximeter probes, and to determine if alternative methods could improve the effectiveness of the cleaning process.

**METHODS.** Pulse oximeter probes on the ICU were examined to assess cleanliness and the effectiveness of current cleaning practices. Microbiology samples were taken from all probes and the specimens cultured. Initial results demonstrated ineffective cleaning techniques. Augmented cleaning techniques (where a toothbrush was used), and an alternative cleansing agent (Chlorprep) were then tested, to see if the use of such techniques reduced the potential for the probes to act as vectors for infection transmission.**RESULTS.** Initial swabbing was carried out on all the pulse oximeters on the ICU. Mixed coagulase negative staphylococcus was isolated from > 80% of all probes after standard cleaning techniques were used, staphylococcus aureus from 3 probes and MRSA from isolated in one probe.

After cleaning using augmented cleaning techniques, only 12.5% of the probes cleaned showed no growth on culture: there was still significant growth of MCNS on most swabs. This is a similar incidence of growth to that found after cleaning using established techniques.

When ChlorPrep was used to clean the pulse oximeter probes, samples taken from 66% of the oximeter probes resulted in no bacterial growth; significant growth still occurred in swabs taken from 33% of pulse oximeters.

**DISCUSSION.** Established cleaning techniques are not providing adequate disinfection of the pulse oximeter probes. The augmented cleaning techniques using established cleaning agents (ChlorClean) did not improve the results. However, using a different cleaning agent (ChlorPrep) resulted in more effective cleaning. The clinical implications of the findings are relevant to patient care.

The design of pulse oximeter probes makes effective cleaning very difficult. Despite the use of enhanced cleaning techniques, we found that one third of all the pulse oximeter probes within the ICU were colonised with bacteria. The presence of colonisation after 'effective' cleaning clearly demonstrates the potential for probes to act as vectors of infection transmission.

**REFERENCE.** 1. Inweregbu K et al (2005) "Nosocomial infections", continuing education in anaesthesia. Critical Care Pain 5(1):14–17

## 1046

## MORTALITY ATTRIBUTABLE TO PRIMARY AND CATHETER-RELATED NOSOCOMIAL BACTEREMIA. A CASE CONTROL STUDY

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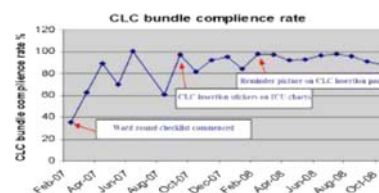
TABLE 1

Factor (cases/controls)	Mortality cases (%)	Mortality controls (%)	OR	CI 95%	p
PCRb (1,879/7,516)	28.1	18.7	1.14	1.05–1.25	0.002
PB only (862/3,472)	30.7	18.3	1.20	1.06–1.36	0.005
CRB only (1,011/4,044)	25.9	19.1	1.10	0.98–1.24	0.10
Gram-negative (499/1,996)	30.1	18.0	1.19	1.01–1.46	0.040
Gram-positives (1,280/5,120)	26.2	18.8	1.11	1.00–1.23	0.045
Fungi only (88/352)	46.6	19.1	3.01	1.85–4.89	<0.001
High-risk (638/2,552)	32.5	18.6	1.22	1.05–1.41	0.008
Low-risk (1,229/4,916)	25.9	18.8	1.11	0.99–1.23	0.057

**CONCLUSIONS.** In our study the PCRb attributable mortality was 9.4%. This impact on mortality has been higher in BP than CRB, and otherwise greater in episodes caused by gram-negative bacteria and fungi than those coming from gram-positive pathogens.

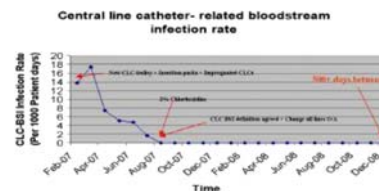
## 1047

## THE ELIMINATION OF CENTRAL LINE RELATED BLOOD STREAM INFECTION (CRBSI) ON THE INTENSIVE CARE UNIT

F. Kovari<sup>1</sup><sup>1</sup>Royal Free Hospital, ICU, London, UK**INTRODUCTION.** The work was done in the Intensive Care Unit (24 beds) at the Royal Free Hospital in London. This is a major London teaching hospital. Primarily, doctors and nurses in the ITU were involved. The work spread to involve a culture change across all visitors to the ITU, both medical and non-medical.**OBJECTIVES.** We set out to address the problem of central line related blood stream infection (CRBSI). It is one of the most frequent, lethal and costly complications of central venous catheterization. Together with the microbiology department we used an agreed definition for CRBSI, following root cause analysis. We measured the rate of CRBSI in the Intensive Care Unit. We assessed the cause as multifactorial. Using PDSA methodology we introduced a series of changes.**METHODS.**

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A series of small step changes were introduced. These involved application of the central line care bundle, introduction of catheter packs and the use of 2% chlorhexidine. We also introduced strict policies for visiting teams and hand washing. All medical and nursing staff were involved with nomination of "champions" for each group.

**RESULTS.**

CRBSI

To date there have been no CRBSI's for more than 560 days. There have been no MRSA bacteraemia for more than a year. Constant attention to detail, dissemination of information and embedding a culture of ownership all proved challenging.

**CONCLUSIONS.** A target that initially seemed improbably achievable was in fact possible. This is a multifactorial problem that is not solved by a "quick fix". A combination of methodologies is the best way forward. Listening to all suggestions by any member of staff prove very useful and time saving.

It is imperative to involve all members of the team and to disseminate information, changes and results in a prominent and timely fashion. There must be a universal sense of ownership and responsibility for the problem. Ultimately it is necessary to change culture both within the individual unit and the wider organisation.