Hand hygiene audit: a tool for clinical practice

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Introduction

Healthcare delivery in 2006 demands the highest possible standards from all healthcare professionals. Quality in healthcare is equated with safe practice by professional regulators (An Bord Altranais 2000, NMC 2004). In light of recently published controversial reports, high standards of quality and audit of professional practice are demanded by key stakeholders. Examples of such reports include the Bristol Royal Infirmary Inquiry (2001) in the United Kingdom (UK) into substandard practices in a paediatric cardiology unit, and the Lourdes Inquiry (Clark 2006) in Ireland, which looked at excessive rates of peripartum hysterectomy performed in a named maternity unit over a 25-year period. Government policy demands quality healthcare delivery. This is witnessed in the UK by the adoption of the National Institute for Clinical Excellence (NICE) *Principles for best practice in clinical audit* (2002), and in Ireland by the publication of the Government policy document *Quality and fairness: a health system for you* (Department of Health and Children 2001). Quality is highlighted as one of the four principles of this document and is defined as the development of a quality culture where the public can maintain trust in healthcare providers and in the service they deliver. Ireland in 2005 saw the radical reorganisation of the Health Service Executive and the establishment of the Health Information and Quality Authority to assist in the implementation of the quality and fairness agenda. The notion of quality improvement and audit are enshrined into the UK Nursing and Midwifery Council (NMC) *Code of professional conduct* (2004). It is implicit in the Irish code of professional conduct for regulation of professional practice (An Bord Altranais 2000) that competence must be striven for and continuously assessed. This is particularly relevant in the area of continuing professional development (Quinn 1998). Huycke and All (2000) identify the four key stakeholders in healthcare provision as the patients, providers, payers and public, with the use of clinical audit as the tool that offers evidence about standards of care based on clinical evidence of best practice (Parsley & Corrigan 1999). In fact, Cooper and Benjamin (2004) maintain that the key role of clinical audit is to advance care for recipients. They also assert that audit is very beneficial to the nursing profession as it can demonstrate the unique role of nursing within the multidisciplinary team (Cooper & Benjamin 2004).

Background

Selection of audit topic

Premature neonates are, by virtue of their early birth, at greater risk of acquiring infection. The geography of neonatal units (open plan) and the close proximity of the cots to each other can assist in the easy transmission of nosocomial infection (Lam *et al* 2004). Nosocomial infection in neonates can be both a dangerous and costly outcome of neonatal care, with increased mortality, morbidity and length of hospital stay (Lam *et al* 2004, Pittet 2005). Hand hygiene practices of healthcare workers (HCWs) have long been identified as a source of concern to all (Pittet *et al* 1999, Cookson *et al* 1999, Maury *et al* 2000, Pittet *et al* 2000, Boyce & Pittet 2002, Lam *et al* 2004, Katz 2004, Burton 2005, Creedon 2005, Pittet 2005). Compliance with hand hygiene practices have been estimated at 30–40%, at best, by these authors. There is therefore enormous potential for the transmission of pathogens on the hands of HCWs. Hand hygiene issues and standards of hospital hygiene in general are currently very topical within the Irish healthcare setting, with the recent hospital hygiene audits conducted for the Minister for Health and Children (Desford Consultancy Limited 2005, 2006). The area of hand hygiene is covered by recommendations contained in the guidelines of the Strategy for the Control of Antimicrobial Resistance in Ireland Committee (SARI Infection Control Subcommittee 2001). The SARI Guidelines (2001)

contain the most up-to-date evidence-based recommendations for hand hygiene practices.

Design of audit

The aims of the audit were to see if current clinical practice was following the SARI guidelines. Specifically, the objectives were to:

1. look at HCW compliance with the SARI guidelines pertinent to intensive care areas. In particular to investigate the uses of alcohol rub solutions
2. identify areas of compliance
3. identify areas for improvement.

The target population was healthcare workers who had direct patient contact opportunities. All grades of clinical staff were considered from student midwives to consultant neonatologists along with any other HCWs who had direct contact with the neonatal population. Parents and ancillary staff with no direct patient contact were excluded. The audit was conducted over a one-week period in April 2006. A variety of days were chosen to target the widest variety of staff.

The unit is small with a capacity for 16 infants, including two intensive care slots and three high dependency cots. The staffing level is commensurate to the number of cots. The decision to conduct three observation sessions was an attempt to reduce the chance of a 'Hawthorne effect' (Cluett & Bluff 2006), and to try to ensure anonymity of participants so that staff could not be identified from their shift pattern. The length of the time period was important to try to capture a variety of workloads from low to high intensity to see if this made any difference to practice. One of the observation periods was at night when the staff quota is lower.

The stakeholders were identified and their permission sought prior to the commencement of data collection (see Box 1). These individuals were identified as key personnel in the multidisciplinary team, with the authority to influence change, and are the gatekeepers to the service — the multidisciplinary approach is essential for the success of such initiatives (Cookson *et al* 1999, Marshall *et al* 2001, Pittet & Boyce 2003, Lam *et al* 2004).

While the audit was examining an aspect of clinical practice, it did not require the specific consent of the mothers of the infants being cared for. However, it was agreed with the audit department of the health service provider and the clinical staff that if families were present during the observation periods, and because the families knew the auditor, a brief verbal explanation would be given to them. In reality, this eventuality did not occur. Staff members were also given a sheet explaining the purposes of the study. Verbal consent was obtained prior to the start of each observation period and anyone who felt uncomfortable and who did not wish to be observed could be excluded from the data collection process. Everyone approached consented to his or her participation in the audit.

Data collection

The observation tool used was adapted from the SARI guidelines audit tool (SARI Infection Control Subcommittee 2001). The tool was piloted to several experienced colleagues to confirm its suitability for data collection. As discussed earlier, the audit was carried out over a one-week timeframe. At the end of the week, 40 care opportunities had been observed. One observer only collected all data manually.

Box 1. Stakeholders identified/permission obtained

Clinical Nurse Managers (2)

Clinical Midwife Managers (3)

Director of Midwifery Services

Consultant Neonatologists (3)

Clinical Nurse Specialist Infection Control

Consultant Microbiologist

Division of Obstetrics, Gynaecology & Neonatology

Audit Department, Health Service Providers

Audit findings

The data were analysed using the SPSS version 12.0.1 computer software package. Descriptive statistics only were utilised for the 40 care opportunities observed (n=40). Registered midwives carried out the majority of the care opportunities observed (33, 82.5%). There were a few care opportunities observed from student midwives (3, 7.5%) and medical registrars (4, 10%). There were no consultant neonatologists present on any of the occasions audited. While there were senior house officers present, they did not need to touch the babies since only the medical registrars carry out daily examinations during the ward round. Compliance for hand hygiene was exemplary at 85% (34 out of 40 occasions). This is higher than in other Irish research studies where findings of 30–40% compliance were observed (Burton 2005, Creedon 2005). This may be explained by the fact that people knew they were being observed and so altered their behaviour. The data collector was also well known to the participants and at that time occupied a position of clinical midwife manager within the unit. Both of these facts may have resulted in bias. However, of the 85% who carried out hand hygiene techniques, the overwhelming majority did so for the recommended greater than 15-second duration. The audit did not ascertain whether the clinical staff were aware of the recommendations to decontaminate their hands for more than 15 seconds and so it was reassuring to note that the majority of people did so, regardless of method chosen. There were three instances where healthcare workers contaminated their hands prior to handling babies either by touching their face or other patients' surfaces, eg another infant's cot. In another six instances of non-compliance with hand hygiene practices (15%), there was no method of hand decontamination utilised. Of these, five were by registered midwives and the remaining one by a student midwife. All of these episodes occurred during the day shift when staffing levels were at the optimum. Patient acuity during these

instances was at the mid-range for this unit and there were no emergency situations recorded that may account for these lapses and the reason for them was not established. This issue of non-compliance needs urgent attention in relation to ongoing staff education. These instances occurred during periods of acute observation when one might expect greater attention to detail.

The method of hand decontamination used by the participants was the surprise finding of the audit, which set out to look at hand hygiene using alcohol rub solutions. However, 55% of participants were found to favour water and chlorahexidine soap over alcohol rub solution. This suggests that the SARI guideline recommendations on the preferable method of hand decontamination (use of alcohol rub solutions) should be reinforced and more widely disseminated (SARI Infection Control Subcommittee 2001).

Discussion and implications for practice

Current guidelines (SARI Infection Control Subcommittee 2001, Boyce & Pittet 2002) suggest that after an initial washing sequence on entry to the unit, hands need only be repeatedly washed with chlorahexidine and water following an episode of soiling with bodily fluids. Decontamination with alcohol hand rub for more than 15 seconds is sufficient to ensure adequate hand hygiene and to promote skin integrity.

The guidelines also suggest that *'alcohol-based hand rubs with added emollient are recognised as superior hand hygiene products for almost every situation'* (SARI Infection Control Subcommittee 2001:11). However, 55% (*n*=22) of staff observed preferred to decontaminate their hands by using water and the liquid soap instead of the alcohol rub solution that was available at each and every cot space. There is a positive association between the availability of alcohol hand rub and staff compliance which has been identified in other studies (Voss & Widmer 1997, Pittet *et al* 1999, Pittet *et al* 2000, Lam *et al* 2004). Although there was 100% availability of alcohol rub solution, its presence was not enough to ensure greater use in this clinical situation. The liquid soap available and utilised at the sinks was chlorahexidine based, that is, Hibiscrub. Time taken to complete hand hygiene practices has often been stated as reasons for non-compliance (Voss & Widmer 1997, Pittet *et al* 1999, Pittet *et al* 2000, Lam *et al* 2004). Education programmes need to be tailored and multifaceted to address gaps in knowledge and to encourage a change in group behaviour with regards to hand hygiene practices (Lam *et al* 2004, Pittet *et al* 2000). Compliance in hand hygiene practices was very high among the participants observed and they are to be highly commended for this. Even allowing for a 'Hawthorne effect' (Cluett & Bluff 2006:81), the levels far exceed the norm (30–40%). Nonetheless, sustainability has been identified as a problem with ensuring that audit becomes part of clinical practice (Harvey & Kitson 1996). In order for audit to be an effective tool for change it needs to become part of everyday work and practice. Several professional organisations are striving to achieve this outcome, for example Vermont Oxford Neonatal Network (VONN). The VONN comprises of worldwide neonatal units, doctors and staff working collaboratively to assist all in striving to achieve best practice. The unit in this particular audit works very closely with VONN and they have suggested the use of randomised safety audit tools that would be kept on flash cards in each unit. Each card would pertain to a particular aspect of infant care, for example availability of alcohol-rub at each cot side. These mini audits would then form part of the daily routine. A different aspect of care delivery could be looked at on each daily multidisciplinary ward round. There is a need for staff to take ownership of the process and its findings in order to continue the momentum of change (Harvey & Kitson 1996, Pittet *et al* 2000, Marshall *et al* 2001).

In order to achieve this change in mind set, Marshall *et al* (2001) suggest that all healthcare workers, particularly nurses and midwives, need to be educated to help them develop critical appraisal skills. Opportunities for further education, creating a culture where everyone feels appreciated and where quality improvement is part of the organisational ethos, is vital to this change. Ring *et al* (2005) found that a bottom-up approach increased the likelihood of a successful long-term change of practice. Change was also more successful where practice had dictated the necessary change and where it was driven by clinicians and valued by their peers. A key person in the clinical area is necessary to lead and drive the required changes. Cookson *et al* (1999) suggest role modelling as a valuable means of encouraging changes in staff behaviour.

Completion of the audit cycle is **also** vital to achieving lasting change in practice. Implementing change to practice and re-auditing that practice is essential in what Cooper & Benjamin (2004) refer to as *'closing the audit loop'*. The use of benchmarking of clinical results as a means of achieving better care is discussed by Pittet (2005), though this approach can be fraught with challenges. Benchmarking is already performed in France with annual league tables publishing hospital infection rates. The difficulty arises when public pressure is on to perform, without the organisational support necessary in terms of extra staff or financial resources. Lam *et al* (2004) discuss the knock-on benefit to infant development by the provision of staff education programmes. During their study they found that the number of patient contacts per hour fell from a low of 2.8 to an even lower 1.8. This was because staff were adopting a strict hands-off approach and clustering care activities. This would be beneficial to the unit being audited as we are trying to promote the idea of neonatal developmental care that necessitates these approaches to allow infants to develop with as little disturbance as possible.

Limitations of audit

A limitation of the results is that they do not reflect before and after procedures for the same caring opportunity. The performance of this audit highlighted the necessity of a multidisciplinary approach to clinical issues (Cookson *et al* 1999, Marshall *et al* 2001, Pittet & Boyce 2003, Lam *et al* 2004). The exercise reinforced the time taken to complete an audit and the need for the ring-fencing of posts to carry them out. At the time this audit was conducted there were no such personnel in post. However,

Action plan

- Following dissemination of audit results, amalgamate the staff feedback into the report to give a more rounded view of the audit process.
- 'Recruit' like-minded clinical staff to stimulate ownership of the audit process at grass roots level.
- Identify skill sets in the clinical area that will assist with this programme.
- Endeavour to maintain the excellent level of organisational support from the Director of Midwifery and the Division of Obstetrics, Gynaecology & Neonatology colleagues.
- Forge alliances with other specialist areas, for example infection control. Liaise with the clinical nurse specialist in infection control to modify educational interventions in light of the audit findings and the research available.
- Re-audit the clinical area subsequent to any changes in education or practice.
- Expand the audit to include the other two neonatal sites that comprise service.

since its completion, the service has appointed two senior midwives, one to the post of evidence-based facilitator and one to the post of practice development co-ordinator. These people have responsibility for leading audit and risk management initiatives in conjunction with the audit department, clinical risk management committee and the clinical staff. In terms of continuation of audit practice in the clinical setting the future looks promising.

Conclusion

In the healthcare service of 2007, clinical audit is a vital tool for confirming what is done well and to identify how service delivery might be improved. Audit can be useful for identifying the need for resource allocation within large healthcare organisations. Clinical audit can also be useful in validating good practice and as a means of motivating staff with positive reinforcement. It is useful for nurses and midwives to help them validate their contribution to clinical practice and to delineate their role within the multidisciplinary team. Audit can assist in the bridging of the clinical/research/academic gap and is something that all members of the multidisciplinary team can claim ownership of. Regardless of the misapprehension of clinical staff, clinical audit has proved its worth and is set to become an integral part of the clinical practice landscape within the Irish healthcare setting. Although this audit formed only a small part of the overall quality process within one health care setting, it highlighted the importance of the follow up of research findings into hand hygiene compliance.

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References

An Bord Altranais (2000). *Review of scope of practice for nursing and midwifery*. Dublin: An Bord Altranais.

Boyce JM, Pittet D (2002). Guideline for hand hygiene in health-care setting. *Morbidity and Mortality Weekly Report (MMWR)* 51(RR-16):1-44.

Bristol Royal Infirmary Inquiry (2001). *Learning from Bristol: the report of the public enquiry into children's heart surgery at the Bristol Royal Infirmary 1984-1995*. London: Stationery Office.

Burton A (2005). *An observational study to assess nurse's compliance with hand washing and glove use in relation to patient care activities in the recovery unit.* Unpublished Thesis. Cork: University College Cork. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116a1.htm [accessed 4 May 2006]

Clark MH (2006). *The Lourdes Hospital inquiry: an inquiry into peripartum hysterectomy at Our Lady of Lourdes Hospital, Drogheda*. Dublin: Stationery Office.

Cluett E, Bluff R (2006). *Principles and practice of research in midwifery*. 2nd ed. Edinburgh: Churchill Livingstone.

Cookson B, French G, Gould D *et al* (1999). Hand washing: a modest measure - with big effects. *British Medical Journal* 318:686.

Cooper J, Benjamin M (2004). Clinical audit in practice. *Nursing Standard* 18(28):47-53.

Creedon SA (2005). Healthcare workers' hand decontamination practices: compliance with recommended guidelines. *Journal of Advanced Nursing* 51(3):208-16.

Department of Health & Children (2001). *Quality and fairness: a health system for you*. Dublin: Stationery Office.

Desford Consultancy Limited (2005). *Report on a national acute hospitals hygiene audit undertaken on behalf of the National Hospitals Office*. Desford: Desford Consultancy Limited.

Desford Consultancy Limited (2006). *Report on the second national acute hospitals hygiene audit. Commissioned by the Health Service Executive*. Desford: Desford Consultancy Limited.

Harvey G, Kitson A (1996). Achieving improvement through quality: an evaluation of key factors in the implementation process. *Journal of Advanced Nursing* 24(1):185-95.

Huycke L, All AC (2000). Quality in healthcare and ethical principles. *Journal of Advanced Nursing* 32(3):562-71.

Katz JD (2004). Hand washing and hand disinfection: more than your mother taught you. *Anaesthesiology Clinics of North America* 22(3):457-71.

Lam BC, Lee J, Lau YL (2004). Hand hygiene practices in a neonatal intensive care unit: a multimodal intervention and impact on nosocomial infection. *Pediatrics* 114(5):e565-71.

Marshall JL, Mead P, Jones K *et al* (2001). The implementation of venous leg ulcer guidelines: process analysis of the intervention used in a multi-centre, pragmatic, randomized, controlled trial. *Journal of Clinical Nursing* 10(6):758-66.

Maury E, Alzieu M, Baudel JL *et al* (2000). Availability of an alcohol solution can improve hand disinfection compliance in an intensive care unit. *American Journal of Respiratory and Critical Care Medicine* 162(1):324-7.

National Institute for Clinical Excellence (2002). *Principles for best practice in clinical audit*. Abingdon: Radcliffe Medical Press.

Nursing and Midwifery Council (2004). *The NMC code of professional conduct: standards, conduct, performance and ethics*. London: NMC.

Parsley K, Corrigan P (1999). *Quality improvement in healthcare*. 2nd ed. Cheltenham: Stanley Thornes.

Pittet D, Boyce JM (2003). Revolutionising hand hygiene in health-care settings: guidelines revisited. *Lancet Infectious Diseases* 3(5):269-70.

Pittet D (2005). Infection control and quality health care in the new millennium. *American Journal of Infection Control* 33(5):258-67.

Pittet D, Mourouga P, Perneger TV (1999). Compliance with handwashing in a teaching hospital. *Annals of Internal Medicine* 130(2):126-30.

Pittet D, Hugonnet S, Harbarth S *et al* (2000). Effectiveness of a hospital wide programme to improve compliance with hand hygiene. Infection Control Programme. *Lancet* 356(9238):1307-12.

Quinn FM (1998). *Continuing professional development in nursing*. Cheltenham: Stanley Thornes.

Ring N, Malcolm C, Coull A *et al* (2005). Nursing best practice statements: an exploration of their implementation in clinical practice. *Journal of Clinical Nursing* 14(9):1048-58.

SARI Infection Control Subcommittee (2001). *Guidelines for hand hygiene in Irish health care settings*. Dublin: HSE, Health Protection Surveillance Centre.

Voss A, Widmer AF (1997). No time for hand washing!? Hand washing versus alcoholic rub: can we afford 100% compliance? *Infection Control and Hospital Epidemiology* 18(3):205-8.

Murphy MM, Sweeney JF. MIDIRS Midwifery Digest, vol 17, no 1, Mar 2007, pp 123–126.