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Handwashing: simple, but effective

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Using ward rounds in the department of surgery at a major teaching hospital, and with the help of the pre-registration house officers (PRHO), we assessed whether the lesson taught to us by Semmelweis had been forgotten.

We asked the PHROs to count the number of patients examined by their consultant or registrar on a ward round, together with the number of wounds examined, and the number of times they washed their hands between patients. Over a 2-week period, following seven consultants and four registrars, 26 ward rounds were followed.

Of 239 patient events, which are defined as a clinician reviewing a patient in order to assess their treatment, a total of 88 involved an examination (37%) and, of these, 41 had postoperative wounds (47%). The number of times clinicians washed their hands between examinations was 36 (41%). Between the two groups of clinicians, the consultants washed their hands 30 times in 55 examinations (55%), while the registrars washed their hands six times in 23 examinations (26%).

When Semmelweis died in 1865 his beliefs were still largely ignored by clinicians. It would seem from our results that in both senior and junior staff the simple exercise of handwashing is not practised *de rigor*. For the safety of the patient and the clinician we recommend a more fastidious adoption of the handwashing practice.

It was in nineteenth century Vienna that Ignaz P Semmelweis noted the incidence of puerperal fever was more common on a maternity ward where medical students worked, than on a ward where midwives provided care. From this observation, he concluded that the students were contaminating their hands from dissecting cadavers and he then ordered that they wash their hands in chlorinated lime before examining the patients. With this simple but effective measure the incidence of puerperal sepsis declined sharply, as did the mortality rate *(1,2)*.

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Using ward rounds in the department of surgery at a major teaching hospital, with the help of the preregistration house officers (PRHO) we assessed whether the lesson taught to us by Semmelweis had been forgotten.

Method

Over a 2-week period, we followed the ward rounds of seven consultants and four registrars collecting the following data:

Date	Consultant
Ward round	No. of patients
Patients examined	Wounds
Hands washed	

Results

The number of ward rounds made by the consultants from which results were obtained varied between 1 and 6, and the registrars 1 and 3. The total number of patient events was 239. A patient event was defined as a clinician reviewing a patient in order to assess their treatment. Many of the patients were seen both pre- and post-operatively, but each was counted as a separate event. Of the total number of events, 88 involved examination (37%) and, of these, 41 had postoperative wounds (47%). The number of times clinicians washed their hands between examinations was 36 (41%). Between the two groups of clinicians, the consultants washed their hands 30 times in 55 examinations (55%), while the registrars washed their hands six times in 23 examinations (26%).

Discussion

The results of this small study present a worrying picture. In these times of invasive medicine and the concern with the development of antibiotic resistance, it would appear that we have forgotten one of the fundamental aspects of self-discipline when we examine our patients—handwashing.

Evidence to support the link between handwashing and contact transmission of infection was first established by Oliver Wendell Holmes in the USA, and Ignaz Phillipp Semmelweis in Europe. By introducing the simple but effective measure of handwashing by doctors in between examining women during childbirth, both showed a decrease in the rate of puerperal sepsis and its associated mortality *(3)*.

Having established this relationship between the hands of healthcare workers and the cross-transmission and spread of micro-organisms between patients, it would seem that a simple but effective measure of reducing the incidence of nosocomial infections would be handwashing. However, despite being considered one of the most basic, as well as the most vital infection control measure, it is one of the most neglected practices *(4)*. Reasons cited by nurses for non-compliance include, 'too busy', 'not at risk of acquiring infections from patients', 'handwashing agents detrimental to skin', 'wearing gloves', and 'not practised by peers' *(5)*.

There is a considerable body of circumstantial evidence to support the theory that most infections are spread by the hands of staff and that the aim of handwashing is to remove transient micro-organisms and prevent transfer to another patient *(6,7)*. The role of unwashed hands was confirmed in the spread of *Staph. aureus* between newborns in the nursery and the isolation of an endemic strain of Klebsiella sp. from the skin of patients and the hands of nurses in an intensive care unit *(8,9)*. Other authors have shown the relationship between Gram-negative organisms and their relationship to nosocomial infections, and it has been demonstrated that the hands could become contaminated from contaminated objects and that the contaminated hands could then contaminate other objects or tissues *(10,11)*.

Despite the fact that we have shown poor compliance between examining patients and handwashing on our surgical unit, we have not assessed the outcome of this issue—namely infections. Infections are costly to the health service in economic terms, and it has been suggested that they provide valuable health service performance indicators *(12,13)*. A 1986 report from York University estimated that £111million/year was spent by the NHS on nosocomial infections *(14)*. However, infection rates must take into account risk factors before they can be used as quality indicators. Although the subject of postoperative wound infections is foremost in the surgeon's mind, other sites must be borne in mind, notably the respiratory and urinary tracts.

Practical procedures, such as urinary catherisation, are often taught at the beside by SHO/Registrars to the PRHOs and, indeed, no formal instruction on aseptic technique is given, whereas nursing colleagues are formally assessed. The emphasis on handwashing is most apparent in the theatre situation, where as a PRHO, it is often a senior theatre nurse who instructs the technique before your first assistance, although not all PRHOs will gain the regular opportunity to attend theatre. We also need to be encouraged to wear gloves for invasive procedures such as cannulation, which has been highlighted by recent concerns over hepatitis and HIV *(15)*. However, it must be appreciated that the wearing of gloves does not dismiss the principle of handwashing, as they may become punctured or leak, and the hands can become contaminated during removal *(16)*.

When Semmelweis died in 1865, his beliefs were still largely ignored by clinicians. It would seem from our results that in both senior and junior medical staff the simple exercise of handwashing is not practised *de rigor*. As surgeons, we go through a surgical scrub and take extensive precautions within the operating theatre to preventive sepsis resulting from surgery, yet for the safety of the patient we recommend a more fastidious adoption of handwashing practice during our ward work. It would seem that we need to relearn the lesson of Semmelweis.

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