

Glove usage and reporting of needlestick injuries by junior hospital medical staff

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The use of gloves when conducting invasive procedures and the reporting of needlestick injuries have been strongly encouraged. Despite this, neither practice appears to be universal. In order to determine the rates of glove usage and needlestick injury reporting, we conducted a survey of junior doctors in three hospitals in the UK. Of the 190 respondents, the majority rarely wore gloves for venesection, insertion of intravenous cannulas or arterial blood gas sampling. For more major procedures (insertion of central venous lines, insertion of thoracostomy tubes, suturing) gloves were invariably worn. Only 17.5% of needlestick injuries were reported. The rates of glove usage and needlestick injury reporting were lower than previous studies have demonstrated in North America. Surgeons suffered the most needlestick injuries and were the least likely to report them. The low reporting rate may have serious implications, particularly in view of the new Government guidelines on needlestick injuries which involve HIV-infected blood. By failing to use gloves and report needlestick injuries, junior doctors, in particular surgeons, are placing themselves and patients at increased risk of blood-borne transmissible diseases.

The use of universal precautions by healthcare workers when dealing with body fluids has been repeatedly recommended (1). This includes the wearing of gloves

when conducting invasive procedures. Gloves decrease skin contamination by blood during such procedures (2) and offer protection in the event of needlestick injury (3). There are guidelines for the management of needlestick injuries and doctors are expected to report all such events. A survey of current practices has not previously been conducted in a UK hospital population. We conducted a study in three London hospitals to determine whether junior doctors use gloves routinely for invasive procedures and report needlestick injuries.

Subjects, methods and results

A postal questionnaire was sent out to 300 junior doctors in two London teaching hospitals. Doctors were asked to complete and return the questionnaire if they had been qualified for less than 10 years; anonymity was assured. Junior doctors were selected as they frequently perform the assessed invasive procedures. Previous studies have estimated that 15% of subjects in postal surveys never receive the questionnaires (4). Another 7% of subjects in this survey were no longer suitable, having been qualified for more than 10 years. Taking these figures into account, the initial response rate was 132/234 (56%).

In order to exclude bias owing to the relatively low response rate, a second survey was conducted. A smaller group of junior doctors at another acute unit (a district general hospital) were studied by more direct methods. In this group, questionnaires were distributed and collected by hand. The population profile was similar to that in the previous study. The response rate in this second survey was higher (58/70, 83%). There was no significant

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difference between the results of the two surveys, suggesting that the initial study was not biased. The figures from the two groups were therefore combined (190/304, 63% overall response rate). All data were analysed statistically using SPSS for Windows (version 8.0).

Of the respondents, 87 (46%) were junior doctors in surgical specialties (including obstetrics and gynaecology) and 103 (54%) were in medical specialties (including anaesthetics and accident and emergency). There were 26 (14%) preregistration house officers, 100 (53%) senior house officers and 64 (33%) specialist registrars.

Junior doctors failed to report the majority of needlestick injuries to occupational health departments. Only 17.5% of all needlestick injuries were formally reported. There was no significant difference in reporting rates between the grades of doctors. Surgeons were significantly less likely to report needlestick injuries than physicians (12.6% vs 28.3% of needlestick injuries reported, $P < 0.01$, χ^2 test). Doctors in surgical specialties had a significantly higher needlestick injury rate than those in medical specialties (mean number of injuries 0.88/year for surgeons vs 0.35/year for physicians, $P < 0.01$, χ^2 test).

Table I shows that the majority of doctors do not routinely use gloves for venesection, intravenous cannulation, arterial blood gas sampling or when administering intravenous drugs. Gloves are commonly worn at cardiac arrests, trauma calls and for inspecting wounds. They are almost always worn for procedures such as insertion of thoracostomy tubes, central venous lines and for suturing. Junior doctors in surgical specialties tended to wear gloves less commonly for venesection and insertion of intravenous cannulas than doctors in medical specialties, though this finding was not statistically significant. Glove usage did not vary with experience; usage by preregistration house officers, senior house officers and specialist registrars was similar.

Discussion

This study suggests that junior hospital doctors, especially surgeons, do not report the majority of needlestick injuries. It also demonstrates that universal precautions are not routinely used by junior doctors. The rates of needlestick injury reporting were considerably lower than has been demonstrated previously (17.5% vs 30–35%) (5,6). Surgeons, who suffer the majority of needlestick injuries, are particularly unlikely to report them. Encouragingly, the overall rate of needlestick injury in our population was lower than that documented previously (7) (0.88 vs 3.8 injuries/year for surgeons, 0.35 vs 0.63 injuries/year for physicians). This implies that though they fail to report needlestick injuries, the junior doctors in this group handle sharps more safely than previously demonstrated.

The failure of surgeons to report needlestick injuries raises particular issues. HIV (human immunodeficiency virus) transmission has been documented between surgeons and patients (8). When a surgeon suffers a needlestick injury, not only is he exposed to the risk of disease but so are his future patients. In order to safeguard patients, it is imperative that surgeons report needlestick injuries. A surgeon has already had his name erased from the medical registrar for failing to report a possible HIV exposure (9). In future, surgeons may find themselves deemed negligent if they do not report all potential HIV exposures, including needlestick injuries.

Needlestick injuries tend not to be reported mainly because of inconvenience and the perception of lack of risk (5,6). Rattner *et al.* (10) found that doctors perform their own risk assessment after needlestick injuries and are more likely to report high-risk exposures. However, the prevalence of HIV and HBV (hepatitis B virus) is greater than generally perceived (2), making such assessments invalid. All needlestick injuries should be treated as potentially exposing the healthcare worker to the risk of

Table I. Junior doctors' use of gloves

Procedures	% of time gloves worn No (%) doctors			
	< 10%	10–50%	50–90%	> 90%
Venesection				
Medical	51 (50)	19 (18)	7 (7)	26 (25)
Surgical	57 (66)	10 (11)	7 (8)	12 (14)
Intravenous cannulation				
Medical	49 (48)	19 (18)	14 (14)	21 (20)
Surgical	57 (65)	12 (14)	7 (8)	11 (13)
Administration of intravenous drugs	120 (65)	32 (17)	15 (8)	17 (9)
Arterial blood gas sampling	97 (55)	20 (11)	19 (11)	37 (21)
Cardiac arrests/trauma calls	8 (4)	20 (16)	49 (27)	102 (57)
Inspecting wounds	7 (4)	17 (9)	47 (25)	116 (62)
Insertion of central venous lines	3 (2)	3 (2)	1 (1)	162 (95)
Suturing of wounds	1 (1)	2 (1)	2 (1)	181 (97)
Pleural aspiration	2 (1)	0	1 (1)	154 (98)
Insertion of thoracostomy tubes	1 (1)	0	0	162 (99)

disease. Such injuries need objective assessment by a disinterested, informed third party.

Independent assessment of needlestick injuries is particularly important given the recent government guidelines on exposure to HIV-infected blood. The Chief Medical Officer's Expert Advisory Group on AIDS (EAGA) (11) have recommended that antiretroviral drugs should be taken when a healthcare worker has been occupationally exposed to HIV-infected blood. This treatment should start ideally within 2 h of the exposure. If junior doctors fail to report needlestick injuries, they may not receive the correct treatment for potential exposure to HIV.

The rates of glove use were lower than previously demonstrated in the United States (6,12,13). Hersey and Martin (12) found that 43% of healthcare workers always wore gloves when venesecting compared with only 20% in this study. This may reflect the more aggressive attitude to the use of universal precautions in the United States and Canada (1). However, junior hospital staff did appear to wear gloves for major interventions, at cardiac arrests and for trauma calls, where the risk of contamination with body fluids is high because of the urgency of the situation.

Overall, this survey has mixed findings. Junior doctors in this group suffered fewer needlestick injuries than previously demonstrated and wore gloves for major invasive procedures. However, they failed to report most needlestick injuries and did not use gloves consistently. This failure may have serious implications for junior doctors' health and clinical risk management. Junior doctors and surgeons may be placing themselves and their patients at increased risk of exposure to serious diseases. These are issues that need to be addressed if the transmission of blood-borne diseases between medical staff and patients is to be minimised.

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