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The Reporting of Blood and Body Fluid Exposure and Follow-up Practices in a Tertiary Care Hospital in the United Arab Emirates

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Abstract
The study explored the reporting and follow-up practices after blood and body fluid exposures in a tertiary care hospital in the United Arab Emirates. The Occupational Health Clinic schedule was audited, and medical files of staff members visiting the Clinic to report an exposure during 2006 and 2007 were retrieved for a detailed review. The raw data were obtained and analyzed; the original files were used as a reference to recover any missing information. Results showed that 156 exposures were reported; of which 77.6% were needle stick injuries. These were most commonly caused by handling, passing, disposing of needles, or while manipulating the needle in the patient. Hospital Wards were the most common location from which exposures were reported (41%). Nurses reported 61% of the exposures, followed by physicians 24%, laboratory staff 9%, and others 6%. Blood analysis was performed for 63% of patients to whose blood staffs were exposed. Post exposure blood tests were performed on 91% of staff. Treatment and follow-up was traced for 6 months at which 42.3% of the staff did not complete the follow-up. The retrospective clinical audit showed that the reported exposures were not managed properly. Repeated preventable exposures were being reported which involved exposures related to recapping and disposal. We recommend a comprehensive blood and body fluid programme to improve the safety and quality of work at the hospital.

Key words: Clinical Audit, blood & body fluid exposure, reporting, treatment and follow-up

Introduction

The World Health Organisation (WHO) stated that, while 90% of infections among healthcare providers (HCPs) are attributed to occupational exposure in the developing world, 90% of the reports of occupational exposure to blood and body fluid are from the developed world (1). An assessment conducted by the WHO Eastern Mediterranean Regional Office reported an average of 4 needlestick injuries per year per HCP (2). The most serious consequence of

failure to report an exposure is loss of access to subsequent medical treatment and follow-up for the HCP. According to published studies, 45-65% of all needlestick injuries are unreported (3). There is limited research data published on blood and body fluid exposure (BBFE) from the Middle East and United Arab Emirates (4,5).

Clinical audit has been used for the last two decades as a quality tool to improve outcomes through systematic review of care against explicit criteria, flowing through to subsequent implementation of change (6). Clinical audits have improved clinical outcomes and effectiveness of the interventions. The aim of this study was to perform a clinical audit to assess the reporting and follow-up practices of BBFE in a tertiary care hospital in UAE. Blood and body fluid exposures in this hospital were reported to the Occupational Health Clinic. This study was an integral part of a larger interventional programme. This study was a pre-intervention assessment to examine current practices which would help in developing a comprehensive BBFE programme to improve reporting, treatment, and follow-up of blood and body fluid exposures.

Materials and Methodology

Setting

The Occupational Health Clinic's records were retrospectively reviewed, to identify all cases in which employees visited the clinic to report an exposure to blood or body fluid between 1 January 2006 and 31 December 2007. For each case, the medical file was reviewed, and the following data were extracted; the number of exposures, the profession of the healthcare provider, type of exposure (needlestick injury or splash), cause of exposure (the physical activity when exposure took place), patients' blood test (blood analysis of patient whose blood or body fluid was the source of exposure to the hospital staff), staff treatment and follow-up (blood analysis and treatment received by the hospital staff), and seroconversion (post exposure blood test results after six months). The files were reviewed and data was collated by trained individuals; to assess transcription error 10% of the data was randomly verified via the hard copies by the principal investigator.

Data was analysed using Statistical Package for Social Sciences (SPSS) version 18 (7); descriptive statistics were conducted. The research proposal was approved by the Research and Ethics Committee of the hospital.

Audit Standards

We audited against two standards. Firstly, those practices, which were being followed in the hospital; the treating physician would decide the type of post exposure treatment and required follow-up. Secondly, those standards set by "Updated U.S. Public Health Services Guidelines for the Management of Occupational Exposures to HBV, HCV and HIV and Recommendations for Post exposure Prophylaxis" (8).

Results

Reporting

156 BBFE cases were identified in the two year study. The most common causes of BBFEs were needlestick injuries. Those injuries were most commonly caused by handling/passing or disposing the needle, or while manipulating the needle in the patient. A detailed description of blood and body fluid exposures is provided in table 1. The departments where the exposures occurred are shown in Figure 1, which illustrates that the wards were the most common location of the reported exposures, followed by emergency and operating rooms. Blood and body fluid exposures were examined to determine which professional groups reported exposure. Reports were submitted by nurses 61%, physicians 24%, laboratory staff 9% and 6% others, at rates of 3.8 BBFE per 100 full time equivalent (FTE) nurses followed by 3.3 BBFE per 100 FTE physicians. The exact numbers of other professional groups were not available therefore it was not possible to calculate the rates for those groups.

Patients' Blood Results

Blood test of those patients to whose blood or body fluid staff were exposed was performed for only 99 out of 156 patients (63.5%). Blood analysis showed that 18 out of 99 patients assessed were infected with either hepatitis C, hepatitis B or HIV, as shown in table 2.

Staff Treatment and Follow-Up

91% of HCPs had their blood tested immediately after the exposure (table 3). However, the proportion having blood tests at three and six months decreased to 74% and 46% respectively. Files which did not have a note indicating need for a follow-up visit were categorized as not applicable for a follow-up visit.

Seroconversion

In 66 out of 156 cases staff did not complete post exposure follow-up. In the 71 cases where follow-up was completed there were no cases of seroconversion identified. Of the 18 known exposures to infected blood, only six individuals were followed up for six months.

Table 1. The frequency of various types and causes of Blood and body fluid exposures

Type	Clinical or circumstantial cause	Frequency (n)
Needle stick Injury (121)		
	Manipulating needle in patient	25
	IV line related causes	1
	Handling/passing device during or after use	35
	Recapping	7
	Collision with healthcare worker or needle	4
	Disposal-related causes	30
	Improperly disposed needle	18
	Lab/ pharmacy accident	1
Laceration (13)		
	Improperly disposed needle	2
	Handling/passing device during or after use	7
	Manipulating needle in patient	4
Puncture (3)		
	Improperly disposed needle	1
	Handling/passing device during or after use	2
Bite (4)		
	Bite/ Aggressive patient	4
Splash (15)		
	Splash blood	9
	IV line related causes	1
	Splash Urine	1
	Splash Saliva	4

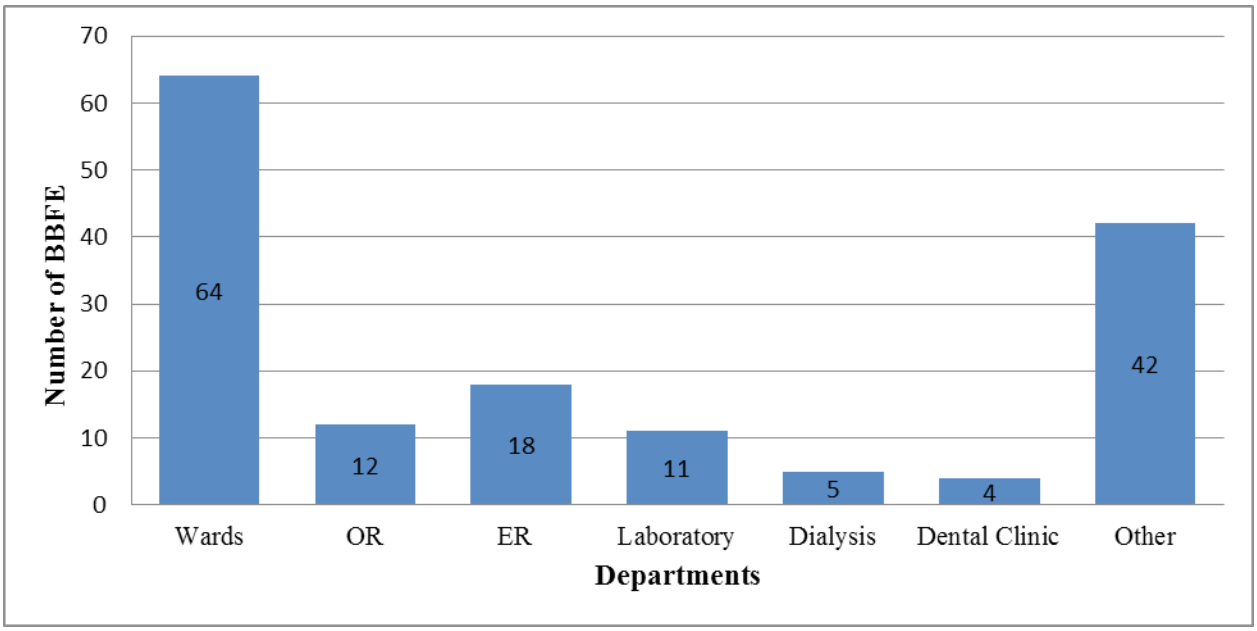

Figure 1. Departments from where blood and body fluid exposure (BBFE) was reported. Notes: OR= Operating Room and ER= Emergency Room.

Table 2. The Numbers of Involved Patient's Blood Results	
Blood Results	N
Normal	81
Hep B	5
Hep C	11
HIV	2

Table 3. Staff treatment and follow-up			
Blood analysis	Immediate [n (%)]	Three months [n (%)]	Six months [n (%)]
Performed	142 (91)	116 (74.4)	71 (45.5)
Not applicable	7 (4.1)	10 (6.4)	10 (6.4)
Not Performed	7 (4.1)	28 (18)	66 (42.3)

Discussion

Reporting rates of BBFE exposure are determined by both the effectiveness of primary prevention programmes targeted at needlestick injuries, and the proportion of exposures that are properly reported for assessment and follow-up. The clinical audit in this hospital recorded that 156 HCPs working in a 400 bed hospital reported an exposure during two years, a rate of 19.5 exposures/ 100 beds/ year. This reported rate is slightly greater than reported by McCormick, who reported a rate of 14.7 exposures/100 beds/year (9), Memish who recorded 15.1 exposures/100 beds/year (10), and the International Healthcare Workers Safety Center

from US reported average percutaneous injuries of 16.16 exposures/ 100 beds/ year (11). A higher rate of reported exposures was reported by Ruben who reported 32.1 exposures/100 beds/year (12). The extent of under-reporting in the study hospital cannot be accurately assessed, but the absence of a standard protocol, or reporting system suggests that the actual rate of BBFEs are higher than recorded in this audit.

The departmental reporting pattern illustrated that wards reported the largest number of exposures at 41% followed by ER 11%, and OR 7.7%; this may be explained on the grounds that most of the exposure prone activities take place in these settings. Our findings were comparable to statistical information from National Health Services Scotland where 53% of the exposures were reported in the wards followed by 16% in OR and 3% in ER (13) and Jahan from Kingdom of Saudi Arabia, who reported 45% exposures in the wards, 16.9% in OR and 19.2% in ER (14).

The study demonstrated that nurses were more likely to report BBFE than other groups; these findings were in concordance with the results of Zafar (15) and McCormick (9). It has been suggested that the reason for this is that physicians self-assess the exposure (13) and have low perception of risk related to transmission of disease, and therefore under-report to a greater extent.

Most of the BBFE reported were needlestick injuries, with relatively few splashes and bites reported. This may indicate that HCPs felt that only NSI or laceration needed to be reported as a source of exposure. Exposure to other body fluid on non-intact skin or mucous membrane may not have been perceived as reportable by HCPs. The most common reasons for exposures were handling and passing devices, incidents occurring during disposal, manipulating needles inside patients, and contact with needles that should have been consigned to a "Sharps Container", but had not been. Data from EPINet studies suggest that 47.5% of injuries occur while using sharps, 10% after use but before disposal, and 11% injuries during disposal (11); Jahan reported 39% injuries occurred while using sharps, 53.4% after use but before disposal (14). When compared our audit showed a substantially larger proportion of injuries related to disposal.

The audit found that blood test for the patient whose blood was the source of BBFE was performed in only 63% of cases. The CDC recommends that all patients (source) should be informed of the incident and have their blood tested for Hepatitis B, C and HIV because it is essential for appropriate treatment and follow-up for the staff member (8). In 63% of source patients tested in our audit, 18% were found to be infected with either hepatitis B, hepatitis C or HIV. While 91% of staff had an initial blood test following BBFE, only 45% of staff completed the recommended six month blood testing protocol. Twelve out of 18 staff that were exposed to blood known to be infected did not complete the six month protocol.

The CDC recommends that healthcare providers should have follow-up blood test after six month in case of exposure to HIV and hepatitis C and in case of hepatitis B they should be test two months after the third dose of vaccine (8). This was achieved in less than half the cases in this audit, and in only one third of the exposures which were known to be from an infectious source. This could be because the protocols were physician-dependent. Reasons given were that some staff may have thought it was not important to have follow-up blood tests performed, stigma attached to HIV, or fear of being diagnosed with disease which would result in deportation by the UAE health authorities.

The clinical audit showed a level of BBFE reporting comparable to other published studies. However, there were considerable limitations identified in the way reported BBFEs were investigated and followed up. A comprehensive BBFE programme with a standardised protocol addressing investigation and follow-up of BBFEs is required to improve the safety and quality of work at hospital.

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