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ACCIDENTAL INJURIES AND CUTANEOUS CONTAMINATIONS DURING GENERAL SURGICAL OPERATIONS IN A NIGERIAN TEACHING HOSPITAL  
A.R.K. Adesunkanmi, MBBS (IB.), FMCS, FWCS, FWACS, FICS, T.A. Badmus, FWACS, and J.O.D. Ogunlusi, MBChB, Department of Surgery, College of Health Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria

Request for reprints to: Dr. A.R.K. Adesunkanmi, Department of Surgery, College of Health Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria

## ACCIDENTAL INJURIES AND CUTANEOUS CONTAMINATIONS DURING GENERAL SURGICAL OPERATIONS IN A NIGERIAN TEACHING HOSPITAL

A.K. ADESUNKANMI, T.A. BADMUS and J.O.D. OGUNLUSI

### ABSTRACT

**Objective:** To determine the prevalence of accidental injuries and body contaminations among the operating personnel during general surgical operation, those involved, the circumstances surrounding the injuries or body contaminations and the factors affecting the prevalence in a unit of a teaching hospital in Nigeria.

**Design:** Patients operated for general surgical conditions in a unit of a Teaching Hospital Complex during a period of two years (1997-1998) were studied. A proforma was designed to enter personal biodata, preoperative and intra-postoperative clinical information of all the patients.

**Setting:** Wesley Guild Hospital a unit of teaching hospital complex serving the large agrarian rural and semi-urban Nigerians.

**Patients:** Five hundred and eighty nine consecutive general surgical patients. All types of general surgical operations were included, emergency or elective, major or minor, carried out during the day or at night.

**Intervention:** All the patients were operated and operating personnel observed for sharp injuries and body contamination.

**Main outcome measures:** Incidence of sharp injuries and cutaneous contamination and personnel at risk determined.

**Results:** Operating personnel sustained 62 sharp injuries (10.5%), these were caused by suture needle in 57 cases (92.0%), towel clips in three (4.8%), knife cut in two (3.2%). Operating physicians sustained 56 cases of sharp injuries (90.3%) and Scrub Nurses in six (9.7%). Self-inflicted sharp injuries in 49 (79%) and in 12 cases (21%) injuries were inflicted by the surgeons or their assistants. Left hand was injured in 39 cases (63%) and right in 23 (37%). Cutaneous or mucosa membrane contamination with blood or body fluid occurred in 232 cases (39.4%). These were made up of wet gown contamination in 124(53.5%), glove failure in 72(31%) and splashing of blood or fluids into the face or eyes in 36 cases (15.5%). Contamination occurred in more than one operating personnel in more than half of the cases. Operating surgeons were affected in 211 cases (91%). The risks of accidental injuries and blood and body fluid contamination were significant, if the duration of the operation was more than one hour, among the operating surgeons and if the operation was major ( $p < 0.05$ ).

**Conclusion:** This study has demonstrated that cutaneous, percutaneous, and mucous membrane exposure to patients blood and body fluids are common events during general surgical operations. Most accidental injuries were due to solid suture needle-sticks, mostly injured personnel were the primary operating surgeons, injuries occurred predominantly on the left hand. This may poses a significant risk of infection with blood borne pathogens when operating on infected patients.

### INTRODUCTION

The risk of occupational exposure to blood borne pathogens is a great concern to surgeons and operating room personnel. The operating personnel have the highest risk of contacting patients blood and body fluids(1). Percutaneous, cutaneous, and mucous membrane exposure to infected blood have resulted in hepatitis B or C virus and HIV infections among health care workers(2). Parenteral

transmission of Lassa and Ebola viruses during major surgery resulted in fatal outcome among doctors(3).

The risk of HIV seroconversion following percutaneous exposures to infected blood was estimated to be approximately 0.36%(4). That of hepatitis B virus is much higher than the risk of HIV infection after exposure(4). The seroprevalance or hepatitis B virus among surgeons ranged from 13-18%; and may be as high as 12-27% among dentists and oral surgeons(3). Studies have

shown that between 0.5-4% of Health Care Workers are chronically infected as compared to 10% in the general population and as many as 21% of chronic carriers may develop hepatocellular carcinoma(3).

In the developed countries, hepatitis B virus infection is now being controlled in the general population by passive and active immunization, also, among the health care workers in addition to immunization hospital safety practices are encouraged(4,5). With rapidly increasing seroprevalence of HIV in Africa(6), intraoperative accidental injuries, blood and body fluids contaminations are becoming life threatening occupational hazards for health care workers, especially, operating room personnel.

Percutaneous injuries caused by needle and sharp injuries, and cutaneous inoculation of patients' blood and body fluids are sometimes unavoidable, but can be minimised. Numerous studies have documented the frequency and circumstances of accidental injuries and body contaminations during surgical operations in developed countries(7-11), such studies are however few in our environment(3,12)

This study is a two year survey of accidental injuries and body contaminations during general surgical operations at one of the hospital units of Obafemi Awolowo Teaching Hospital Complex, Ile-Ife, Nigeria. The aim was to determine the prevalence of accidental injuries and body contaminations among the operating personnel, those involved, the circumstances surrounding the injuries or body contaminations and the factors affecting the prevalence. It is hoped, that this will assist in the design and establishment of appropriate precautionary measures.

## MATERIALS AND METHODS

This study was carried out over a period of two years, January 1997 to December 1998 at Wesley Guild Hospital, Ilesa, a unit of Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Nigeria. The hospital has a general surgical unit which takes care of a wide range of surgical operations. Orthopaedic surgical procedures were excluded. The unit has two permanent Consultant surgeons, one Senior registrar, two Registrars on six monthly rotations and two to three, house officers on two monthly rotations.

All the members of the unit were informed about the study and instructed to report any accidental injury and body contamination. In addition a registrar was assigned the duty of watching out for accidental injuries and other forms of contaminations. Only members of operating personnel were observed, anaesthetists, circulating nursing personnel and others watching the operations were excluded.

All operations were included, both major or minor, elective or emergency procedures, under local, regional or general anaesthesia. The patients biodata such as age, sex, occupation, marital status, educational background and clinical diagnosis were carefully documented. Also, documented were the type of operation whether elective or emergency, whether major or minor procedures, whether it was done during the day or at night, the duration of operation, the operative procedures, number of operating personnel, number, status and role of the surgeons and scrub nurses. The type of anaesthesia and American Society of Anaesthesiologist (ASA) score were as assessed by anaesthetists;

the past medical history especially of major illness, history of previous operation and blood transfusion were also documented.

Surgical operations were monitored for accidental injuries and glove failure. Such blood and body fluid contaminations as soilage of operating gown with skin contact and splashing of blood or body fluid on to the face or eyes of the surgeons or any of the operating personnel. These were ascertained by direct observation or by voluntary reporting. The conditions surrounding the accidental injuries, whether self-inflicted or inflicted by the second person, the anatomical area injured, the role of the injured persons, whether first aid was applied or not.

Single pair of gloves were routinely worn during operations; plastic aprons and protective goggles are not routinely worn in our unit.

### *Definitions of types of contamination:*

1. Gown soilage: When any area of scrub gown was soaked by blood, pus, peritoneal fluid, or intestinal content or urine and established contact with wearer's skin.

2. Glove Failure: Completely torn glove or punctured glove with the skin of the hand or fingers establishing direct contact with blood or other body fluids.

3. Accidental or sharp injury was defined as injury by any sharp objects, such as needles, knife and other sharp objects; in which there is a breach in the skin with or without bleeding.

4. Splash contamination when blood spurted on to the face or eyes from bleeding vessel or splashing of body fluid on the faces or eyes of any of the operating personnel.

5. Mucosal exposure was defined as conjunctival inoculation of patients blood or body fluids. Skin or cutaneous exposure: when the skin of operating personnel was in contact with blood or body fluid. Percutaneous exposure defined as inoculation of patients blood or body fluid resulting from skin penetration by sharp objects(13,14).

*Data collection and statistical analysis:* All the data were collected in a proforma prepared for the study, entered into a personal IBM compatible computer. Analysis of variables performed by using Epi Info version 6 software (Center for Disease Control, Atlanta Georgia, USA). Frequencies, tabulations and means were determined. Groups were compared using Student t-test and proportions were compared with Chi-square analysis with Yate correction and Fisher's Exact test when indicated. P-value of less than 0.05 was taken as significant. The Relative Risks of accidental injuries and blood and body fluids contaminations were calculated for the surgical personnel, also calculated for the surgical procedures and for certain conditions under which operations took place. This was done using STATCALC of Epi Info Version 6 Software at 95% confidence limit.

## RESULTS

Age ranged from 2 weeks to 97 years with a mean age ( $\pm$ SD) of  $37 \pm 25$  years. There were 389 males (66%) and 200 females (34%). Consultants were involved in 234 operations (39.7%), senior registrars in 385 operations (65.4%), registrars in 447 cases (76.0%) and house surgeons in 234 (39.7%). Two doctors were involved in 363 operations (61.6%), three doctors in 189 cases (32%), four doctors in 24 (4%) or one doctor in 13 cases (2.2%). Operation duration ranged from 10 minutes to 4 hours with a mean ( $\pm$ SD) of  $1.05 \pm 0.6$  hours. Only 41 patients

had previous history of blood transfusion.

The major operations were made up of laparotomy in 141 cases (66.2%), prostatectomy 35(16.4%), mastectomy 17(8%), thyroidectomy, and anorectal procedures and skin grafting in six patients each, accounting for 2.8%. Parotidectomy and neck dissection in one patient each.

Minor and intermediate operations were 152 (40.4%) herniorrhaphy and herniotomy, 73 appendicectomies, excision of superficial body masses in 49(13%) cases, hydrocelectomy 33(8.8%), orchidopexy and orchidectomy in 32 (8.5%), major incision and drainage of abscess and wound debridement in 10 (2.7%) cases each. Others, such as suprapubic cystostomy, secondary wound closure in 12 cases (3.2%).

*Accidental injuries:* Sixty two accidental injuries by sharp instruments occurred during 589 general surgical

operations, accounting for 10.5%. Injuries were due to suture needle in 57 cases (92%), towel clips in three cases (4.8%) and two cases due to knife (3.2%). Injuries involved operating doctors in 56 cases (90.3%) and scrub nurse in six cases (9.7%). The injuries were self inflicted in 49 cases (79%) and second person inflicted in 13 cases (21%). Injury occurred in the primary surgeons in 46 cases (74.2%), first assistants in seven (11.3%), second assistant in two cases and 3rd assistant in only one case.

Consultants were the most injured with 15 cases (6.4%), followed by registrars with 21 cases (4.7%) , senior registrar with 17 (4.4%) of senior registrar operations and House Surgeons three cases (1. 1%). Most of the needle-stick injuries (93.5%) occurred during tissue retraction for dissection and suturing, five injuries occurred in scrub nurses during positioning of suture needles and handling over to the surgeons. All injuries affected the hands in this study. Thirty nine cases (63%) involved the

**Table 1**

*Incidence and relative risk of accidental injuries in general surgical operations*

Operations	N=589	Sharp Inj. N=62	%	Relative Risk (RR)
Laparotomy	141	20	14.2	1.8 (1-3.0)
Herniorrhaphy	152	9	6	0.8 (0.4-1.4)
Appendicectomy	73	12	16.4	2 (1-3.3)
Excision biopsy	49	3	6	0.6 (0.2-2)
Prostatectomy/Vesical	35	5	14.3	1.5 (0.7-4.6)
Hydrocelectomy	33	1	3	0.31 (0.04-2)
Orchidopexy/Orchidectomy	32	2	6.3	0.64 (0.2-3.5)
Mastectomy	17	4	23.5	2.6 (1-6.2)
Major incision drainage	10	0	0	0
Major wound debridement	10	0	0	0
Thyroidectomy	6	1	16.7	1.8 (0.3-11)
Skin graft	6	1	16.7	1.8 (0.3-11)
Anorectal	6	1	16.7	1.8 (0.3-11)
Neck dissection	1	1	100	10.6 (8.7-13.5)
Total parotidectomy	1	1	100	10.6 (8.7-13.5)
Others	17	1	6	0.6 (0.1-4.2)

**Table 2***Relative risk of exposure of operating personnel to accidental injuries*

Variables	N=589	Sharp Injuries (62)	Percentage (10.5%)	Relative Risk (RR)
Consultants	234	15	6.4	0.6 (0.3-1)
Senior Registrars	385	17	4.4	0.3 (0.15-0.45)
Registrars	447	21	4.7	0.21 (0.13-0.35)
House Surgeons	234	3	1.3	0.1 (0.03-0.28)
Scrub Nurse	506	6	1.2	0.01 (0.01-0.03)
Primary surgeon	589	46	7.8	-
1st assistant	576	7	1.2	-
Minor/Intermediate Surgery	376	31	8.2	0.57 (0.35-0.90)
Major surgery	213	31	14.5	1.8 (1.10-2.52)
Elective	379	35	9.2	0.72 (0.45-1.66)
Emergency	210	27	13.0	1.01 (0.63-1.61)
Operation duration			6.5	
<1 hour	247	16	-	0.55 (0.29-0.85)
≥1 hour	342	46	13.5	2.02 (1.2-3.5)

**Table 3***Factors affecting incidence of accidental injury*

Factors	N=589	Sharp Injuries N=62(10.5%)	DF	P-Value
Op. duration. <1 hr	247	16	2	0.03
> 1 -4hrs	342	46		
Primary Surgeon	589	46	3	0.000000
1st Assist Scrub Nurse	576	7		
Nurse	566	6		
Minor Op.	376	31	2	0.00005
Major Op.	213	31		
Elective	379	35	2	0.43
Emergency Time Surg.	210	27		
Day	106	13	2	0.8
Night	483	49		
Left hand	589	39	2	0.005
Right hand	589	23		

Significant: P<0.05  
95% Confidence Limit.

fingers of non-dominant left hand, while right hand was involved in 23 cases (37%).

The Relative Risk (RR) of accidental injuries was high during major surgery RR= 1.77, P=0.02; emergency operation RR=1.01; P=0.9 and operation duration longer than one hour RR=1.17; P=0.01. The risk of accidental injuries were also significantly higher among the consultants than the residents RR=0.6; P=0.02, among the primary surgeon than his first assistant RR=0.08, P=0.0000. Among the operative procedures, neck dissection and total parotidectomy had the highest risk of accidental injuries RR 10.6; P=0.09, followed by mastectomy RR=2.56; P=0.07 RR was 1.76 for laparotomy P=0.03. (Tables 1 and 2).

Table 3 shows the factors influencing the incidence of accidental injuries. The duration of surgery, the role of the surgeon and the type of surgery significantly affected the incidence of accidental injuries P=0.0000-0.03.

**Blood and body fluid contamination:** This occurred through soakage of theater gown with skin contact in 124 cases (21%), 72 cases of glove failure (12.2%) and splashing of blood or body fluid to the face or eyes in 36 (6%) surgical operations. The total blood and body fluids

Table 4

*Relative risk of blood and body fluids contaminations in general surgical procedure*

Operations	N=589	N=232 (39.4%)	Percentage	Relative Risk (RR)
Laparotomy	141	102	72.3	3.73 (2.8-5)
Herniorrhaphy/Herniotomy	152	25	16.4	0.51 (0.4-0.7)
Appendicectomy	73	36	49.3	1.80 (1.4-2.3)
Excision biopsy	49	9	18.4	0.63 (0.3-1.2)
Prostatectomy/Vesical	35	29	83.0	3.13 (2.6-3.8)
Hydrocelectomy	33	2	6.0	0.34 (0.1-1.3)
Orchidopexy\Orchidectomy	32	2	6.3	0.21 (0.1-0.9)
Mastectomy	17	11	64.7	2.32 (1.61-3.36)
Major I&D	10	1	10.0	0.35 ((0.05-2.26)
Major wound debridement	10	1	10.0	0.35 (0.05-2.26)
Thyroidectomy	6	5	83.3	3 (2.04-4.32)
Skin graft	6	3	50	1.8 (0.8-4)
Anorectal	6	3	50	1.8 (0.79-4)
Neck dissection	1	1	100.0	3.6 (3.2-4)
Total Parotidectomy	1	1	100.0	3.6 (3.2-4)
Others	17	0	0	0

Because of overlapping total did not add up to 100%

Table 5

*Factors affecting blood and body fluids contamination*

Factor	N=589	Wet Gown (N=124) (21%)	Glove Fail. 72 (12.2%)	Face/ Eyes 36 (6%)	Total 232 (39.4%)	DF	P Value
<1 hr	247	19	17	4	40	2	0.000
>1-4hrs	342	105	55	32	192		
Primary surgeon	589	124	58	21	203	3	0.000
1st assistant	576	64	14	15	83		
Scrub nurse	586	0	0	0	0		
Minor	376	30	33	11	74	2	0.003
Major	213	94	39	25	152		
Elect Surg.	379	64	53	27	144	2	0.003
Emerg. Surg.	210	60	19	9	88		
Time							
Night	106	32	14	4	50	2	0.02
Day	483	92	58	32	182		

contaminations was 232, (39.4%) procedures. Table 4 shows the incidence and Relative Risk (RR) of body contaminations in various surgical procedures. Laparotomy had the highest risk RR=3.73; P= 0.0000, followed by neck dissection and total parotidectomy RR=3.57 and 3.56; P=0.022 and 0.08 respectively, prostatectomy RR= 3.13; P=0.000, thyroidectomy had RR=3.0 P=0.008, while mastectomy had RR=2.332, P=0.0021. Table 5 shows the factors influencing the incidence of body contamination in general surgical operations. Events responsible for the blood and body fluids contaminations were soakage of sterile gown during operation in the abdomen full of pus, exudate, blood or ascites; undetected glove tear, unexpected arterial spurting, slipped instruments especially retractor and uncontrolled jerky movement during tissue retraction and dissection. The contaminations were significantly more during major operations, operative procedures requiring longer operating period, during emergency surgery than elective. Contamination also occurred more during the operations carried out at night. The operating surgeons were also significantly affected than the other participants (P<0.05).

## DISCUSSION

Our study confirms that accidental injuries and body contaminations occur commonly during general surgical procedures. Comparative studies of surgical specialties have shown that accidental injuries and body contaminations are specialty dependent. The reported incidences of accidental injuries in previous studies ranged from 1.7-18.7%(3,7-11,13,14). It also depends on the type of procedure within a particular surgical specialty. Lewis *et al* (15) reported 10% and 21 % in abdominal and vaginal hysterectomy respectively. The incidence of body and cutaneous contamination is much higher than the incidence of sharp injuries, it was 50.4% in a study by Quebeberman *et al* (11) and Adesanya *et al*(3) reported 52.4% in Nigeria.

The procedure injury rate of 10.5% and blood and body fluid contaminations rate of 39.2% observed during our study were lower than those of previous studies. The reason for this lower rate may be due to the fact that all surgical procedures were observed. Direct observation by participating surgeon as done in this study was associated with better accuracy of data collection, than the use of questionnaire(7-8) or by the trained observer without other responsibility in the operating room(10=11,13). Trained observers may not always be able to visualize the operation field. Intentional and unintentional under-reporting of injuries may occur with the use of questionnaire. However, the observer participating in the surgery may, also, be too occupied to adequately monitor the scrub nurses; leading to under-reporting in this group of surgical personnel. Thus, the rate observed in this study would appear to be a true representation of accidental injury and contamination rates in the general surgical procedures.

As previously documented(3,11), and confirmed by our study, the mostly injured and contaminated operating personnel were the surgeons and their first assistants. It is, however, important to monitor all surgical personnel to ascertain accurate prevalence of injuries and body contamination, for effective preventive measures.

Sharp injuries mostly from suture needle accounted for 92% accidental injuries in this study in accordance with previous studies(3,7,9). Our study also confirmed the previous findings of index finger of non-dominant hand as the most frequently injured, accounting for 63% in this study. Most of the injuries were self inflicted, and occurred mainly during suturing and retraction of tissue with hand. Needlestick injuries were commoner during major surgery, prolong operations and among the primary surgeons. Fatigue at the end of a long operations and the desire to finish the job quickly may be responsible for many of these injuries(3,7).

The risk of injuries was the highest during mastectomy with injury rate of 23.5%, skin graft and anorectal procedure accounted for 16.7% each, while it was 15% in laparotomy. There was no significant difference in the injury rate between the residents and consultants contrary to the findings by Adesanya *et al*(3), however more major surgical cases were handled by the consultants in this study, while more intermediate and minor surgical cases were handled by the residents. High injury rates of 16.4% in appendicectomy and 8% herniorrhaphy can be attributed to many of these cases were operated by the residents. The rate may be higher with major operations, this appears to have confirmed the findings of previous studies that residents are more prone to injuries than consultant surgeons(3,7,9).

It is our believe that all surgical personnel injured in this study were inoculated with patient blood, because instruments were contaminated before causing injuries and sharp pains of penetrating sharp objects was also experienced by the victims. Fortunately, no HIV seroconversion after an injury from a suture needle or other solid needle used in operating theater had been reported(1,4).

A previous study(10) suggested that most of the injuries are superficial. However, bleeding occurred in 85% of the cases as reported by Wright *et al* (13) further strengthen the possibility of inoculation of patients blood or body fluids. The exact amount of such inoculated blood is not known, it depends on the depth of the wound. Hollow bore needle however tends to inoculate more quantity of blood than solid suture needles(16).

Experimental studies(16) have shown that the volume of blood injected by suture needle is smaller than that inoculated by hollow injection needle. Also, a single layer of surgical glove material was found to reduce the amount of blood inoculated by suture needle by 70%, whereas only reduced that of hollow needle by 35-50%. Two layers of surgical glove materials will, therefore, be more efficient in removing blood from suture needles. HIV seroconversion

after percutaneous injuries caused by hollow injection needle contaminated with blood of AIDS patients had been reported(1,9,17). The risk of seroconversion after a single percutaneous exposure to HIV infected blood through hollow injection needle was approximately 0.36%, but may be higher if such inoculation is made by knife resulting in big open wound(4,9,12). Antigen titre in patients with HIV infection is 100 times lower than patients with AIDS, also surgical operations may be infrequent in AIDS patients. Thus, the risk of seroconversion is lower in patients with HIV infection than those with AIDS.

The risk of seroconversion after percutaneous exposure depends on prevalence of the infection in the society, the numbers of exposures and chances of transmission per exposure(17). Based on binomial distribution  $1 - [1 - fp]^n$ , where "f" is the prevalence in the society, "p" is the chance of transmission per incident and "n" the number of incidents, with HIV seroprevalence of 3.2% in this environment(6). Adesanya *et al* (3) in Nigeria calculated the cumulative professional life risk for a consultant surgeon operating 100 patients for 30 years to be about 1%, similar to the rate obtained by Lowenfels *et al* (7) in 1989. Consultant surgeons sustained 6.4% injuries per hundred operations in this study, compared to 8.4% injuries per consultant operation is reported by Adesanya *et al* in this environment. Based on this, the cumulative risk for consultant surgeons in our area of study would be a little less than 3%. This level of risk is an indication for meticulous and careful surgical technique and other preventive measures to reduce the rate needle-stick injuries during surgical operations.

Blood or body fluids, unexpected arterial spurting, drainage of peritoneal content, irrigation fluid and glove failure are major factors which make operating personnel susceptible to body contamination during general surgical procedures. Such contamination occurred in 39.4% of this study. The risk of infection with blood borne diseases through the cutaneous exposures, such as may occur from these sources is much less, it has been documented in four cases so far(7). The risk, however, increases with such break in skin and mucosa barrier, as skin ulceration, dermatitis, and micro-injuries from frequent hand scrubbing with brush(3). Also, the type of body fluids, blood or blood containing fluids and physical factors are all important factors in the risk of seroconversion(1,19). None of the cases of seroconversion resulting from non-parental occupational HIV exposure was due to blood contamination of intact skins(8).

It may, however, pose a substantial risk because of high frequency of cutaneous contamination. The cutaneous contamination occurred in 39.4% in 100 procedures and 79% of all exposures in this study. Furthermore, frequent hand scrubbing make operating room personnel particularly susceptible to skin breaks on the finger tips; the site of majority of glove tears in this study and previous studies(13). The exposure may, also, be inadvertently prolonged, as the operating surgeon may be too occupied

to note glove tears or other cutaneous contaminations. Wearing of double pairs of glove will reduce this to the barest minimum(20). Waterproof apron and protective goggles have been found effective in preventing skin contact and conjunctival inoculation of patients blood and body fluids. While protective goggles are routinely worn in our unit, wearing of waterproof aprons is regularly practiced. All patients must be assumed to be potentially infected with HIV or other blood borne microorganisms and appropriate precaution should be taken to minimise the risk of exposure to blood and body fluids, this a policy advocated by the universal precaution.

In conclusion, our study has demonstrated that cutaneous, percutaneous, and mucous membrane exposure to patients' blood and body fluids are common events during general surgical operations. Most accidental injuries were due to solid suture needles, most injured personnel were the primary operating surgeons and injuries occurred predominantly on the left hand index finger. This poses a significant risk of infection with blood borne pathogens, thus adequate preventive measures are urgently needed.

*Preventive strategies:* The health education against the risk of contacting HIV infection in the general population must as a matter of necessity continue, thus, the incidence of HIV and AIDS in the community can be reduced, thus, reducing the incidence of HIV and AIDS among patients requiring surgery.

The use of sharp instruments can, also, be avoided when possible. The use of scissors for dissection instead of knife and free ligation of blood vessel can be employed in place of transfexion. When facilities are available the use of electrocautery in skin incision, or in dissection or in securing haemostasis can, also, be employed. Vascular clips for haemostasis and the use of staplers in suturing are all techniques that minimise the use of sharp instruments. Blunt needles have, also, been designed to reduce the incidence of sharp injuries from needle sticks(27).

Hospitals should have written policies on the management of sharp injuries and adequate record of such should be kept. All surgical personnel should be immunized against hepatitis B and C viruses(5). The concept of universal precautions(5) should be encouraged and used among all health care workers. Blood and body fluids of all patients should be assumed to be infectious and appropriate precaution should be taken. Non-touch technique is recommended for wound closure and keeping operation field free of blood and body fluid through the use of appropriate techniques in event of sharp injury, immediate disengagement from the procedure, removal of gloves and squeezing of blood out of affected finger and application of any available antiseptic solution is recommended. If there is no competent hand to continue with the surgical procedure, the surgeon may, resume activity after wearing double gloves. In case of cutaneous contamination, the eyes, hands or other skin surfaces affected can be washed immediately and thoroughly with water.

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