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Risk Assessment Of The Umtata General Hospital's Mortuary In The Former Republic Of Transkei, Umtata, Eastern Cape

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ABSTRACT

Abstract (English)

The risk of working in a mortuary is enormous; cadavers pose the risk of infection with organisms like cholera, plague, typhoid, tuberculosis and anthrax. Infectious conditions and pathogens in the recently deceased that present particular risks in the mortuary include HIV, hepatitis B and C viruses, meningitis (especially meningococcal) and septicemia. A study was conducted among mortuary staff to estimate the risk of disease and disability associated with working in Umtata General Hospital (UGH) mortuary. Respondents were asked "Yes" or "No" questions from which collective inferences were drawn. The risk factors were classified into four categories (1-4) and further subdivided into a, b, c, d, and e according to severity of risk. Physical inspection of the mortuary was also done.

The staff identified infection, and HIV in particular, as the greatest risk they faced; while the least worrying factor was exposure to chemicals. A high risk of psychological stress, leading to, or contributing to, manifestations such as major depression, generalized anxiety disorders and substance abuse was also noted. Ergonomic factors related to poor ventilation and light, extreme heat and cold, and inappropriate postures during lifting of bodies were thought to pose the risk of breathing problems, sore eyes and generalized body pains as well as backache, especially among porters and technicians. Chemical risk factors included a wide range of known chemicals (like formalin and alcohol) and substances whose real chemical nature was unknown to staff (such as

rat poisons and pesticides). Furthermore, gases released from decomposition body tissue or from poisoning cases brought in for autopsy posed another risk for the staff.

Existing control procedures were found to be negligible and ineffectively implemented. The building is unsuitable and not well-equipped as a mortuary. It is suggested that the staff should be educated on the risks involved in their work and on the preventive measures they could employ to minimize them. Measures like stress management, vaccination, improved mortuary hygiene, use of personal protective equipment (PPE) and improvement in ergonomic factors need to be instituted as a matter of urgency. The present study points to the need to have an Occupational Health and Safety Unit (OHSU) established at UGH. Such a unit will deal with planning, implementation, and assessment of the control measures in place. To accomplish this, the unit would periodically visit the mortuary, and develop basic-databases of risk-ranking.

Abstract (German, Deutsch)

Die Gefahr des Arbeitens in einer Leichenhalle ist enorm; cadavers werfen die Gefahr der Infektion mit organismen wie Cholera, Pest, typhusartiges, Tuberkulose und Anthrax auf. Ansteckende Bedingungen und Krankheitserreger in den vor kurzem gestorbenen, die bestimmte Gefahren in der Leichenhalle darstellen, schließen HIV, Hepatitis B und c-Viren, die Meningitis (besonders Meningokokken) und Blutvergiftung mit ein. Eine Studie wurde unter Totenpersonal geleitet, um die Gefahr der Krankheit und der Unfähigkeit zu schätzen, die mit dem Arbeiten in der allgemeinen dazugehörig sind Leichenhalle des Krankenhauses Umtata (UGH). Antwortende wurden " ja " oder " nicht " Fragen gefragt, von denen Kollektivfolgerungen gezeichnet wurden. Die Gefahr Faktoren wurden in vier Kategorien (1-4) und in weiteres unterteilt in a, in b, in c, in d und in e entsprechend Schwierigkeit der Gefahr eingestuft. Körperliche Kontrolle der Leichenhalle war auch erfolgt. Der Personal kennzeichnete Infektion und HIV insbesondere, wie die größte Gefahr, die sie gegenüberstellten; während der wenige Sorgen Faktor Aussetzung zu den Chemikalien war. Eine hohe Gefahr zu des psychologischen Druckes, führend oder beitragend zu, zu der Äusserungen wie Haupttiefstand, zu der generalisierten Angststörungen und zu des Substanzmißbrauches wurde auch beachtet. Ergonomische Faktoren standen auf schlechter Ventilation und Licht in Verbindung, extreme Hitze und kalt, und nicht angebrachte Lagen während des Anhebens der Körper wurden gedacht, um die Gefahr der Atmung der Probleme, wunde Augen aufzuwerfen und die Körperschmerz sowie Backache, besonders unter Porters und Technikern generalisierten. Chemische Gefahr Faktoren umfaßten eine breite Strecke der bekannten Chemikalien (wie Formalin und Spiritus) und der Substanzen deren reale chemische Natur unbekannt war mit Personal zu versorgen (wie Rattegifte und -schädlingsbekämpfungsmittel). Ausserdem gaben Gase vom Aufspaltungkörpergewebe frei, oder von den Poisoningfällen, die innen für Autopsie geholt wurden, warf eine andere Gefahr für den Personal auf. Vorhandene Steuerprozeduren werden gefunden, um unwesentlich zu sein und eingeführt erfolglos. Das Gebäude ist unpassend und als Leichenhalle nicht gut ausgerüstet. Es wird vorgeschlagen, daß der Personal auf den Gefahren gebildet sein sollte, die in ihre Arbeit mit einbezogen werden und auf den vorbeugenden Massen sie beschäftigen konnten, um sie herabzusetzen. Masse wie Druckmanagement, Schutzimpfung, verbesserte Totenhygiene, Gebrauch der persönlichen schützenden Ausrüstung (PPE) und Verbesserung in den ergonomischen Faktoren müssen als Stoff der Dringlichkeit eingeleitet werden. Die Punkte der vorliegenden Untersuchung zur Notwendigkeit, eine berufliche Gesundheit und Sicherheit Maßeinheit (OHSU) zu haben stellten bei UGH. Such, das eine Maßeinheit Planung beschäftigt, Implementierung und Einschätzung der

Kontrollmaßnahmen im Platz her. um dieses zu vollenden, würde die Maßeinheit regelmäßig die Leichenhalle besuchen und Grundlegenddatenbanken von Gefahr-Risk-ranking entwickelt.

Abstract (French, Française)

Le risque de travailler dans une morgue est énorme; les cadavers posent le risque d'infection avec des organizations comme le choléra, la peste, typhoïde, tuberculose et anthrax. Les conditions infectieuses et les microbes pathogènes dans récemment les décédés qui présentent des risques particuliers dans la morgue incluent HIV, l'hépatite B et les virus de C, méningite (particulièrement méningococcique) et septicémie. Une étude a été entreprise parmi le personnel mortuaire pour estimer le risque de la maladie et d'incapacité associées à travailler dans la morgue générale de l'hôpital d'Umtata (UGH). Des répondants ont été demandés " oui " ou " jamais " les questions dont des inférences collectives ont été tirées. Les facteurs de risque ont été classifiés dans quatre catégories (1-4) et encore subdivisés en a, b, c, d, et e selon la sévérité du risque. L'inspection physique de la morgue a été également faite. Le personnel a identifié l'infection, et l'cHiv en particulier, comme le plus grand risque qu'ils ont fait face; tandis que le moindre facteur d' s'inquiéter était exposition aux produits chimiques. Un gros risque de contrainte psychologique, menant, ou contribuant, derrière manifestations telles que la dépression principale, derrière désordres généralisés d'inquiétude et derrière abus de substance a été également noté. Les facteurs ergonomiques ont associé à la ventilation et à la lumière faibles, la chaleur et froid extrêmes, et des maintiens inadéquats pendant la levée des corps ont été pensés pour poser le risque de respirer des problèmes, yeux endoloris et ont généralisé des douleurs de corps aussi bien que le mal de dos, particulièrement parmi des bagagistes et des techniciens. Les facteurs de risque chimiques ont inclus un éventail de produits chimiques connus (comme la formaline et l'alcool) et de substances dont la vraie nature chimique était inconnue pour fournir (comme des poisons et des pesticides de rat). En outre, les gaz ont libéré du tissu de corps de décomposition ou des cas d'empoisonnement apportés dedans pour l'autopsie a posé un autre risque pour le personnel. Des procédures existantes de commande sont avérées négligeables et inefficacement mises en application. Le bâtiment est peu convenable et non bien équipé comme morgue. On le suggère que le personnel devrait être instruit sur les risques impliqués dans leur travail et sur les mesures préventives ils pourraient utiliser pour les réduire au minimum. Des mesures comme la maîtrise du stress , la vaccination, l'hygiène mortuaire améliorée, l'utilisation du matériel de protection personnel (PPE) et l'amélioration des facteurs ergonomiques doivent être instituées d'urgence. Les points de présente étude à la nécessité d'avoir une unité de salubrité professionnelle et de sûreté (OHSU) ont établi chez UGH. Such que une unité traitera la planification, mise en place, et évaluation des mesures de contrôle en place. Pour accomplir ceci, l'unité visiterait périodiquement la morgue, et développe des de base-bases de données du risque-rang.

Abstract (Italian)

Il rischio di funzionamento in una camera mortuaria è enorme; i cadavers comportano il rischio di infezione con gli organismi come il colera, la peste, tifoide, la tubercolosi ed antrace. I termini contagiosi e gli agenti patogeni recentemente nei defunti che presentano i rischi particolari nella camera mortuaria includono il HIV, l' epatite B ed i virus di C, la meningite (particolarmente meningococcica) e la setticemia. Gli studi sono stati intrapresi fra il personale mortuario per valutare il rischio di malattia e di inabilità connesse con il funzionamento nella camera mortuaria generale dell' ospedale di Umtata (UGH). Ai dichiaranti non sono stati chiesti " sì " o " no " domande da cui le illazioni collettive sono state dissipate. I fattori di rischio sono stati classificati in quattro categorie

(1-4) ed in più ancora suddivisi nella a, nella b, nella c, nella d e nella e secondo la severità del rischio. Il controllo fisico della camera mortuaria egualmente è stato fatto. Personale l' infezione identificata HIV ed in particolare, come il rischio più grande hanno affrontato; mentre il meno fattore preoccuparsi era esposizione ai prodotti chimici. Un elevato rischio dello stress psicologico, conducente a, o contribuente, alle manifestazioni quale la depressione principale, dei disordini generalizzati di ansia e dell' abuso della sostanza egualmente è stato notato. I fattori ergonomici collegati con ventilazione e luce difficile, calore estremo e posizioni fredde e ed inadeguate durante la sospensione dei corpi si sono pensati per comportare il rischio di respirazione dei problemi, occhi irritati ed hanno generalizzato i dolori del corpo così come il backache, particolarmente fra i portatori ed i tecnici. I fattori di rischio chimici hanno incluso una vasta gamma dei prodotti chimici conosciuti (come formalina ed alcool) e delle sostanze di cui la natura chimica reale era sconosciuta fornire (quali i veleni e gli antiparassitari del ratto). Ancora, i gas liberati dal tessuto del corpo di decomposizione o dai casi di avvelenamento portati dentro per l' analisi hanno comportato un altro rischio per il personale. Le procedure attuali di controllo sono risultate trascurabili ed inefficace sono state effettuate. La costruzione è inadatta e non ben attrezzata come camera mortuaria. È suggerito che il personale dovrebbe essere istruito sui rischi coinvolgere nel loro lavoro e sulle misure preventive potrebbero impiegare per minimizzarle. Le misure come la gestione di sforzo, la vaccinazione, l' igiene mortuaria migliorata, l' uso di apparecchiatura protettiva personale (PPE) ed il miglioramento nei fattori ergonomici devono essere istituite urgentemente. I punti di studio presente alla necessità di avere un' unità di sanità e sicurezza professionale (OHSU) hanno stabilito a UGH. Such che un' unità si occuperà della progettazione, implementazione e valutazione delle misure di controllo sul posto. Per compire questa, l' unità visiterebbe periodicamente la camera mortuaria ed elabora le di base-basi di dati del rischio-risk-ranking

Keywords: Risk-Assessment Existing-Procedures Required -Control-implementation

Introduction

The term "hazard" and "risk" are often used interchangeably, which is not accurate. For instance, the ability of scalpels, saws and needles to inflict injury represents a hazard, while the likelihood of acquiring hepatitis B from such an injury represents a risk. Staff of the medico legal laboratory have a great risk of infection inherent in their work, which partly explains the frequent dropouts among this group of workers. As in other working areas, the general principle of ensuring safety in the autopsy room involves the recognition of risks and their elimination. This requires, risk assessment to be carried out in order to create a healthy and safe working environment for the staff of the mortuary.

Morris (1946) showed that many students became tuberculin-positive during the time they attended postmortem examinations (1). Harrington and Shannon (1976) in a retrospective survey of 1000 British laboratory workers, found that the incidence of tuberculosis was five times higher in this group than in the general population; one-third of their cases occurred amongst autopsy room workers (2). Over the last twenty years, however, there has been a decline the incidence of occupationally acquired tuberculosis amongst mortuary workers; and there has been a significant decline in the number of cases of blood-borne hepatitis (3, 4). The falling incidence of occupational-acquired infections now seen amongst mortuary workers is attributable to the improved standards adopted in the workplace. It also reflects an increased awareness of the need for safe working practices and the consequent introduction in most countries of national Codes of Practice and

legislative mechanisms to promote compliance (5). Case-to-case transmission of tuberculosis is mainly due to inhalation of bacteria, and a clear potential for inhalation exists in autopsy room, since it has been shown that an infected aerosol is created when tuberculosis lung were sliced (6, 7). Opening, dissection and washing of bowels lead to heavy contamination of the worker's hands and surroundings surfaces with intestinal bacteria, which may include intestinal pathogens such as salmonella. Given normal standards of hygiene and prohibition of food consumption in the autopsy room, oral transmission of infection should not occur. Contaminated gloved hands should not handle articles, like the telephone, which may subsequently touched by ungloved hands. The mortuary at UGH is situated in the center of the hospital, adjoining to the pharmacy and medical outpatient department. The mortuary services Umtata and Nqgeleni magisterial areas, comprising a population about 200,000 people. The mortuary is attached to University of Transkei Medical School and is used as a teaching place for medical students.

The staff carries out a workload of 1500 autopsies a year. There are 16 members of staff who works in the laboratory. These are of different categories, i.e. six police officers who helps in dissecting the bodies; four porters who transport the bodies on trolley; one mortuary supervisor, who look after the store and keep account of materials in the mortuary; one general worker and four medical officers, three of them are part-time working on sessions. Some of the mortuary staff has been working in laboratory since 14 years ago. In addition these 16 staff members, five others have since died, two due to unnatural deaths and three due to natural causes from long illnesses. All the porters are illiterate to semi-literate, technicians those dissect the bodies, are police officers, having 7th standard certificates, store clerk is matriculated.

This study was designed to estimate the frequency of risk exposure by the mortuary staff; to estimate the prevalence of major risk factors, and to ascertain the existing control procedures and their effectiveness in place. This paper suggests some control measures that could help better safeguard the mortuary workers at UGH. It was the aim of study to identify hazards which gives rise to risks in the UGH mortuary; to rank those risks; to elimination or suggest ways of eliminating such hazards, where possible; to assess existing control procedures and their effectiveness; to enlist the support of the administrative authorities for the implementation of the required control measures; and above all to heighten staff awareness of the possible risk factors in the mortuary.

Methodology

A questionnaire was designed to assess the hazardous factors at the mortuary at UGH. All the staff of the mortuary two medical officers, six technicians (police officers), four porters, one supervisor (store keeper), one general worker, participated in the study from 5th May 15th May, 1998. The questions were explained in detail to the respondents, and then collective inferences were drawn from the Yes/No answers to each statement. Furthermore, Compensation for Occupational Injuries and Disease (COID) Act 130, of 1993, and Occupational Safety and Health (OSH) Act No. 85, of 1993 and the workers' rights within this act was explained to them. These risk factors are identified and their amount of danger (risk rating) 1 to 4 in range weighted, on the basis of amount of risk prevalent in the mortuary, concluded by the staff in majority. These were further subdivided into a, b, c, d and e, according to severity e.g. 'a' is more severe than 'e' (most life threatening denoted a '1a' and least harmful denoted by ' 4e').

A skilled Medical practitioner (author) is responsible for the final identification of risks and relative weighting. The author got the ideas from all concerned, and made final judgment in the risk assessment on foundation of his knowledge, insight, data and expert experience.

The second part of the study involved joint inspection by all the participants (all mortuary staff from porters to medical officer) of the mortuary premises. Special emphasis was placed on the following factors: physical condition of the building including its location, ventilation, insulation against extremes of temperature; and availability of storage facilities for chemical and biological material, fire safety and protective equipments.

The mutual agreement of all the staff member have taken into account jointly, especially on the risk factors, for example state of building, jointly considered as unsuitable for mortuary work. Likewise all the hazardous problems discussed and then most eminent one considered as the risks. By this way the risk factors were identified with consensus of all staff members.

Results

Table 1

Designation	*Hazards*	*Risks*	*Physical form*	*Route of entry*	*Risk rating*
Technicians	1. Infections	HIV	Virus	Contact (Blood)	1a
Doctors		Hepatitis	Viruses	Contact (blood)	1b
Porters		TB	Bacteria	Droplets	1c
Clerk		Meningitis	Bacteria/ viruses	Inhalation, Contact	1d
		Septicemia	Bacteria/ viruses	Contact, Inhalation(air)	1e
Technicians	2.Psychological	Chronic Stress	----------	----------	2a
Porters		Depression	----------	----------	2b
Clerk		Hostility	----------	----------	2c
Doctors		Abnormal Behavior	----------	----------	2d
		Absenteeism	----------	----------	2e
Porters	3.Physical (ergonomics)	Backache	Physical	----------	3a
Technicians		Hearing loss	Vibrations	Sensory	3b
Clerk		Sore eyes	Strain	Sensory	3c
Doctors		Muscular pains	Physical	----------	3d
		Injuries, disability and death	Physical	----------	3e
Technicians	4. Chemicals	Hypersensitivity	Liquid, vapors	Contact, Inhalation	4a
Porters		Dermatitis	Liquids	Contact	4b
Clerk		Mouth taste changed	Vapors	Inhalation	4c
Doctors		Difficulty in breathing	vapors	Inhalation	4d
		Chronic effects	Vapors, Solids	Inhalation Ingestion	4e

Table 1 and 2 are self explanatory, indicted four prominent risk factors in the mortuary. Infection is the most threatening and chemicals are least. Psychological and physical (ergonomics) factors are somewhere in between. Most of the staff member concerned about HIV infection, although hepatitis is rather more common and also life threatening disease. This may be due to increasing awareness of HIV nowadays. Tuberculosis is the most common droplet infection in mortuary areas. This could possible due to over crowding in the mortuary, as the total area of the mortuary is about 160 sq. meters, where working and waiting room is even less than 10 sq. meters. The relative of the deceased, investigating officers, and staff of mortuary are all the time squeezes. Ventilation is poor and smoking, coughing and sneezing could not be controlled. All this lead to cross infection as pulmonary tuberculosis is the commonest disease in this area. Staff of the mortuary mutually agreed that they are lacking personal protective equipments (PPE).

Chronic stress is accepted most of the staff and one of them accepted that he is smoking "Dagga" because of working in the mortuary. One general worker is depressed as agreed by the fellow staff and as a result of it he is chronic alcoholic.

Physical factor have some role especially in lifting of dead bodies from ground to autopsy table. Some of the bodies are even heavier than 100 kgs, then it will require a great, imbalance force to place the body on the table, and is the probable cause of backache in two porters. Known chemicals are only few like formalin, alcohol and disinfectant but rat killing substance keep on evaporating along with putrefied organ tissues are the cause of concern. Although staff of mortuary, least worried about their harmful effects, this could be due to their limited knowledge on chemicals.

Table 2

Existing Control procedures	***Effectiveness of procedures***	***Re-visit risk Ranking***	***Required Control Procedures***	***Control Procedures to be Implemented***	***Action Taken by Whom and when***
Minimal	**Unsatisfactory**	**Nil**	**Hygiene PPE Ergonomics Stress-therapy Staff-education**	**No plan in existence**	**Nil**

Control procedures as depicted in table 2, are minimum, it could be due to mere ignorance of the staff, and their education background. Some procedures like cleanliness does not require money but, the atmosphere and surroundings are so depressive that nobody want to move for anything, even people do not want to talk about hygiene and cleanliness. They feel that it is beyond their scope and nobody can improve the situation. A kind of inertia, fatigue and worklessness environment, partly induced due to the nature of work. Paper masks, thin rubber gloves, green linen gowns which are kept separately only for mortuary work, sometimes they are not properly autoclaved. There is lot to require especially from building to hygiene, PPE, ergonomics, stress

therapy to staff, their health check up and health education. At present, no plan in existence and it seems to author that nothing is going to happen in near future.

Inspection of the Mortuary premises

1. Physical (ergonomic) factors

The mortuary is housed in a poor structure, which was formerly a pharmacy building. It is poor in light, lacks windows and is therefore poorly ventilated; only one of the autopsy rooms has windows. It has poor light arrangement, moreover most lights have not been changed for many years, resulting in poor visibility. There is no air-conditioning or other protection against extremes of cold or hot temperatures, it is reportedly very cold during winter and very hot during summer time. The roof is eroded; the floor evidently needs repairs; the paint is peeling off the walls; the doors are worn out; and there are holes and gaps in some parts, which could be used by rats. The furniture in the mortuary is either too old or damaged due to poor care and neglect. The overall impression was one of an unclean building with dust and fungal growth in many parts, in short: an example of a terminal building.

There is little protection against noise or sound pollution, for instance the skull is opened by an electric saw, that makes vibration definitely beyond the permissible limits- it is virtually impossible to hear anything else (such as ordinary talk) at a distance of one meter or more while electric saw is in operation. Ear plugs are apparently not used routinely. At the same time bone dust is also inhaled by the operator as well as by the other workers in that atmosphere due to the poor ventilation and lack of protective masks. This poses the obvious risk of complications such as lung diseases and meningitis. There was no evidence of availability or use of eye protection in the autopsy rooms, and yet bone dust and blood could be splashed into the eyes of workers. As if that was not bad enough, there is no continuous flow of water in the mortuary for use during or after an autopsy. Blood and other biological materials flow into open drainage, which is frequently blocked by discarded needles, threads and tissue materials. Hot water and soap are scarce. The mortuary is a fire hazard with no safety devices whatsoever. It is also noted that lifting bodies from ground to autopsy tables and tilting them are entirely manual tasks without any mechanical device, which could lead to repetitive strain injuries, especially to spine.

2. Chemical factors

In the mortuary, chemicals such as formalin, methyl and ethyl alcohols, savlon and rat killers are commonly used. There is no provision for treatment of emergencies in case of accidental exposure (ingestion or spilling) of any of those chemicals. Rat killer liquid is kept open in the corners of mortuary room, it keeps on evaporating. In addition viscera of the corpses are often kept long in the store room, leading to putrefaction due to lack of proper preservatives, again this exposes the staff to various kinds of gases.

3. Biological factors

There is consistent danger of getting infection in any mortuary, simple droplet infection to blood-borne contagious diseases especially to laboratory technicians and pathologist are always possibilities. There is no method to avoid blood or tissue contact other than using strict PPE. At UGH mortuary, septic cases are frequently encountered by the workers in enclosed, poorly ventilated

and crowded areas, enhancing the chances of infection, not only from cadaver but also from staff, investigating officers and relative of the deceased.

4. Psychological problems

Psychological problems were high lighted by the staff during the inspection of the premises (and also during the questionnaire). In the situation described above it is difficult for workers to perform their duties with peace of mind. The constant fear and risk of infection keeps the mortuary staff under a chronic stress. This was apparently more so among the porters and police officers who work as technicians in the mortuary.

Discussion

Compensation for occupational Injuries and Diseases (COID), Act 130 0f 1993, describes is disablement caused by occupational injuries or diseases sustained or contracted by employees in the course of their employment, or for death resulting from such injuries or diseases. The results presented show the designation of employees arranged from most commonly involved from that hazard and risk factor to least involvement, on the basis of their association with a risk. For instance4, technicians are on top in table 1 since they are most at risk of infection with the HIV (risk rating 1a). Similarly, ergonomic factor (physical) risk ranking (3a) was highest for the porters. There are 16 people working in an enclosed area of 160 square meters of two mortuary rooms, six of them are police officers who help in dissecting bodies. The latter are more vulnerable and fearful of infections from the deceased, especially from HIV and hepatitis. The four porters (mortuary assistants) who lift the bodies onto and off trolleys complain of backache, muscular pains, which are ergonomic problems. The mortuary supervisor, on the other hand, looks after the store and keeps account of materials in the mortuary; he is always in the risk area (mortuary) from morning 7 AM to 4 PM every day, exposing himself to the risk of infections, chemical vapors and unpleasant smell. The medical officers (3 part-time and 1 full-time) are involved in the postmortem examinations, with the attendant risk of getting infections.

The UGH mortuary has a workload of about 1500 autopsies a year, in addition to holding autopsy demonstrations for medical students from University of Transkei (UNITRA). Personal protective devices are used but are not of the prescribed standard. There is lack of simple and inexpensive equipment required for the consistent implementation of "Universal Precautions" against occupational transmission of HIV (and other) infections, notably: adequate supplies of appropriate gloves), impermeable full length apron, an inexpensive face masks wit visor. The mortuary has only five pair impermeable boots, which are evidently not sufficient to cover all staff members. Because of the risk involved in working under such conditions, there has been adopted a policy to finish work in the shortest time possible and be away from the risk area most of the time. This of course has its own drawbacks, most important and common is the quality of work. The Director-General, Department of Justice has been notified of this problem, but the poor quality of work from this unit is considered a minor problem so no remedial solutions have been provided.

Infection is the highest risk factor associated with working in the hospital especially in the mortuary. It could be a simple flu to serious infection like HIV and hepatitis. Although the risk of occupationally acquired blood-borne infections has been characterized in population of hospital workers, data on mortuary practitioners are sparse (8)Turner et al, 1989), and yet the risk of acquiring blood-borne diseases is even higher amongst mortuary workers because of frequent

occupational exposure to infected body fluids(9). (Occupational Safety and Health administration, 1990). Cadavers pose infection hazards to people who handle them. Infectious conditions and pathogens in the recently deceased that present particular risks include tuberculosis, group A streptococcal infection, gastrointestinal organisms, the agents that cause transmissible spongiform encephlopathies (such as Creutzfeldt-Jakob disease), hepatitis B and C viruses, HIV, and possibly meningitis and septicemia (especially meningococcal)(10). (healing TD, Hoffman PN, Young SE, 1995). Thankfully, some of the deadly organisms that caused mass death in the past- for example, plaque, cholera, typhoid, anthrax, small-pox are unlikely to survive long in human remains.

Health care workers have been studied extensively to identify the risk of occupationally acquired blood-borne infections(11). (Robyn et al, 1995). Prospective studies have estimated the risk of infection with the HIV to be approximately 0.4% following exposure(12) (Beekman et al, 1990). In another study the risk of type 1 after high risk exposure of health care workers to blood or body fluids from HIV positive patients was estimated to be 0.3% (13)(Handerson et al, 1990). It reportedly requires approximately 0.1 ml of blood to transmit the HIV(14). (Morgan, 1990). The probability that one of these exposure categories actually transmits the infection, given an patient HIV-positive patient is approximately 0.004, four chances in thousand (15)(Jefferies, 1992). Mortuary workers come in contact with pools of blood, and therefore have a high risk of being infected with the HIV. Hepatitis B virus (HBV) and hepatitis C virus (HBC) infection in health care workers has been estimated at incidences of 6% to 30% and 10% respectively, after exposure (16).(Seeff et al, 1978). This should be higher in mortuary workers. In the case of UGH mortuary blood is always in close contact with the workers who use thin layer ordinary gloves; and yet the HIV-positive cases are high. This, in the author's opinion, pushes the risk of infection with the HIV much higher, probably in between 5-6 chances in 500 autopsies. This is an example of the right of dead not to undergo prior testing for HIV infection compromising that of living one, who are exposed to dangers of getting HIV(17) (Barker EM, 1998).

Psychological pressure on all staff members exists, not only from the nature of work, but also from the environment in the work place. Unhygienic work conditions, scarcity of protective materials and fear of catching diseases are always in the minds of mortuary workers. In addition to the fear and risk of infection, mortuary staff deal with the dead, and their sight and smell are very stressful aspects of their day to day experiences (18)(Raphael, 1986). This manifests among porters and technicians as they are in the habit of taking alcohol regularly, and one of them consumes "dagga (cannabis)" also.

High levels of distress were found in military mortuary workers prior to arrival of the human remains from the Persian Gulf War of 1991(19) (McCarrol JE; Ursano RJ; Fullerton CS; Lundy, 1995). Disasters and traumatic events usually involve many stresses, particularly exposure to traumatic deaths (20, 21, 22, 23). (Frazer and Taylor, 1982; Jones, 1985; Ursano RJ; Fullerton 1990; Ursano and McCarrol, 1990). Staff at UGH mortuary handle about 5 to 6 bodies every day, majority of them in a very poor state of preservation. Therefore, foul smelling and unpleasant feelings lead to all kind of psycho -social trauma, which may manifest themselves in depression, frustration and behavioral abnormality. Apart from risks to the mortuary staff, public health is also at risk, as open drainage where blood and tissue and discarded material are often found in the blocked drainage system. Secondly, it is not known for certain where this discarded blood and tissue materials from the deceased ultimately go. The mortuary is situated in the center of the hospital, next to overcrowded

pharmacy and medical out -patient departments putting many people at a constant danger of getting infections.

Conclusion

The risks of working in UGH mortuary are frightening especially associated with fear of infection like HIV, hepatitis etc. Psychologically, staff is always under pressure and demoralized, symptoms frequently manifested in quarrelsome behavior, absenteeism, indulged in alcohol and drug abuses. Existing control measures are not enough and unsatisfactory. There is no planning at least in near future to address these horrifying problems. In fact, this mortuary should declared condemned, and unfit to human use.

Recommendations

The health department should audit UGH mortuary especially in concern with Occupational Safety and health (OSH) Act, 1993, and develop basic data regarding health status of mortuary staff based on the standard health and safety site-specific checklist. This need Occupational Health Committee, who will deal with risk assessment, identifying and controlling risk factors. Developing a policy in mortuary that will prevent, protect and promote the health of workers. Risk bearing accidents (needle stick and other) recorded and immediate access to an initial dose of prophylactic therapy be available to staff at all times. The expert medical counseling and advice regarding all aspects of prophylaxis be available to mortuary staff. Stress management and education of mortuary workers, to make them aware of mortuary hazards and risks factors are pivotal in implementation of healthy work environment of these workers.

Author would like to emphasize that avoidance of mortuary workers- health have serious impact on the police force, justice department and ultimately to the community will suffer.

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