

Present: Dr David Dawson, Head of Unit
Netta Gallazzi, Senior Technician
Ian Leith, Scientific Services Manager
Irene Blair, SOLS Health and Safety Co-ordinator
Lisa Grayson, SOLS Health and Safety Information Officer

Introduction

On Friday 22nd November KP, LG, IL, and IB visited the Mortuary and Anatomy Department to understand the activities there and to identify health and safety concerns. Dr. David Dawson and Netta Gallazzi showed us round and explained the processes. No embalming or other processing was being undertaken at the time. The former animal resource unit is occupied as the body embalming and preparation area, with 12 small dissection workshops and other facilities.

Summary of activities

Of some 80 bodies offered every year about 30 are chosen thereby avoiding those which might be expected to present a higher infection risk or other features undesirable for anatomy teaching purposes. Bodies are delivered by undertakers to the lower level of the department where they are moved using a scissors lifting trolley. Up to 35 litres of embalming fluid composition 51.6% methanol, 8.65% phenol and 8.91% formaldehyde is perfused using a small pump operating at 6-10 psi on the embalming table. Embalmed bodies are then bagged in strong polythene bags and placed on storage shelves. Leaking embalming fluid is contained in these bags. Earthenware jars of preserved organs were stored at higher levels on these shelves with no visible safe means of access and handling them.

Bodies are transported upstairs to the anatomy laboratory using a lift to which access is limited by keys. Bodies undergoing dissection may remain in this laboratory up to a year. 3% phenol is used as a surface disinfectant for these bodies.

Particular organs may be further treated in the basement to plasticise them. A bandsaw is used to cut body parts up to the size of heads and pelvises. The process involves washing out the embalming fluid with many changes of water, dehydration in several changes of acetone at -20 deg C which is undertaken in chest freezers, impregnation with a liquid silicone material under vacuum, and finally polymerisation of the silicone using a vapour of Biodur S6 in another chest freezer. Specimens prepared in this way are used for teaching purposes and displays in the small dissection rooms.

Facilities

The department is housed in sub-optimal accommodation which impedes room layouts that would improve hygiene. The floor surfaces throughout the basement level do not conform with the requirements of being smooth, impervious and easily cleaned, in particular the red floor surfacing in the embalming room and workshops.

One shower room is available. The rest room is one half of a laboratory where specimens are handled and it appeared that coffee cups were being washed in the same sink as was used for hand washing.

There was no demarcation of clean and dirty areas throughout.

Staff overalls and lab coats are washed in a domestic washing machine situated at the back of one of the basement workshops known as the "body bit room".

Ventilation in the embalming area consisted of outflow and intake ducts at opposite sides at ceiling level. There was no local exhaust ventilation over the embalming table although a rudimentary "elephant trunk" had been added with parcel tape at some time and appeared to be purely decorative. Many ventilation ducts were dirty and there was no local knowledge of any recent testing of the system.

No measurements of substances in the air had been made in the basement although it was said that measurements had been made when students had been dissecting and these had not shown harmful levels of formaldehyde. Netta had an aged ori-nasal respirator which she occasionally used, but could not recall when the filters had last been changed. It had not been stored in a clean place and appeared to be a health hazard on its own. A disposable charcoal-filled mask will provide an interim solution until personal exposure to chemicals has been checked.

Chemicals

Besides embalming fluid, a number of chemicals and mixtures were stored in poorly labelled containers and no safety data sheets or COSHH assessments were available. Significant quantities of acetone are used and this was not stored in a flameproof cabinet. (Use of this will be subject to the new DSEARegs 2002 which repeal the HFLPG Regs 1972). Lisa Grayson undertook to research more information on the chemicals in use, in particular the polymerising agent Biodur S6 which is vapourised for use.

Chemicals are being transferred from large containers by tipping, pouring or using a jug. The use of hand siphon pumps is recommended.

Personal Protective Equipment

Lab coats (Netta's being short sleeved) and Dr Dawson uses a green theatre tunic and presumably overtrousers. No head coverings and no boots seen although there was no activity needing these at the time. Powder-free latex gloves are used by students, with nitrile gloves being provided for any who are sensitised to latex. Netta uses latex gloves but Dr Dawson prefers not to use any. Neither Dr Dawson nor Netta use a face shield despite the risks of chemical splash when embalming and from spray and particulates when cutting organs. Netta was wearing closed-toe clogs during our visit.

Students provide their own lab coats and are responsible for cleaning them, so they vary in standard. Students' lab coats are stored in their lockers when not in use.

Students do occasionally cut themselves with scissors or scalpels when dissecting, and despite the presence of many qualified doctors, no-one is trained in First Aid. Irene has invited Netta to do the First Aid course and she appears willing. First Aid materials are available and a rest room downstairs where fainting students can be taken to recover.

Reports of these accidents have not been reaching Safety Services, and the correct procedures were explained. Irene Blair volunteered to receive the accident reports from Netta and relay them to SS. An assumption has been made that infection risks from embalmed bodies is minimal.

Infection risks

Dr Dawson relies on the Cause of Death as stated on the death certificate in assessing the infection risk, (which may bear little relationship to medical history and infection risk) but pointed out that due to the age group of body donors he recognises that TB may be present, therefore they never cut into lung tissue.

Dr Dawson claims that recent research shows that dilute phenol solution kills prions, but bearing in mind that most body donors are older and therefore at greater risk of brain degenerative diseases, I think that more scrutiny of the risks when handling brain tissue is needed. I think that further enquiries and hygiene precautions are needed to assure the health and safety of Dr Dawson and his technicians.

Occupational Health

At present there is no programme of immunisations for staff, no medical contact cards are carried and there is no OH questionnaire during employment. Likewise, there appears to be no OH advice to students on the Infection risks and suitable precautions.

Electrical Installations

A number of domestic multi-socket extension leads were in use in the basement area in potentially wet or hazardous areas. Home-made arrangements for processes included a small electrical fan and a fish tank bubbler inside a chest freezer with no apparent protection against water ingress or assessment of potentially flammable atmospheres. There was no record of PAT testing.

Fire Hazards

Means of escape were obstructed by stored materials and equipment and in one case the final exit was locked with a key which was held in a glass box. Fire signage was lacking and emergency lighting appeared to be absent from some areas in the basement. Larry Fortune has been informed of these matters.

Equipment

An unguarded bandsaw with its motor situated under the cutting table is used. There is no LEV and Dr Dawson does not use a face shield. The saw was still dirty with debris from previous use, though I was told that it is washed down when necessary, and question the electrical safety. Dr Dawson insists that only he uses the saw and that he accepts any risks in its use. He does have a push stick but the current position of the saw just behind a door, its lack of guarding and method of use are unacceptable.

240v electrical cast cutting saws consisting of a small cutting disc which oscillates rapidly are used by staff and students for cutting bones. Dr Dawson demonstrated on his own hand that these do not injure soft tissue but cut into rigid tissue. These saws need PAT testing regularly. It is not routine practice here to cover cut rib ends when working on the chest cavity although even sawn bone can cause abrasions.

No autoclaving facilities were seen and it appears that phenolic solution is used for all cleaning of scissors and scalpels where these are not disposable. Sharps bins are provided and said to be properly used.

A rusty bench saw bolted to the floor but never used obstructed space in one basement workshop, a Berkely bacon slicer and various other pieces of obsolete equipment were occupying space there.

Waste

Currently waste materials which are considered only to be slightly contaminated are disposed of in black bags and this is clearly a risky practice. All waste should be regarded as clinical waste from this area.

Risk Assessments, Training, Documentation

Students do not appear to receive adequate information, instruction and training regarding the infection risks, in particular the need to cover any cuts or abrasions before working at dissection.

Risk assessments, manual handling assessments, COSHH assessments and Local Rules were not available, nor were any maintenance records.

Conclusions

It was not possible in short of 2 hours to obtain full information necessary to make a comprehensive report, and no activities were in progress which might reveal further concerns.

Enough was seen to conclude that health and safety standards in this area are unacceptable in many respects when compared with the Guidance in HSE's "Safe Working and the Prevention of infection in the mortuary and post mortem room" published by HSAC in 1991, though it is appreciated that the circumstances are somewhat different. Much work in several stages will be required to bring this department up to a passable standard. At present Dundee University risks enforcement action and considerable disruption of activities if an HSE inspector visited.

Actions

I intend to prioritise remedial actions in a memo to Dr Dawson, and obtain further information from E&B and SOLS on ventilation and chemicals respectively.

Safety Services needs to organise an atmospheric survey of chemicals when embalming, acetone dehydration and polymerisation of siliconised specimens is underway. We also need to find out from other universities what standards of health and safety they are implementing in similar departments.

Irene Blair will supply disposable charcoal-filled facemasks to Netta, and ensure that adequate clinical waste bags/boxes are provided.

Lisa Grayson will pass on information on chemicals.

A decision needs to be taken on whether Bill Reynolds should just PAT test equipment there or also do work on the various unsatisfactory rigs that were seen, or whether this work should be passed to E&B – there are likely to be arguments over who pays (as usual).

More enquiry is needed on manual handling aspects of the work (jars on high shelves etc).