Guidance Note on Working with Human-Derived Material[1]

1. Objective

These procedures set out the recommended measures to be adopted and implemented by NUI Galway Units working with human-derived material. The objective of this Guidance Note is to ensure that:

- Units have adequate procedures and practical measures in place to ensure the reduction of the risk of transmission of human pathogens to other personnel.
- There are adequate emergency procedures in place where there is a risk of accidental exposure e.g. in the event of a needle stick injury.

2. Prevention Procedure

All human-derived material must ALWAYS be handled as potentially infectious material, even if the tissue has been found to be negative for human immunodeficiency virus (HIV), hepatitis B virus (HBV) or hepatitis C virus (HCV) or any other potential pathogen. In all cases **UNIVERSAL PRECAUTIONS** must always be applied. Attention is drawn to the University's Approved Handling Procedures for Sharps Waste and Laboratory Biological Waste available on the Safety Office website. Please also refer to Principles of Good Hygiene and Hand wash Protocol available on the NUI Galway Safety Office website.

2.1 Risk Assessment Procedure

Persons responsible for the safety of staff, students and visitors who may be exposed to human-derived material being stored, used or otherwise handled in their laboratories and work areas for which they are responsible, have a legal obligation to the assess the risks of exposure to such material and to have measures and controls in place to eliminate such risks or to reduce them to an acceptable working level. The procedure for achieving this is as follows:

1. Identify the task in which potentially infectious material is handled.
2. Identify the source of the specimen.
3. Identify the nature of the specimen.
4. Assess the treatments to which the specimen has been subjected.
5. Identify the possible biological agents in the specimen.
6. Identify and implement measures to eliminate/prevent exposure as far as possible (see 2.3 below).
7. Assess the remaining risks in terms of severity and likelihood.

[1] For the purposes of this Guidance Note the term "human derived" material refers to all human tissue, human body fluids, their cellular and non-cellular components, and any derivates of human derived material produced by chemical, physical or any other means. Human body fluids include blood, blood products, cerebrospinal fluid, lymph, milk, saliva, sputum, synovial fluid, tears, urine and any human organ and mucous membrane secretion. Human faeces are also included.

8. Identify and ensure that all the required control measures are being implemented.
9. Review regularly.

2.2 Persons at Risk

Persons at risk include laboratory staff, supervisory staff, housekeeping staff, porters and couriers, maintenance staff, building contractors, administrative staff including ISS and visitors.

Infected persons may transmit infection to their families and other contacts, and hence pose a risk to the community. Account must also be taken of risks to people who may be more severely affected due to pregnancy, compromised immunity, pre-existing disease, or the effects of medication.

2.3 Control Procedures

Mechanisms for controlling the hazards posed by human-derived material are approached in a prioritised manner. Elimination is the primary mechanism of control, followed by Substitution, Engineering, Administrative, Personal Hygiene, and finally, and lastly, Personal Protective Equipment. In considering one or more of these controls it is necessary to take into account any added risks associated with them.

2.3.1 Elimination Control

- Does the work actually require the use of human material?

2.3.2 Substitution Control

- Consider using material from a screened source e.g. blood-bank blood.
- Is it possible for the students/researchers to use material from their own body? **This is expressly forbidden when working with cell lines.**
- Consider using avirulent or attenuated microbial strains.

2.3.3 Engineering Control

- Work on human material is to be only carried out in a designated "Biohazard" facility, with restricted access, and appropriate facilities and signage.
- Biological safety cabinets provide operator protection, rather than protection against cross-contamination of the material being handled (which is afforded by a laminar flow hood or similar device).
- Systems/procedures that generate risks of cuts, puncture wounds, or other injuries must be reviewed as to whether they can be mechanised or otherwise modified to eliminate/reduce such risks.

2.3.4 Administrative Control

- Local protocols and safe operating procedures.
- Local emergency procedures (for first aid, for spills, etc.).
- Local job induction and safety training.
- Detailed disinfection procedures.
- Equipment decontamination, repair and transfer procedures.
- In particular:

- Care should be taken when opening or extracting from ampoules so as to avoid cuts.
- Needles, syringes and sharps must not be re-sheathed but be disposed of into the appropriate "sharps" containers, and never into refuse sacks.
- Sharps disposal bins must not be filled above the level indicated. They must be carefully sealed and securely stored prior to (regular) disposal so that those handling them will not be put at risk.
- An appropriate disinfectant solution should be used to clean any human-derived material-contaminated surfaces.

2.3.5 Personal Measures/Hygiene Control

- Vaccination (see 2.4 below)
- Abrasions/eczema/raw areas or cuts to the skin must be covered with waterproof dressings and gloves where appropriate.
- Smoking and eating is prohibited in all laboratory areas.
- Hand washing after contact with human-derived material blood is always absolutely essential.

2.3.6 Personal Protective Equipment (PPE) and Clothing Control

- First ensure that all PPE is appropriate to the task and hazards and fits well.
- Appropriate disposable gloves must always be worn whenever there is potential contact with human derived material.
- Clothing contaminated with human derived material should be placed in a plastic bag for cleaning. Such cleaning should not be conducted at home, but by an approved service supplier.
- Remove gloves before answering a telephone, using a pen, handling documents, light switches, door handles, etc.
- Where there is a risk of specimen spraying, splashing or spillage wear appropriate eye and face protection, such as goggles, mask or full face visor.
- Laboratory coats, preferably Howie type, must be worn at all times.
- Personal clothing (including footwear) must be appropriate to the working area. Sandals or open-toe style footwear should not be worn.

2.4 Vaccination Procedure

Working with human-derived material involves a risk of contracting potentially fatal diseases many of which are not vaccine preventable. However vaccines are available for hepatitis A (HAV) and hepatitis B (HBV). Personnel should ensure that before commencing work with human tissues that they have been vaccinated (and assessed in the case of HBV). Attention is drawn to the University Guidance on Vaccination to be found on the NUI Galway Safety Office website.

3. Accident Management

A significant exposure occurs in the following circumstances:

1. A skin cut or puncture by a sharp object which has been used on a patient, or has been in contact with a patient's blood, blood components or other body fluids.

2. Aspiration or injection of blood, blood components or other body fluids.
3. Splashing of blood, blood components of other body fluids into the face, particularly the lips, mouth and eyes.
4. Extensive splashing of blood, blood components or other body fluids over large areas of unprotected body surface or clothing, or on a skin surface that is broken.
5. Bites and scratches that break the skin or mucous membranes.

3.1 First Aid Procedure

Procedures to be promptly followed in the event of a needle stick injury or other exposure accident resulting in a puncture wound:

1. Wash the area thoroughly with soap and warm water. In the case of needle stick injury/wounds encourage them to bleed.
   - Do not suck the puncture site.
   - Do not use a nailbrush.

   Apply a sterile dressing before referral to the hospital Accident & Emergency Dept.
2. In the case of splashes to the eye(s) wash with clean water (use an eye-wash fountain) for 15-20 minutes.
3. In the case of splashes to the face, thoroughly irrigate the nose, mouth and skin with clean water.

3.2 Procedure for Referral to Accident and Emergency, University College Hospital

1. Immediately bring the affected person to the A&E Department (or call an ambulance where appropriate – the emergency number is 112/999).
2. At the A & E Department the situation will be assessed and arrangements made for blood samples to be taken from the person exposed. The person will be asked to give their informed written consent before blood samples are taken.

Do not give tetanus toxoid

3. The person (or accompanying person) should have details of the victim's hepatitis B vaccination status (Staff/Students should keep their vaccinations record in their possession while at work), and as much detail as possible on the human derived material involved in the accident.
4. The person will be given appropriate "post-exposure prophylaxis" (hepatitis B vaccination, immunoglobulin, anti-HIV medication) depending on the risk assessment .
5. Report the necessity of referral at once to the Unit Head where the accident occurred.
6. Counselling and follow-up is essential and should be provided.

3.3 Reporting and Notification Procedures

- A report of every accident / incident must be made to the Head of Unit
- The Head of Unit will immediately report every accident / incident to the Health and Safety Office using the University Accident Report Form.
- In the case of an employee who was infected prior to the commencement of University employment, it is the duty of that individual to inform the Head of Unit. The University

shall at all times act so as to ensure appropriate confidentially for the employee.