

Biological risk assessment for FFPE human prostate biopsies

Background

Formalin-fixed paraffin embedded (FFPE) blocks from human prostate biopsies are provided by the National Cancer Institute Central Repository Services. These samples have been chemically fixed and embedded in paraffin.

Risk considerations

All human tissue samples should be considered potentially infectious, as even screened samples cannot be screened for all possible pathogens. The fixation process inactivates most, but not all, pathogens. Prions are one notable exception of pathogens **not** inactivated by chemical fixation.

The combination of possible pathogenicity and fixation means that these fixed biopsies should be handled under at least Biosafety Containment Level 1 conditions.

Exposure risk

Exposure routes include accidental puncture and transmission through direct/indirect contact with skin and mucous membranes.

Specific precautions for reducing puncture risk:

- Replace needles and scalpel blades with non-sharp instruments wherever possible.
- Do not recap needles after use. Opt for safety-engineered sharps wherever possible.
- Fill sharps containers only 2/3 full.

Specific precautions to avoid direct/indirect contact:

- Wear safety goggles, a lab coat, gloves, and long pants and socks. A face shield is recommended if risk of splashes and aerosolization is high. Use gloves appropriate to the work at hand: nitrile gloves are recommended over latex for general use due to lower frequency of allergic responses and higher chemical resistance.

- Remove gloves and lab coats prior to leaving the Containment Level 1 area.
- Wash hands after working.

Decontamination/disposal procedures

Fixed tissue is not considered biohazardous waste and can be disposed of in general chemical waste.

Summary

Compared to untreated tissue, fixed tissues pose lower infection risks due to inactivation of pathogens during chemical fixation. However, as some pathogens (especially prions) survive chemical fixation, reasonable precautions should still be taken.

Tentative assessment: Risk Group 2

Further reading

This risk assessment was based upon the following sources, which should be perused for more detailed information:

- Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th Edition, Centers for Disease Control and Prevention
- Practical Disinfection Guidance for the Clinical Laboratory, Association of Public Health Laboratories
- Biosafety Policies and Procedures Manual, 2007, University of Toronto