



Information sheet

Document G_10_Info_10_A Author: S Kangup Authorised: W Porau 1/9/22 Review: 1/09/24

Laboratory Acquired Infections (LAI)

Overview

The most common routes of laboratory acquired infection (LAI) are inhalation (particularly by aerosols), percutaneous inoculation (needle stick injuries, broken glass injury, and/or animal bites or scratches), direct contact between contaminated surfaces (gloves, hands), and mucous membranes as well as through ingestion – for example by smoking, eating, or accidental aspiration through a pipette.

Laboratory-acquired infections are preventable by safe practice and keeping your mind on the job.

High risk pathogens and risks

Pathogen	Risk situation	Usual symptoms
HIV	Exposure to blood or blood products- needlestick, splash to eye or mouth	Febrile illness with headache, myalgia and joint pains (many other possible symptoms) several weeks after exposure but often no symptoms. Longer term (years later), onset of immunosuppression and wide variety of serious infections are possible including pneumococcal and pneumocystis pneumonia.
<i>Mycobacterium tuberculosis</i>	Inhalation of infected aerosol created during specimen processing	Subclinical (asymptomatic) infection Development of cough over several weeks. Blood in sputum, fevers, weight loss. Disseminated infection possible. Immunocompromised person (e.g. is at greater risk of acquisition and development of disease)
COVID-19	Exposure to infected bioaerosol during specimen processing	Acute respiratory illness that can be fatal
Viral hepatitis	Exposure to blood or blood products - needlestick, splash to eye or mouth	Infection without symptoms possible Acute hepatitis of varying severity - can be fatal; onset several weeks after exposure
<i>Burkholderia pseudomallei</i> (melioidosis) <i>Neisseria meningitidis</i> <i>Brucella</i> species	Inhalation of infected aerosol created during specimen processing, especially from positive blood culture Sniffing of plates	Rapid onset of systemic (septicaemic) infection that can be fatal <i>Most infections were acquired through workers being unaware of contaminated cultures from clinical cases</i>
<i>Salmonella</i> / <i>Shigella</i> spp.	Handling of samples and manipulation of cultures	Gastroenteritis, Dysentery, Bloodstream infection

Preventing LAI

Personal protective equipment and safe practices:

- Eating, drinking, smoking, applying cosmetics or storing food for human consumption in laboratories is strictly prohibited.
- Always wear appropriate PPE including protective eye wear (*G_10_Info_3 Laboratory Biosafety*)
- Keep potentially contaminated hands away from the mouth, eyes, and non-intact skin.
- Wash your hands frequently, even after wearing gloves, vigorously with soap and water for a full 30 seconds. The physical removal of organisms from the skin is just as important as using a disinfectant.
- Always manipulate blood culture bottles and sputum samples in the biosafety cabinet.
- Maintain a tidy lab. Work surfaces and equipment must be decontaminated after using biohazardous materials.

Immunisation:

- Ensure that you have completed vaccination for Hepatitis B, COVID-19 and Tetanus

Avoiding mucosal or needle exposures

- **Personal protective equipment**
 - use eye protection always
 - use gloves to avoid direct exposure to skin
- **Care with sharps**
 - NEVER re-sheath a needle before disposal
 - have a puncture-resistant disposal bin available next to where you are doing the procedure
 - take personal responsibility for disposal of the sharp or contaminated material after a procedure
- **Have your mind on the job when using a needle or performing any procedure**

What to do if you think that LAI possible or if you have an exposure

- In the event of a blood or body fluid contaminated needlestick injury or splash to the eye, mouth or nose, encourage the wound to bleed or wash/irrigate the eye with copious clean water for 5 minutes
- Report all exposure events or illness to the laboratory manager or section head as soon as possible via telephone if relevant. Seek advice about when you should return to work if unwell.
- For potential blood borne virus exposure, also contact the hospital clinician who is responsible for advice on post-exposure prophylaxis for HIV. Consult your local PEP guidance document.
- If necessary obtain further medical review/treatment/immunisation (e.g. tetanus booster)

References

- G_10_Info_3 Laboratory Biosafety Information sheet - noticeboard
- G_90_SOP_8 Use and Maintenance of Class I and Class II Biological Safety Cabinets
- Local Post-exposure prophylaxis protocol