

Medical Surveillance

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Disclaimer

- I am not an occupational health physician or epidemiologist and do not have specific experience in Medical Surveillance from an occupational health standpoint
- Not a member of CFIA or PHAC

Who are We?



- Originally based out of Brooklyn,
- Have been acknowledged as one of the earliest bands to fuse hardcore punk and heavy metal with elements of hip hop music.

Medical Surveillance

- What is it
- What is involved
- Why do it
- Risks of certain pathogens



Surveillance

- Surveillance is
 - the systematic ongoing collection, collation, and analysis of data, AND
 - the timely dissemination of information to those who need to know so that action can be taken

Applied to medical surveillance for biosafety.....

Medical Surveillance

- Evaluating employee health (to)
- Identify conditions that could represent adverse health effects related to the task being performed, (and)
- Analyzing health information to identify workplace problems that require action

Medical Surveillance

- Laboratory Biosafety Guidelines (3rd edition 2004- PHAC)
 - 2.4 Health and Medical Surveillance:



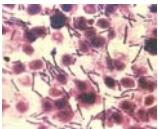
“A Health and Medical Surveillance program (including pre-employment and then periodic testing) needs to be appropriate to the agents in use and the programs in place in the laboratory”

- “Details defined by a risk assessment process based upon Canadian and international practices”



Medical Surveillance Program

- Designed to monitor potential health hazards associated with R&D activity
- recombinant DNA,
- blood-borne and other pathogens,
- hazardous chemicals and
- heavy metals.



<http://www.ncsu-engineering-resources.com/store/trans/productDetailForm>

Medical Surveillance Program Requirements

- **HAZARD/ RISK ANALYSIS** with assistance of medical professionals, safety officer and lab supervisor
- Coordinated by an occupational medicine physician
- PIs have responsibility too



Principal Investigator/Laboratory Director (PI) responsibilities

1. Instructing and training staff to ensure safety and in the procedures for dealing with accidents.
2. Supervising the safety performance of their staff to ensure they follow safe practices and techniques.
3. Informing the staff of the reasons and provisions for any precautionary medical practices advised or requested, such as vaccination or serum collection.
4. Making available to the laboratory staff copies of the manuals and procedures that describe the potential biohazards and the necessary precautions.
5. Making available a copy of the Biosafety Manual.
6. Maintaining written documentation for all training activities and review of protocols by all personnel.
7. Investigating and reporting in writing to the BSO, and the IBC any significant problems or incidents.
8. Correcting conditions that may result in the release of biohazardous agents.
9. Ensuring the integrity of the physical containment (e.g., biosafety cabinet) and the biological containment (e.g. purity and genotypic and phenotypic characteristics).
10. Ensuring compliance with other procedures governing the use of biohazardous agents

Development of Medical Surveillance plan

(Am J Family Phys 2000)

- Hazard assessment / risk assessment

1. Assessing the Pathogen
2. Assessing the Exposure
3. Assessing the Host



http://www.scienceinthebox.com/en_UK/safety/pic/risk_assessment.jpg

Components of Medical Surveillance

Assessing the Pathogen / Exposure

- What pathogens are you going to be exposed to
- What is the likelihood of infection
- What is the consequence of infection
 - These will determine the Containment level and PPE required
- Duration of exposure
 - Concept of a safe exposure limit not really applicable

Bloodborne Pathogens



- Any pathogenic micro-organism that is present in human blood or other potentially infectious containing fluid/matrix including:
 - Blood components
 - semen
 - vaginal secretions
 - cerebrospinal fluid
 - synovial fluid
 - pleural / peritoneal/ pericardial fluid,
 - amniotic fluid
 - saliva in dental procedures
 - any other body fluid that is visibly contaminated with blood
- Many different examples
- All have different risk of infection depending on the pathogen and type of exposure:
- Example - risk of infection from needle stick from known positive patient
 - HBV – 5- 30%
 - HCV – 3%
 - HIV – 0.3%

- Routine practices
 - Always assume that a specimen that is from humans or animals contains a potential pathogen
 - Wear gloves, eye and mucous membrane protection, and gown (lab coat) where appropriate



http://www.farmedic.com/images/lc_poster_0101.jpg

Components of Medical Surveillance

Assessing the Host

- The Program may or may not include the following based on the risk assessment of the pathogens you are working with
 - Pre-employment survey
 - Medical examination
 - Serologic assessment
 - Serum banking
 - Immunization review and implementation



Assessing the Host

Pre-employment survey

- What is your overall health
- Is there anything that would put you at risk working with highly pathogenic organisms
 - Immunosuppression
 - Pregnancy



<http://www.myspacecomedy.com/images/funnydouble-pregnancy.jpg>



Assessing the Host

Pre-employment survey – WHY?

- Not used for the purposes of hiring and firing
- Part of the risk assessment model
- Results are kept confidential
- Necessary to give a proper risk assessment and decide on immunization or prophylaxis
- Opportunity for primary prevention



<http://www.britishmists.com/images/vaccination.gif>

Assessing the Host

Pre-employment survey – typical questions

- Allergies
 - Animal dander
- Latex sensitivities
 - Gloves / masks
- What is your expected job/exposure/PPE
- Any of the following that could affect you in the performance of your job
 - List.....
 - Others can be more detailed



Assessing the Host

Pre-employment survey – typical questions

- Immunization history / documentation of serologic results
 - Ever had chickenpox
 - MMR
 - Tetanus/Diphtheria vaccination
 - BCG
 - Hepatitis B vaccination



<http://www.co.wasatch.ut.us/health/immun1.jpg>



http://blogs.msdn.com/blogfiles/localdev/qal/WindowsLive/Writer/Screenar/mesulntrfromcoding_7BA7/Vaccinations_3.jpg

Assessing the Host

Screening Activates

- Serologic screening
 - Identify opportunities to vaccinate
 - Base line serum and banking serum
 - Controversial
- Base line testing
 - Tuberculin Skin test
- Follow up serology/ testing
 - Scheduled
 - After an “event”



Vaccine Preventable Diseases

- Diphtheria
- Hepatitis A
- Hepatitis B
- Influenza
- Measles
- Meningococcus
- Mumps
- Pertussis
- Pneumococcus
- Polio
- Rubella
- Tetanus
- Tuberculosis (would take out)
- Varicella
- Other agents for which vaccinations may be appropriate are:
 - Anthrax
 - Botulism
 - Cholera
 - Japanese encephalitis
 - Lyme disease? Not available
 - Plague
 - Pneumococcus
 - Rabies
 - Typhoid
 - Vaccinia
 - Yellow Fever

Communicating results

- Feedback to the employee
- Confidentiality – maintained
- Determination of whether they are fit for work
- Potential pre-exposure prophylactic strategies
 - Vaccination
 - Drugs
 - PPE – can they wear it

Program Quality

- The Physician overseeing the MS program should be experienced and appropriately trained
- Program review
 - data

Extremes?

- Persons with should be discouraged/prevented from working with potentially infectious organisms.
 - severe immunological deficiencies
 - treatment with immunosuppressive drugs and certain other medical disorders
- Persons undergoing treatments with antibiotics or steroids; persons with eczema, colitis, ileitis, active chronic diarrhea or other gastrointestinal disorders; and women during pregnancy must seriously consider whether or not they should participate in any research activities.
- Consultation with a physician and other health and safety professionals (including biohazard specialists) is available.

Other Components of Medical Surveillance and Employee Health

- Exposure protocols
 - What do you do
 - Who do you tell
 - Do you need medical follow up
- Incident reporting procedures



Questions?



<http://www.usp.edu/safety/images/qablood.gif>

- www.phac-aspc.gc.ca/publicat/lbg-lmbl-04/pdf/lbg_2004_e.pdf
- www.ehs.utoronto.ca/services/biosafety.htm