Laboratory biosafety and safe handling of infectious material

Theory and practice

Place and date: Chisinau, Moldova, 23 June 2011
Author: Eugene Gavrilin, Ph.D., WHO, Laboratory Network Coordinator, Biosafety and biosecurity
Outline

What we will talk about:

- Safety and infectious materials - how much of a problem is it?
- A few examples from the field
- Laboratory Biosafety Training in WHO
- WHO Laboratory Biosafety Video Course
WHO Event Management System (EMS)

Global approach
Number of Events in EMS by Hazard

All Regions, year 2001 to 2011 (as of 15 April 2011)
Top 5 Diseases - Number of events over time
WHO Europe, 2005 - 2011 (as of 11 April 2011)

Pandemic (H1N1) 2009 events excluded
Smallpox legacy

“...Because the incident follows a similar one at a London hospital in 1973 that claimed two lives, it confirmed WHO'S belief that virus labs have become the last major source of smallpox danger...”

Living Disease
Monday, Sep. 18, 1978
Lab is the source, so what?!

A few examples...
Country 1

HPAI, large scale poultry die offs

No human cases
Quarantine measures, lab is investigating samples from humans..
Wooden chairs, no decontaminant in sight, etc.
Single autoclave (unstable foundation, worn out gasket, no sterilization control)
Material awaiting decontamination
Country 2

HPAI, large scale poultry die offs

Several human cases, 7 fatal
R.A.P.I.D. instrument on-site but...
None of the autoclaves worked
Inoculated CCs were poured out into a vessel with decontaminant on open bench.
1st WHO Europe Biosafety Workshop

November 2007
Brief summary

Number of students - 16

Days of training – 9

Training site – “Vector”, Russian Federation

Biosafety level – BSL 2/BSL 3
Agent used for the practicals..

HPAI strain isolated in the Russian Federation in 2005
Curriculum

- Biosafety levels
- Physical layout, equipment, security
- Infectious material flow in the lab
- Personal protective equipment
- Accidents
Physical layout, equipment, security

- Room integrity
- Access control/security
- Door interlocks/airlocks
- Air exchange rate/HEPA filtration
- Supply and exhaust ductwork
- Backflow prevention
- Effluent treatment
- Biological safety cabinets
- Autoclaves and decontamination systems
- Emergency generator
- Control systems
- Communication devices
Every student brought his/her lab’s layout
Separate session on BSCs
Effluent treatment
Donning/doffing of PPE
Respirator fit test
WHO Laboratory Biosafety Video Course

Introduction
Background

- Developed training materials in 2009 in collaboration with Det Norske Veritas and Finland and Zambia laboratories
- Pilot tested materials in EMR in 2009
- Conducted "Training of trainers" workshop for WHO Laboratory Coordinators in March 2010
- Other training workshops scheduled in EMR & SEAR in 2010 & WPR in 2011
- Distributed training modules to regions for further distribution to network labs
- Translation of materials into Chinese, French and Russian. Completion expected by mid-2011
Course Modules

Package comes with 6 modules

- Disinfection, Autoclaving and Waste Management
- Laboratory Infrastructure
- Personal Protective Equipment
- Emergency Procedures
- Training
- Laboratory Equipment and Maintenance
Course presentation

Training materials for Modules 1-6. Each module consists of a Presenter’s Notes, a Leaflet and a Prompt Card.

DVD covers for Modules 1-6. The description on the back of the cover is the same as the description on the back of the DVD box set.

Documents for one module (inserted inside DVD case together with DVD)

Training Guidelines for the Presenter (you may want to start with this document first)
Video sample of the course
Thank you!

Place and date: Chisinau, Moldova, 23 June 2011

Author: Eugene Gavrilin, Ph.D., WHO, Laboratory Network Coordinator, Biosafety and biosecurity