Keeping the

'Genome' in the Bottle:

Reinforcing Biosafety Level 3 Procedures

Target Audience

- Laboratory directors
- Biosafety officers
- Laboratory scientists
- Laboratory technicians

Laboratories

- Received live SARS-CoV
- Propagating SARS-CoV
- Working with other BSL-3 agents

Goals

Review:

- Guidelines for working with SARS-CoV
- Requirements for BSL-3 facilities
- BSL-3 practices
- Medical surveillance program

- Not applicable to clinical labs
- Does not replace lab safety training
- Does not cover work with lab animals

Laboratory-acquired SARS: Singapore

- August 23 - presumed exposure
- WNV research in BSL-3 lab
- Also doing SARS-CoV research
- Minimal BSL-3 training

Laboratory-acquired SARS: Singapore

- SARS-CoV isolated from WNV sample
- Genetic signature sequences in patient, WNV sample, and lab stocks very similar
- Isolated event; no secondary transmission

Laboratory-acquired SARS: Singapore

- Avoid cross-contamination

Laboratory-acquired SARS: Singapore

- Avoid cross-contamination
- Be aware of all agents; self-monitor for symptoms

Laboratory-acquired SARS: Singapore

- Avoid cross-contamination
- Be aware of all agents; self-monitor for symptoms
- Use highest-level procedures

Laboratory-acquired SARS: Taiwan

- December 3 - presumed exposure
- Cleaned spill in transport chamber
- Inserted head/torso into chamber

Laboratory-acquired SARS: Taiwan

- Patient and laboratory strains genetically similar
- Environmental samples PCR+
- Isolated event; no secondary transmission

Laboratory-acquired SARS: Taiwan

- Use appropriate decontamination procedures

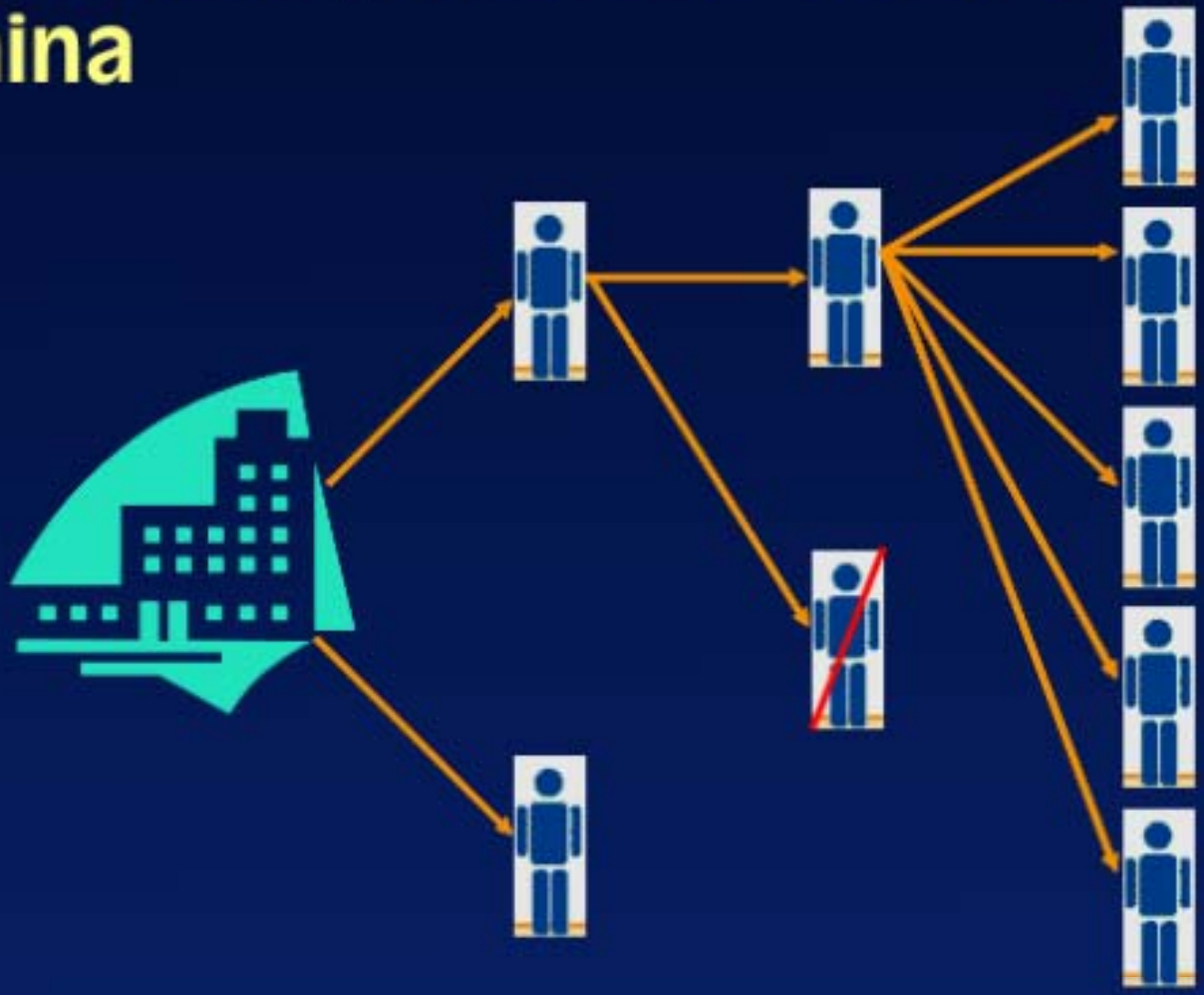
Laboratory-acquired SARS: Taiwan

- Use appropriate decontamination procedures
- Use an appropriate disinfectant

Laboratory-acquired SARS: Taiwan

- Use appropriate decontamination procedures
- Use an appropriate disinfectant
- Report all spills

Laboratory-acquired SARS: China



Lessons Learned

- Provide BSL-3 training

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- Provide BSL-3 training
- Be aware of the presence of live pathogens
- Use appropriate disinfectants
- Know symptoms

Lessons Learned

- Avoid cross-contamination

Lessons Learned

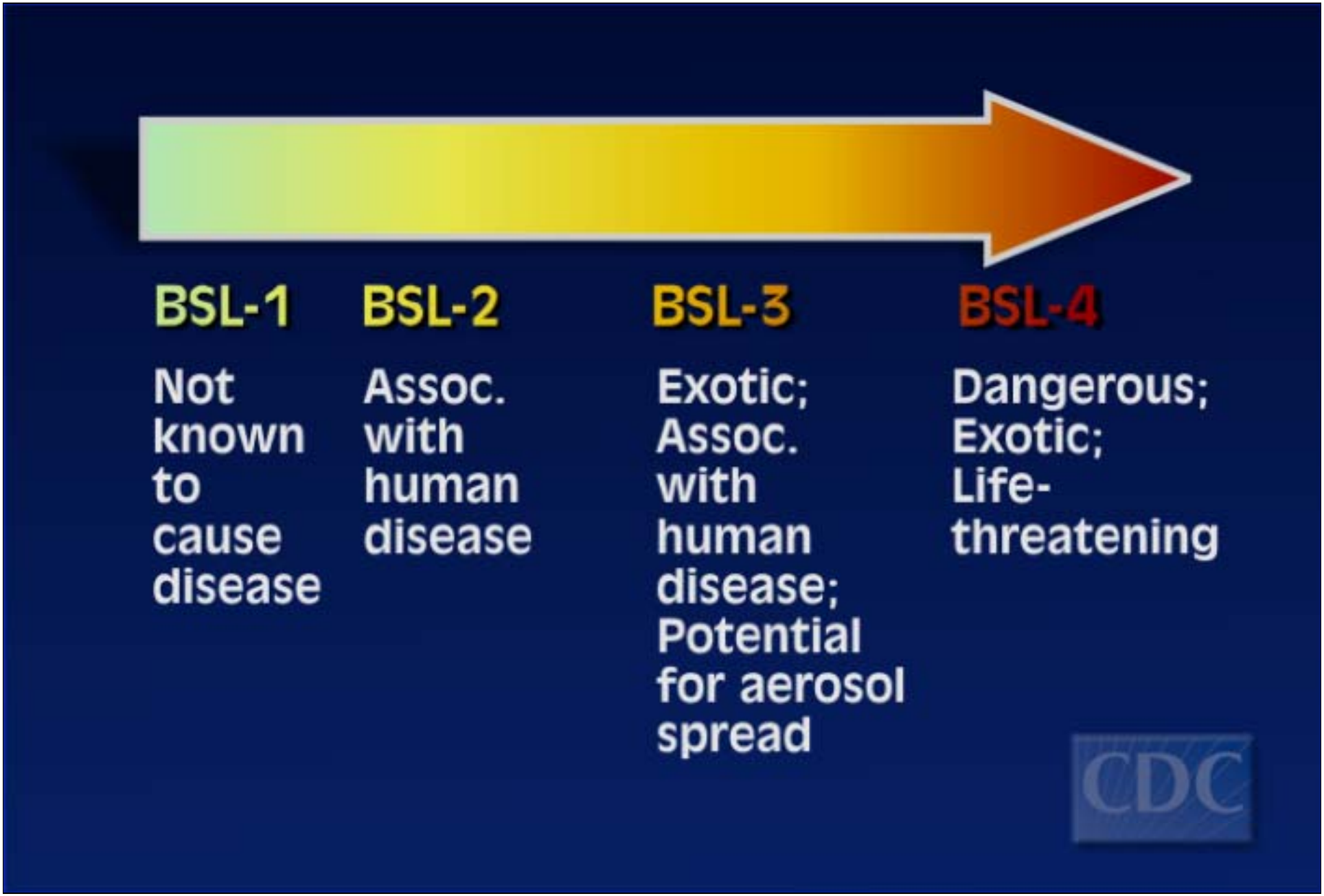
- Avoid cross-contamination
- Encourage reporting

Lessons Learned

- Avoid cross-contamination
- Encourage reporting
- Report all incidents & symptoms

Lessons Learned

- Avoid cross-contamination
- Encourage reporting
- Report all incidents & symptoms
- Monitor workers' health


BSL-1
Not known to cause disease
BSL-2
Assoc. with human disease
BSL-3
Exotic; Assoc. with human disease; Potential for aerosol spread
BSL-4
Dangerous; Exotic; Life-threatening
CDC

Institutional Leadership

- Support the safety program
- Provide resources
- Provide a safe environment

Supervisor: skilled and experienced

- Entry criteria
- Policies/procedures
- Training
- Hands-on oversight
- Compliance with medical surveillance

Lab personnel

- Receive training
- Follow guidelines
- Demonstrate proficiency
- Report incidents
- Participate in medical surveillance

Training program

- General biosafety
- BSL-3 biosafety
- On-the-job training and observation

Components of laboratory biosafety

1. Facility design
2. Safety equipment
3. Laboratory practices
4. Medical surveillance

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CDC


CDC

Components of laboratory biosafety

1. Facility design
2. Safety equipment
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Biosafety cabinets must be:

- Certified and maintained
- Away from air ducts
- Away from doors

Components of laboratory biosafety

1. Facility design
2. Safety equipment
3. Laboratory practices
4. Medical surveillance

BSL-3 laboratory procedures

- Centrifugation
- Vortexing
- Autoclaving
- Aliquoting
- Concentrating tissue culture
- Etc.....

Need SOPs that emphasize SAFETY!

Standard practices

- Wash hands
- Handle sharps safely
- Minimize aerosols
- Decontaminate

BSL-3 practices

- Access

BSL-3 practices

- Access
- PPE

BSL-3 practices

- Access
- PPE
- BSC

BSL-3 practices

- Access
- PPE
- BSC
- Sharps

BSL-3 practices

- Access
- PPE
- BSC
- Sharps
- Decontamination

BSL-3 practices

- Access
- PPE
- BSC
- Sharps
- Decontamination
- Storage

Components of laboratory biosafety

1. Facility design
2. Safety equipment
3. Laboratory practices
4. Medical surveillance

Before BSL-3 work:

- Baseline serum sample
- Immunizations
- Know symptoms of illness
- SARS - fever, respiratory symptoms

The bearer of this card may have occupational exposure to the following pathogens:

virus A, bacteria B, parasitic disease C

back

front

The bearer of this card works at the **ABC Research Institute** and may have occupational exposure(s) to one or more pathogens listed on the reverse side. Physicians and other healthcare providers needing information about possible exposures or wanting to report a potentially work-related infection should contact the supervisor listed during business hours or the 24-hour occupational health number if calling during non-business hours.

Name of card holder: John Doe
Supervisor: Dr. Joe Smith
Supervisor's number: (123) 456-7890
Occupational health number: (123) 456-7891

CDC

For any break in lab procedure:

- Report
- Evaluate

For any exposure:

- Be vigilant for symptoms
- Report symptoms

If symptoms *plus* exposure:

- Worker notifies contact person
- Worker reports for evaluation

If symptoms *minus* exposure:

- Worker contacts supervisor
- Supervisor contacts occupational health
- Occupational health evaluates

Questions

bsl3webcast@cdc.gov

Laboratory biosafety

www.cdc.gov/od/ohs/biosfty/biosfty.htm

Laboratory biosafety

www.cdc.gov/od/ohs/biosfty/biosfty.htm

BMBL

www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm

Laboratory biosafety

www.cdc.gov/od/ohs/biosfty/biosfty.htm

BMBL

www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm

SARS laboratory guidance

www.cdc.gov/ncidod/sars/lab.htm

Archived webcast

www.phppo.cdc.gov/PHTN/webcast/bsl3

Video and CD-ROM

bookstore.phf.org

877-252-1200

Registration/evaluation

www.phppo.cdc.gov/phtnonline

Registration questions

800-41-TRAIN

404-639-1292

E-mail ce@cdc.gov

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Centers for Disease Control and Prevention

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Good Day from Atlanta