DLS ECHO Biosafety Session: August 29, 2023

Safety Challenges with Specimen Collection, Transport, Accessioning, and Storage

Joey Stringer
General Laboratory Supervisor
Dallas County Health and Human Services
Dallas, TX

Kayle Cirrincione
Health and Safety Officer
Dallas County Health and Human Services
Dallas, TX

CDC Centers for Disease Control and Prevention
UNM Health Sciences
Project ECHO

Agenda

- Didactic and Case Presentation
- Discussion
- Summary of Discussion
- Closing Comments and Reminders

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Kayle Cirrincione
Health & Safety Officer, Dallas County Health Department

DCHHS
Safe families, healthy lives.
Dallas County Health and Human Services

OVERVIEW

Objectives

- Identify significant biosafety challenges in specimen handling, collection, transport, accessioning and storage *
- Discuss the significance of proper handling at every stage to prevent potential risks to human health and the environment.
- Describe alternative methods to overcome safety concerns
- Discuss real-life incidents and cases related to specimen handling

Specimen Collection

Question #1

What are some safety challenges with specimen collection?

a. Complacency

b. Filling wrong specimen collection tube for infection requested

c. Not wearing proper PPE

d. Lack of training in collection techniques

e. All the above

Specimen Collection

Proper training of personnel involved is paramount to minimize risk:

- Clear guidelines (SOPs) for selecting collection methods based on the nature of the specimen.
- Using appropriate personal protective equipment (PPE) during collection.
- Having actively engaged personnel.

Safety Challenges often seen with Specimen Collection

- Complacency
  - Doing the same thing repeatedly
  - Forget one small item…
- Lack of training in collection techniques
  - Everyone needs training in collection techniques and in the proper selection and use of equipment/supplies to minimize risks

Specimen Collection

42 CFR §493.1242 Standard: Specimen Submission, Handling , and Referral

Laboratories are required to establish and adhere to written SOPs specifically addressing these issues to ensure consistent and standardized practices.

Components of SOPs for Specimen Collection and Handling:

1. Identification and Labeling
2. Collection Techniques
3. Personal Protective Equipment (PPE)
4. Packaging and Transport
5. Documentation and Record-Keeping
6. Biosafety Measures
7. Emergency Procedures

Unique Safety Challenges with Specimen Collection

a. Out-reach – POC testing in field
    i. Patient testing
    ii. Sample collection
    iii. Resource Limitations
    iv. Waste Disposal
b. Detention center specimen collections
    i. Juvenile Detention Center
    ii. County Jail

Safety Challenges within your Laboratory

Breakout Session (5 minutes)

1) What are some safety challenges you see within your laboratory?
    a. What about prepackaged kits? What additional instructions should accompany the kit?

Safety Challenges within your Laboratory

Specimen Transport

Specimen Transport

Question #2

What are the safety concerns when transporting specimens?

a. Specimen spill in car, or transport bag

b. Lack of communication between submitting lab and receiving lab

c. Lack of coordination between submitting lab and receiving lab

d. All the above

Specimen Transport

Safety Challenges within your Laboratory

Breakout Session (5 minutes)

1) What are the safety concerns when transporting specimens?
2) What is needed in specimen transport?
3) What are the safety challenges with specimen transport?

Specimen Transport

- Transport includes pick up, loading, movement and unloading
- Challenges related to transportation, including potential hazards exist during transit (e.g., leaks, breakage, temperature fluctuations).
- Proper packaging, labeling, and documentation to prevent mishandling or loss of specimens.
  - Considerations for transport methods and regulations
  - 6.2 Hazardous Shipping
- Maintaining the cold chain during specimen transport to preserve sample integrity and prevent contamination.

Safety Challenges with Specimen Transport

- What training is needed?
- Materials needed for correct packaging?
- Vehicle and driving safety?
- Sample Pick-up and delivery?
- Documentation of sample pick-up and delivery?
- Communications –
  - Who are the POC?
- (Outreach specimen collection and transport
  - What are the safety challenges when collecting specimens in the field and transporting)

Specimen Transport

- What training is needed?
  - DCHHS has an SOP for Dallas County Courier
    - Familiarizing personnel with relevant regulations and guidelines for transporting hazardous materials, biological samples, and medical specimens.
    - Movement including secure loading and unloading
    - Emergency Response Protocols
    - Communications (POCs)

Specimen Transport

- What training is needed?

DOT U.S CFR Title 49: Regulates transportation of HAZMAT in the U.S.

- Ground (motor vehicle, railroad), air, and water vessel
- Defaults to ICAO/IATA regulations for air transport
- Established "Hazardous Materials Regulations" (HMR)

Transporting with Private Carriers Exception

According to U.S. CFR Title 49, 173.134 (b)(10), patient specimens, other than Category A infectious substance, are exempt from requirements and regulations when a private carrier is used exclusively to transport such materials.

Specimen Transport

- What training is needed?
  - DCHHS has an SOP for Dallas County Courier
    - Movement – routes to take, vehicle check list, not stopping, etc.

DCHHS Vehicle Checklist Prior to Transport							
Date and initials	Tires	Turn Signals	Headlights	Windshield Wipers	Windows	Mirrors	Bumpers
Full Gas Tank? Y or N							
	Brakes	Defroster	Seatbelts	Spill kit	Heater/AC	Notes (body damage/repairs needed)	

Specimen Transport

- What training is needed?
  - Loading of sample
    - Secure a hazardous material in transport
    - Backseat and secure
  - Unloading
    - The courier is responsible once he/she picks up the sample at recipient's location until it is dropped off at its destination.
    - Unload package carefully, always use the handles and or straps of the container

Specimen Transport

- What training is needed?
  - Emergency Response Protocols
    - Training on how to respond to emergencies, accidents, and spills during transportation.
    - DOT ERG (Emergency Response Guidebook)
    - A spill kit is essential for containing and managing spills of hazardous materials, including biological specimens. A complete spill kit should include the following components:
      - ?

Specimen Transport

Safety Challenges within your Laboratory

Breakout Session

What should be in a vehicle spill kit?

Specimen Transport

- What training is needed?
  - Emergency Response Protocols
    - Training on how to respond to emergencies, accidents, and spills during transportation.
    - DOT ERG (Emergency Response Guidebook)
    - A spill kit is essential for containing and managing spills of hazardous materials, including biological specimens. A complete spill kit should include the following components
      - **<u>PPE, absorbent pads, a solidifier, hand disinfectant</u>**

Specimen Transport

Question #3

What should be done in case of an accident while transporting a specimen?

a. Leave vehicle and go for help

b. Attempt to move the vehicle to a safe place

c. Assess the situation and ensure specimen integrity

d. Follow established emergency protocols

e. Answers C and D

Specimen Accessioning

Question #4

Specimen Accessioning

What safety concerns do we see with accessioning of samples

a. Lack of communication of high-risk or select agent submission(s)
b. Inadequate size of accessioning room
c. Lack of biosafety cabinet
d. All the above

Specimen Accessioning

Lack of communication when submitting high-risk samples

- *Y. pestis* blood sample submitted with rack of blood tubes for STI processing
- *Brucella* isolate comes in on agar plate and passed to microbiology BSL-2 lab to be Gram stained

- What are the safety concerns with this scenario?
  - Possible exposure?

Specimen Accessioning

Inadequate size of accessioning room

- Too small of room for accessioning samples
- Clutter

- What are the safety concerns with this scenario?
  - Spill? Possible Exposure?

Specimen Accessioning

Lack of Biosafety Cabinet in Accessioning Room

- Process samples of bench top
- Loading and unloading centrifuge on bench top

- What are the safety concerns with this scenario?
  - Spill? Possible Exposure?

Specimen Accessioning

Question #5

Do you have a biological safety cabinet in your accessioning room?

Yes, or no?

Specimen Storage

Specimen Storage

Inadequate refrigerator/freezer space

- Importance of Proper Storage
- Risk of Contamination
- Storage Planning
- Maintenance
- Expandable Solutions
- Temperature Monitoring

Specimen Storage

Inadequate inventory control for high-risk samples

- Risk Mitigation
- Proper Labeling
- Restricted Access
- Chain of Custody
- Regular Audits
- Training
- Emergency Protocols

Specimen Storage

Safety Challenges within your Laboratory

Real-Life Case Scenario

LRN Select Agent Rule Out

Sample submitted to DCHHS that failed in transport and accessioning.

- **Culture agar plate packaged in clear 95kPa package (not fully sealed) with sticky note**
- **No notice given by submitting facility**
- **Our Accessioning didn't know what to do**
- **Placed on BSO office desk**

Specimen Safety

In closing -

- Always remember laboratory safety in collection, transport, accessioning and storage of specimens.
- Coordination and Communication goes a long way in preventing incidents.

Safety Challenges

Thank you for participating and listening.

QUESTION / ANSWERS

DLS ECHO Biosafety Session: September 26, 2023

Medical Waste Management

Nikki Parrish, PhD

Associate Professor of Pathology, Johns Hopkins University School of Medicine

Director of Medical Mycobacteriology, Johns Hopkins Hospital

Baltimore, MD