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Ministry of Defence

Medical Response to Incidents in High Containment Laboratories

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Would like to emphasise……

Incidents are very rare!

- Prudent to test the “system”
- Very low risk but **NOT** no risk
- **Lot of “What if’s?”**

Working Practices at DSTL

- Primary Containment
  - Rigid wall isolators
  - Class III Microbiological Safety Cabinets/Cabinet Line
- BSL-3
  - Lab coat on entry
  - Hand wash and leave lab coat in lab on exit
- BSL-4
  - Full clothing change on entry
  - Shower on exit

NO LONE WORKING IN EITHER CASE

Primary Containment

Potential Incidents

1. A contamination event

2. An infection event

3. A medical emergency/injury in the containment laboratory where there is no current pathogen hazard or containment has not been breached

4. A medical emergency/injury where there is a risk of contamination but not infection

5. A medical emergency/injury with a risk of an infection exposure to a pathogen

Paradoxes in Laboratory Incidents

- From an infection perspective

TIME

Time to think, time to act

- From a medical perspective

POTENTIALLY IMMEDIATE

Paradoxes in Laboratory Incidents

SAVE LIFE

OR

PREVENT SPREAD of CONTAMINATION

(Especially escape of the pathogen from containment)

- Are both achievable?
- Is compromise acceptable?

Potential Contamination Event

- Breach in containment, no injury
  - Commonest cause is spontaneous tear in glove
  - Established glove change procedure
  - Most cases will not require medical input
- However ALWAYS risk assess all containment breaches
  - Nature/route of potential exposure
  - Pathogen

Infection event

- Laboratory acquired infection
  - Sharps injury
  - Bites
  - “Splash” injury
  - Inhalation
  - Cutaneous
  - *Ingestion*
- Incident may be overt with obvious breach in containment or occurs a result of mishap outside containment e.g. breakage in centrifuge
- May not be obvious – late presentation of infection outside work

- First aid as necessary and decontaminate
- Remove individual to place of safety and quiet
- Risk assess
  - Nature/route of exposure
  - Pathogen
  - Prophylaxis
  - Expert opinion/referral as necessary

Medical emergency in laboratory (No hazard)

- Risk assess entry/exit into laboratory
  - Can probably bypass normal entry/exit procedures
  - Does medical assistance need to enter containment suite?
- **“Stay-and-play” or “Scoop-and-run”?**
- Evacuation may be difficult and prolonged

Drag Stretcher

Entry/Evacuation

Interlocking Doors

Trip hazards, narrow corridors and tight corners

Medical emergency with contamination

- **Should medical assistance enter?**
  - Individual may not be able move or “buddy” unable to move
  - PPE (Time!!) **Do you risk it?**
  - PPE may restrict/limit medical intervention
  - **“Stay-and-play” or “Scoop-and-run”?**
    - Permissive environment – Containment restored
    - Continued breach in containment
- Evacuation now complicated by need to decontaminate
  - Interferes with medical treatment
  - Which has the priority?
- **Will contamination lead to infection?**

Medical emergency with potential infection

- Approach and uncertainties as with managing a medical incident with contamination
- **When does an “infected” individual become “infectious”?**
  - **Will have implications for further care e.g. surgery**

Don’t forget the “buddy”

- May have had similar exposure
- May have had to perform first aid
- May have seen things they are not used to
- May feel guilty/anxious
  - May have been the cause of or contributed to the incident
  - May have doubts on their response and actions

The future……

How do we respond in a suited laboratory?

To conclude….

- Dealing with a medical emergency in containment is challenging
- Balanced risk assessment *vs* clinical priorities based on close co-operation of medical team and safety chain
- Medical personnel need to be familiar with containment, and the pathogens in question
- **A lot of unknowns remain!**

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