Environmental Services Response

Robert Jackson
Waste Management for Ebola Care

• All EVD patient waste entered waste stream after treatment

• All patients’ liquid wastes were disinfected with bleach or quaternary disinfecting detergents for > 5 minutes prior to flushing

• All room waste was meticulously handled with onsite processing
Onsite Processing

- Sterilizer room self contained within SCDU
- Autoclave up to 5 bags per-load
- Average 10-12 boxes medical waste processed per day
- Spore testing pack placed in every load for validation
- Preparation of waste for shipping and exchange to contractor according to established protocols
- 800 -1,000 sq. feet dedicated space for all waste management processes
Equipment Needed

- 50 waste contractor boxes
- 3 cases of red biohazard bags
- 1 case autoclave bags
- 1 bag of autoclave bag rubber bands
- 1 incubator
- 1 case spore testing pack
- 2 cart covers
- 1 spill kit
- 1 pair heat resistant gloves
- 12 Rubbermaid barrels with lids and casters
Waste Generation

• Patient 1: Admitted for 19 days
• Patient 2: Admitted for 14 days

• Autoclaved **350 bags** of regulated medical waste
  • *Total weight*: **3,058 lbs**

• Packaged **218** boxes of regulated medical waste

• 6 shipments of regulated medical waste were transported for incineration
SCDU EVS Team

• Staffing – coverage for day, night and weekend shifts
• 5 EVS staff trained to manage waste
• Strong partnership with clinical and lab team

• Waste Management Issues
  – Amount of waste generation
  – Expanded autoclave capacity
  – Coordinated disposal with waste contractors
Facilities Management Response

Jerry Lewis
Physical Infrastructure Needs for Ebola Care

- Dedicated exhaust system
- HEPA filters
- Neg Pressure Alarm panels
- Scrub sink in anteroom
- Locker room with shower
- Vinyl coated ceiling tiles
- Epoxy wall paint
- Solid sheet flooring
- Dedicated family room and conference room
This type of facility is NOT necessary for the care of patients with Ebola
SCDU

Main Entrance into SCDU

Anteroom

Staff Shower in Anti-Room

Patient Room

HEPA Filtration & Solid Surface Ceiling Tiles

Patient Restroom
SCDU Facilities Management

• Staffing – available 24/7 by phone
• 4 staff trained to work in SCDU
• Responsiveness and close working relationship with clinical team

• Facilities Management Issues
  – Toilet seats
  – Touchless fixtures
  – Flooring
  – Doors
  – Lighting
Laboratory Response

Charlie Hill, MD, PhD
Charles E. Hill, MD, PhD
Personal/Professional Financial Relationships with Industry

<table>
<thead>
<tr>
<th>External Industry Relationships *</th>
<th>Company Name</th>
<th>Role</th>
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<tr>
<td>Equity, stock, or options in biomedical industry companies or publishers</td>
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<td>Board of Directors or officer</td>
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<td>Royalties from Emory or from external entity</td>
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<td>Industry funds to Emory for my research</td>
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<td>Other</td>
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Laboratory for Ebola Care

- Known positive Ebola specimens do not leave the SCDU (except to go to CDC)
  - Cannot shut down automated line for a possible spill
  - Positive custody for category A pathogen samples
- Limited test menu is sufficient to care for critically ill Ebola patients
- SCDU lab capable of handling aerosol transmitted organisms, even though not the case for Ebola
The SCDU Laboratory
Test Equipment

- Blood Gas Analyzer – GEM 4000
- Chemistries and Enzymes – Abaxis Piccolo
- CBC – Sysmex pocH 100i
- UA – Clinitek Status
- PCR – Biofire FilmArray
- EIA – Binax Now, OraQuick Advance

- In patient room(s) – CoaguCheck, AccuCheck
Test Menu in the SCDU Lab

- pH, pCO$_2$, pO$_2$, Na$^+$, K$^+$, Ca$^{++}$, Glu, Lac, Hct, tHgb, O$_2$Hgb, COHgb, MetHgb, HHgb, T Bili
- ALB, ALP, ALT, AST, BUN, Ca, Cl$^-$, CRE, GLU, LDH, K$^+$, Mg, Na$^+$, Phos, T Bili, tCO$_2$, TP
- WBC, RBC, Hgb, Hct, MCV, MCH, MCHC, Plt, MPV
- UA – Alb, Bili, Cre, Glu, Ket, Leu, Nit, pH, Pro, SP, Ubg
- GI Panel PCR, Respiratory Panel PCR, Blood Culture Identification PCR, Ebola PCR (BT Panel, now BT-E under EUA)
- Malaria EIA, HIV EIA
The SCDU Laboratory

- Staffing – assigned for 6 hour blocks, 24/7
- 10 Medical Technologists trained to work in lab
- Extremely close working relationship with clinical team (part of the care family)

- Lab Issues
  - Instrument maintenance and repair
  - Waste management
Equipment Needed

- PPE
- Disposable clinical items
- Cleaning supplies
- Waste management supplies
SCDU PPE

• Coverall
• Gloves regular
• Gloves extended cuff
• Booties
• PAPR Hood
• Apron
Managing PPE Resources

- Insure adequate PPE supply for training & reuse items as appropriate
- Limit PAPR training to specific personnel with high potential for exposure
- Develop standard pre-packaged kit for ambulatory settings and points of entry
- Constantly source alternate vendors
- Constantly source alternate products and validate with clinical team & biosafety
Materials Management

• Staffing – available 24/7
• Dedicated personnel stocked SCDU daily

• Materials Management Issues
  – Sourcing enough PPE supplies
  – Evaluating alternate products
  – Adjusting supply based on acuity of patient
QUESTIONS