Ebola and Children: Conversation with the CDC and Children’s National Medical Center

Conference Call
January 13, 2015

Stephanie Griese, MD, MPH, FAAP
Lead, Children’s Task Force

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Ebola and Children: Conversation with the CDC and Children’s National Medical Center
Children’s Task Force

- Activated in October 2014

- Mission
  - Ensure the unique needs of children are recognized and addressed in all aspects of CDC’s response to the ongoing Ebola outbreak

- Goals
  - Establish and translate the science
  - Advance international response efforts
  - Advance domestic preparedness
Establish and Translate the Science

- Published "Ebola Virus Disease and Children: What Pediatric Health Care Professionals Need to Know" (*JAMA Pediatrics*)

- Exploring available data sources for prevalence, course of disease, and routes of exposure

- Summarizing pediatric domestic clinical inquiries data, with plans to share in a short report
Advance International Response Efforts

▪ Created an internal working group to unify children's efforts across the agency

▪ Translated CDC breastfeeding guidance into culturally-relevant SMS (text) messages for Sierra Leone

▪ Supporting the development of Observational Interim Care Centers

▪ Supporting the re-opening of schools in affected countries
Ensure Domestic Preparedness

- Developed and maintain webpage clearinghouse of resources for parents, educators, and pediatric healthcare professionals

- Facilitated collaboration with the U.S. Department of Education to develop guidance for schools and child care centers

- Created "How to Talk with Children about Ebola" materials

- Developing guidance and FAQ documents (e.g., pediatric transport, monitoring of neonates)
Hospital Preparedness

- Participate in readiness assessment visits to children's hospitals

- Initiated and moderate bi-monthly collaboration forums for children's hospitals
  - Foster information sharing between facilities as they prepare for and respond to pediatric cases and their families
  - Open to any facility with pediatric capacity

- Supported the development of a pediatric Ebola training course for clinicians and hospitals
Evaluation of a Pediatric Person Under Investigation

- Facility, physician, or health department may request assistance from CDC

- Conference calls are conducted real-time with
  - CDC
  - Local and state health department
  - Facilities involved

- Children’s Task Force participates in these discussions and provides feedback on parental presence, transport, and other immediate needs specific to children
Available Resources

- **CDC Children’s Task Force Main Website**

- **Linked resources include**
Helping Children Understand Ebola

- Ebola: What Parents Need to Know
  http://www.healthychildren.org/English/health-issues/conditions/infections/Pages/Ebola.aspx

- How to Talk with Your Children about Ebola

- Talking with Children: Tips for Caregivers, Parents and Teachers During Infectious Disease Outbreaks
  http://store.samhsa.gov/shin/content/SMA14-4886/SMA14-4886.pdf
Pediatric Transport

- Interim Guidance for Emergency Medical Services (EMS) Systems and 9-1-1 Public Safety Answering Points (PSAPs) for Management of Patients Who Present With Possible Ebola Virus Disease in the United States

- Frequently Asked Questions (FAQs) Regarding the Transport of Children (<18 years of age) with Known or Suspected Ebola Virus Disease (Ebola) in the United States (in CDC clearance)
Critical Care

- Recommendations for Safely Performing Acute Hemodialysis in Patients with Ebola Virus Disease in U.S. Hospitals

- The American Academy of Pediatrics early release Red Book chapter on Ebola (open access)

- Forthcoming (with publisher)
  - “Care of the Child with EVD” (*Pediatric Critical Care Medicine*)
  - “Ebola Virus Disease: Focus on Children” (*Pediatric Infectious Disease*)
Pregnant Women and Neonatal Care


- Guidance on the Care of a Neonate Born to a Mother with Exposure to, Suspected, or Confirmed Ebola Virus Disease in U.S. Hospitals (in CDC clearance)
Persons Under Investigation

- Clinical Inquiries Regarding Ebola Virus Disease Received by CDC — United States, July 9–November 15, 2014
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm63e1205a1.htm?s_cid=mm63e1205a1_x

- Pediatric Clinical Inquiries Regarding Ebola Virus Disease Received by CDC — United States, July 9, 2014–January 4, 2015 (in development)

- Caregiver Presence during the Care of a Child (<18 years) who is Suspected or Confirmed to have Ebola (in development)
Keeping Up to Date on New Information

- Information for Healthcare Workers and Settings
  http://www.cdc.gov/vhf/ebola/hcp/index.html

- Timeline of "What's New"
Thank you!

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Pediatric Ebola Readiness and Pediatric PUI Experience at Children’s National Health System

Roberta L. DeBiasi, MD, MS
Chief, Division of Pediatric Infectious Diseases
Children’s National Health System
Professor of Pediatrics and Microbiology/Immunology/Tropical Medicine
The George Washington University School of Medicine
Pediatric – specific Elements of Ebola Preparedness

- Institutional Ebola Response Plans involve every Department in the Hospital
- Pediatric Institutional Response Plan - must also include:
  - Child Life
  - Family Services
  - Messaging for Families
    - Screening
    - Initial PUI Intake
    - Moving patients off unit at time of SIU activation
- Parental Presence Policies
- Education/Messaging for community parents/families
- Neonatal PUI - partnerships with OB colleagues
## Summary - CNMC Inpatient PUI’s

<table>
<thead>
<tr>
<th>Date</th>
<th>Sex</th>
<th>Age</th>
<th>Country</th>
<th>Travel</th>
<th>Origination</th>
<th>Symptoms</th>
<th>EV PCR</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-7</td>
<td>M</td>
<td>11</td>
<td>Nigeria</td>
<td>T-14</td>
<td>Outside ED Transfer</td>
<td>40° C Fever, Hypotension, Tachycardia</td>
<td>N/A</td>
<td>Severe Malaria 27% Parasitemia</td>
</tr>
<tr>
<td>9-16</td>
<td>M</td>
<td>7</td>
<td>Sierra Leone</td>
<td>T-4</td>
<td>Direct into CNMC ED</td>
<td>38.7° C Fever, Resp Symptoms</td>
<td>N/A</td>
<td>Resp Viral Infection</td>
</tr>
<tr>
<td>11-5 to 11-7</td>
<td>M</td>
<td>10</td>
<td>Sierra Leone</td>
<td>T-3</td>
<td>Direct from within CNMC ward</td>
<td>Initially afebrile, prolonged leg pain - Developed 39.9 ° fever while hospitalized, Vomiting</td>
<td>Neg X 1</td>
<td>Chronic Osteomyelitis - MSSA</td>
</tr>
<tr>
<td>11-28 to 11-30</td>
<td>F</td>
<td>7</td>
<td>Sierra Leone</td>
<td>T-5</td>
<td>Outside ED Transfer</td>
<td>39.7° Fever, Hypotension, Vomiting Tachycardia, Diarrhea</td>
<td>Neg X 3</td>
<td>Severe Malaria 33% Parasitemia</td>
</tr>
</tbody>
</table>
### Institutional Activation Checklist

**Initial calls: Infectious Diseases 24-7 Dedicated Pager**
- ID Activates Inf. Control, Hosp Admin on Call, Lab Director, DC/MD/VA DOH

<table>
<thead>
<tr>
<th>Task</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital administrator on-call is notified</td>
<td>If applicable, UMC hospital leadership (Pam) is notified</td>
</tr>
<tr>
<td>Infection Control is notified</td>
<td>Staff will arrive at the unit by ___________________________ (estimated time)</td>
</tr>
<tr>
<td>Central nursing staff is notified</td>
<td>_______ (number) patient(s) will be relocated by _____________________ (estimated time)</td>
</tr>
<tr>
<td>Unit nursing leader is notified</td>
<td>ED □ or □ PICU nurse will resume patient care starting _______________ (estimated time)</td>
</tr>
<tr>
<td>Physician service is notified</td>
<td>ED □ or □ Hospitalist □ or □ Critical Care physician will resume patient care starting ___________ (estimated time)</td>
</tr>
<tr>
<td>EVS leader is notified</td>
<td>Room(s) will be cleaned and handed over to unit by _______________ (estimated time)</td>
</tr>
<tr>
<td>Transport team is notified</td>
<td>EVD super user team and supply cart will arrive by ___________________ (estimated time)</td>
</tr>
<tr>
<td>Central Supply is notified</td>
<td>EVD supply cart will be delivered by _____________________________ (estimated time)</td>
</tr>
<tr>
<td>Lab medicine is notified</td>
<td>Lab medicine will be delivered by _________________________________ (estimated time)</td>
</tr>
<tr>
<td>Pharmacy is notified</td>
<td></td>
</tr>
<tr>
<td>Security is notified</td>
<td>Security will lock all entrance and take over the space by _____________ (estimated time)</td>
</tr>
<tr>
<td>PR/Marketing is notified</td>
<td></td>
</tr>
<tr>
<td>Family service is notified</td>
<td>If applicable, family service will arrive at ______________ to work with family</td>
</tr>
<tr>
<td>Dietary is notified</td>
<td></td>
</tr>
</tbody>
</table>
Children’s National Special Isolation Unit (SIU)

- **Two-component Isolation Unit**
  - **First floor – Intake/Evaluation Component: 1-2 rooms**
    - Adjacent to but separate and isolated from ED
    - Dedicated entrance for patient and ambulance arrival
    - Decontamination Shower area
  - **Fifth Floor: 2-4 rooms**
    - Connected to first floor by dedicated/secure elevator
    - Activated unit isolated from other hospital patients
    - Capability for standard or ICU level care
    - Satellite lab (in construction)
    - Approximately 4 hours to stand-up unit fully
  - Both components with telemedicine capability
Children’s National Special Isolation Unit
Telemedicine Solution for CNHS Special Isolation Unit

Isolation Room 1
- Telehealth Cart with Cisco C20 Codec
- VITel Net PC
- High-Res Capture Card
- Stethoscope
- General Exam Camera
- Portable Ultrasound-Rad.
  (not included in pricing)

Isolation Room 2
- Telehealth Cart with Cisco C20 Codec
- VITel Net PC
- High-Res Capture Card
- Stethoscope
- General Exam Camera
- Portable Ultrasound-Rad.
  (not included in pricing)

Family Room
- within CNMC Facility
- VITEL NET PROVIDED

Family - Roaming
- using iPad, etc with Wireless Connection Within CNMC
- CNMC PROVIDED

Control Station Roaming Cart
- Telehealth Cart with Cisco C20 Codec
- Dual Monitors
- 2 VITel Net PCs
- 2 High-Res Capture Card
- Local Database
- Stethoscope - Receiver
- VITEL NET PROVIDED

Physicians with access to existing CNMC Network
- Physicians connect via existing technology for patient record access
- Video via attached or built-in webcam using Jabber video software

CNMC’s Existing Network
- Cerner EMR Database
- Cisco Jabber Server

Cart Moved to ED as Required

Children’s National Medical Center

Emergency 24hr Isolation Room
CNHS PUI Transport Ambulance – Unique Design
Staffing and Resource Allocation: On Activated Unit

- 1 Site Manager – Content Expert, Logistics
- 1 Dedicated MD (Critical Care or Hospitalist) – 24 hr
- 5:1 RN ratio plus site manager each 12 hour shift
  - 2 teams of 2 RN’s
    - Clinical Care role
    - Disinfection Role
    - Teams alternate time in PPE – Max 2 hours
  - 1 Watsun
- Environmental Services Personnel
Staffing

- Self-selection Critical
- Motivated, individuals, morale high
  - Consistency helpful for staff as well as patient/family and optimizing PPE technique
  - Need critical mass of trained staff to mitigate last-minute changes, plan ahead
- Stay in area for duration of shift
Personal Protective Equipment for Health Care Workers

Ambulatory Care/ED
Minimum PPE allowed during Initial PUI Identification

- Mask or respirator
- Goggles, safety glasses or face shield

Hospitalized Patients
N95/Hood/Face Shield
PAPR

Tyvek Coverall + gown, Boot Covers, Double Glove, Fluid Impermeable Apron added if “Wet” patient

Donning and Doffing PPE:
- Always Performed with Trained Observer
- Methodical Process with Detailed Prompt Checklists/Visuals
PPE - Practical Lessons Learned

• Appropriate PPE must be immediately available for providers in any clinical setting
  ▪ Education and reassurance to staff about variable levels of PPE
    ▪ Clinics/ED
    ▪ Special Isolation Unit “Dry” and “Wet” patients
    ▪ Lab Workers
  ▪ Education to staff about “usual” emergency mode of immediately attending to patient versus “Ebola” mode where PPE is ABSOLUTE requirement prior to patient contact

• Training
  • Central Super User (train the trainer) model
  • Drilling sessions run by groups themselves

• Supply chain must be addressed proactively, with identified backups
• Once procured, PPE must be closely inventoried and secured
• PPE organization is key
PPE – Evolution of the Cart (Before and After)

Note: Mini PPE Kits for ED, Ambulatory, Satellite Clinics
# PPE Inventory

## Daily PPE Usage

* * Updated daily using PPE Supply Tally

<table>
<thead>
<tr>
<th>Date</th>
<th>Tyvex suit</th>
<th>Short gloves</th>
<th>Long gloves</th>
<th>Shoe covers</th>
<th>Long boot covers</th>
<th>N 95 mask</th>
<th>Hood</th>
<th>Yellow Gowns</th>
<th>Face Shield</th>
<th>Bonnet</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/7 AM</td>
<td>9</td>
<td>24</td>
<td>24</td>
<td>42</td>
<td>24</td>
<td>9</td>
<td>9</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>11/7 PM</td>
<td>12</td>
<td>36</td>
<td>36</td>
<td>60</td>
<td>36</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>11/8 AM</td>
<td>10</td>
<td>28</td>
<td>28</td>
<td>48</td>
<td>28</td>
<td>10</td>
<td>10</td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>11/8 PM</td>
<td>8</td>
<td>32</td>
<td>32</td>
<td>50</td>
<td>32</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>11/9 AM</td>
<td>13</td>
<td>28</td>
<td>28</td>
<td>58</td>
<td>28</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>11/9 PM</td>
<td>12</td>
<td>36</td>
<td>36</td>
<td>60</td>
<td>36</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>11/10 Am</td>
<td>13</td>
<td>28</td>
<td>28</td>
<td>58</td>
<td>28</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>11/10 PM</td>
<td>8</td>
<td>32</td>
<td>32</td>
<td>50</td>
<td>32</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>11/11 Am</td>
<td>4</td>
<td>16</td>
<td>16</td>
<td>25</td>
<td>16</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Defective</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total per admission</td>
<td>99.0</td>
<td>260.0</td>
<td>260.0</td>
<td>451.0</td>
<td>263.0</td>
<td>89.0</td>
<td>101.0</td>
<td>138.0</td>
<td>139.0</td>
<td>138.0</td>
</tr>
<tr>
<td>Average Usage Per 12hr Shift</td>
<td>11.0</td>
<td>28.9</td>
<td>28.9</td>
<td>50.1</td>
<td>29.2</td>
<td>9.9</td>
<td>11.2</td>
<td>15.3</td>
<td>15.4</td>
<td>15.3</td>
</tr>
<tr>
<td>Average Usage Per Day</td>
<td>22.0</td>
<td>57.8</td>
<td>57.8</td>
<td>100.2</td>
<td>58.4</td>
<td>19.8</td>
<td>22.4</td>
<td>30.7</td>
<td>30.9</td>
<td>30.7</td>
</tr>
</tbody>
</table>

## RN PPE Usage

<table>
<thead>
<tr>
<th>RN PPE Usage</th>
<th>Total for Aprox 4.5 day admission</th>
<th>Average Usage Per Day</th>
<th>Average Usage Per 12hr Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tyvex Suite</td>
<td>99</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Short Gloves</td>
<td>260</td>
<td>57.8</td>
<td>28.9</td>
</tr>
<tr>
<td>Long Gloves</td>
<td>260</td>
<td>57.8</td>
<td>89.9</td>
</tr>
<tr>
<td>Shoe Covers</td>
<td>451</td>
<td>100.2</td>
<td>50.1</td>
</tr>
<tr>
<td>Long Boot Covers</td>
<td>263</td>
<td>58.4</td>
<td>29.2</td>
</tr>
<tr>
<td>N95 Masks Small</td>
<td>44</td>
<td>11.4</td>
<td>4.6</td>
</tr>
<tr>
<td>N95 Masks Regular</td>
<td>45</td>
<td>9.4</td>
<td>4.3</td>
</tr>
<tr>
<td>Hoods</td>
<td>101</td>
<td>22.4</td>
<td>11.2</td>
</tr>
<tr>
<td>Yellow Gown</td>
<td>138</td>
<td>30.7</td>
<td>15.3</td>
</tr>
<tr>
<td>Face Shields</td>
<td>138</td>
<td>30.7</td>
<td>15.3</td>
</tr>
<tr>
<td>Bonnetts</td>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAPR Hood</td>
<td>20</td>
<td>only had 20</td>
<td>20</td>
</tr>
</tbody>
</table>
Parental Presence

**PRO**
- Family Centered Care: Child and Parent Satisfaction
- Assistance with care for patient who is not critically ill
- Staff spend less time in the room

**CON**
- Responsibility of Staff to Train and Monitor Don/Doff
- Safety of Staff
  - Shared doffing area
  - Potential contamination of Warm Zone
- Risk to family member - even if no break in PPE
- Fear of seeing parent in PPE
- Increased usage of PPE

**CNMC Policy:**
- Preference for Parent Out of Room/Telemed
- Informed Consent Document
- Input from Risk Management
Laboratory: Ebola – Specific Issues

- Specimen Transport to Lab
  - Phone Alert
  - Pickup of Dedicated Box
  - Delivery into Hood
- BSL 2 Hood with Lab Level PPE
  - Malaria thin smear – modified technique
  - Binax
  - Blood Culture
- EPOC in room
  - Chemistry
  - ABG
  - No Creatinine, Liver Enzymes

- Detailed SOP’s and Drills Essential
- EV PCR: Must have certified individual available to pack the specimen and deliver via courier to DOH/CDC
Post-PUI Debriefing Sessions Essential to Continuously Optimize Institutional Plan

• Communication (While PUI in-house)
  • Internal – Daily Conference Call, Systematic
  • External Agencies – Daily Conference Call
• PPE Inventory and Supply – proactive monitoring
• Parental Presence – evolves/one size does not fit all
• Defining Site Manager Role
• Expansion of Nursing Role:
  • Trash decontamination/liquid waste/parent support
• Detailed Checklists for Standardization of SIU activation, operation and decommission processes across disciplines for 24-7 readiness
KEEP CALM AND WEAR YOUR PPE