Lessons Learned from Super Storm Sandy – The Bellevue Experience

Marjorie Bon Homme, PhD, DABCC
Bellevue Hospital Center

- Mission - to provide the highest quality of care with dignity, cultural sensitivity and compassion; regardless of ability to pay
- founded on March 31, 1736 and is the oldest public hospital
- located on 1st Ave in the Kips Bay neighborhood of Manhattan

Bellevue Hospital as viewed from the East River circa 1880
Courtesy of Ehrman Medical Library NYU Medical Center Archives

Bellevue From the East River

Photos by Kenneth Wilsey - Mar 10, 2014
http://www.fema.gov/vi/media-library/assets/images
Bellevue from the FDR Drive
Storm Surge from Hurricane Sandy
The FDR Drive, flooded by Hurricane Sandy the evening of October 29.
17 million gallons of water entered Bellevue’s basement


Water Level in Basement

Fuel for Back Up Generators is stored in the Basement

Video by Ashley Andujar - Feb 14, 2013
http://www.fema.gov/media-library/assets/images/68283
Back Up Generators are on the 13th Floor
Help Arrives


http://www.globalpost.com/photo/5724742/hurricane-sandy-damage-recovery-2012-8
“The Bucket Brigade”

http://www.army.mil/article/90252/N_Y__mobilizes_more_than_2_300_Guardsmen_to_battle_Hurricane_Sandy_aftermath/

National Guardsmen evacuate 725 patients

Objective

• To share with you some tools that helped Bellevue chemistry laboratory survive
• To get you thinking about emergency preparedness for your institution
Know Your Floor Plan
Clinical Chemistry Main Laboratory
Know Your Floor Plan

Emergency Power for Chemistry Area
# Know Your Floor Plan

## Common North American AC Power Connectors

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<tr>
<th>Size/Type</th>
<th>Straight Blade Connector</th>
<th>Twist-Lock Connector</th>
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Know Your Floor Plan

Understand the Components Required to Produce Relevant Data
Know Your Floor Plan
Refrigeration Floor Plan

• Unit #
  • Temperature
  • Description of Contents – Reagents/Samples
  • Value of Par Volume
  • Priority (1, 2, 3)
  • Reliability (Y/N)
  • Other – In case of emergency………. 
Be Prepared to Cannibalize your Instruments

Article by John Paczkowski, Apple CEO: Don’t Fear Cannibalization, Embrace It, JANUARY 23, 2013
http://allthingd.com/20130123/apple-ceo-dont-fear-cannibalization-embrace-it/
Be Prepared to Cannibalize your Instruments

Know Where All Sources of CLRW is
Communication
External to Clinical Staff

- **Test Menu**
  - Blood Gas Analysis
  - General Chemistry Analyzer
- Expected TAT
- How to Order
- Sample Requirements
- Patient Results

Communication
Internal to Laboratory Staff

- Staffing
- Bench/Instruments
- Test Menu
  - by Bench
  - STAT
- Workflow
- Personal Hygiene and Safety
- Planned Timelines
- Responsible Parties
- Contact Information
- Updates

http://ec.l.thumbs.canstockphoto.com/canstock4006957.jpg
Communication

The Human Factor

Photo by Jocelyn Augustino - Nov 02, 2012
http://www.fema.gov/media-library/assets/images/65968

http://officesupplygeek.com/category/site-update/
Communication

The Human Factor

Closing Down the Lab

Close Out Remaining Samples
• Document disposition of all samples
• Perform testing
• Send-out the rest

Properly Dispose of
• Samples (Urine, Serum/Plasma, etc)
  • Urine w/out the presence of blood is not current considered regulated waste
• Reagents

Shut down Instruments
• Consider sanitizing/decontamination prior to shutting down
• Seek advice from manufacturer

Turn off, unplug all unused instruments and equipment
Closing Down the Lab

Stability Studies

**Total Calcium Stability following a Freeze-Thaw Cycle**

Frozen after Seven Days

- **Data Points**
- **Reference Range**, 8 - 10 mg/dL
- **Regression Line**

**Equation:**

\[ y = 0.7287x - 0.0534 \]

**R²:** 0.1023

**Reference Range:** 8 - 10 mg/dL

**Data Points**

- **Subsequent Total Calcium, mg/dL**
- **Initial Total Calcium, mg/dL**

**Regression Line:**

- Linear relationship between **Subsequent Total Calcium** and **Initial Total Calcium**.
Closing Down the Lab

Stability Studies

Total Calcium Stability following a Freeze-Thaw Cycle
Fresh Frozen Sample

\[ y = 0.969x + 0.1196 \]
\[ R^2 = 0.9125 \]

Data Points
Reference Range, 8 - 10 mg/dL
Regression Line
Starting Back Up

Decontaminate/Sanitize your Instruments
Starting Back Up
Method Validation

EP Evaluator
Simple Precision

GLUCOSE
Instrument XYZ
Sample Name HIGH

EP Evaluator
EP5 Precision

CLSI EP6 Linearity

EXAMPLE

EP Evaluator
CLSI EP9 Method Comparison

EP Evaluator
Carryover A

Individual Results Plotted

Supporting Data

Sample Data Printed: 19 Sep 2014 01:19:04

Sample Data Printed: 19 Sep 2014 01:21:31

Sample Data Printed: 19 Sep 2014 01:27:24
## 2014 Surveys Program Shipping (Continued)

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Starting Back Up

Proficiency Testing

[http://www.cap.org/apps/cap.portal?_nfpb=true&cntwrPltt_actionOverride=/portlet/contentViewer/show?windowLabel=cntwrPttt&cntwrPttt%7BactionForm.contentReference%7D=proficiency_testing/surveysorders.html&_state=maximized&_pagelabel=cntwr]
In Summary:

- **Know and understand your floor plans, infrastructure and resource**
  - Ever changing situation, so commit to re-evaluating every 1 – 2 hours during an emergency and then 1 – 2 times a year
- **Be prepared to cannibalize a perfectly healthy instrument**
- **Communication**
  - Internal with Medical Director and laboratory staff
  - External with Clinical Staff
- **Considerations for Temporary Closure of a Laboratory**
- **Top Three Things to Remember when Re-Opening a Laboratory following a Disaster**
Acknowledgments

Peter Jung – Manager
Meiling Chen – Immunoassay Supervisor
Sofyia Postelnik – POC Supervisor
Bijan Davoudi – General Supervisor
Kathay Gayle – Immunoassay Supervisor
Alla Valtsis – QC Supervisor
Charles Blackwell – Night Supervisor
Andrew Kapsopoulos – Overnight Supervisor
The Entire Chemistry Laboratory
Dr. Maria Aguero – Medical Director
Patience Mancho – Senior Administrator
Neil Peckman – Administrator
Jacobi Hospital – Desiree Mehegan, Manager
Memorial Sloan Kettering – Dr. Kazunori Murata
Siemens – Dennis Williams, Field Service Engineer; Maggie Bruno, Account Manager
Thank you for your attention
Do you have any questions or comments?