## EHR Downtime and IT Triage — Strategies for Response and Recovery

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stacey Gustafson, MA, PMP, MBCP</td>
<td>Emergency Preparedness &amp; Security Program Coordinator, UC Davis Health System</td>
</tr>
<tr>
<td>Mandy Williams, RN-C, BSN</td>
<td>Assistant Nurse Manager, Labor &amp; Delivery, UC Davis Medical Center</td>
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<tr>
<td>David Buettner, MS, RN, MICN</td>
<td>Prehospital Care Coordinator/Control Facility Supervisor, Department of Emergency Medicine, UC Davis Medical Center</td>
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<tr>
<td>Crystal Walsh, BSN, MICN</td>
<td>Base Station, Disaster Response &amp; Infectious Diseases Coordinator, Mercy Medical Center Redding</td>
</tr>
<tr>
<td>Jeffrey Ennen</td>
<td>North State IT Operations Manager, Dignity Health</td>
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</table>
EHR Downtime

Stacey Gustafson MA, UC Davis Health System
Mandy Williams BSN, UC Davis Medical Center
David Buettner MS, RN, UC Davis Medical Center

Objectives

- Describe alternative electronic strategies developed for managing system outages
- Demonstrate procedure variations in emergency department and inpatient system outages
- Identify lessons learned from downtime implementation strategies
About UC Davis Medical Center

Emergency Department (ED)
- 64 licensed beds
- 2015 census: 79,355 patients
- 30% of ED patients arrive via EMS daily
- 26% of ED patients require inpatient admit

Labor & Delivery (L&D)
- 15 inpatient beds / 8 outpatient beds
- 2 operating room suites
- 1,790 births (fiscal year 2015-16)
- 4,729 triage visits (fiscal year 2015-16)
UCDMC Epic Interfaces

- Vital Signs Monitoring
- Pyxis
- Food & Nutrition
- iSite Imaging Systems
- OBIX – Fetal Surveillance
- Syngo Dynamics Cardiology
- Meditech – Lab System

EHR Downtime Preparation

- Type of downtime
- Communication plans
- Current and scheduled patients
- New patient arrivals
  - Emergency Department
  - Labor and Delivery
  - Laboratory – separate system
Types of Downtime

Scheduled
- Pause – 1 to 3 minutes, scheduled 22:00 (low electronic medical record (EMR) utilization)
- Scheduled maintenance – typically monthly 02:00 – 05:00

Unscheduled
- EHR
- Supporting systems (e.g., network, server)

Scheduled Communication Plan
- Managed by IT EHR Lead and Technology Operations Center (TOC)
- Group email sent to predetermined clinical managers at least two weeks prior
- Pre-prepared response reminders
Unscheduled Communication Plan

- Managed by TOC
- Pre-prepared response actions personalized for current event

Portal Notification

MyChart will be unavailable on **11/11** from **12:00 PM to 3:00 PM** for maintenance. We apologize for any inconvenience.

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EHR Downtime Response Strategies

- Current and scheduled patients
- New patient arrivals
  - Emergency Department
  - Labor and Delivery
  - Laboratory – separate system
Current and Scheduled Patients – Primary Strategy

EMR View-Only

ELECTRONIC MEDICAL RECORD

Current and Scheduled Patients – Secondary Strategy

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Current and Scheduled Patients
– Anytime Access to Reports

When EMR View Only isn't available, patient information available via the intranet.

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Ambulatory</th>
</tr>
</thead>
</table>

Please use your EMR Hyperspace login credentials to log in

User ID: 
Password: 
Log In

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New Patient Arrival System

Downtime Label Printing
PROD

Home | Search Patients | Add a New Patient | Reports

Search Patients | Add a New Patient | Reports
New Patient – Label Printing

When All Else Fails

This tab is for ED Registration and New admissions only

This tab is for Inpatient, OR, PACU, ED (before outage) Only
EHR Downtime Procedures

Downtime Forms and Worksheets

- Downtime Procedures
  System Unavailability Manual
- EMR Downtime Reports
  Ambulatory Downtime Reports
  Hospital EMR Downtime Reports
- Administrative Worksheets
  Admission Downtime Form
  Admission from an HSD Form
Downtime Response Process

Downtime Forms Available:
- Online Clinical Resource Center
- Downtime computers
- Bins/drawers for specialty forms

Paper orders labeled by unit and called/sent to fulfilling department

Pyxis machines on override, so manual registration required

Results During Downtime

- Critical labs called
- All labs auto-faxed to unit (some exceptions)
- Images available via Citrix Images icon
Department Variations

EMR Downtime
LABOR AND DELIVERY
UC DAVIS HEALTH SYSTEM

EMR Downtime
EMERGENCY DEPARTMENT
UC DAVIS HEALTH SYSTEM

Internal Triage Monitors

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Goal: minimize non-clinical (administrative) recovery period
Utilize email group and checklists
Group members
- Bed control
- Hospital access services
- Laboratory
- System integration
- EMR technical team (coordinates)
One hour allocated for standard monthly outages
Recovery Phase I – Admissions/Discharges/Transfers

Recovery mode only available to select group of EHR users

Recovery Phase II – Clinical

Clinical references

- System Unavailability Row in Vital Signs flow sheet
- System Unavailability Note in the Notes activity – information automatically populates within the note
- Ensures coders capture services for billing
Recovery Phase II – Clinical (cont.)

Medications removed from Pyxis console reconciled with medication administration record (MAR)

Newborns may require manual linking to mother

Laboratory and imaging results auto-populate via interfaces

Scanned paper documentation available on the EMR Media tab – flags in system

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Recovery Phase II – Clinical (cont.)

ED visits that begin and complete during downtime are scanned

ED to L&D – ED visit recorded in EHR; downtime visit documented by L&D
Lessons Learned

IT Triage: One-Stop Shop for Disaster Response and Recovery
Objectives

- Identify factors incorporated into acuity level for an IT application
- Describe how to apply the database for everyday use and in all phases of emergency management
- Identify important data fields needed for your site and how they interrelate

About Mercy Medical Center

- Located in Redding, California
- Level II Trauma Center
- 256 licensed beds
- 57,650 ER visits annually
- 190 applications
- 1,700 staff (hospital)
- Multiple off-site clinics
Quote of the Day

*If necessity is the mother of invention ...*

... *confusion is frequently the offspring of disaster response.*

Show Me the Money

- IT downtime cost: $8,000+/minute*
- Average downtime cost: $740,000/outage*
- Average cost of home in California: $464,200+
- Three outages a year and you get ...

*Source: Ponemon Institute, Jan. 2016
*Source: zillow.com
What Led Us Here

Enterprise Outage

New Kids on the Block

Hot Wash

Notification Flow for IT Outage

Clinical Staff
- Call Help Desk
- Reboot computer
- Notify House Supervisor

Help Desk
- Attempt to problem solve and fix
- Notify local IT

House Supervisor
- Gather information
- Monitor situation
- Communicate with all
- Report to AOC if needed
Original State

Design Collaboration
Database Development Objectives

Ease of Use  Acuity  Output

Tool Selection

Spreadsheets  Database

Easy  Powerful
Known  Efficient
Multi-User
IT Triage vs. Clinical Triage

Factors that Affect Acuity Level
Technical Overview

- SharePoint
- SQL
- Excel

Axioms to Live By …

- Simple is Good
- If Not Up-to-Date, Why Do It?
- Always Available: Period!
Mercy Redding’s Solution

Let’s Take a Look!

Application Sample

NSSA Application Information Form

General Application Information

Application Name: **iKnowMed**

Application Description:
Electronic Health Record System for Oncology and Hematology practices.

NSSA Business Owner:
Carma, Leslie - MMCR

ENTT Business Owner:
Project Leader: Ambulatory

NSSA Department:
Ambulatory Care / Oncology

Entertainment:
KRM 02

NSSA Application Owner/SME:
Carma, Leslie - MMCR

ENTT Application Owner/SME:

Data Manager:
Nanman, Louis - MMCR

ENTT Application Analyst:

Data Manager:
Nanman, Louis - MMCR

ENTT Project Manager:

ENTT Project Manager:

Application Sample (cont.)

Application Support Information

<table>
<thead>
<tr>
<th>Support Type</th>
<th>Facility Support</th>
<th>Vendor Support</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NSGA IT BA Team</td>
<td>NSGA/IT Analyst Team + NSGA/IT A...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vendor Support Phone</th>
<th>Vendor Support Hours</th>
<th>Client ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>888.338.8445</td>
<td>24/7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vendor After Hours Support Phone</th>
<th>Maintenance Agreement Ends</th>
<th>Maintenance Agreement Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same</td>
<td>1 Year</td>
<td>3 - Annual</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance Agreement Start Date</th>
<th>Maintenance Agreement Ends</th>
<th>Maintenance Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/13/2014</td>
<td>2/15/2016</td>
<td>$350.00</td>
</tr>
</tbody>
</table>

Maintenance Notes:
Automatically renews yearly

Application Sample (cont.)

Application Technical Information

<table>
<thead>
<tr>
<th>Server Name</th>
<th>Location</th>
<th>Rack Location</th>
<th>IP Address</th>
<th>OS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHX-WAP-318</td>
<td>PHX EDC</td>
<td>VC-503 (G94)</td>
<td>19.248.5.61</td>
<td>32 bit 2007 Server Standard SP2</td>
</tr>
</tbody>
</table>

Server Notes: NSGA BA team has access to this server. Lync Mobile Interface Listner that is installed on this server needs to constantly run in order to receive data from IBM and IBM Hosting located (VC/7)

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<th>IP Address</th>
<th>OS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHX-WAP-321</td>
<td>PHX EDC</td>
<td>VC-503 (G94)</td>
<td>19.248.5.253</td>
<td>32 bit 2007 Server Standard SP2</td>
</tr>
</tbody>
</table>

Server Notes: NSGA BA Team has access to these servers. IBM only has one connection to hosting site so if Test System is turned on from this site, it goes to the Final Environment

<table>
<thead>
<tr>
<th>Environment Ends</th>
<th>Application</th>
<th>Server党委书记</th>
<th>Distribution Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-Plus</td>
<td>4.5.7</td>
<td>CoreSys/Rel</td>
<td>365/360/IN/playNet/intranet/Internet</td>
</tr>
</tbody>
</table>
Sortable Results

Event Calendar
4 Phases of Emergency Mgt.

- Mitigation
  - Maintaining agreements
  - Calendar of events

- Preparedness
  - Application list
  - Paper form

- Response
  - Acuity level
  - Organized, structured response

- Recovery
  - Prioritize recovery
  - One-stop shop

Everyday Uses

- Application Support
- Decommissioning
- Contract Management
Remember This?

Current State
Keys to Your Success

Visualize

Do It!

Team Effort

Up-to-Date

Accurate

Final Thought

“All great changes are preceded by chaos.”

– Deepak Chopra
Sources

- Ponemon Institute
- Zillow.com
  - www.zillow.com/ca/home-values/
- Mercy Redding Database Programmer
  - Chad Webb, Project Manager III – Dignity Health

Questions?
Thank You!

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