Knox County/East Regional Real-World Hospital Surge Event

After-Action Report

January 8-17, 2014

Prepared by: Charity Menefee, Knox County Regional Hospital Coordinator

THIS PAGE LEFT INTENTIONALLY BLANK

EVENT OVERVIEW

Event Name	Knox County/East Tennessee Regional Hospital Real-World Surge Event
Event Date	January 8-17, 2014
Scope	This local county event ultimately involved many local, regional, and state organizations and resources.
Mission Area(s)	Response
Core Capabilities	HPP and PHEP Capabilities 1 (Healthcare System Preparedness and Community Preparedness), HPP and PHEP Capabilities 3 (Emergency Operations), PHEP Capability 4 (Emergency Public Information and Warning), HPP and PHEP Capabilities 6 (Information Sharing), PHEP Capability 9 (Medical Material Management and Distribution), HPP and PHEP Capabilities10 (Medical Surge), PHEP Capability 13 (Public Health Surveillance and Epidemiological Investigation).
Objectives	Assist hospital community in managing an on-going surge event, with specific challenges regarding critical care beds and ventilator/Bi-Pap support. Facilitate information and resource sharing among hospital partners in an effort to minimize personal impact to the event. Attempt to determine if there was a clearly identified cause of the surge event using Epidemiological Investigation techniques.
Event Overview	• **January 8th**: Knox County Regional Hospital Coordinator (RHC) received an after-hours call on the evening of January 8th with concerns that they were experiencing a shortage of ventilators and had heard that it was affecting numerous other hospitals. The hospital also reported that when they contacted their normal suppliers to rent ventilators that the suppliers' stock were depleted. • **Morning, January 9th**: Knox RHC received a call regarding another hospital met with Knox County Health Department (KCHD) Director and Knox County Emergency Response Coordinator (ERC) to provide brief situation report and also touched base with East Regional RHC. Both Knox and East Region RHCs checked the Hospital Resource Tracking System and contacted their hospitals and determined that the situation was, in fact, widespread. Ventilator shortage was at critical levels and there were very few critical care beds in area.

- **Afternoon, January 9th**: Held the first regional conference call with both KCHD and ETRO, area hospitals, the RMCC, State EMS Consultant and TDH Central Office Staff. Several hospitals were looking to activate their surge plans. Hospitals reported staffing shortages. Participants decided to activate the Hospital Resource Tracking System (HRTS) and update twice a day. TDH agreed to turn on the ventilator availability in HRTS. Hospitals encouraged to utilize service capability section in HRTS and to contact the RMCC for bed availabilities throughout the region. University of Tennessee Medical Center reported having a small cache of ventilators available. Hospitals directed to contact the RMCC for ventilator requests. Decided to utilize KCHD and ETRO Epidemiology Staff to attempt to determine cause and possible public health implications of the surge event. KCHD Director reached out to ED Physicians Group to discuss utilizing alternative treatment protocols to try to keep people off ventilators (increased use of BiPAP). KCHD Community Relations Director reached out to Knox County Hospitals and ETRO to work together for unified public messaging efforts. EMS was notified of the event and possible increased wait times at area Emergency Departments.
- **January 10th**: Conference call was held with partners. Ventilator availability increased slightly but remained low and continued very low availability of critical care beds in the region (17 in Knox and 11 in East Region). Many hospitals activated their surge plans and opened critical care surge areas. Hospital staffing continued to be a concern. TDH Central Office contact CDC regarding vent supplies and reported that other areas were having similar problems. Southeast and Hamilton County RHCs reached out offering support of their ventilator cache. Epidemiological data gathering plans were taking place. East Tennessee Health Information Network (ETHIN) participating hospitals' data would be collected by KCHD staff and non-ETHIN hospitals' data by ETRO staff. There continued to be a few instances of patients being transferred out of the region when there were beds available at competitor hospitals in our area. Media messaging was released by KCHD discussing general infection control guidelines and encouraging the public (especially children) to limit visits to hospitals. RMCCs and Regional Hospital Coordinators began fielding requests for ventilators and BiPAP.
- **January 11th-12th:** No conference call. Epidemiology staff at KCHD and ETRO began collecting and analyzing data. It was determined that the ventilator questions in HRTS were not sufficient (originally asked for ventilators and C-PAP). TDH was contacted and made a quick change to the questions to remove C-PAP and begin asking for BiPAP. RMCC and RHCs continued to work with ventilator and BiPAP requests.
- **January 13th:** Conference call held with partner agencies.

Ventilator supply increased slightly over the previous weekend and continued to hold steady. Critical care beds increased slightly (20 in Knox and 37 in the region). Both Public Health Officers for KCHD and ETRO strongly recommended that hospital staff NOT rely on rapid influenza tests due to their lack of accuracy. Infection Control and Social Distancing Measures were implemented at University of Tennessee Medical Center and distributed via public health and RHCs to other area hospitals for implementation. Preliminary Epidemiological Report:

  - 510 patients in area ICUs from January 6-10.
  - 160 with respiratory associated diagnosis (great deal of variation with diagnosis).
  - 96 were influenza positive (heavy reliance on rapid flu tests).
  - Average age of 60 years.
  - No clear cut cause identified.

- **January 14th:** Feedback provided to the RHCs from non-ETHIN participating hospitals that manual data collection was time-consuming and arduous. Considering that the previously collected data did not indicate a clear cause or lend itself to a public health measure that could be implemented to change the situation, it was decided to stop the manual data collection.
- **January 17th:** Last conference call among partner agencies. Ventilator supply had increased throughout the week. Critical care bed availability had also improved (31 Knox and 15 in the region). The numbers appeared to be low but they were stable considering that many hospitals were able to close their critical care surge areas. A nationwide IV Fluid Shortage started affecting hospitals in the region. HRTS event was closed and hospitals returned to one-daily reporting. KCHD Director contacted TennCare Medical Director and clarified the protocol for providing Tamiflu to TennCare patients. The information was shared with area hospitals by the RHCs.
- **January 23rd:** Hotwash held between KCHD and ETRO.
- **January 24th:** Hotwash held for partner agencies.

Participating Organizations

Tennessee Department of Health Central Office and State EMS Consultant, East Tennessee Regional Health Office, Knox County Health Department, Regional Medical Communications Center: Medlink 2, East Tennessee Children's Hospital, Ft. Sanders Regional Medical Center, North Knoxville Medical Center, Parkwest Medical Center, Physicians Regional Medical Center, Turkey Creek Medical Center, University of Tennessee Medical Center, Blount Memorial Hospital, Claiborne County Hospital, Fort Loudoun Medical Center, Jefferson Memorial Hospital, Jellico Community Hospital, Lafollette Medical Center, Methodist Medical Center of Oak Ridge, Morristown Hamblen Hospital Association, Newport Medical Center, Roane Medical Center, Pioneer Hospital of Scott County Hospital, and Sweetwater

Hospital Association.

Major Strengths

- Early notification of the event and quick response to the situation. This demonstrated the benefits of the relationships built between RHCs and our partner hospitals.
- Information sharing between all participating organizations.
- University of Tennessee Medical Center's cooperation and community support with ventilators, specifically Vickie Carver. This demonstrated the benefit of the ASPR Regional Funds purchase of several ventilators.
- UTMC created a checklist that can be used in the future to assist in opening a critical care surge area.
- Cooperation between KCHD and ETRO during the event highlighted the fantastic working relationships that have been established. Both departments will utilize the ETRO RHOC to coordinate future events.
- KCHD's access to the ETHIN participating hospitals' medical records dramatically lessened the burden of data collection on hospital staff.
- Flexibility to edit questions in HRTS to better meet the needs of the circumstances.

Areas of Improvement

- Better utilize Incident Command principles within public health response. Clearly identify an Incident Commander to expedite decision making between KCHD and ETRO during events.
- Attempt to clearly identify data elements early and avoid adding additional items unless there is a clearly defined public health outcome or goal for doing so.
- Hospitals voiced challenges with having enough physicians (Hospitalists and Pulmonologists) to manage such an event, but they were able to manage staffing needs for critical care nurses.
- Need to better define the ventilator types in HRTS to avoid reporting confusion.
- Though this situation did not warrant it, there were concerns regarding the hospitals' willingness to transfer patients out of their facilities to other (possibly competing) organizations that had available critical care capacity. It was suggested that the Public Health Officers meet with hospital leadership throughout the region to get support of the plan to move patients to areas with greater capacity or develop a new plan if current strategies will not suffice.

THIS PAGE LEFT INTENTIONALLY BLANK

APPENDIX A: IMPROVEMENT PLAN

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[1]	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 1: Healthcare System Preparedness, 3: Emergency Operations	Better utilize Incident Command Principles within the Public Health Response	An Incident Commander from either KCHD or ETRO will be designated early in an event to facilitate decision making. Use the ETRO RHOC to coordinate future events.	Planning/Training	KCHD and ETRO	Directors/PHOs	January 23, 2014	January 23, 2014

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[2]	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 13: PH Surveillance and Epidemiological Investigation, 6: Information Sharing	Clearly define data elements early and try not to deviate unless there is a clear public health outcome/goal.	Take the time on the front end to determine data elements.	Planning	KCHD and ETRO	KCHD and ETRO Epidemiology Staff	January 23, 2014	January 23, 2014

[1] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.
[2] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[3]	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 1: Healthcare System Preparedness, 3: Emergency Operations, 10: Medical Surge	Hospitals had difficulty staffing medical providers – specifically Hospitalists and Pulmonologists.	Hospitals should look at utilizing the Regional MOU when necessary to get additional providers. Also, look at ways to support the efforts of providers by increasing clinical support in other areas (nursing, respiratory therapy, etc).	Planning	Area Hospitals	HCC	January 24, 2014	January 24, 2015

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[4]	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 1: Healthcare System Preparedness, 3: Emergency Operations, 6: Information Sharing,10: Medical Surge	Ventilator questions in HRTS should be revised to more clearly define area resources and capabilities.	Gather suggested revisions from Respiratory Therapists in region to provide to TDH Central Office	Planning	KCHD and ETRO	RHCs	January 24, 2014	March 31, 2014

[3] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.
[4] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[5]	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Core Capability 1: Healthcare System Preparedness, 3: Emergency Operations, 10: Medical Surge	Transferring patients to hospitals where there was critical care bed capacity – even if it was a competitor.	Discuss current strategies and plans with hospital leadership. Determine if revisions to the plans and/or Regional MOU need to be made.	Planning	KCHD, ETRO, and area hospitals	Directors/Public Health Officers from KCHD and ETRO	January 24, 2014	January 24, 2015

[5] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

APPENDIX B: SITUATION REPORTS


January 9th
Situation Report


January 10th
Situation Report


January 13th
Situation Report

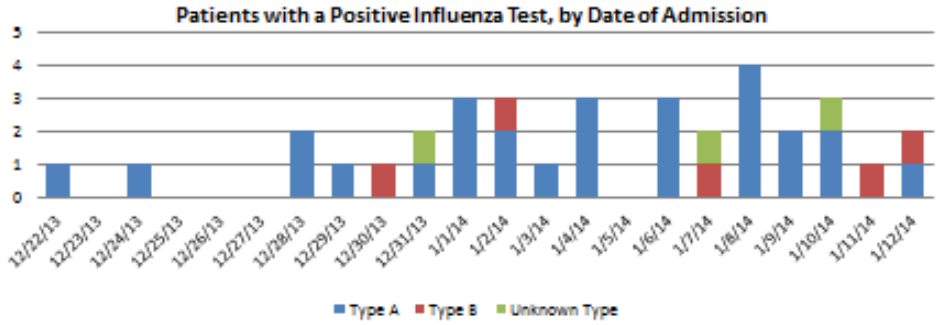

January 17th Final
Situation Report

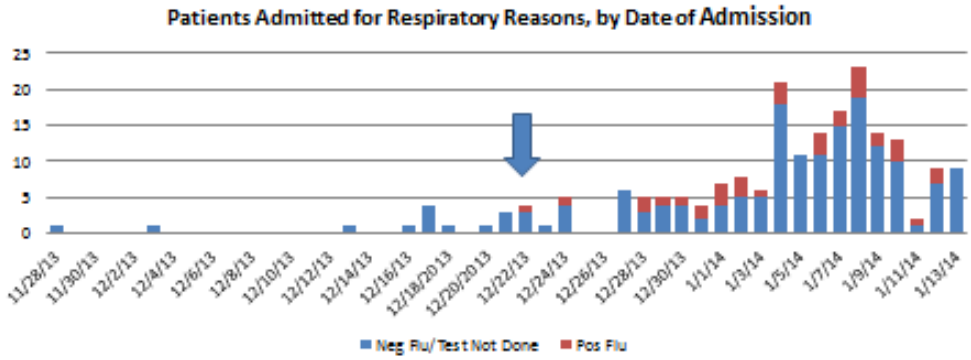
APPENDIX C: ANALYSIS OF EVENT

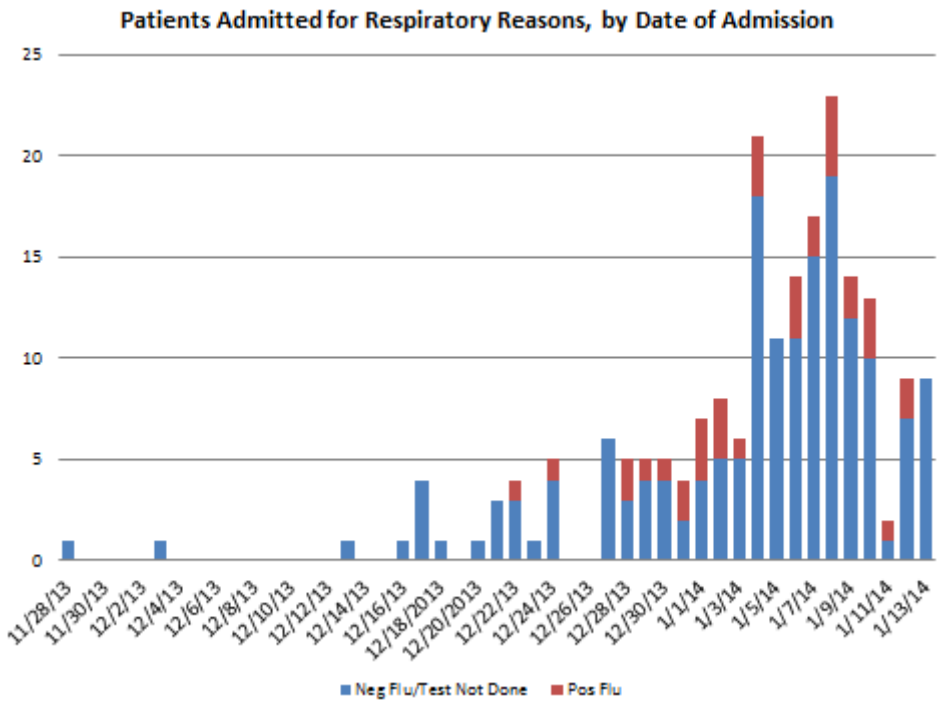
Hospital ICU bed Capacity			
Knox County Facilities	**ICU Beds**	**PICU**	**NICU**
East Tennessee Children's Hospital		13	54
Fort Sanders Regional Medical Center	22		
North Knoxville Medical Center	11		
Parkwest Medical Center	30		
Physician's Regional Medical Center	35		15
Turkey Creek Medical Center	16		
University of Tennessee Medical Center	75	7	67
East Tennessee Region Facilities			
Blount Memorial	24		
Claiborne County*	5		
Fort Loudon Medical	5		
Jefferson Memorial	6		
Jellico Community*	4		
La Follette Medical	6		
Lakeway Regional*	7		
Leconte	8		
Methodist	25		
Morristown Hamblen	20		
Newport Medical	5		
Roane Medical	6		
Sweetwater*	7		
Scott*			
Total	**317**	**20**	**136**

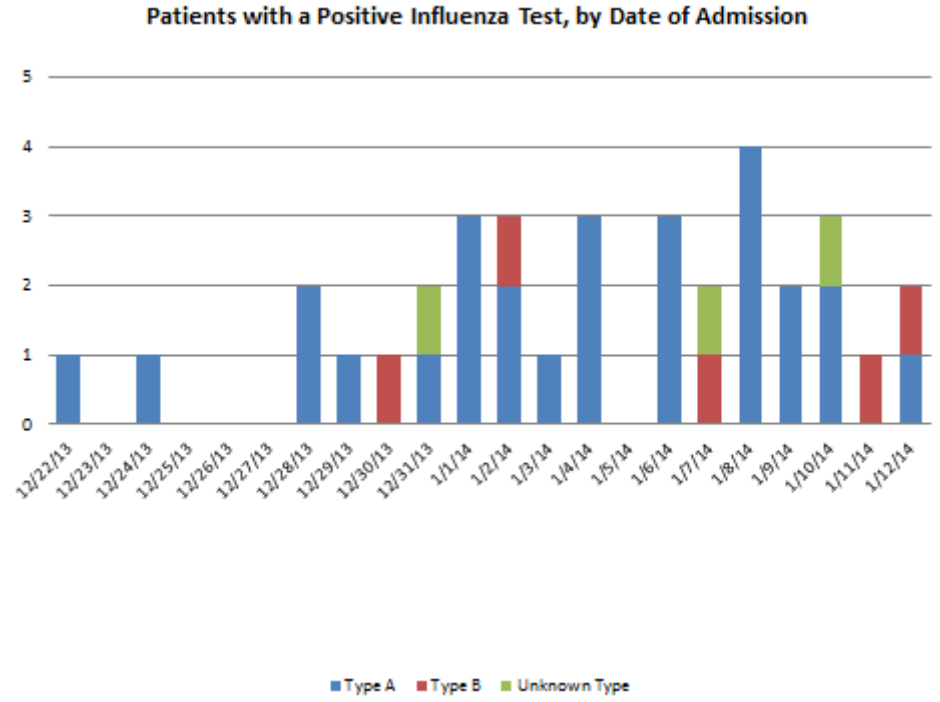
Diagnosis/Flu Test Results

Dx Code	Total Patients (n=510)	Total Patients with Flu test performed	Total Patients with Positive Flu Test	% Positive Flu Tests	No Flu Test Performed	No Information
RESP	205	128	34	26.56	76	2
CARDIAC	62	7	0	0.00	54	1
NEURO	29	5	0	0.00	24	0
RENAL	13	4	0	0.00	7	2
SURG	43	7	0	0.00	29	2
ID	26	12	1	8.33	14	0
METABOLIC	10	5	1	20.00	4	0
UNKNOWN*	110	4	0	0.00	3	102
OTHER	33	4	0	0.00	28	0
GI	27	5	1	20.00	21	0
ONC	16	3	0	0.00	13	0
TRAUMA	28	1	0	0.00	26	2


Patients with a Positive Influenza Test, by Date of Admission
5
4
3
2
1
0
12/22/13
12/23/13
12/24/13
12/25/13
12/26/13
12/27/13
12/28/13
12/29/13
12/30/13
12/31/13
1/1/14
1/2/14
1/3/14
1/4/14
1/5/14
1/6/14
1/7/14
1/8/14
1/9/14
1/10/14
1/11/14
1/12/14
Type A
Type B
Unknown Type


Patients Admitted for Respiratory Reasons, by Date of Admission
25
20
15
10
5
0
11/28/13
11/30/13
12/2/13
12/4/13
12/6/13
12/8/13
12/10/13
12/12/13
12/14/13
12/16/13
12/18/2013
12/20/2013
12/22/13
12/24/13
12/26/13
12/28/13
12/30/13
1/1/14
1/3/14
1/5/14
1/7/14
1/9/14
1/11/14
1/13/14
Neg Flu/Test Not Done
Pos Flu


Patients Admitted for Respiratory Reasons, by Date of Admission
25
20
15
10
5
0
11/28/13
11/30/13
12/2/13
12/4/13
12/6/13
12/8/13
12/10/13
12/12/13
12/14/13
12/16/13
12/18/2013
12/20/2013
12/22/13
12/24/13
12/26/13
12/28/13
12/30/13
1/1/14
1/3/14
1/5/14
1/7/14
1/9/14
1/11/14
1/13/14
Neg Flu/Test Not Done
Pos Flu


Patients with a Positive Influenza Test, by Date of Admission
5
4
3
2
1
0
12/22/13
12/23/13
12/24/13
12/25/13
12/26/13
12/27/13
12/28/13
12/29/13
12/30/13
12/31/13
1/1/14
1/2/14
1/3/14
1/4/14
1/5/14
1/6/14
1/7/14
1/8/14
1/9/14
1/10/14
1/11/14
1/12/14
Type A
Type B
Unknown Type