Mailman School of Public Health
Case Consortium @ Columbia
Columbia University

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Evacuate or Stay? North Shore LIJ and Hurricane Sandy
Teaching Note

Case Summary

Choosing whether to evacuate a hospital based on predictions of disastrous weather is one of the most difficult decisions facing hospital administrators. Moving patients is costly, labor-intensive and a logistical nightmare. It's also hard on patients, putting fragile lives at risk. But leaving patients in a storm's path puts them at risk from loss of heat and power and damage to hospital buildings. The track and intensity of a hurricane are notoriously difficult to predict, and there's no certainty about the risk any given storm poses. Administrators must weigh several variables: storm forecasts days in advance of landfall, confidence in evacuation plans, confidence in being able to handle flooding and a complete loss of power, and the impact of an evacuation on a hospital system and region as a whole.

In August 2011, Hurricane Irene bore down on the East Coast. Forecasters and public officials alike warned that Irene would wreak havoc on coastal communities. New York City, among other municipal authorities, evacuated low-lying areas. The privately-held nonprofit North Shore-Long Island Jewish Hospitals (North Shore-LIJ) group owned 15 hospitals on Long Island and in New York City. Three of them—Staten Island University Hospitals North and South, and Southside—sat in low-lying areas and were at risk of flooding in severe storms. North Shore-LIJ decided to evacuate the three threatened hospitals, and on August 24, 2011, 947 patients moved to other facilities further inland.

At the last minute, however, Irene weakened and greater New York escaped essentially unscathed. North Shore-LIJ had put its patients through an arduous evacuation exercise needlessly. There were no specific negative consequences, but the experience reinforced for North Shore-LIJ Vice President of Protective Services James Romagnoli and COO Mark Solazzo the pros and cons of evacuations, and the challenges of planning for weather-related events.

Fourteen months later, the experience appeared set to repeat itself. On Friday, October 26, 2012, a massive storm named Sandy was bearing down on New York City. The storm had reached hurricane strength and already devastated the Caribbean. North Shore-LIJ officials again had to decide: evacuate, or shelter-in-place?

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Romagnoli, who brought broad experience in emergency preparedness and crisis management to the hospital system when he joined in 2001, had built an emergency operations center, taught crisis decision-making skills to physicians and other employees, and instituted emergency management best practices. Irene put this infrastructure to the test, and it passed with flying colors, giving Romagnoli and Solazzo heightened confidence in their ability to evacuate hospitals. Nevertheless, even a smooth evacuation is a huge strain on a hospital system and a threat to vulnerable patients. Their experience with Irene also left Romagnoli and Solazzo skeptical about how much they should rely on weather forecasts in making crucial decisions.

All this weighed on their minds as Hurricane Sandy approached. The storm was expected to make landfall on October 29, 2013. For safety reasons, an effective evacuation had to be completed more than 48 hours in advance of landfall. The National Weather Service and the company's private weather consultants both painted a grim picture of the storm's strength. However, that was the prognosis before Irene as well. Romagnoli and Solazzo had only a few hours to decide whether to order an evacuation of the three at-risk hospitals, as they had with Irene, or allow patients to remain in place, with the attendant risks.

Teaching Objectives

Use this case to start discussions about how hospitals prepare for disasters and how hospital administrators decide whether to evacuate patients or shelter-in-place. Ask students to consider the logistics involved in managing a major disruption to a large healthcare system. Have them discuss the challenges of weighing risks and making consequential decisions under deadline pressure. Look in particular at North Shore-LIJ as an example of a large metropolitan hospital system with flood-prone hospitals.

Students should consider the importance of evacuation plans, the use of the Incident Command System (ICS), and the distribution of staff and resources. How do you know if your evacuation plan will work? How do you get a health care organization that's structured for deliberative, committee-driven decision-making to make effective decisions in a crisis? When you offload patients from one hospital to another, how do you handle the shifted burden on nursing staffs and pharmacies? Should an Incident Command staff focus solely on the hospitals being evacuated, or should it divide its efforts and also manage the process at receiving hospitals?

Romagnoli and Solazzo say they were frustrated by the uncertainty of the information they based their decisions on. How do you make decisions that affect the well-being of patients when the critical piece of information is a weather forecast two or three days in advance? What sources of information should a health care system use? How much should previous experience factor into the decision? What variables can a health care system control?

Transferring a patient from one hospital to another typically involves doctors and nurses at the sending and receiving facilities communicating with each other and exchanging paperwork to insure uninterrupted access to patient records. How can you satisfy these legal and ethical requirements while moving hundreds of patients on short notice and in short order? How do you coordinate transportation for large numbers of patients?

Discuss a hospital system's place in the larger community during a crisis. Should evacuated hospitals continue to provide emergency services? Should competing hospital systems cooperate or fend for themselves? What is government's role in helping hospital systems prepare for hurricanes? How can multiple hospital systems and multiple government jurisdictions better coordinate their responses to a crisis? What responsibility does a hospital system have to the emotional well-being of evacuees' families?

Finally, have students consider the influence of psychology and patient and public perception on decision-making. If, with the benefit of hindsight, you can be accused of having made the wrong decision during one hurricane, can you avoid overcompensating during the next one? If you've carried out an evacuation without incident, does that make you more inclined to choose that option?

Class Plan

Use this case in a course on disaster preparedness, crisis management or health care system logistics.

Pre-class. Help students prepare for class by assigning the following question:

1) Should Romagnoli and Solazzo order the evacuation of North Shore-LIJ's three flood-prone hospitals in advance of Hurricane Sandy or allow them to shelter-in-place?

Instructors may find it useful to engage students ahead of class by asking them to post brief responses (no more than 250 words) to questions in an online forum. Writing short comments challenges students to distill their thoughts and express them succinctly. The instructor can use the students' work both to craft talking points ahead of class, and to identify particular students to call upon during the discussion.

In-class questions: The homework assignment is a useful starting point for preliminary discussion, after which the instructor could pose any of the following questions to promote an 80-90 minute discussion. The choice of questions will be determined by what the instructor would like the students to learn from the class discussion. In general, choosing to discuss three or four questions in some depth is preferable to trying to cover them all.

a) How does a health organization know if its evacuation plan will work?

b) How can a health care organization that is structured for deliberative, committee-driven decision-making prepare to make effective decisions in a crisis?

c) When patients move from one hospital to another, how might one handle the shifted burden on area nursing staffs and pharmacies?

d) Should an Incident Command staff focus solely on the hospitals being evacuated, or should it divide its efforts and also manage the process at receiving hospitals?

e) How do you make decisions that affect patients' well-being when the critical piece of information is a weather forecast two or three days in advance? What sources of information can a health care system use?

f) What arrangements might satisfy the legal and ethical requirements of transferring medical records and handing off patients from one doctor to another while moving hundreds of patients on short notice and in short order?

g) What are the options for coordinating transportation for large numbers of patients?

h) Should competing hospital systems cooperate or fend for themselves? Why or why not?

i) Should government play a more prominent role in helping hospital systems prepare for hurricanes?

j) If, with the benefit of hindsight, others can charge you with making the wrong decision during one hurricane, how might you avoid overcompensating during the next one?

k) If you've carried out an evacuation without incident, does that make you more inclined to choose that option a second time?

Suggested Readings

Christina Verni, "A Hospital System's Response To A Hurricane Offers Lessons, Including The Need For Mandatory Interfacility Drills," *Health Affairs*, August 2012.

SYNOPSIS: This case study examines the evacuation of three North Shore-LIJ hospitals in advance of Hurricane Irene in August 2011. The study looks at the evolution of North Shore-LIJ's evacuation plan, and the lessons the hospital system learned from the Irene evacuations.

http://www.ncbi.nlm.nih.gov/pubmed/22869660

Sheri Fink, "The Deadly Choices at Memorial," *ProPublica*, August 27, 2009.

SYNOPSIS: This article explores the devastation Hurricane Katrina wrought on Memorial Medical Center in New Orleans in August 2005. Though the article focuses on patient deaths and the controversial arrests of a doctor and two nurses for alleged mercy killings, it provides a vivid and in-depth account of the hospital's chaotic evacuation.

http://www.propublica.org/article/the-deadly-choices-at-memorial-826

OSHA Training Institute – Region IX, "History of Health Care Facility Evacuations," 2006.

SYNOPSIS: This presentation provides numerous historic examples of hospital evacuations spanning the 1906 San Francisco earthquake to the 2006 Kiholo Bay earthquake in Hawaii.

http://www.osha.gov/dte/grant_materials/fy06/46j6-ht40/1-history-evac.ppt

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New York City Office of Emergency Management, "New York City Coastal Storm Plan (CSP)," June 28, 2006.

SYNOPSIS: This presentation illustrates New York City's official plan, still effective in 2012, for responding to hurricanes. It includes maps and populations of evacuation zones A, B and C.

http://www.nyc.gov/html/oem/downloads/pdf/csp_summary_06.pdf

New York Centers for Terrorism Preparedness and Planning, "Hospital Evacuation Protocol," March 2006.

SYNOPSIS: This document contains New York City's official guidelines for evacuating hospitals.

http://www.nyc.gov/html/doh/downloads/pdf/bhpp/bhpp-hospital-nyctpevac-plan.pdf