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NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

THESIS

A CASE STUDY IN THE IDENTIFICATION OF CRITICAL FACTORS LEADING TO SUCCESSFUL IMPLEMENTATION OF THE HOSPITAL INCIDENT COMMAND SYSTEM

by

Lisa Schoenthal

June 2015

Thesis Advisor: Christopher Bellavita
Second Reader: Lauren Wollman

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The Hospital Incident Command System (HICS) is widely used by the nation's hospitals, yet there is a paucity of research and a lack of developed models to examine HICS implementation. A study of HICS implementation may benefit hospitals, provide insight for future revisions, and add to the body of knowledge about HICS. This case study examined the critical factors that lead to the successful implementation of HICS based upon Stanford Medicine's Response to the Asiana plane crash of July 6, 2013. Four commonalities identified from the literature review formed a hypothesis for successful HICS implementation that was tested and supported. In addition to the lessons learned that supported the tested hypothesis, the documentation reviewed described highly competent individuals and cohesive teamwork. It was not possible to separate individual and team competence from the tested hypothesis. As a result of this study, six critical factors were identified from the supported hypothesis that form an HICS implementation model for future evaluation.

14. SUBJECT TERMS
Hospital Incident Command System, HICS, incident command system, hospital emergency management, Stanford Medicine, healthcare emergency management, California Emergency Medical Services Authority, California EMSA, National Incident Management System, NIMS, hospital preparedness program, Nursing Home Incident Command System, NHICS, Hospital Emergency Incident Command System, HEICS

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A CASE STUDY IN THE IDENTIFICATION OF CRITICAL FACTORS LEADING TO SUCCESSFUL IMPLEMENTATION OF THE HOSPITAL INCIDENT COMMAND SYSTEM

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

The Hospital Incident Command System (HICS) is widely used by the nation's hospitals, yet there is a paucity of research and a lack of developed models to examine HICS implementation. A study of HICS implementation may benefit hospitals, provide insight for future revisions, and add to the body of knowledge about HICS. This case study examined the critical factors that lead to the successful implementation of HICS based upon Stanford Medicine's response to the Asiana plane crash of July 6, 2013. Four commonalities identified from the literature review formed a hypothesis for successful HICS implementation that was tested and supported. In addition to the lessons learned that supported the tested hypothesis, the documentation reviewed described highly competent individuals and cohesive teamwork. It was not possible to separate individual and team competence from the tested hypothesis. As a result of this study, six critical factors were identified from the supported hypothesis that form an HICS Implementation Model for future evaluation.

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LIST OF ACRONYMS AND ABBREVIATIONS

Cal/OSHA	California Occupational Safety and Health Administration
DHS	U.S. Department of Homeland Security
EMP	emergency management program
EMSA	Emergency Medical Services Authority
EOC	emergency operations center
EOP	emergency operations plan
FEMA	Federal Emergency Management Agency
FIRESCOPE	Firefighting Resources of California Organized for Potential Emergencies
GETS	government emergency telecommunications service
HCC	Hospital Command Center
HEICS	Hospital Emergency Incident Command System
HICS	Hospital Incident Command System
HIMT	Hospital Incident Management Team
HVA	hazard vulnerability analysis
IAP	incident action plan
IC	incident commander
ICS	Incident Command System
IPG	incident planning guide
IT	information technology
JAS	job action sheet
JIC	joint information center
LPCH	Lucile Packard Children's Hospital
MCI	mass casualty incident
MGH	Massachusetts General Hospital
NCKUH	National Cheng Kung University Hospital
NDMS	National Disaster Medical System
NIMS	National Incident Management System
OEM	Office of Emergency Management
OES	Office of Emergency Services

PHS	Partners HealthCare System
PIO	public information officer
PPE	personal protective equipment
SARS	severe acute respiratory syndrome
SFO	San Francisco International Airport
SHC	Stanford Hospital and Clinics
SOC	satellite operation centers
U.S.	United States
USAR	Urban Search and Rescue
VA	U.S. Department of Veterans' Affairs

EXECUTIVE SUMMARY

A. INTRODUCTION

The Hospital Incident Command System (HICS) is a system of incident management that applies the principles of the Incident Command System (ICS) to hospitals. ICS is an organizational and multi-organizational management system developed in the 1970s by California's FIRESCOPE (Firefighting Resources of California Organized for Potential Emergencies), a working partnership of fire service partners at the local, regional, state and federal level. Both HICS and ICS provide a scalable, flexible organizational structure that allows for common terminology and span of control during incident response and may expand or contract depending on the size of the incident.

Many of the 6,000 hospitals in the United States use a version of HICS for emergency management, and international use continues to increase. HICS is also used by all Navy hospitals. The Orange County Emergency Medical Services Agency developed HICS in 1991 in partnership with the California Emergency Medical Services Authority (EMSA), and EMSA released subsequent versions, each with increasing stakeholder input. The Fifth Edition was released in 2014.

This thesis is a case study in the identification of critical factors leading to the successful implementation of HICS by Stanford Medicine in response to the Asiana plane crash of July 6, 2013, hereafter referred to as Asiana.

B. PROBLEM STATEMENT

HICS is widely used, yet there is a paucity of research on HICS implementation. No model exists for evaluating HICS implementation or using it as a predictor of success. A study of HICS may benefit hospitals, provide input for future revisions, and add to the body of knowledge about HICS.

The impact of HICS, positive or negative, has not been comprehensively studied, and implementation of the system seems to be limited to anecdotal examples. Before the hospital response to the 2013 Boston Marathon Bombings provided anecdotal support for the value of HICS, the most compelling documentation available on the value and use of HICS in the United States was a survey conducted at Northridge Hospital after the Northridge Earthquake of 1994.

A research endeavor of HICS implementation during an emergency response appears timely, if not overdue.

C. RESEARCH QUESTION

What are the critical factors that lead to the successful implementation of HICS based upon Stanford Medicine's response to Asiana? For the purposes of this case study, Stanford Medicine refers to Stanford Hospital, Lucile Packard Children's Hospital, and the Stanford University School of Medicine located in Palo Alto, California.

D. ANALYSIS

Although the available literature on HICS implementation was not extensive, four commonalities that support the perceived successful implementation of HICS were identified to build a model for successful implementation.

- The literature supports that a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness is a critical factor in successful HICS implementation.
- It appeared that advance planning with community partners that includes training, drills, and exercising are critical variables in successful HICS implementation.
- An effective communication plan with redundancies for information management to both internal and external partners is another factor identified from the literature review that supports successful HICS implementation.

- The modification of HICS to the individual hospital's or health system's needs appeared to be a critical factor as part of the planning process.

The HICS implementation model proposes that if a hospital implements HICS and embraces the four commonalities, the hospital will then perceive HICS to be successful during an actual incident. Perceived success is measured by staff statements indicating such, e.g., "HICS worked."

A comprehensive review and analysis of all documentation relative to Stanford's Emergency Management Program was conducted including an analysis of HICS activations, an average of 29.6 annually, for the five years that preceded Asiana. It was determined that the four commonalities identified for successful HICS implementation are demonstrated at Stanford Medicine. Thus, it was reasonable to hypothesize that Stanford personnel would perceive HICS implementation to be successful in response to Asiana.

A review of extensive after action documentation was conducted to test this hypothesis. In addition to the after action report (AAR), all HICS materials and forms relevant to Asiana were reviewed along with debrief data collection forms and debrief emails. The AAR stated, "The established HICS processes and procedures worked" specifically under the category of communication. It was reasonable to conclude that the tested hypothesis was supported.

In addition to the lessons learned that support the tested hypothesis, the documentation reviewed described highly competent individuals and cohesive teamwork. It was not possible to separate individual and team competence from the tested hypothesis.

Through the analysis conducted at Stanford, it appeared the four commonalities may not be granular enough for future evaluations and may be further delineated for greater specificity in evaluation.

E. RECOMMENDATIONS

As a result of analyzing the data from Stanford, it is recommended that the four commonalilties or critical factors for further hypothesis testing be subdivided in six areas for further evaluation. This delineation will provide greater specificity for future analysis:

- Executive and Administrative Support
- Planning and Tailoring (includes modifying HICS)
- Training and Retraining
- HICS Activations and Exercises
- Communication
- Coordination with Community/External Partners

These six critical factors comprise a HICS Implementation Model that is provided as an appendix that may be used as an “after action” evaluation tool or as a potential predictor of HICS success prior to an incident.

Recommendations are provided for users of HICS, for future revisions of HICS and for future research. Based upon lessons learned from Stanford, the HICS Implementation Model comprised of the six critical factors for successful HICS implementation is recommended for hospital use, for inclusion in the next edition of HICS, and to be collected to further analyze case studies of HICS implementation and the perceived success of HICS during an actual event.

F. CONCLUSION

This case study identified critical factors leading to the successful implementation of HICS based upon Stanford Medicine’s response to Asiana. A hypothesis for successful HICS implementation was developed from a literature review and this hypothesis was tested and supported by Stanford. In addition to the lessons learned that support the tested hypothesis, the documentation reviewed described highly competent individuals and cohesive teamwork. It was not possible to separate individual and team competence from the tested hypothesis.

A HICS Implementation Model was developed that may be used for “after action” evaluations, as a predictor of successful HICS implementation, for inclusion in the next version of HICS, and to analyze future case studies of HICS implementation.

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I. INTRODUCTION

A. RESEARCH QUESTION

What are the critical factors that lead to the successful implementation of the Hospital Incident Command System (HICS) based upon Stanford Medicine's response to the Asiana plane crash of July 6, 2013? (hereafter referred to as Asiana). For the purposes of this case study, Stanford Medicine refers to Stanford Hospital, Lucile Packard Children's Hospital, and the Stanford University School of Medicine located in Palo Alto, California.

B. PROBLEM STATEMENT

What is HICS? Why is it important to study it? Many of the 6,000 hospitals in the United States (U.S.) use a version of HICS for emergency planning and response according to the American Hospital Association.[1] HICS is a system of incident management that applies the principles of the Incident Command System (ICS) to hospitals. ICS is an organizational and multi-organizational management system developed in the 1970s by California's FIRESCOPE (Firefighting Resources of California Organized for Potential Emergencies), a working partnership of fire service partners at the local, regional, state, and federal level. ICS provides a scalable, flexible organizational structure that allows for common terminology and span of control during incident response and may expand or contract depending on the size of the incident.[2] Although FIRESCOPE originally designed ICS for the purpose of fighting wildland fires, an entity can apply ICS characteristics or principles to any type of situation, emergency or non-emergency that requires organization.[3] The United States Department of

[1] Rosylne Schulman (American Hospital Association), email correspondence with the author, May 14, 2015.

[2] "Firefighting Resources of California Organized for Potential Emergencies," accessed June 13, 2014, http://www.firescope.org/.

[3] California Emergency Medical Services Authority, *Hospital Incident Command System (HICS) Guidebook* (Sacramento CA: California Emergency Medical Services Authority, 2006), ix.

Homeland Security (DHS) adopted ICS as part of the National Incident Management System (NIMS) and it now has widespread use.[4]

HICS incorporates the general organizational structure and management characteristics of ICS. Five components comprise the ICS structure: incident command, operations, plans, logistics, and finance/administration.[5] ICS specifically defines various organizational elements in each of these five general components.

The Orange County Emergency Medical Services (EMS) Agency in partnership with the California Emergency Medical Services Authority (EMSA) developed the first version of HICS in 1991.[6] Mr. Paul Russell led the development of HICS for Orange County and cited a number of benefits for the development of this ICS adaptation for hospitals.[7] He noted the success of ICS, the need for hospitals to have clear management objectives, and the value of a common communication language for hospitals to have with public safety and hospital partners among the benefits of developing HICS.[8]

Subsequent editions were released by EMSA in 1993 and 1998.[9] *The Hospital Incident Command System (HICS) Guidebook* released by the California EMSA in 2006 introduced incident planning guides (IPGs) and incident response guides (IRGs) for a variety of internal scenarios and those external to hospitals, as well as expanded job action sheets (JASs). The Fifth Edition of *The Hospital*

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[4] FEMA, *National Incident Management System* (Washington, DC: Department of Homeland Security, 2008), https://www.fema.gov/pdf/emergency/nims/NIMS_AppendixB.pdf.

[5] Ibid., 53.

[6] The 2011 HICS National Summit October 2011 PowerPoint. HICS was originally the "Hospital Emergency Incident Command System" or "HEICS." California EMSA dropped the "E" from HEICS with the Fourth Edition in 2006, as ICS principles need not only apply to emergencies.

[7] California Emergency Medical Services Authority, *California Innovations in Disaster Medical Preparedness*, EMSA #391-03 (Sacramento, CA: California Emergency Medical Services Authority, 1991), 11.

[8] Ibid.

[9] California Emergency Medical Services Authority, *California Innovations in Disaster Medical Preparedness*. EMSA partnered with the Orange County EMS Agency for the 1993 edition and with the San Mateo County EMS Agency for the 1998 version.

Incident Command System (HICS) Guidebook was recently released by EMSA on May 30, 2014.[10] HICS has also been adopted internationally.

For the Fourth and Fifth Editions, California EMSA recruited a 20 member National Work Group from hospitals and health systems of different sizes from around the United States that provided input into the HICS materials that included representatives from the Navy Medicine Office of Homeland Security and the U.S. Department of Veterans' Affairs, Veterans' Health Administration (the VA). In addition, an Ex Officio group comprised of leaders from the American Hospital Association, the U.S. Department of Homeland Security-NIMS Integration Center,[11] The Joint Commission, the U.S. Department of Health and Human Services, and the Health Resources and Services Administration advised EMSA and the National Work Group. The Contract Support Team was from Kaiser Permanente and Med Star Washington Hospital Center. Additionally, a 60 member Secondary Review Group reviewed the draft HICS materials and provided feedback before the final release.

The numbers and types of subject matter experts are described to demonstrate the wide participation in the development of HICS for the incident management needs of all hospitals to be represented including Department of Defense hospitals and VA hospitals. Navy hospitals[12] and VA hospitals also implement HICS.[13]

HICS is widely used, yet research on HICS implementation is lacking. No model exists for evaluating HICS implementation or using it as a predictor of

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[10] "Hospital Incident Command System—Welcome!," accessed May 30, 2014, http://www.emsa.ca.gov/disaster_medical_services_division_hospital_incident_command_system_resources; California Emergency Medical Services Authority, *Hospital Incident Command System (HICS) Guidebook*, Fifth Edition (Rancho Cordova, CA: California Emergency Medical Services Authority, 2014).

[11] It is now named the National Integration Center.

[12] Bureau of Medicine and Surgery, *BUMED Instruction 3440.10 Section 3 Command and Control* (Falls Church, VA: Department of the Navy, 2008), paragraph 3.a, 33. California EMSA credits CMDR Spencer Schoen for the implementation of HICS in Navy hospitals.

[13] The researcher is aware of this implementation from her day-to-day duties. California EMSA credits Mr. Peter Brewster for the implementation of HICS in VA hospitals.

success. A study of HICS may benefit hospitals, as well as provide input for future revisions.

The impact of HICS, positive or negative, has not been comprehensively studied, and implementation of the system seems to be limited to anecdotal examples. Before the hospital response to the 2013 Boston Marathon bombings provided anecdotal support for the value of HICS, the most compelling documentation available on the value and use of HICS in the United States was a survey conducted at Northridge Hospital after the Northridge earthquake of 1994.[14]

1. The HICS Guidebook

A description of The HICS Guidebook including HICS forms is provided to present a background on the foundational elements of HICS prior to the literature review.

The Fourth Edition of HICS used for the Asiana response is comprised of *The Hospital Incident Command System Guidebook* that contains six chapters with learning objectives, a glossary, 11 appendices, and education materials designed to assist with the training of the HICS materials.[15]

The guidebook explains the critical components of the ICS principles and depicts how they are adapted for hospitals. It is not intended to be the final word on hospital emergency preparedness or to suffice as a hospital's emergency operations plan (EOP) although it may be of assistance in developing the EOP in concert with a hospital's hazard vulnerability analysis (HVA) and may serve as a guide in developing a hospital's emergency management program (EMP).[16] Chapter IV is devoted exclusively to EMP development.

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[14] Diane Lowder, "The Day the Earth Moved," *Hospitals & Health Networks* 69, no. 7 (April 5, 1995): 32–3.

[15] California Emergency Medical Services Authority, *Hospital Incident Command System (HICS) Guidebook*, Fourth Edition.

[16] California Emergency Medical Services Authority, *Hospital Incident Command System (HICS) Guidebook*, Fourth Edition, xi.

The appendices include incident planning considerations, the HICS hospital incident management team (HIMT) chart or organization chart[17] (See Appendix B of the HIMT) and 78 JASs for the various potential HICS positions. As with ICS, HICS is scalable and flexible, and only the positions necessary to meet the incident objectives are intended to be activated.

2. Job Action Sheets

The JASs list suggested steps or task analyses for each potential position broken out into operational periods, i.e., the following.

- Immediate: 1–2 hours
- Intermediate: 2–12 hours
- Extended: beyond 12 hours
- Demobilization/System Recovery[18]

Documents and tools are also listed on each JAS including the applicable HICS forms that coincide with the action steps listed.

See Appendix C of a JAS example for incident commander (IC) and Appendix F for potential candidates for HICS positions, which is an organizational chart showing which hospital roles can fill command and general staff positions.

In addition, the Fourth Edition of HICS introduced IPGs and IRGs for 13 internal scenarios and 14 external scenarios. These IPGs and IRGs were designed to assist with hospital planning efforts with specific guidance for the identified scenarios but also with the plan that they be adapted in accordance with a hospital's HVA for additional scenarios. The internal scenarios were

[17] Technically, it was called the Incident Management Team or IMT for the Fourth Edition and was renamed as the Hospital Incident Management Team or HIMT for the Fifth Edition to avoid confusion with government-typed IMTs. The HIMT from the Fifth Edition is the example used and is comparable to that of the Fourth Edition.

[18] California Emergency Medical Services Authority, *Hospital Incident Command System (HICS) Guidebook*, Fourth Edition, Appendix C, 109.

identified by EMSA, the Contract Team and the National Work Group and the external scenarios were developed by the DHS.[19]

Internal scenarios range from bomb threats to child abductions to work stoppage, and external scenarios vary from biological attacks to cyber-attacks to natural disasters, such as earthquakes and hurricanes.

The IPGs and IRGs differ from the JASs in that they provide general planning and response considerations rather than step-by-step actions taken by specific positions and they also provide a suggested HIMT organizational chart.

Since the basic foundational information about HICS has now been provided, the literature review provides anecdotes of HICS implementation.

C. LITERATURE REVIEW

This literature review presents sources that describe anecdotal examples of the use of HICS, and based on the anecdotes, four identified commonalities are presented related to the perceived successful implementation of HICS. These anecdotes are taken from journal articles, on-line articles, and from the "Summit Proceedings of the 2011 HICS National Summit."[20]

During his presentation on a literature review of HICS during the 2011 HICS National Summit, Mr. Craig DeAtley, PA-C, of MedStar Washington Hospital Center, stated very few articles even mention HICS, and among the few articles, no peer reviewed scientific articles could be found.[21] Additional material about HICS has been written since 2011.

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[19] California Emergency Medical Services Authority, *Hospital Incident Command System (HICS) Guidebook*, Fourth Edition, 471.

[20] "The California Emergency Medical Services Authority's HICS National Summit October 2011 Summit Proceedings," Sacramento, CA, October 2011. This national stakeholder summit was convened by California EMSA in partnership with the VA.

[21] Ibid., 2.

1. Anecdotal Examples of the Use of HICS

The following are sources of anecdotal information discussed in chronological order from which commonalities were identified. The value of HICS was noted when it was perceived to be successful. The perceived success of HICS is measured by statements of hospital personnel indicating such, e.g., "HICS worked." Examples of HICS implementation range from the 1994 Northridge Earthquake to the 2013 Boston Marathon bombings. Articles citing the use of ICS are also noted after the HICS literature.

An on-line article in *CNN Money* entitled "Leading through a Disaster" stated that every hospital in Boston implemented HICS on the ill-fated day of April 15, 2013, when two bombs went off within seconds of each other near the finish line of the Boston Marathon injuring 264 people and killing three.[22] According to Dr. Eric Goralnick, Medical Director of Emergency Preparedness at Brigham & Women's Hospital, "HICS worked."[23] Many reasons for the adoption of HICS at this hospital were cited in this article.

HICS training was cited as valuable in a May 2013 on-line hospital newsletter article about the Boston bombings entitled "Training Made the Difference in MGH Preparedness for Marathon Tragedy."[24] Dr. Alasdair Conn, Chief of Emergency Services at Massachusetts General Hospital (MGH), also cited other reasons for the success of HICS.[25]

Two articles from Iran describe this country's official adoption of HICS in 2007. A 2012 article entitled "Hospital Incident Command System (HICS)

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[22] Eric Goralnick and Ron M. Walls, "Leading through a Disaster," *CNN Money*, October 18, 2013, http://management.fortune.cnn.com/tag/boston-marathon-bombings/.

[23] Ibid.

[24] Robert Tomsho, "Training Made the Difference in MGH Preparedness for Marathon Tragedy," Massachusetts General Hospital, May 28, 2013, http://giving.massgeneral.org/boston-marathon-bombing-training-difference/.

[25] Ibid.

Performance in Iran; Decision Making in Disasters"[26] and a 2011 article entitled "Are Hospitals Ready to Respond to Disasters? Challenges, Opportunities and Strategies of Hospital Emergency Incident Command System (HEICS)" emphasize the importance of training.[27]

"The 2011 HICS National Summit Proceedings" is a report that provides anecdotal examples of the success of HICS by the 40 stakeholders in attendance at the HICS National Summit in Sacramento, California. These stakeholders represented users of HICS from hospitals and health systems from across the country, as well as vendors, e.g., HICS trainers and regulators, and e.g., The Joint Commission. California EMSA convened the summit in partnership with the VA to receive stakeholder input prior to the revision for the Fifth Edition of HICS.[28]

Mr. Chris Van Gorder, FACHE, President and CEO of SCRIPPS Health in San Diego, California, was the summit's keynote speaker.[29] He cited a number of examples of successful HICS implementation for responses, such as mass casualty incidents, the 2003 and 2007 wildfires, H1N1 and the 2011 California/Mexico/Arizona power outage, as well as SCRIPPS Health's response to Hurricane Katrina in 2005, and the 2010 Haiti earthquake.[30]

The *International Journal of Trauma Nursing* published an article in 2007 entitled "Organization of a Hospital-based Victim Decontamination Plan Using the

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[26] Djalali et al., "Hospital Incident Command System (HICS) Performance in Iran; Decision Making in Disasters," *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine,* 20, no. 14 (2012).

[27] Mohammad Yarmohammadian et al., "Are Hospitals Ready to Respond to Disasters? Challenges, Opportunities and Strategies of Hospital Emergency Incident Command System (HEICS)," *Journal of Research in Medical Sciences* 16, no. 8 (July 27, 2011): 1070–1077.

[28] "The HICS National Summit Proceedings," October 2011, produced by Sacramento's State's Center for Collaborative Policy for the California Emergency Medical Services Authority.

[29] Ibid., 12.

[30] Ibid. PowerPoint presentation "*HICS in Action*" presented by Chris Van Gorder, President & CEO, Scripps Health, Immediate Past Chairman, American College of Healthcare Executives.

Incident Command Structure," in which HICS was cited as enhancing the effectiveness of hospital-based decontamination.[31]

A series of articles entitled "Scarred but Smarter: Lessons Learned from Florida's 2004 Hurricanes" was published by the Florida Hospital Association in 2004 in *Healthcare Executive*, which recommended the use of HICS as a lesson learned from that year's hurricane season.[32] This same article cites the Yale New Haven Health System and touts the advantages of HICS as being critical to improving communication and coordination within a hospital and with responding agencies, but examples were not provided that illustrated how HICS benefitted Florida or the Connecticut system.[33]

Law & Health Weekly published an article on a Taiwan hospital's use of HICS entitled "National Cheng Kung University Hospital, Tainan; Hospital Emergency Incident Command System Implemented during SARS Outbreak."[34] HICS was apparently effective in assisting National Cheng Kung University Hospital (NCKUH) in Tainan, Taiwan in response to the outbreak of severe acute respiratory syndrome (SARS) in 2003 as determined by a staff survey.[35] A 14-question survey was conducted by interview of 87% of the 89% of HICS leadership positions activated from March 25 to June 16, 2003.[36] The authors, Tsai et al. concluded, "HICS provides a flexible framework that seems to have assisted NCKUH in the organization of its emergency response to the SARS

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[31] Robert Powers, "Organization of a Hospital-Based Victim Decontamination Plan Using the Incident Command Structure," *International Journal of Trauma Nursing* 5, no. 4 (October–November 2007): 119–123.

[32] Ellen Lanser May, "Scarred but Smarter: Lessons Learned from Florida's 2004 Hurricanes," *Healthcare Executive* 20, no. 1 (January/February 2005): 22–5.

[33] May, "Scarred but Smarter: Lessons Learned from Florida's 2004 Hurricanes," 22–5.

[34] "National Cheng Kung University Hospital, Tainan; Hospital Emergency Incident Command System Implemented during SARS Outbreak," *Law & Health Weekly*, April 30, 2005.

[35] Ibid.

[36] Ibid.

outbreak in Taiwan, ROC."[37] Specific details were provided regarding successful HICS implementation that include modifying HICS.

A *Hospitals and Health Networks* journal article from 1995 entitled "The Day the Earth Moved" provides an anecdotal example of the use of HICS at Northridge Hospital Medical Center in response to the 1994 Northridge earthquake.[38] The 1995 account of the chairman of Northridge Hospital Medical Center, Diane Lowder, indicated that HICS was essential to the successful response of the hospital when the 6.8 earthquake struck Northridge, California on January 17, 1994.[39]

Ms. Lowder stated the HICS plan,

> not only worked, it also gave everyone a feeling of control, even when they didn't have any. HICS was a major reason Northridge could effectively respond to one of the worst disasters in recent history. By ensuring communication, role clarification and an overall organized response, the plan helped the hospital remain operational, providing care to 1,400 victims.[40]

The use of JASs that define the duties and roles for each HICS position seemed to be especially beneficial.

A survey on the use of HICS was conducted six months after the earthquake of 60 employees who worked within the system during the first three days of incident response. Ms. Lowder stated,

> the overwhelming majority felt the plan had reduced their apprehension level once they were at work; they also said they would be less apprehensive when responding to a future disaster. They said the system gave them the support to provide patient care and meet patient needs during the disaster.[41]

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[37] "National Cheng Kung University Hospital, Tainan; Hospital Emergency Incident Command System Implemented during SARS Outbreak."

[38] Lowder, "The Day the Earth Moved," 32–3.

[39] Ibid.

[40] Ibid.

[41] Ibid.

This data from Northridge was the most detailed anecdote about HICS implementation.

Since HICS is based on the principles of ICS, literature was reviewed regarding ICS to amplify the literature review that included research on case studies of ICS including, "The Network Governance of Crisis Response: Case Studies of Incident Command Systems" from the *Journal of Public Administration Research and Theory*[42] and *"A Critical Evaluation of the Incident Command System and NIMS"* in the *Journal of Homeland Security and Emergency Management* that both support a strong sense of community among responders as a factor that supports the successful implementation of ICS principles.[43]

Based on the aforementioned identified material, it is possible to identify potential factors that contributed to the perceived success of HICS.

2. The Development of a HICS Implementation Model Using Four Identified Commonalities of the Perceived Successful Implementation of HICS

The literature supports that a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness is a critical factor in successful HICS implementation.

Support for this commonality is cited from HICS implementation in San Diego and Boston, as well as from stakeholders at "The 2011 HICS National Summit" and from international use in the country of Iran.

Mr. Chris Van Gorder, FACHE, President and CEO of SCRIPPS Health in San Diego, California is quoted in "The 2011 HICS National Summit Proceedings," as proclaiming that "HICS is leadership in action"![44] Mr. Van Gorder described a culture of preparedness in stating that HICS is a significant

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[42] Donald Moynihan, "The Network Governance of Crisis Response: Case Studies of Incident Command Systems," *Journal of Public Administration Research and Theory* 19, no. 4 (January 30, 2009): 895–915.

[43] Dick A. Buck, Joseph E. Trainor, and Benigno E. Aguirre, "A Critical Evaluation of the Incident Command System and NIMS," *Journal of Homeland Security and Emergency Management* 3, no. 3, article 1 (2006): 1–27.

[44] "The 2011 HICS National Summit Proceedings," 12.

part of SCRIPPS' infrastructure and is used at every opportunity, scaled up or down, for actual incidents as well as exercises.[45] He urged the summit participants to lobby their executives to promote and encourage the use of HICS and stated that HICS saves his health system money.[46]

In the same summit proceedings, the first best practice for implementing HICS by summit participants was "obtain executive support" and "low executive priority" was considered a barrier to effective HICS implementation.[47] It is not possible to conclude if summit participants identified this best practice independently of Mr. Van Gorder's strong recommendation. It seems that stakeholders would have noted the importance of executive support, regardless.

Executive leadership's commitment to a culture of preparedness was evident in Boston as Brigham & Women's, Massachusetts General, and other Boston hospitals seemed proficient in implementing HICS in response to the Boston Marathon bombings. After the attacks of September 11, 2001, these two hospitals and four community hospitals that are all part of Partners HealthCare System, Inc., (PHS) participated in a comprehensive implementation of HICS system-wide.[48] This was not a simple training program but a cultural embrace of HICS throughout this system. PHS convened a system-wide emergency preparedness task force that adopted HICS to provide the command structure that met the ideals the task force sought.[49] A HICS planning group was established, the HICS organizational chart was tailored to each hospital and a methodical training program was developed and conducted that included administrative leadership.[50] Table top exercises were strategically conducted

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[45] "The 2011 HICS National Summit Proceedings," 12.

[46] Ibid., 13.

[47] Ibid., 14–15.

[48] Richard Zane and Ann Prestipino, "Implementing the Hospital Emergency Incident Command System: An Integrated Delivery System's Experience," *Prehospital and Disaster Medicine* 19, no. 4 (October–December 2004): 311.

[49] Ibid., 312.

[50] Ibid., 313.

three months after initial training sessions and live drills simulating multi-casualty incidents tested competency.[51] Ongoing refresher courses and drills are part of this comprehensive HICS implementation.[52] Executive commitment includes a budget that supports planning, training, and exercises.

Dr. Eric Goralnick, and Ron M. Walls of Boston's Brigham & Women's hospital, seem to agree with Mr. Van Gorder about culturally adopting HICS and asserted "HICS is not an ad hoc activity, it's the result of a determined commitment to plan, prepare and train."[53]

The 2011 article from Iran entitled "Are Hospitals Ready to Respond to Disasters? Challenges, Opportunities and Strategies of the Hospital Emergency Incident Command System" asserts that HICS was not implemented successfully in the hospitals of Isfahan University of Medical Sciences due to a barrier of organizational culture and senior managers lacking a belief and commitment in the value of HICS.[54]

A commitment from leadership is considered to be essential for the successful implementation of HICS in a hospital in the United States, as well as internationally. This is supported by hospitals from across the country that participated in the HICS National Summit, as well as specific HICS implementation in San Diego and Boston. In addition, the lack of executive support was considered a barrier to successful HICS implementation in Iran.

> *Additionally, it appears that advance planning with community partners that includes training, drills and exercising are critical variables in successful HICS implementation.*

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[51] Zane and Prestipino, "Implementing the Hospital Emergency Incident Command System: An Integrated Delivery System's Experience," 314.

[52] Ibid.

[53] Goralnick and Walls, "Leading through a Disaster."

[54] Yarmohammadian et al., "Are Hospitals Ready to Respond to Disasters? Challenges, Opportunities and Strategies of Hospital Emergency Incident Command System (HEICS)," 1070–1077.

Advance planning includes meetings, trainings, exercises, and HICS activations with fire, law, emergency medical services, and other community partners. This common practice is supported by the Boston and Northridge responses, as well as the HICS national summit participants and journal articles including two about ICS.

The May 2013 edition of Massachusetts General Hospital's newsletter cited training as the principle reason for the hospital's success in the article "Training Made the Difference in MGH Preparedness for Marathon Tragedy."[55] Dr. Alasdair Conn, Chief of Emergency Services at Massachusetts General Hospital (Mass General), cited training and repeated disaster drills as making the primary difference in this hospital's success.[56] Mass General and other Boston hospitals participated in exercises with local emergency medical services in a variety of disaster scenarios that would result in multi-casualty incidents.[57] Dr. Eric Goralnick of Brigham & Women's Hospital cited the culture of planning, training, and exercising or responding together with the community as contributing to the success of HICS and the hospital's response as was the strong relationships the hospital had with all community response partners.[58]

The article about Northridge "The Day the Earth Moved" emphasized the importance of drills.[59] It is also possible that the Northridge Hospital Medical Center implemented HICS successfully because the hospital was affected by the civil unrest in Los Angeles related to the Rodney King verdict 18 months earlier and had the opportunity to address gaps identified with the disaster plan at that time.[60]

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[55] Tomsho, "Training Made the Difference in MGH Preparedness for Marathon Tragedy."

[56] Ibid.

[57] Ibid.

[58] Goralnick and Walls, "Leading through a Disaster."

[59] Lowder, "The Day the Earth Moved," 32–3.

[60] Ibid.

The *International Journal of Trauma Nursing*'s 2007 article entitled "Organization of a Hospital-based Victim Decontamination Plan Using the Incident Command Structure" cited HICS as enhancing the effectiveness of hospital-based decontamination but emphasized that training and practice are key to success.[61]

"The 2011 HICS National Summit Proceedings" emphasized the vital importance of training for the successful implementation of HICS and how SCRIPPS Health trains three to four people in each of the key roles and provides extensive cross-training within the system and local campuses.[62] Of the 14 best practices for HICS implementation identified by the national stakeholders in attendance, six specifically addressed the importance of training.[63] CEO Mr. Van Gorder also stated that SCRIPPS' implementation of HICS helped strengthen the health system's relationships with local fire and police departments that now consider SCRIPPS a valued response partner.[64] The researcher asserts it is because hospital personnel use the same ICS terminology as fire and law first responders, and HICS implementation involves the liaison officer from the Hospital Command Center interfacing with the incident command post where the fire and/or law response is managed.

The 2011 article from Iran entitled "Are Hospitals Ready to Respond to Disasters? Challenges, Opportunities and Strategies of Hospital Emergency Incident Command System (HEICS)" asserted that training the senior managers would persuade them on the value of HICS,[65] and the 2012 article about Iran's implementation of HICS "Hospital Incident Command System (HICS)

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[61] Powers, "Organization of a Hospital-Based Victim Decontamination Plan Using the Incident Command Structure."

[62] "The 2011 HICS National Summit Proceedings," 13.

[63] Ibid., 15.

[64] Ibid., 12.

[65] Yarmohammadian et al., "Are Hospitals Ready to Respond to Disasters? Challenges, Opportunities and Strategies of Hospital Emergency Incident Command System (HEICS)," 1070–1077.

Performance in Iran; Decision Making in Disasters" indicated standardized training is needed.[66]

Studies on ICS also support the commonality of advanced planning with community partners that includes training, drills and exercising. The first conclusion in "A Critical Evaluation of the Incident Command System and NIMS" is "ICS works well when official responders have trained in ICS and have a strong sense of community."[67] This analysis was regarding the use of ICS in nine different disasters involving the participation of the Federal Emergency Management Agency's (FEMA) Urban Search and Rescue (USAR) task forces. In "The Network Governance of Crisis Response: Case Studies of Incident Command Systems" the evidence proposes that "trust and positive working relationships" were "critical factors in fostering crisis response coordination."[68] The researcher asserts that a hospital's advanced planning with community partners that includes training, drills, and exercising is an effective way to build trust and positive working relationships.

The Boston and Northridge responses, the HICS summit stakeholders, journal articles, and ICS case studies corroborate the belief that advanced planning with community partners that includes training, drills, and exercising all support successful HICS implementation.

> *An effective communication plan with redundancies for information management to both internal and external partners is another factor for successful HICS implementation.*

This commonality is supported by the Boston Marathon response, as well as the HICS summit stakeholders, a journal article, and the 911 Commission Report.

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[66] Djalali et al., "Hospital Incident Command System (HICS) Performance in Iran; Decision Making in Disasters."

[67] Buck et al., "A Critical Evaluation of the Incident Command System and NIMS," 21.

[68] Moynihan, "The Network Governance of Crisis Response: Case Studies of Incident Command Systems," 909.

Gaps in communications capability present barriers when they occur in all aspects of emergency response. Decision-making ability is dependent on situational awareness, and comprehensive situational awareness is dependent on a solid communication plan. A clear communication plan that enables hospital staff to communicate internally with hospital staff, as well as externally with community response partners and the media, is essential. This involves technology and the use of radios.

A predetermined communication plan was cited as vital at Brigham & Women's Hospital during the Boston Marathon response, as well as a backup plan "and a backup for that backup" in *CNN Money*'s "Leading through a Disaster."[69]

The Journal of Nursing Administration published an article in February 2006 entitled "High-Reliability Teams and Situation Awareness: Implementing a Hospital Emergency Incident Command System," which states that situational awareness relates to team reliability in dynamic environments.[70] Situational awareness cannot be maintained without an effective communication plan.

"The 2011 HICS National Summit Proceedings" indicate that software programs and information technology (IT) are part of a communication plan, but a redundant plan that includes low tech (paper) is needed for when a power outage occurs and/or IT access is not available.[71]

The 9/11 Commission Report cited the breakdown in radio communications among first responders as a contributing factor to the firefighter

[69] Goralnick and Walls, "Leading through a Disaster," 2.

[70] Pamela Autrey and Jacqueline Moss, "High-Reliability Teams and Situation Awareness: Implementing a Hospital Emergency Incident Command System," *Journal of Nursing Administration* 36, no. 2 (February 2006): 67–72.

[71] "The HICS National Summit Proceedings," 15.

fatalities in the north tower of the World Trade Center on September 11, 2001.[72] The inability to communicate had tragic consequences in this example.

In addition to communicating internally with hospital staff, hospitals need to communicate effectively with community response partners with whom they must work successfully during an incident. The HICS structure identifies the liaison officer stationed in the hospital command center who may communicate or interface with the field incident command post and/or the local emergency operations center. The hospital IC has the ability to interface with the IC, unified command, or area command, depending on the size and complexity of the incident and must have the ability to communicate. The public information officer (PIO) may interface with the PIO at the incident command post or the local emergency operations center to assure consistent messaging as part of the Joint Information System for the community.

Redundancies enable communication when primary communication methods fail. The ability of the hospital to communicate internally and with community response partners is critical for a coordinated response.

> *The modification of HICS to the individual hospital's or health system's needs is a critical factor as part of the planning process.*

This commonality is supported by the Boston response, two journal articles including the modification of HICS in Taiwan, and the 2011 HICS Summit stakeholders.

HICS allows for the modification of positions or creation of new positions depending on the needs of the hospital or the complexity of the incident. All the HICS JASs and forms are designed to be individualized and modified to meet the needs of a hospital or health system. In addition, supplemental forms may be added to tailor HICS implementation to meet the needs of a hospital.

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[72] The National Commission on Terrorist Attacks, *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States* (Authorized Edition), (Washington, DC: The National Commission on Terrorist Attacks, 2004), 319–323.

The 2005 *Law and Health Weekly* article entitled "National Cheng Kung University Hospital, Tainan; Hospital Emergency Incident Command System Implemented during SARS Outbreak" stated that four newly created HICS positions and JASs were created and determined to be helpful during this hospital's 2003 SARS response.[73]

NCKUH HICS leaders created a total of four new HICS positions and JASs for the SARS outbreak including an "infection control officer" and "isolation unit leader."[74] Six new HICS subunits were created including "fever screening" and "employee isolation inside the hospital."[75]

In addition to modifying existing forms or creating supplemental forms, new positions may be created that add to the HIMT organizational chart, as was demonstrated in Taiwan.

The Massachusetts General Hospital newsletter article "Training Made the Difference in MGH Preparedness for Marathon Tragedy" stated that this hospital modified HICS to include procedures on how to purchase equipment, such as ventilators.[76]

In the 2008 *Disaster Medicine and Public Health Preparedness* article "Surge Capacity Concepts for Health Care Facilities: The CO-S-TR Model for Initial Incident Assessment" Drs. John Hick and Kristi Koenig et al. asserted that the NIMS-compliant HICS has greatly improved hospital preparedness, in general, but the system does not provide adequate guidance to assist hospital leaders in conducting initial assessments and making informed decisions in the immediate aftermath of an emergency, as response activities are being

[73] "National Cheng Kung University Hospital, Tainan; Hospital Emergency Incident Command System Implemented during SARS Outbreak," 278.

[74] Ibid.

[75] Ibid.

[76] Tomsho, "Training Made the Difference in MGH Preparedness for Marathon Tragedy."

initiated.[77] They describe their development of an adjunctive tool to HICS that assists hospitals with conducting initial assessments as response activities are being initiated.[78] It is one example of a supplemental form to HICS.

Minor modifications to HICS to meet the individual needs of a hospital are acceptable, such as tailoring HICS forms and JASs or creating new positions to meet the needs of an incident. However, an element of caution should be taken before modifying HICS significantly. A key strength to HICS is that it enables hospitals to use common ICS language with first responder partners. If the system is modified such that fire, law, and EMS first responders do not understand it, it may undermine a coordinated response.

3. Literature Review Summary

The 2013 Boston Marathon anecdotes represent the perspective of two physicians cited in two on-line articles. Although they are credible witnesses and cited specifics about the use of HICS, their contribution cannot be described as research. The 2005 article about Taiwan represented a survey of staff and provided compelling anecdotes about the benefit of modifying HICS with the specifics of how this assisted a SARS response. Prior to this incident, the last detailed example of HICS implementation for an emergency response was from the 1994 Northridge earthquake response where a staff survey was the source of data. Other articles tout the benefit of HICS or cite it as a best practice but provide no examples of HICS implementation. A California health system president and CEO cited anecdotal evidence about HICS implementation and 40 HICS stakeholders from around the country provided input, but this is reflected in the written proceedings from “The 2011 HICS National Summit,” not a research article. Although the available literature on HICS implementation was not extensive, four commonalities that support the perceived successful

[77] John Hick et al., “Surge Capacity Concepts for Health Care Facilities: The CO-S-TR Model for Initial Incident Assessment,” *Disaster Medicine and Public Health Preparedness* 2 (September 2008): S51–57S.

[78] Ibid.

implementation of HICS were identified and build a model for successful implementation.

A research endeavor of HICS implementation during an emergency response appears timely, if not overdue.

4. Model Summary

The proposed model is centered around four elements identified as commonalities in the literature: (1) a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness, (2) advance planning with community partners that includes training, drills, and exercising, (3) an effective communication plan with redundancies for information management, (4) and the modification of HICS as part of planning to meet the hospital's or health system's needs.

The HICS implementation model proposes that if a hospital implements HICS and embraces the four commonalities, the hospital will then perceive HICS to be successful during an actual incident.

D. RESEARCH DESIGN

1. Object

The object of study is the implementation of HICS by Stanford Medicine, and specifically tested in response to Asiana. Stanford Medicine is comprised of Stanford Hospital, also known as Stanford Health Care; Lucile Packard Children's' Hospital, also known as Stanford Children's Health; and the Stanford University School of Medicine.

This also required an analysis of Stanford's adoption of HICS as a component of the hospital's EMP.

2. Selection Criteria

Stanford's selection as the object of a single case study is also related to a limitation as an object of research. As the second highest ranked hospital in

California by the U.S. *News and World Report*,[79] it could be suggested that Stanford has a robust EMP, and therefore, Stanford's implementation of HICS would reveal lessons that could benefit other healthcare organizations across the country. In addition, the response to this plane crash equated to a mass-casualty incident (MCI) response that can be generalized to other MCI responses hospitals across the country experience in comparison to a less common scenario, such as an earthquake. A case study of an earthquake response might be of less benefit to hospitals not at risk for earthquakes.

This incident is of interest to the national healthcare community since Asiana received national attention at San Francisco International Airport (SFO).

According to Robert K. Yin in *Case Study Research, Design and Methods,* a single case study may be used to validate a theory.[80] Yin goes on to state, "the single case can represent a significant contribution to knowledge and theory building by confirming, challenging, or extending the theory."[81] In a similar vein, a single case study may also be used to test or generate a hypothesis. This case study was chosen to test the hypothesis that successful HICS implementation is dependent on four commonalities identified from the literature review. After an analysis of Stanford's EMP was conducted, the case study evolved into testing the hypothesis that the practice of four commonalities would lead to the perceived successful implementation of HICS.

3. Study Limitations

This study was limited to retrospective written documentation available for analysis and did not include human subjects. Staff surveys were not conducted.

The research involved a review of the hospital's EMP and plan with emphasis on the hospital's adoption of HICS.

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[79] "Stanford Hospital and Clinics," accessed June 10, 2014, http://health.usnews.com/best-hospitals/area/ca/stanford-hospital-and-clinics-6932330.

[80] Robert K. Yin, *Case Study Research, Design and Methods* (Thousand Oaks, CA: Sage Publications, 2014), 51.

[81] Ibid.

Another limitation for this thesis could also be considered a positive factor. The pre-determined excellence of the selected hospital for study, Stanford Hospital and Clinics in Palo Alto, CA, is ranked nationally in 13 adult specialties by U.S. *News and World Report*. It is ranked #1 in the San Jose, CA metropolitan area and ranked #2 in the state of California.[82] The findings that led to Stanford's success may be difficult to replicate for hospitals with fewer resources, but since Stanford is among the better hospitals in the country and known for excellence, theoretically, this could provide an ideal setting to learn about HICS implementation.

Another possible limitation is the edition of HICS used for this response. The Fifth Edition of HICS was released in May 2014, and this study will address the implementation of the Fourth Edition of HICS released in October 2006. The basic structure and components of the system are unchanged however, and the edition studied should not be of significance for individuals knowledgeable about HICS. The Fifth Edition includes updated terminology more consistent with the NIMS and includes IPGs and IRGs for new scenarios, such as "active shooter."

A sensitivity for this thesis is the researcher's relationship to HICS. She served as the program coordinator for the Fourth Edition of HICS and was the executive sponsor for the Fifth Edition on behalf of the California EMSA. This researcher acknowledges the potential bias and has endeavored to be objective.

4. Instrumentation

A site visit to Stanford Hospital was conducted on October 28 and 29, 2014, and March 10, 2015. In addition to the hospital's 57-page confidential EOP, and 18-page PIO response guide, all documentation Stanford presented regarding this response to Asiana was reviewed, which included the hospital AAR, the incident action plan (IAP), the hospital incident management team chart, the IPGs, the JASs, the communication plan, and HICS forms. Available training records from the previous five years were reviewed, as were available

[82] "Stanford Hospital and Clinics."

AARs from exercises from the previous five years. Any available documentation that involved the hospital's adoption of HICS was reviewed, such as HICS training requirements for staff, or any policy memos related to HICS. News articles were also reviewed.

Documentation was reviewed for the purpose of identifying answers to the questions in Appendix A that relate to the four commonalities identified in the literature review. Questions and sub-questions were developed and answered, as the documentation was reviewed at Stanford to analyze each commonality.

5. Steps of Analysis

This single case study began as a test of the hypothesis that successful HICS implementation is dependent on critical factors for preparing a hospital to implement HICS identified from available literature: (1) a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness, (2) advance planning with community partners that includes training, drills, and exercising, (3) an effective communication plan with redundancies for information management, and (4) the modification of HICS as part of planning for the individual hospital's or health system's needs.

As part of the case study test, Stanford's EMP was analyzed. It was determined the four commonalities are practiced at Stanford. This case study examined whether the practice of four commonalities would lead to the perceived successful implementation of HICS. General feedback about HICS from Stanford was reviewed during the course of research, and an evaluation of perceived success was measured and is discussed.

E. OVERVIEW OF CHAPTERS

Chapter II describes Stanford Medicine and the robust Stanford EMP.

Chapter III analyzes Stanford's adoption of HICS, which appears to be institutionalized to emergency operations with an average of 29.6 HICS activations annually. The depth of the HIMT is discussed and assistive tools,

such as The *Public Information Officer Response Guide* and *The Hospital Command Center (HCC) Set Up Guide* are reviewed. Detailed step-by-step instructions provide clarity, such that it appears the HCC could be quickly activated even if the most trained staff are not present. A five-year analysis for the years that preceded Asiana is described with a delineation of emergency responses from drills and exercises.

Chapter IV discusses the steps of analysis. An analysis of the Stanford EMP was conducted, and it was determined that the four commonalities identified for successful HICS implementation are practiced at Stanford Medicine. Thus, it is reasonable to suggest that Stanford personnel would perceive HICS implementation to be successful in response to Asiana. This hypothesis was tested with the Asiana response discussed next.

Chapter V describes Asiana from the perspective of the medical response. Stanford's response is discussed with a summary timeline of the flow of 55 incoming patients. All Asiana after action review documents were reviewed and analyzed including "debrief data collection forms" and "debrief emails." The AAR stated, "The established HICS processes and procedures worked." Two negative comments regarding HICS were reviewed and analyzed from the data collection forms.

Chapter VI presents findings. The tested hypothesis was supported. The practice of the four commonalities led to the perceived successful implementation of HICS, specifically in promoting effective communication. However, the four commonalities may not be granular enough for future evaluations and may be further delineated. One negative comment about HICS was addressed in the Fifth Edition released in May 2014.

Chapter VII presents the conclusion. The hypothesis that these four commonalities support the perceived successful implementation of HICS was supported: (1) a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness, (2) advanced planning with community partners that includes training, drills, and exercising, (3) an effective

communication plan with redundancies for information management, and (4) the modification of HICS to the individual hospital's or health system's needs as part of planning.

Six critical factors were identified from the four commonalities and comprise a HICS implementation model that may serve as a predictor of successful HICS implementation.

In addition to the lessons learned that support the tested hypothesis, the documentation reviewed described highly competent individuals and cohesive teamwork. It is not possible to separate individual and team competence from the tested hypothesis.

Chapter VIII presents recommendations for users of HICS, future revisions of HICS, and future research.

Recommendations for users of HICS include the implementation of six critical factors that form a HICS implementation model that provides a foundation for effective hospital emergency management at the organizational level and may serve as a predictor of successful HICS implementation,

Recommendations for future revisions of HICS include incorporating a number of HICS modifications developed by Stanford. The addition of Appendix K, the HICS implementation model, to the HICS guidebook may be sent to California EMSA for consideration of changes to future editions and to provide data for future research.

Future research is recommended to test the HICS implementation model as a predictor of successful HICS implementation.

II. STANFORD MEDICINE AND THE STANFORD EMERGENCY MANAGEMENT PROGRAM

This chapter describes Stanford Medicine and Stanford's EMP. The description of the EMP and EOP provides foundational knowledge for a subsequent analysis of whether the commonalities identified in the literature review are practiced at Stanford.

A. STANFORD MEDICINE

Stanford Medicine is comprised of Stanford Hospital, also known as Stanford Health Care, Lucile Packard Children's' Hospital, also known as Stanford Children's Health, and the Stanford University School of Medicine.

The Stanford Office of Emergency Management (OEM) offers this description of Stanford Medicine:

> STANFORD MEDICINE delivers unparalleled care for each patient's unique needs. Our multidisciplinary approach to health care coordinates deep expertise with the most advanced technology for the best possible outcomes. Comprised of Stanford Health Care, Stanford Children's Health and the Stanford University School of Medicine.
>
> At Stanford Health Care, we seek to provide patients with the very best in diagnosis and treatment, with outstanding quality, compassion and coordination. With an unmatched track record of scientific discovery, technological innovation and translational medicine, Stanford Medicine physicians are pioneering leading edge therapies today that will change the way health care is delivered tomorrow.
>
> As part of our spirit of discovery, we also leverage our deep relationships with luminary Silicon Valley companies to develop new ways to deliver preeminent patient care.
>
> Stanford Children's Health is the only network in the area—and one of the few in the country—exclusively dedicated to pediatric and obstetric care. Our doctors and facilities bring our Stanford Children's Health level of extraordinary care to our multiple specialty locations, pediatric practices and partner hospital locations across the entire San Francisco Bay Area which means

that a Stanford Children's Health physician is easy to access, closer to home.[83]

The following hospital statistics were also provided and noted to be accurate as of July 10, 2014.[84] These statistics provide an overview of the size and scope of Stanford Medicine.

	Stanford Health Care	**Lucile Packard Children's Hospital Stanford | Stanford Children's Health**
Founded	1959	1991
Licensed Beds	613 (475 operating)	311 (52 OB, 259 peds)
ED	39 (using 11 on H1)	9
ICU Beds	67 (66 operating)	40 NICU 20 IICU 20 PICU 24 CVICU
Operating Rooms	49	8 main ORs in our surgery center
Staff • **Medical** • **Interns & Residents** • **RNs** • **LVN** • **Nursing Assistants** • **Non-medical employees**	2,136 1,099 2,154 15 141 4,936	• 958 medical staff • 3257 employees
Volunteers	1,050	853
Patient Visit info/stats • **Inpatient** • **Outpatient visits** • **ED visits** • **Births**	25,164 643,806 53,908	• 4467 obstetric patients • 12,671 pediatric inpatients • 350,000 clinic visits • 4200 births • Served patients from 32 states and 9 countries

[83] Brandon Bond (Administrative Director of the Stanford Office of Emergency Management), email message to the author, February 2, 2015.

[84] Ibid. Fiscal year 2014 hospital statistics.

B. STANFORD MEDICINE'S EMERGENCY MANAGEMENT PROGRAM

Stanford's EMP, the delegated authority of the OEM, the governance structure, the EOP, and Stanford's integration with the community demonstrates foundational support and commitment by hospital executive leadership to emergency preparedness, as well as Stanford's strong community partnerships.

The support and delegated authority of the Stanford OEM is formalized via signed policy and delegation with four signatories, specifically the chief executive officers and chief operating officers of both Stanford Health Care and Stanford Children's Health.[85]

This delegation and policy acknowledges that the success of the OEM is dependent upon the active involvement of multiple stakeholders and the community, and the core responsibilities of reviewing and testing the core elements of the OEM rests with the multi-disciplinary emergency management governance structure.[86]

The position of the OEM administrative director is designated as the organization's emergency management officer and is responsible for the overall program coordination through the emergency management governance structure.[87]

The clarity of the delegation and policy suggests strong executive support for the OEM and empowerment of the OEM administrative director while acknowledging the importance of community and stakeholder support.

1. Stanford Governance Structure for the Office of Emergency Management

The "Governance Structure for Fiscal Year 2014" was reviewed and serves as Appendix D. The Emergency Management Steering Committee is

[85] Stanford OEM Emergency Management Program Authority.

[86] Stanford Health Care and Stanford Children's Health OEM Emergency Management Program Authority document.

[87] Ibid.

overseen by the hospital boards, medical executive committees, and quality improvement committees of Stanford Hospital and Clinics and Lucile Packard Children's Hospital. Community representation on the steering committee includes the City of Palo Alto, Hospital Councils for Stanford Medical Center and Lucile Packard Children's Hospital, Stanford University's Emergency Management Committee and the Emergency Management Group from SFO.

The chair of the emergency management steering committee is the OEM administrative director. Eleven steering committee subcommittees perform planning tasks, five of which are named according to specific HICS functions or roles.[88]

These steering subcommittees are:

- Logistics (HICS function/role)
- Operations (HICS function/role)
- Planning (HICS function/role)
- Finance (HICS function/role)
- Mitigation
- Business continuity planning/technology
- Contingency
- Public information officer (HICS function/role)
- Emergency response team leads
- Senior physician disaster management committee
- Emergency infectious diseases/bioterrorism[89]

Naming five steering subcommittees after specific HICS functions or roles seems to reinforce the adoption of HICS and institutionalize HICS terms. Members of the steering committee include subcommittee co-chairs, senior Vice presidents, physicians and other leaders who receive technical subject matter expertise from departments across the health system including nursing, general services, and ancillary services.[90] This involvement of senior leadership appears indicative of strong executive support for emergency management.

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[88] Stanford Hospital and Clinics/Lucile Packard Children's Hospital, *Confidential Do Not Distribute-Emergency Operations Plan* (Palo Alto, CA: Stanford Hospital and Clinics, 2013), 6.

[89] Ibid.

[90] Ibid., 7.

2. The Emergency Operations Plan

The extensive EOP with 18 supplemental annexes and the frequency in which it is reviewed and revised seem to indicate that the effectiveness of the plan is a priority for the health system. The EOP is reviewed annually for effectiveness with emergency responses and exercises by the emergency management steering committee before the end of the first quarter of each calendar year.[91] According to the EOP, it is this annual evaluation that drives the annual revision process based on lessons learned. The board at each hospital, senior leadership, quality committees, and the medical evaluation committee review this evaluation as part of an annual program review.[92]

Section I of the EOP discusses Stanford's planning process:

> The mission of this Emergency Operations Plan is to ensure an all hazards approach so that Stanford Hospital and Clinics (SHC) and Lucile Packard Children's Hospital (LPCH) have adequate plans and resources to effectively respond to all types of incidents, and to facilitate the education, training, and testing of all hospital staff to respond to the consequences of any internal or external disaster or planned event.[93]

Twelve specific objectives of the EOP are defined and appear to be comprehensive in that they address all areas of facility operations and service delivery and their continuity.

- EOP Objectives
    - Coordinate unified facility-wide command
    - Provide preliminary medical and/or surgical services to the victims
    - Provide ongoing support and care to existing patients
    - Protect and sustain all responding staff members
    - Coordinate prompt transfer of casualties to the most appropriate facility for administering effective care

[91] Stanford Hospital and Clinics/Lucile Packard Children's Hospital, *Confidential Do Not Distribute-Emergency Operations Plan*, 7. The researcher reviewed the annual revision dates.

[92] Ibid.

[93] Ibid., 5.

- Initiate procedures for prompt discharge or transfer of patients who can be moved without jeopardizing their health or recovery from either hospital to another facility
- Provide security services to manage personnel access to emergency response areas at either hospital; and/or, the hospital grounds
- Provide relevant and appropriate information to the public, community, staff, and/or patients
- Convert usable space in defined areas for efficient patient care services
- Maintain availability of adequate basic utilities, supplies and/or any identified critical assets
- Protect and maintain physical plant facilities
- Provide social services, including religious, mental health support, and crisis management to staff, patients, and visitors.[94]

Specific compliance with regulatory agencies is cited, such as Cal/OSHA (California Occupational Safety and Health Administration), the California State Fire Marshall, and The Joint Commission (previously named the Joint Commission on the Accreditation of Healthcare Facilities).[95] This is noted because it answers sub-questions asked as part of Question I of Appendix A in analyzing one aspect of hospital leadership's commitment to a culture of preparedness by assuring compliance with regulatory standards.

3. Community Integration

Significant documentation in the EOP supports Stanford's strong integration with community partners, which supports one of the four commonalities identified in the literature review for the perceived successful implementation of HICS. It includes the incorporation of the emergency management objectives of the City of Palo Alto's Office of Emergency Services (OES) into the EOP. The adoption of the city's objectives into the health system's plans seems to extend beyond Stanford's recognized need of the community and

[94] Stanford Hospital and Clinics/Lucile Packard Children's Hospital, *Confidential Do Not Distribute-Emergency Operations Plan*, 6.

[95] Ibid., 7.

may imply that Stanford Medicine endeavors to serve by also making the community's emergency preparedness and response a priority.

The development of structures that link the City's incident command system to non-governmental organizations is also cited.[96] The adoption and implementation of HICS accomplishes this link for Stanford.

Broad community and business partnerships that support continuity of operations after a disaster involve memoranda of understanding or contracts with hospitals in Santa Clara County, as well as the Palo Alto Medical Foundation, Palo Alto Veterans' Health Systems Administration, American Red Cross Bay Area, and all key vendors who provide essential services to Stanford Medicine.[97]

Stanford's OEM is an active member of the City of Palo Alto emergency preparedness task force and is also represented on the Palo Alto/Stanford Citizens' Corps Council with community representatives, such as the City of Palo Alto public safety: police, fire/EMS, OES; the business sector/Chamber of Commerce, Silicon Valley/Red Cross, as well as Stanford University.[98]

County-wide emergency preparedness activities expand beyond the borders of Santa Clara County where Stanford is located to neighboring San Mateo County as well. The OEM participates on the Hospital Council-Santa Clara County Emergency Preparedness Partnership and the San Mateo County Healthcare Working Group.[99] These committees have cross-cutting county-wide objectives that span hospital specific plans for topics, such as surge management, evacuation, pandemic, and mass fatality.[100]

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[96] Stanford Hospital and Clinics/Lucile Packard Children's Hospital, *Confidential Do Not Distribute-Emergency Operations Plan*, 8.

[97] Ibid., 9.

[98] Ibid.

[99] Ibid.

[100] Ibid.

Each facility's HVA is reviewed annually with community partners as part of the annual EOP evaluation.[101]

Stanford Hospital and Lucile Packard Children's Hospital are also members of the National Disaster Medical System (NDMS) to which they agree to provide a certain number of acute care hospital beds to treat patients in the event of a federally declared emergency.[102]

The EOP also includes specific actions that define how the hospitals will participate in a multi-agency coordination system during a community-wide disaster.[103] It is not only consistent with NIMS, but the detail reflects a deep understanding of the need for public and private entities within the community to respond together.

This chapter provided foundational knowledge of Stanford Medicine and Stanford's EMP with an emphasis on Stanford's integration with the community. The next chapter focuses on Stanford's adoption of HICS before the following chapters depict an analysis of the commonalities identified in the literature review and how they are practiced at Stanford.

[101] Stanford Hospital and Clinics/Lucile Packard Children's Hospital, *Confidential Do Not Distribute-Emergency Operations Plan*, 11.

[102] Ibid., 10.

[103] Ibid.

III. AN ANALYSIS OF HICS IMPLEMENTATION BY STANFORD MEDICINE

It is important to describe Stanford Medicine's comprehensive EMP before focusing on how Stanford adopted HICS. This chapter emphasizes how HICS was adopted and implemented at Stanford before Asiana and subsequent analysis of the implementation of HICS for that response.

The extensive detailed documentation describing HICS seems to exemplify the commitment of hospital leadership to implement HICS supporting a commonality identified in the literature review for perceived successful HICS implementation. An entire section of the EOP is devoted to Stanford's administrative and cultural adoption of HICS to provide for coordination of hospital and community resources during an emergency response.[104] Highlights from the documentation demonstrate executive commitment.

The EOP states relative to HICS:

> Its primary purpose is to provide administrative coordination and support for all hospital resources allocated to the response effort and to establish effective communication and coordination with internal and external response partners to facilitate maintenance of hospital operations.[105]

The HICS structure is modified to provide an organizational response structure for the two hospitals, Stanford Hospital and Lucile Packard Children's Hospital, if both hospitals are affected by an incident.[106] The HCC is the HICS term for what equates to a hospital emergency operations center.[107] The primary HCC is maintained at Stanford and Lucile Packard maintains the secondary

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[104] Stanford Hospital and Clinics/Lucile Packard Children's Hospital, *Confidential Do Not Distribute-Emergency Operations Plan*, 12.

[105] Ibid.

[106] Ibid.

[107] The hospital EOC was renamed the HCC for the Fourth Edition of HICS for consistency with NIMS at the request of Ex Officio member Al Fluman, the director of the NIMS Integration Center at that time, now called the National Integration Center.

HCC. The HICS structure provides for two ICs, two operations chiefs, and two planning chiefs for each respective hospital if necessary who may work out of the primary HCC or could work out of the two depending on the incident if both are activated.[108] Policies and procedures for activating and deactivating HICS are identified. In accordance with HICS, as well as ICS, staff serving in a HICS role report to their supervisor on the HICS HIMT organizational chart, regardless of to whom they may report during their daily duties when HICS is not activated. JASs are provided for each position. Only positions necessary for an incident are activated as HICS is scalable.

HICS is used in the management of every emergency event, regardless of size.[109] As part of the EOP section devoted to HICS, 11 detailed objectives identify how the EOP is also consistent with the NIMS.[110] Satellite operation centers (SOC) are established so that offsite clinics will coordinate communications with the HCC.[111]

A policy of participating in unified command provides for integration of hospital operations with a community-wide response. This policy could occur with Stanford Hospital and/or Lucile Packard staff or liaison officers integrated into the field incident command post or the city emergency operations center (EOC) or other designated location.[112]

The commitment to implement HICS regardless of the size of an emergency event and detailed policies describing HICS implementation suggest a cultural adoption of HICS.

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[108] Stanford Hospital and Clinics/Lucile Packard Children's Hospital, *Confidential Do Not Distribute-Emergency Operations Plan*, 12.

[109] Ibid.

[110] Ibid., 13.

[111] Ibid., 14.

[112] Ibid.

A. THE HOSPITAL INCIDENT MANAGEMENT TEAM

The HIMT provides the foundation of the HICS organizational structure. The functions of the positions Stanford is prepared to staff, and the number of people trained in each position, shows the depth of Stanford's preparedness and demonstrates a firm commitment to adopt HICS within a culture of preparedness.

Both Stanford Hospital and Lucile Packard Children's Hospital have identified three individuals by name who may fill each of the command and general staff positions on the HIMT.[113]

- Incident Commander
    - Organizes and directs the HCC
    - Gives overall strategic direction for hospital incident management and support activities
- Public Information Officer (PIO)
    - Serves as the conduit for information to internal and external stakeholders, including staff, visitors, families, and the media as approved by the IC
- Liaison Officer
    - Serves as the incident contact person in the HCC for representatives from other agencies
- Safety Officer
    - Ensures safety of staff, patients and visitors
    - Monitors and corrects hazardous conditions (has authority to halt any operation that poses immediate threat to life and health)
- Security Officer
    - Stanford-named position[114]
    - Appears to serve as security services director/law enforcement interface representative (applicable for the

[113] Bullets are summarized from the JAS for each position.

[114] Security officer, ambulatory branch director, materials management, and engineering and maintenance branch director reflect day-to-day operations intentionally left off of the HIMT chart akin to radiology, environmental services, central supply, etc.

Asiana response in consideration of multiple law enforcement entities including Homeland Security Investigations, the Federal Bureau of Investigations and Customs and Border Patrol)

- Medical Technical Specialist
    - Serves as subject matter expert(s) for issues relevant to the specific incident

Three individuals are also identified by name for each Section Chief Position.

- Operations Section Chief
    - Develops and implements strategy and tactics to execute the objectives
    - Organizes, assigns, and supervises staging, medical care, infrastructure, security, hazardous materials and business continuity branch resources
- Planning Section Chief
    - Oversees all incident-related data gathering and analysis regarding incident operations and assigned resources
    - Develops alternatives for tactical operations
    - Conducts planning meetings
    - Prepares the incident action plan (IAP) for each operational period
- Logistics Section Chief
    - Organizes and directs the operations associated with maintenance of the physical environment and with the provision of human resources, material, and services to support incident activities
    - Participates in incident action planning
- Finance/Administration Section Chief
    - Monitors the utilization of financial assets and the accounting for financial expenditures
    - Supervises the documentation of expenditures and cost reimbursement activities

Three individuals are identified who may fill the branch director positions under operations.

- Medical Branch Director
    - Organizes and manages the delivery of emergency, inpatient, outpatient, casualty care, and clinical support services
- Ambulatory Branch Director
    - Stanford-named position
    - Appears to organize and manage the delivery of ambulatory care

Three individuals are identified who may fill the positions under logistics.

- Materials Management
    - Stanford-named position
    - Appears to manage and organize logistics at the direction of the logistics chief
- Engineering and Maintenance Branch Director
    - Stanford-named position
    - Appears to oversee engineering and maintenance as the title suggests

In addition to showing the depth of staff trained and prepared to staff the HIMT, the aforementioned positions also show four positions Stanford named that are not officially-named HICS positions. This demonstrates one example of the fourth commonality identified in the literature review for successful HICS implementation, a modification of HICS to support the hospital's needs. It appears these positions were named to precisely reflect the day-to-day duties of the staff who fill them.

B. THE PUBLIC INFORMATION OFFICER RESPONSE GUIDE

The 18-page PIO response guide shows the commitment and advance preparation of Stanford Medicine to impart public information effectively and communicate with external community partners.

The guide includes a PIO response checklist for the media briefing area, the media staging/holding area, the joint information center, media backpacks, methods for communicating to staff, and notifications (internal and external).

Step-by-step directions are given for methods of communication including 16 different message templates for posting to emergency hotlines, as well as frequently asked questions with answers.

The detailed instructions to staff to be assigned to the PIO position(s) appear to enhance the ability of Stanford to communicate internally with staff and externally with the media and community effectively. It seems reasonable to suggest that this assistive tool strengthens the effectiveness of at least part of the communication plan, while also reinforcing an infrastructure conducive to successful communication.

C. THE HOSPITAL COMMAND CENTER SET UP GUIDE

Incident management occurs at the HCC (Figure 1). The hospital incident management team positions described in Section I of this chapter work within the HCC or typically report to a position who works in the HCC depending on assigned duties. The HCC set up guide demonstrates the detailed advance preparation Stanford undertook in assuring the HCC could be set up quickly for any event. During a site visit to Stanford, the HCC was observed and the accuracy of the HCC set up guide was verified, which further demonstrates Stanford's attention to detail for emergency preparedness.

Figure 1. Stanford's Hospital Command Center[115]

The detailed 15-page HCC set up guide was reviewed that provides specific chronological step-by-step directions with photographs that illustrate how to open and activate the HCC.[116] An HCC Quick Reference Guide with floor plan layout that identifies the specific location of resources is visually precise. It also contains the assigned location of HICS positions and the contents of seven storage cabinets that include position binders, HICS vests that staffs wear to identify their HICS roles, phones, HICS forms, office supplies, laptops, printers, fax machines, a DVD player, and emergency supplies. The communications closet also contains radios, centrexes, and laptops. Audio-visual capability is present, as are ample white boards and planning boards. An additional floor plan illustrates the location of specific jacks for VoIP phones and analog phones that correlate with the applicable HICS position and phone number.

Photographs illustrate the contents of each cabinet and closet. An extensive collection of base station radios, handheld radios, and satellite phones are present with a channel guide located in the communications closet, as well as in the HCC set up guide. A visual aid with precise directions to operate

115 "When Plane-crash Victims Arrived at Stanford Medicine, Response Teams Were Ready," July 8, 2013, http://med.stanford.edu/news/all-news/2013/07/when-plane-crash-victims-arrived-at-stanford-medicine-response-teams-were-ready.html. Photo courtesy of Brandon Bond.

116 Stanford Hospital and Clinics, *Lucile Packard Children's Center, Office of Emergency Management (OEM) Hospital Command Center Set Up Guide* (Palo Alto, CA: Stanford Hospital and Clinics, 2013).

handheld radios and satellite phones is also present in this closet and in the HCC set up guide as well.

Conference call instructions are detailed and wireless Internet information with passcodes is provided. Information on the electronic bed polling system, EMSystem's "EMResource" is provided with web addresses, logins and passwords although it is usually completed in the emergency department. This system can also be used to declare interruptions to services to the county emergency medical services agency.[117] Information on the internal hospital alerting system is also provided, as are instructions on how to mirror an Apple iPhone or iPad onto the HCC TV, and how to use the mobile wireless hotspots also stored in the communications closet.

The attention to detail and step-by-step instructions provide clear direction in setting up the HCC and appear to enable the hospital to organize and activate quickly the HCC even if the most trained or experienced staff are not present. It seems to further suggest a commitment to HICS within a culture of preparedness.

D. BOX REVIEW

To assess the extent of Stanford's commitment to HICS activations and exercises as part of assessing the applicability of the commonalities identified in the literature review, the frequency of HICS activations over a five-year period, from 2009 through 2013, was conducted on the Stanford OEM's secure online "Box" account.[118] This time frame preceded Asiana, and this duration was selected to review the HICS activity prior to Asiana. The time frame of five years was chosen (2009–2013) to show HICS activity over a period of time that was not short term to show HICS activity that was not "ad hoc," which was keeping in mind the statement of Boston's Brigham & Women's hospital personnel that

[117] Stanford Hospital and Clinics, *Lucile Packard Children's Center, Office of Emergency Management (OEM) Hospital Command Center Set Up Guide*, 13.

[118] Box offers cloud storage and file sharing services that enable the secure access and sharing of files online.

stated “HICS is not an ad hoc activity. It’s the result of a determined commitment to plan, prepare, and train.”[119]

The number of HICS activations observed and reviewed on Box are as follows.

- 2009: Twenty-six HICS activations, 10 for real incidents, such as a South Bay phone outage, a power outage, and H1N1 influenza, 16 for drills/exercises
- 2010: Thirty-two HICS activations, eight for real incidents, such as the San Bruno Gas line explosion, a planned network upgrade, and IT issues in one department, 15 for drills/exercises
- 2011: Twenty-seven HICS activations, 13 for real incidents, such as a water line break, a planned IT upgrade, and a missing child; 14 for drills/exercises
- 2012: Thirty-four HICS activations, 18 for real incidents, such as a gas line failure, a planned electrical utility shutdown, and a slow IT network, 16 for drills/exercises
- 2013: Twenty-nine HICS activations, 13 for real incidents, such as Asiana, a water leak, and a steam outage, 16 for drills/exercises

These activations include quarterly unannounced drills for HICS activations and monthly exercises. Drills and exercises include communications drills and radio tests, and exercises involving scenarios, such as an earthquake, an active shooter, a missing child, a power outage, an MCI, a hospital evacuation, and an improvised explosive device.

With the frequency of HICS activations ranging from 26 to 34 annually, (an average of 29.6 times), a variety of scenarios exercised, and activations for planned events in addition to emergencies, it seems reasonable to conclude that HICS is the result of a determined commitment to plan, prepare, and train at Stanford.

This chapter described and analyzed Stanford’s adoption of HICS after the preceding chapter laid the foundation by describing Stanford’s EMP. These chapters provided information that depicted Stanford Medicine’s culture of emergency preparedness prior to the next chapter that provides an analysis of

[119] Goralnick and Walls, “Leading through a Disaster.”

the four identified commonalities of the perceived successful implementation of HICS and their applicability to Stanford.

These chapters that precede the case study of Stanford's response to Asiana portray the environment of emergency preparedness at Stanford when the crash occurred. An analysis of Stanford's EMP and adoption of HICS was done before the analysis of the case study to provide insight into the readiness of Stanford prior to the Asiana MCI.

The next chapter analyzes the applicability of the four commonalities to Stanford Medicine.

IV. STEPS OF ANALYSIS I–IV

In order to determine if the four commonalities identified in the literature review are practiced at Stanford, the answers to four questions with sub-questions were analyzed that correspond with each commonality. Questions and more detailed sub-questions were developed from commonalities found in the literature. The answers to these questions allow analysis of the applicability and practice of the commonalities to Stanford.[120] Appendix A, also referenced in Chapter I, lists the questions and sub-questions, the answers to which are discussed in the following sections: four identified commonalities of the perceived successful implementation of HICS and four analyzed answers to questions that correspond with each commonality.

A. QUESTIONS AND ANSWERS

1. Question 1

An analysis was conducted of answers to the question "What steps did hospital leadership take to implement HICS within a culture of preparedness over the past five years?" to assess the first commonality for successful HICS implementation: "A firm commitment of hospital executive leadership to implement HICS within a culture of preparedness."

Notable staff resources are committed to emergency preparedness. As discussed and cited in Chapter III, Stanford's extensive EMP with a fully staffed OEM including a full-time administrative director and three additional full-time staff suggests executive commitment to this health system's culture of preparedness. A signed policy and delegation formalizes the support of executive leadership for the OEM. The four signatories are the chief executive officers and chief operating officers for both Stanford Health Care and Stanford Children's Health. An entire four-page section is devoted to Stanford's administrative and

[120] These questions and sub-questions in Appendix A were discussed with Patrick Lynch, RN of California EMSA and Craig DeAtley, PA-C of Med Star Washington Hospital Center.

cultural adoption of HICS in the 57-page EOP. Written verification also demonstrates the hospital's compliance with NIMS, The Joint Commission's emergency management standards and the Centers for Medicare and Medicaid Services emergency management requirements. Oversight is provided to the Emergency Management Steering Committee by the Hospital Boards, Medical Executive Committees, and Quality Improvement Committees of Stanford Hospital and Lucile Packard Children's Hospital. Five subcommittees on the Emergency Management Steering Committee are named according to specific HICS functions or roles that increases the frequency staff use HICS terminology to further assist the cultural adoption of HICS.

As this research did not include staff surveys but a review of documentation only, it was not determined how often leadership participates in HICS training and exercises. However, the Annual Report for Fiscal Year 2013 indicates that 165 "managers and above" received HICS training through FEMA's Emergency Management Institute and Stanford has a total of 594 current "managers and above" trained in HICS.[121] Minimal training requirements for staff was not determined but considering the numbers of staff trained in specific positions (three in each of the most commonly activated positions), the frequent HICS activations ranging from 26–34 annually, and the staff comments about frequent training noted in the Asiana after action documentation,[122] it seems training is sufficient.

The documentation reviewed did not include budget information. Thus, the allocation of financial resources for emergency management was not determined, but it is reasonable to assert that Stanford's financial investment in emergency management is substantial in consideration of the personnel

[121] Stanford Hospital and Clinics, *Stanford Hospital and Clinics Emergency Management Annual Report FY 2013* (Palo Alto, CA: Stanford Hospital, 2013), 22.

[122] Stanford Hospitals and Clinics and Lucile Packard Children's Hospital, *2013 SFO Plane Crash Mass Casualty Incident After Action Report/Improvement Plan* (Palo Alto, CA: Stanford Hospitals and Clinics and Lucile Packard Children's Hospital, 2013).

resources allocated, the frequent HICS activations, the extensive preparation of the HCC, and the significant logistics observed in the HCC.

An additional example of this health system's financial commitment to emergency preparedness was observed during a site visit to Stanford when the health system was preparing for the potential treatment of Ebola patients. To prepare staff effectively for this type of infectious disease, a simulation lab for the treatment of Ebola patients was built and developed to allow staff to practice the highly specialized medical treatment needed and the use of extensive personal protective equipment (PPE). This lab was observed, as well as PPE training. It appeared that significant financial resources were allocated to assure this health system's proficient response to this potential public health crisis and possible emergency.

The review of documentation on Box revealed that HICS is not only implemented for proclaimed emergencies but for planned events as well, such as a planned utility shutdown and a planned IT upgrade. The HICS structure was also observed for Ebola preparation.

Based on the aforementioned answers, it is reasonable to conclude that Stanford Medicine demonstrates a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness.

2. Question 2

Answers to the question "What is the extent of advanced planning with community partners that includes training, drills and exercises" were analyzed to assess the second commonality for successful HICS implementation: "Advance planning with community partners that includes training, drills and exercising."

Advance planning with community partners is extensive as determined by the review of the EOP. As stated, and cited in Chapter IV, significant documentation supports Stanford's strong integration with community partners. The City of Palo Alto where Stanford is located is represented on the Emergency Management Steering Committee as is SFO's Emergency Management Group.

Executive leadership's delegation and policy for the OEM states that the success of the OEM is dependent on the active involvement of multiple stakeholders and the community. Steering committee representation also includes members from the Hospital Councils for Stanford Medical Center, Lucile Packard Children's Hospital, and Stanford University's Emergency Management Committee.

The objectives of the City of Palo Alto's OES are incorporated into Stanford's EOP. Continuity of operations after a disaster are supported by broad community and business partnerships that include memoranda of understanding with the American Red Cross Bay Area, and hospitals in the county, as well as other health systems, such as the Palo Alto Medical Foundation and the Palo Alto Veterans' Health Systems Administration.

As stated in Chapter IV, Stanford's OEM program is an active member of the City of Palo Alto Emergency Preparedness Task Force and is also represented on the Palo Alto/Stanford Citizens' Corps Council with community representatives, such as the City of Palo Alto Police, Fire/EMS, OES, the business sector/Chamber of Commerce, Silicon Valley/Red Cross, as well as Stanford University.

The frequency of trainings, drills, and exercises that included community partners beyond the annual statewide medical and health exercise could not be determined from the review of documentation. However, the City of Palo Alto's homeland security coordinator wrote the AAR for a hospital earthquake exercise conducted on November 5, 2009 and included a description of the effective "Stanford hospital nexus" to the City of Palo Alto. This person is now the Director of Emergency Services for the City of Palo Alto,[123] so it seems reasonable to believe this relationship remains strong in consideration of the joint activities and committees between the Stanford OEM and Palo Alto.

Stanford far exceeds the two joint commission-required annual exercises as indicated in Chapter IV. Exercise participation includes the annual statewide

[123] The researcher is aware of this person's position from her day-to-day duties.

medical and health exercise coordinated by the California Department of Public Health and California EMSA that enables each hospital to determine its own objectives with the community with a provided scenario. The Annual Report for Fiscal Year 2013 states that 3,142 hospital staff participated in this exercise for an earthquake scenario with the community. As discussed in Chapter V, Stanford also conducts monthly drills, as well as quarterly unannounced HICS activations for a variety of objectives and scenarios.

In addition, Stanford participates in the regional "Urban Shield" annual exercise,[124] led by neighboring Alameda County, as well as the annual state disaster medical training and exercise led by California EMSA.[125] Participating in community, regional, and state preparedness exercises appears to be a priority.

Based on the aforementioned answers, it is reasonable to conclude that Stanford Medicine participates in advance planning with community partners that includes training, drills, and exercising.

3. Question 3

Answers to the question "What are the components of the Hospital Command Center's (HCC) Communication Plan and what are the redundancies?" were analyzed to assess the third identified commonality for successful HICS implementation "An effective communication plan with redundancies for information management." The communication plan is described before its aspects are observed.

The EOP provides an eight-page communication plan.[126] As stated and cited in Chapter V, components of the plan are referenced in the separate HCC set up guide and further details of the internal and external communication plan are provided in the PIO Response Guide. JASs provide instructions to implement

[124] "Home," accessed January 11, 2015, http://www.urbanshield.org/.

[125] The researchers is aware of this exercise from her day-to-day duties. The EMSA-led exercise is dependent on available funding and will not be held in 2015.

[126] Stanford Hospital and Clinics/Lucile Packard Children's Hospital (SHC and LPCH), *Confidential Do Not Distribute-Emergency Operations Plan*, 32–39.

the communication plan including how to activate communications systems with IT and what information is stored on thumb drives. It would appear that providing aspects of the plan in redundant assistive documents would increase the ease of implementing the plan, which would theoretically increase the communication ability of staff.

The communication plan calls for participation in a joint information center (JIC) with Stanford Hospital and Lucile Packard Children's Hospital when applicable. Specific documentation that identified the PIO's participation in a city or county JIC was not observed. However, the communication plan did identify the role of a Stanford liaison officer at the city or county EOC, and specific details are provided on how the HCC would communicate with "external authorities," including local EMS, local and state public health, first responders, patients and families, other healthcare organizations, vendors, contractors, alternate care sites, and HAM radio communications.[127]

Hospital generators provide backup or redundancy for power if a power outage occurs, and all technologies in the HCC are also in the Stanford mobile communications truck, as observed by the researcher and stored on Stanford's property. The "black box" in this truck also provides a wireless connection. The truck provides "a backup for that backup," which was stated to be vital by Brigham & Women's Hospital personnel after the Boston Marathon.[128]

Stanford key personnel also have access to the government emergency telecommunications service (GETS) and specific directions are provided to obtain said access.[129] GETS is an emergency phone service provided by the National Communication System that provides emergency access and priority processing as a means to overcome network outages.[130]

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[127] Stanford Hospital and Clinics/Lucile Packard Children's Hospital (SHC and LPCH), *Confidential Do Not Distribute-Emergency Operations Plan*, 33, 36–37.

[128] Goralnick and Walls, "Leading through a Disaster," 2.

[129] *SHC and LPCH-Confidential-Do Not Distribute-EOP*, 38–39.

[130] Ibid.

The communications equipment in the HCC had thorough directions in sufficient detail for use of the equipment immediately available so that staff who have never been in the HCC could respond at that location and determine how to communicate without being told. A hard copy of the communication plan was in the HCC, and it is redundantly available on the hospital's software program, "EPIC," as well as on the Cloud. There are two separate IT networks plus analog. Every cabinet containing communications equipment in the HCC is labeled and contains photographs of the equipment with specific directions for use.

The HCC communications closet contains base station radios, handheld radios, portable satellite phones and fixed position satellite phones in sufficient number for staff to communicate. Photographs illustrate the contents of each cabinet and closet in the HCC. A channel guide is in the communications closet, as well as in the HCC set up guide. A visual aid with precise directions to operate handheld radios and satellite phones is also present in this closet and in the HCC set up guide as well. Bay stations that provide communications capability with fire, law, and EMS are present. Specific directions on how to communicate if landline telephones or satellite phones are not accessible are provided.[131]

Conference call instructions are detailed and wireless Internet information with passcodes is provided in the HCC. Information on the electronic bed polling system, EMSystem's "EMResource"[132] is provided with web addresses, logins and passwords, although bed polling is usually completed in the emergency department (redundant capability is provided in the HCC). This system can also be used to declare interruptions to services to the county emergency medical services agency. Information on the internal hospital alerting system is also provided, as are instructions on how to mirror an Apple iPhone or iPad onto the HCC TV, as well as how to use the mobile wireless hotspots also stored in the COMMUNICATIONS CLOSET.

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[131] *SHC and LPCH-Confidential-Do Not Distribute-EOP*, 33.

[132] "Resources," accessed December 31, 2014, http://www.emsystems.com/info/emresource.html.

Based on the aforementioned answers, it appears reasonable to conclude that Stanford Medicine has an effective communication plan with redundancies for information management.

4. Question 4

Answers to the question "What measures, if any, were taken to modify HICS to the individual hospital's needs as part of the Emergency Management Plan and as part of the Asiana response?" were analyzed to assess the fourth identified commonality for successful HICS implementation: "The modification of HICS to the individual hospital's or health system's needs."

Several modifications to HICS are notable. The EOP states the standard HICS organizational structure has been modified to a command structure that coordinates the two separate hospitals in this health system, Stanford Hospital and Lucile Packard Children's Hospital.[133] Two ICs, one from each facility, are present in the HCC, as are two operations chiefs, and two planning chiefs, each of whom performs their role for their respective hospital.[134]

A "transfer of command" sheet, Appendix E, has been developed to enable a smooth transition for the outgoing and incoming IC. This "transfer of command" sheet identifies four major steps the ICs must take, as well as a briefing checklist that contains 11 components the outgoing and ingoing IC should review. The JAS for the IC has two additional tasks that are added at the beginning, (1) "stop, take a deep breath, do you have control of the room?," and (2) "have non-essential personnel not assigned leave the HCC."[135]

One additional IRG has been developed from the hospital's evacuation plan, but no other additional IRGs were observed.

A notable Stanford development is the creation of one page "fast action sheets" for HICS positions that contain nine to 11 bullets listing the most

[133] *SHC and LPCH-Confidential-Do Not Distribute-EOP*, 38–39, 12.

[134] Ibid.

[135] Incident Commander JAS observed in the HCC on October 28, 2014.

important steps staff must take. These fast action sheets are considerably shorter, and may be folded in half and fit into pockets, compared to the HICS JASs that can be three, or sometimes, four pages.

"Code triage" is the emergency code Stanford uses for an MCI and Asiana constituted an MCI.[136] Appendix G illustrates the fast action sheets for the key HICS leadership positions related to the implementation of the Asiana code triage. It is noted that these fast action sheets also contain a color-coded map indicating the location for each of these categorized patients: immediate, delayed, minor, etc.

Stanford modified HICS with the creation of the HICS positions of triage unit leader, immediate care team leader, delayed care team leader, minor care team leader, pediatric care team leader and expectant care team leader. Only the casualty care unit leader is an official HICS position.

Additional HICS modifications include the naming of HICS positions that more closely match the day-to-day titles and duties of staff positions, such as security officer, ambulatory branch director, materials manager and engineering and maintenance branch director.

In consideration of the examples of HICS modifications previously noted, it is reasonable to conclude that Stanford Medicine has planned and modified HICS to meet the specific needs of the health system.

B. CONCLUSION OF ANALYSIS

Previous chapters discussed the adoption of HICS within the context of Stanford's comprehensive EMP. This chapter compared the HICS implementation at Stanford Medicine to the commonalities of the perceived successful implementation of HICS identified from the literature review.

[136] Stanford uses the SALT triage method, which stands for sort, assess, lifesaving interventions, treatment/transport.

It is concluded from the analysis that Stanford Medicine demonstrates a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness, that Stanford participates in advance planning with community partners that includes training, drills and exercising, that the communication plan is effective with redundancies for information management, and that Stanford Medicine modifies HICS to meet the specific needs of the health system.

Based on this conclusion, the commonalities of the perceived successful implementation of HICS identified in the literature review are also practiced at Stanford Medicine independent of whether HICS is perceived to be successful at Stanford.

These chapters that precede the case study of Stanford's response to Asiana portray the environment of emergency preparedness at Stanford when the crash occurred. An analysis of Stanford's EMP and adoption of HICS was done before the analysis of the case study to determine if the four commonalities are practiced at Stanford and to provide insight into the readiness of Stanford prior to the Asiana MCI.

The next chapter introduces the scenario of Asiana and Stanford's response. Stanford's preparedness prior to Asiana may be comparable to that of Boston's hospitals prior to the Boston Marathon bombings described in Chapter I. From the available information about Boston, it appears that both health systems' implemented HICS within a culture of preparedness, conducted advance planning with community partners, had effective communication plans with redundant measures, and modified HICS to meet the needs of the health systems.

In consideration of Stanford's practice of the four commonalities, including extensive measures of preparedness and cultural adoption of HICS, it is reasonable to theorize that Stanford personnel would perceive HICS to be successful in response to Asiana as Boston personnel perceived HICS to be successful. The next chapter discusses the testing of this hypothesis.

V. AN ANALYSIS OF HICS SUCCESS DURING ASIANA AND STANFORD'S RESPONSE

This chapter describes Asiana from the perspective of the medical response. Stanford Medicine's response is also discussed and analyzed. This plane crash constituted an MCI for Stanford in that it received 55 patients from the crash. The previous chapter concluded that the four identified commonalities independent of the perceived successful implementation of HICS are applicable to Stanford Medicine. Theoretically, it would indicate that the implementation of HICS for Stanford's response to this incident would be perceived as successful. As part of this case study, the researcher further assesses applicability of the four commonalities, and tests the hypothesis that the four commonalities will lead to the perceived success of HICS implementation.

The perceived success of HICS is measured by statements of hospital personnel indicating such, e.g., "HICS worked" as was the case in response to the Northridge earthquake and the Boston Marathon bombings cited in Chapter I.

A. THE ASIANA PLANE CRASH

On Saturday July 6, 2013, at 11:27 am, Asiana Airlines Flight 214 crashed upon landing at SFO (Figure 2).[137]

[137] Kevin Rose, "From Chaos to Coordination: The EMS Patient Movement Strategy for the Asiana Plane Crash," California Hospital Association's Disaster Planning for California Hospitals Conference, presentation and PowerPoint by Interim Medical Health Operational Area Coordinator (MHOAC), San Mateo County EMS Agency, September 24, 2014.

Figure 2. This Aerial Photo Shows the Wreckage of Asiana Flight 214 after It Crashed July 6, 2013, at SFO[138]

The loss of the airplane tail and other parts of the plane caused a trail of airplane debris with a debris field that measured more than eight football fields in length from the sea wall to the aircraft's resting site.[139] Jet fuel was leaking along with aircraft lavatory waste and luggage was exposed.[140] Chutes imploded on the right side of the plane and 307 people were dispersed from the sea wall to the crash site, including 291 passengers and 16 members of the flight crew.[141] Two were dead on scene, and four crew members and two passengers were ejected during the crash.[142] The explosion and subsequent fire occurred after the casualty collection point was set up on the tarmac.[143]

SFO is geographically located in San Mateo County, and therefore, the San Mateo County EMS agency has jurisdiction and authority to coordinate the

[138] "This Is Not a Test: In Caring for Airplane Crash Victims, Training and Teamwork, Prevailed," July 15, 2013, http://med.stanford.edu/news/all-news/2013/07/this-is-not-a-test-in-caring-for-airplane-crash-victims-training-and-teamwork-prevailed.html. AP photo courtesy of Marcio Jose Sanchez.

[139] Ibid.

[140] Ibid.

[141] Ibid.

[142] Ibid.

[143] Ibid.

movement of patients from the scene.[144] This EMS agency implemented its multi casualty incident plan and trauma plan, which resulted in three hospitals that are also Trauma Centers receiving a total of 110 trauma patients. Fifty-five trauma patients were transported to Stanford Hospital, 53 were transported to San Francisco General Hospital and two were transported to Eden Medical Center.[145] In total, 181 patients were transported to 11 hospitals within five hours in three to four waves with resources that included 52 transport ambulances, four air ambulances, and two buses.[146]

A more comprehensive description of the incident that extends beyond the medical response may be accessed at *USA Today*.[147] This on-line article provides details regarding the flight path of the Boeing 777 with multiple photos of the crash site, as well as a video of the National Transportation Safety Board representative announcing the investigation of the crash.

B. STANFORD'S RESPONSE

The flow of incoming patients and the activation of HICS is described as follows.

At 11:40 am, the San Mateo County EMS Agency issued a bed query through EMSystems' EMResource, the Internet-based bed polling application,[148] regarding a MCI.[149] The initial code triage standby page was activated at 12:06 by the emergency department, which alerted staff to standby for a possible MCI after media reports of the crash were observed by a nurse on the television in the

144 "This Is Not a Test: In Caring for Airplane Crash Victims, Training and Teamwork, Prevailed."

145 Ibid.

146 Ibid.

147 William M. Welch, John Swartz, and Gary Strauss, "Two Dead, 168 Hurt in San Francisco Air Crash," *USA Today*, July 6, 2013, http://www.usatoday.com/story/travel/news/2013/07/06/airline-crash-san-francisco/2495099/.

148 "Resources."

149 Stanford Hospitals and Clinics and Lucile Packard Children's Hospital, *2013 SFO Plane Crash Mass Casualty Incident After Action Report/Improvement Plan*, 6.

patient waiting area.[150] The first two patients arrived on scene at 12:40 via a U.S. Coast Guard helicopter.[151] At 12:43, the San Mateo County EMS agency notified the emergency department that four patients were en route, which was the trigger for the decision to be made to initiate code triage major, the code for an MCI, and activate the HCC.[152] The HCC was activated at 12:46 when the code triage major page was sent to notify staff of the SFO plane crash.[153] By 1:15 pm, 29 minutes later, the joint Stanford Hospital and Lucile Packard Children's Hospital HCC located at Stanford Hospital was fully activated with all HICS positions filled and the triage area readied (Figure 3).[154]

Figure 3. Teams Await the Arrival of the Crash Victims at Stanford's Emergency Department on July 6, 2013[155]

An exact timeline for the arrival of each patient was not determined. However, the documentation reviewed indicates patients were received in waves throughout the afternoon (Figure 4). At 3:35 pm, an additional eight patients were inbound to the emergency department, and by 4:30 pm, a total of 35 patients

[150] Stanford Hospitals and Clinics and Lucile Packard Children's Hospital, *2013 SFO Plane Crash Mass Casualty Incident After Action Report/Improvement Plan*, 6.

[151] Ibid.

[152] Ibid.

[153] Ibid.

[154] Ibid.

[155] "This Is Not a Test: In Caring for Airplane Crash Victims, Training and Teamwork, Prevailed." Photo courtesy of Brandon Bond.

were in the emergency department. The last 7 patients arrived at 6:27 pm, which brought the total numbers of patients seen at both hospitals on July 6 to 55.[156]

Figure 4. The First Ambulance Arrives at Stanford[157]

Guest services worked with the City of Palo Alto and the American Red Cross to assist with family reunification.[158] Guest services also coordinated the multitude of outside agencies that arrived including Homeland Security Investigations, The Federal Bureau of Investigation, and Customs and Border Patrol.[159] The Custom and Border Patrol officials on site asked that all patients remain secure and not be discharged.[160]

Records indicate at 6:40 pm, patients discharged from the emergency department were housed and supported until they were allowed to be released and transportation was arranged to return them to SFO.[161] At 7:03 pm,

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[156] "This Is Not a Test: In Caring for Airplane Crash Victims, Training and Teamwork, Prevailed."

[157] Ibid. Photo courtesy of Brandon Bond.

[158] Ibid.

[159] Ibid.

[160] Ibid., 31.

[161] "This Is Not a Test: In Caring for Airplane Crash Victims, Training and Teamwork, Prevailed."

discharged patients began being transported back to SFO with coordination from security services.[162]

An HCC brief and update was given at 7:15 pm, and a press conference was held at 7:30 pm with Stanford Hospital and the Palo Alto Police Department. At 8:12 pm, the code triage major was paged "all clear," which indicates most patients had been triaged and were either admitted to the hospital, discharged but securely held before release, or transported back to SFO (only patients triaged as "minor" remained in the emergency department).[163] By 8:45 pm, much of the HCC was broken down and all paperwork was processed and signed, and at 1:30 am, on July 7, the HCC was officially closed.[164] Final patient numbers indicate 55 patients were received with 11 admitted to Stanford Hospital and seven admitted to Lucile Packard Children's Hospital.[165]

A modified HCC was opened at 10:00 am on July 7 with scaled down staffing, and Asiana Airlines and Chinese Consulate representatives arrived at the hospital.[166] By 12:45 pm, a communication was sent to all staff directing them to refer any third parties requesting information concerning patients to the administrator on call.[167]

One additional patient arrived on July 7 totaling 56 patients in all received from Asiana.[168] By 6:28 pm on July 7, all seven children admitted to the Children's Hospital were discharged and one patient was discharged from Stanford Hospital.[169]

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[162] Ibid.

[163] Ibid.

[164] Ibid.

[165] Ibid.

[166] Ibid.

[167] Ibid.

[168] Ibid.

[169] "This Is Not a Test: In Caring for Airplane Crash Victims, Training and Teamwork, Prevailed."

The previous description indicates that HICS was quickly activated when Stanford was notified that patients were incoming from the scene of the plane crash, and the HCC was fully activated with all HICS positions filled in less than 30 minutes. This HCC activation occurred very quickly, in the researcher's opinion.

C. DOCUMENT REVIEW

After concluding that the four commonalities for successful HICS implementation identified in the literature review were practiced at Stanford, it was hypothesized that the HICS implementation for Asiana should be perceived to be successful by Stanford personnel. To test this hypothesis, a review was conducted of all documentation with the focus of identifying comments, positive or negative, relative to HICS. Comments not directly related to HICS were not considered relevant.

In response to the request to review all documentation from the Asiana response, OEM Administrative Director Brandon Bond provided the following documents: the 40-page Stanford Hospital and Lucile Packard Children's Hospital AAR, 26 "debrief data collection forms," 12 "debrief emails,"[170] the IAP, the HCC sign-in sheet; HICS forms; and JASs.

Appendix J provides a detailed description of the Asiana after action documentation review.

Two Stanford newsletter articles were reviewed from July 8, 2013, and July 15, 2013,[171] and one July 12, 2013. A *Los Angeles Times* article was reviewed about Stanford's response to Asiana, all of which support the

[170] A total of 23 emails were reviewed but only 12 were "debrief" emails relative to an after action review.

[171] "When Plane-crash Victims Arrived at Stanford Medicine, Response Teams Were Ready."

commonalities in the HICS implementation model that Stanford was well prepared due to advance planning, training, drilling, and exercising.[172]

The debrief data collection forms and the debrief emails appear to be the building blocks for the AAR (along with the comments provided at the after action review meetings). Twenty-six data collection forms and 12 emails were reviewed with the focus of identifying comments, positive or negative, relative to HICS.

- No positive comments directly related to HICS on the data collection forms and emails

Although 60 comments related to individual and team performance, and the efficiency of the HCC, the data collection forms and emails did not contain positive comments directly related to HICS.

- Two negative comments directly related to HICS were written by one person on a data collection form[173]

> The HICS Job Action Plans are not as clear as they could be and appear more complex than necessary. There is also no Job Action Plan for a mass casualty event![174]

- One positive comment directly related to HICS in the AAR

> One observation under the communication element on the AAR was a strength directly related to HICS:
>
> Information traveled through appropriate HICS channels, both in terms of going up to the HCC and back down. The established HICS processes and procedures worked.[175]

- No negative comments directly related to HICS in the AAR

> The AAR did not contain negative comments directly relevant to HICS.

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[172] Kate Mather, "Asiana Plane Crash: A Stanford Hospital's Disaster Drill Paid Off," *Los Angeles Times*, July 12, 2013, http://articles.latimes.com/2013/jul/12/local/la-me-ln-asiana-plane-crash-stanford-hospital-disaster-20130709.

[173] The researcher is not able to state the position of the commenter, as it could be possible to determine the identity of the person, which violates rules of the Department of the Navy.

[174] Debrief Data Collection Form.

[175] Stanford Hospitals and Clinics and Lucile Packard Children's Hospital, *2013 SFO Plane Crash Mass Casualty Incident After Action Report/Improvement Plan*, 12.

VI. FINDINGS

This research was initiated because of the paucity of research done on the implementation of HICS. The impact of HICS, positive or negative, has not been comprehensively studied, and implementation of the system seems to be limited to anecdotal examples. It could be argued that this thesis represents another anecdotal example; however, the detailed review of a hospital or health system's emergency management program was not part of any of the anecdotes previously described. In addition, none of the anecdotes tested a hypothesis.

Every hospital in Boston used HICS in response to the 2013 Boston Marathon bombings, and anecdotes from two online articles about this response touted the benefits of HICS, "HICS worked."[176] However, prior to this incident, the most compelling documentation available on the value of HICS for an emergency response in the United States was from a survey conducted at Northridge Hospital after the 1994 Northridge earthquake in which HICS was cited as a major reason for the hospital's successful response.[177] An article from Taiwan stated the apparent value of a modified HICS in response to the SARS outbreak of 2003 as determined by a staff survey.[178]

While publications about HICS implementation are not extensive, a literature review revealed four commonalities that support the perceived successful implementation of HICS. In addition to the Boston and Northridge examples, a California health system's CEO and 40 stakeholders from the "2011 HICS National Summit" also provided feedback as did journal articles including those describing international use.

[176] Goralnick and Walls, "Leading through a Disaster."

[177] Lowder, "The Day the Earth Moved," 32–3

[178] "National Cheng Kung University Hospital, Taiwan; Hospital Emergency Incident Command System Implemented during SARS Outbreak."

As a result, it can be concluded that four commonalities support the perceived successful implementation of HICS.

- A firm commitment of hospital executive leadership to implement HICS within a culture of preparedness.
- Advance planning with community partners that includes training, drills, and exercising.
- An effective communication plan with redundancies for information management.
- The modification of HICS to the individual hospital's or health system's needs.

However, these four commonalities may not be granular enough for future evaluations. For example, "advance planning with community partners that includes training, drills and exercising" may be further delineated for future analyses into the four categories of planning, training, exercising, and coordinating with external/community partners.

A comprehensive analysis of the documentation relative to Stanford's EMP with an emphasis on Stanford's cultural adoption of HICS determined that these four commonalities are practiced at Stanford. The review and analysis included data from the five years that preceded Asiana, the OEM governance structure, integration with the community, frequency of HICS activations, a robust communication plan and redundant communications resources, and modifications to HICS.

After it was determined that the four commonalities are practiced at Stanford, it was hypothesized that Stanford personnel would perceive HICS to be successful in response to the Asiana crash. Extensive after action documentation from the Asiana response was analyzed to test this hypothesis.

The researcher's finding is that HICS was perceived to be successful in the area of supporting effective communication, when considering the statements from the AAR: "Information traveled through appropriate HICS channels, both in terms of going up to the HCC and back down. The established HICS processes and procedures worked."

Based on the aforementioned comments, the tested hypothesis was found to be supported in that HICS was perceived to be successful in promoting effective communication.

A. ANALYSIS OF DATA FROM THE ASIANA CRASH RESPONSE

Since this research addresses the performance of HICS and not the performance of Stanford, the focus of the documentation review was specific to HICS. The review of the debrief data collection forms and emails revealed no positive comments directly related to HICS and two negative comments directly related to HICS made by one individual. The review of the AAR revealed one positive comment directly related to HICS and no negative comments directly related to HICS.

It is notable that the two negative comments the researcher observed on the one data collection form were not mentioned in the 40-page AAR, possibly because the comments were an outlier among an abundance of positive general input about non-HICS issues. The same person who made the negative comments about HICS also stated positive comments about the outstanding performance of staff and the professional management of the response. It appears the person's complaint did not negatively affect her perception of the response but reflected her opinion about HICS.

It is possible the individual who made the negative comments was not among the most trained in HICS. The descriptions made are not consistent with correct HICS terminology, although it does not invalidate the comments made. The staff member refers to the HICS "job action plan" when the term is actually job action *sheet.* However, the remark that these assistive documents are "not as clear as they could be and appear more complex than necessary" may be a valid point. The JASs vary in length from three to four pages, and also contain the documents or forms the position may benefit from using. It is possible the OEM administrative director may agree that the JASs are more complex than

necessary, as he created the one page fast action sheet that contains the most important nine to 11 action steps.

The comment that “there is also no job action plan for a mass casualty event” also reflects incorrect HICS terminology as job action *sheets* are for *positions,* not events or scenarios. IPGs and IRGs are developed for incidents or scenarios. This confusion of precise terminology seems to be a minor detail, and it is a valid point that the Fourth Edition of HICS did not contain an IPG or IRG for an MCI.

The AAR also contained information that extended beyond the debrief data collection forms and emails and incorporated the comprehensive input of the 125 staff who participated in the three different after action/debrief meetings. Based on this input, the two negative comments on the data collection sheet may have seemed irrelevant.

The theory that the feedback of 125 staff was more comprehensive than the data collection forms and emails could also explain why not one positive comment was directly related to HICS on the data collection forms and emails, but one positive comment and strength of the response attributed to HICS was cited in the AAR.

Without conducting staff interviews, it is not possible to analyze with certainty why the one negative comment was not included in the AAR, and why the positive comment in the AAR was not noted in the data collection forms and emails reviewed.

It does appear, however, that the implemented HICS processes and procedures were effective in maintaining clear communication among HIMT personnel, as it was noted as a strength of the response in the AAR, which summarized the feedback of 125 staff and extended beyond the data collection forms and emails.

Even though this study did not consider feedback not directly related to HICS to be relevant, significant documentation described a high level of

individual and team proficiency of Stanford personnel in responding to this incident. It is apparent from the debrief data collection sheets and emails that highly competent individuals and a cohesive HIMT were significant factors that led to Stanford's success.

Of the 26 debrief data collection sheets reviewed, 29 specific comments cited individual or team competence. Of the 12 debrief emails reviewed, 31 cited individual or team competence.

Even the one staff member who made the two negative comments preceded those with the positive remarks that succinctly summarize those of Stanford colleagues:

> Very well organized, calm, professionally managed, coordinated, outstanding work by all.[179]

The data from Asiana further supported the conclusion that Stanford practices the four commonalities, specifically a cultural of emergency preparedness and adoption of HICS and advance planning with frequent exercises. Staff comments on data sheets and debrief emails included statements, such as "prep work was working in the HCC," "it was apparent that staff training and prep work had been done in advance," "staff felt ready to act due to the recent drill," "I was impressed with how confident everyone was and how quickly the whole area was cordoned off," and "everyone knew what to do and stayed calm."[180]

The opening paragraph in the July 8th Stanford Newsletter states "Years of disaster training and preparation culminated in an extraordinarily executed response July 6 when 55 injured passengers were brought to Stanford Hospital and Lucille Packard Children's Hospital."[181] OEM Administrative Director

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[179] Debrief Data Collection Form.

[180] A sampling of comments taken from the debrief data collection sheets and debrief emails. (these were not counted or considered to be citing individual or team performance)

[181] "When Plane-crash Victims Arrived at Stanford Medicine, Response Teams Were Ready."

Brandon Bond is quoted as saying "The many hours we devote to disaster planning and training really paid off."[182] The researcher's review of Stanford's comprehensive EMP, including a review of five years of documents related to emergency preparedness and response that preceded Asiana, support these statements.

Dr. Robert Norris, Stanford's Chief of Emergency Medicine, is quoted in *the Los Angeles Times*' July 12, 2013, article, "To Be Honest with You, It Was a Phenomenal Test of Our System." The key to this is being practiced at it and drilling. If you try to adopt a plan or hope that a plan that is completely alien to your staff will work, it won't."[183] It is reminiscent of Dr. Alisdair Conn, Chief of Emergency Services at Massachusetts General Hospital after the Boston Marathon Bombings, who cited training and repeated disaster drills as making the primary difference in his hospital's success.[184]

The analysis of data further supported Stanford's culture of preparedness and revealed that HICS was perceived to be successful in promoting effective communication during the Asiana response, and individual and team competence were considered to be significant factors that contributed to Stanford's success.

One of the two negative comments made about HICS were addressed in the release of the Fifth Edition discussed as follows.

B. HICS FIFTH EDITION

The Fifth Edition of HICS released in May 2014 provided an IPG and an IRG for an MCI; thereby, addressing the negative comment noted on the debrief data collection sheet that no such documents existed for the Asiana response.[185]

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[182] Ibid.

[183] Mather, "Asiana Plane Crash: A Stanford Hospital's Disaster Drill Paid Off."

[184] Tomsho, "Training Made the Difference in MGH Preparedness for Marathon Tragedy."

[185] It was not causal because the documentation review was conducted after the release of HICS, Fifth Edition.

Appendix H, Incident Planning Guide: Mass Casualty Incident, and Appendix I, Incident Response Guide: Mass Casualty Incident, represent these assistive tools noted to be lacking for Asiana.[186]

Noting this information about the Fifth Edition could be attributed to bias on the part of the researcher because it is tantamount to citing a corrective action for a weakness attributed to HICS. Since the researcher's relationship to HICS was previously described in Chapter I, no argument is offered to counter this potential claim. It is not possible to predict if another researcher would have included this information or considered it notable.

[186] As a peripheral issue, the Fifth Edition of HICS also addresses a comment not specific to Stanford but relative to the Asiana response. During Kevin Rose's presentation at the September 2014 California Hospital Association Conference cited in "Section X: From Chaos to Coordination: The EMS Patient Movement Strategy for the Asiana Plane Crash," Mr. Rose of the San Mateo County EMS agency made a general statement that the hospitals that received the patients from Asiana would have been better positioned to address patient family needs during the response with the new Patient Family Assistance Branch added under the Operations Section in the Fifth HICS Edition released in May 2014. The Patient Family Assistance Branch organizes and manages the delivery of assistance to meet patient family care needs, including communication, lodging, food, health care, and spiritual and emotional needs that arise during the incident including family reunification. "Hospital Incident Command System (HICS) 2014—Job Action Sheet—Operations Section," http://www.emsa.ca.gov/hospital_incident_command_system_job_action_sheets_2014_Operations.

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VII. CONCLUSION

The study began as a test of a hypothesis that successful HICS implementation is dependent on the four commonalities identified in the literature. These four commonalities are: (1) a firm commitment of hospital executive leadership to implement HICS within a culture of preparedness, (2) advanced planning with community partners that includes training, drills, and exercising, (3) an effective communication plan with redundancies for information management, and (4) the modification of HICS to the individual hospital's or health system's needs.

An analysis was conducted of Stanford's EMP, OEM governance structure, integration with the community, frequency of HICS activations ranging from 26–34 annually for the five years that preceded Asiana, the robust communication plan with redundant communications resources, and several modifications to HICS. Based on this analysis, it was concluded that Stanford Medicine practices or demonstrates the four commonalities suggested as critical factors during HICS implementation, which was before the after action documentation about Stanford's response to Asiana was reviewed.

This research then evolved into testing a hypothesis that the practice of the four commonalities would result in the perceived successful implementation of HICS. Specifically, since Stanford demonstrated the four commonalities, staff would perceive the implementation of HICS to be successful in response to Asiana, as hospital personnel did after the Boston Marathon bombings and the Northridge earthquake. The perception of successful HICS implementation was measured by staff statements indicating such, e.g., "HICS worked" as was stated after the Boston response. After the Northridge response, HICS "not only worked….it was a major reason the hospital could effectively respond…providing care to 1400 victims" as a conclusion from a staff survey cited in Chapter I.

Extensive after action documentation from the Asiana response was reviewed and analyzed,which included the 40-page Stanford Hospital and Lucile

Packard Children's Hospital AAR, 26 "debrief data collection forms," 12 "debrief emails," the IAP, the HCC sign-in sheet, HICS forms, JASs, two Stanford newsletter articles, and an article from the *Los Angeles Times*.

The AAR expanded upon the comment from Boston that "HICS worked" and specified under the category of communication:

> Information traveled through appropriate HICS channels, both in terms of going up to the HCC and back down. The established HICS processes and procedures worked.

This statement supports the tested hypothesis that the four commonalities led to the perceived successful implementation of HICS. In this case, HICS was specifically attributed to promoting effective communication.

The AAR further supported Stanford's practice of the four commonalities identified in the literature review for successful HICS implementation, especially, the culture of preparedness and cultural adoption of HICS and frequent HICS activations, as demonstrated by written staff comments citing such.

Stanford's executive leadership has committed significant resources to a robust EMP that contains four full-time staff. A signed policy and delegation formalizes the full support of executive leadership for the OEM. Written support of HICS is clear in the 57-page EOP in which an entire section is devoted to Stanford's administrative and cultural adoption of HICS. HICS activations range from 26–34 annually including those for unannounced quarterly drills. HICS implementation is a way of life at Stanford.

Advanced planning with community partners is extensive as determined by the review of the EOP. The City of Palo Alto where Stanford is located is represented on the Emergency Managment Steering Committee as is SFO's Emergency Management Group. The objectives of the City of Palo Alto's OEM are incorporated into Stanford's EOP, and Stanford's OEM program is an active member of the City of Palo Alto Emergency Preparedness Task Force. Broad community and business partnerships support Stanford's continuity of

operations. In addition, the researcher has directly observed Stanford's participation in community, regional, and state-level exercises.

The communications plan contains redundancies that include a mobile communications truck with all technologies contained in the HCC. The communication plan is in the EOP and further details are contained in the HCC set up guide, as well as the PIO response guide.This plan is available in the HCC, on the hospital's software program, as well as on the Cloud. Every cabinet containing communications equipment in the HCC is labeled and contains photographs of the equipment with specific directions for use. An ample collection of handheld radios, portable satellite phones, fixed position satellite phones, and bay stations that provide redundant communications capability with fire, law, and EMS, are among the communications equipment stored in the HCC that are sufficient in number for staff to communicate.

Stanford's modifications to HICS include adding two practical steps to the JAS for the IC, creating an IRG developed from the hospital's evacuation plan, creating one page "fast action sheets" that communicate the most important steps staff should take and creating additional HICS positions below the casualty care unit leader for the implementation of triage. Stanford also developed a "transfer of command sheet" for ICs to use when transitioning command during a change of shift. Additional HICS positions are named that more closely match the titles and duties of staff during non-emergency times. The researcher observed the Stanford-named HICS positions of security officer, ambulatory branch director, materials manager, and engineering and maintenance director. (These positions that reflect day-to-day operations were intentionally left off of the HIMT chart as cited in Chapter IV.)

One individual made two negative comments about HICS on the Asiana debrief data collection sheets. The negative comment regarding the unnecessary complexity of the JAS may be addressed with the development of fast action sheets, and the complaint that HICS did not include specific assistance for an MCI was addressed with the 2014 release of the Fifth Edition of HICS, which

included an Incident Planning Guide: Mass Casualty Incident (Appendix H) and an Incident Response Guide: Mass Casualty Incident (Appendix I).

This study was limited to an analysis of written documentation and did not include human subjects or staff surveys. It seems additional information directly relevant to HICS would have been obtained if human subjects were included in the research.

The researcher's relationship to HICS as the coordinator of the Fourth Edition and executive sponsor of the Fifth Edition was identified as a sensitivity for this study. Potential bias was acknowledged and objectivity was endeavored. It was a challenge to be limited to the review of documentation only after communicating with hospital personnel from around the country for the past 10 years, as well as internationally, and having the ability to ask questions about experiences with HICS.

Another limitation for this thesis is the pre-determined excellence of Stanford as the selected hospital for study. Hospitals with less resources may have difficulty replicating the findings that led to Stanford's success.

In consideration of the high volume of comments, 60 in total, citing individual and team competence; it is apparent that highly competent individuals and a cohesive HIMT were significant factors that enabled Stanford's proficiency.

> In addition to the lessons learned that support the tested hypothesis, the documentation reviewed described highly competent individuals and cohesive teamwork. The researcher is not able to separate individual and team competence from the tested hypothesis.

It is possible that the cultural embrace of HICS and the frequent HICS activations fostered the competence and teamwork for this response. Staff comments included statements, such as "prep work was working in the HCC," "it was apparent that staff training and prep work had been done in advance," "staff felt ready to act due to the recent drill" and congratulatory remarks to the OEM on

the “superb response” that included expressions of gratitude “thanks to your efforts in preparing all of us, everyone knew what to do and stayed calm.”[187]

Although staff are highly competent and function well as a team, it appears that HICS provided a structure for staff to excel. This perception is based on the statement in the AAR that stated the HICS processes and procedures worked after referencing the HICS organizational structure of communication channels of going up to the HCC and back down (to where patient care was provided). It also appears that the frequency of HICS activations reinforced this structure based on the staff references to frequent trainings and exercises in the AAR and the HICS activations ranging from 26–34 annually including quarterly unannounced drills.

The one staff member who made the two negative comments about HICS preceded those with the positive remarks that succinctly summarize those of Stanford colleagues:

> Very well organized, calm, professionally managed, coordinated, outstanding work by all.[188]

This case study supports this assessment.

[187] A sampling of comments taken from the debrief data collection sheets and debrief emails.

[188] Debrief data collection form.

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VIII. RECOMMENDATIONS

As a result of analyzing the data from Stanford, it is recommended that the four commonalilties or critical factors for further hypothesis testing be subdivided in six areas for further evaluation. This delineation will provide greater specificity for future analysis.

- Executive and administrative support
- Planning and tailoring (includes modifying HICS)
- Training and retraining
- HICS activations and exercises
- Communication
- Coordination with community/external partners

A. RECOMMENDATIONS FOR USERS OF HICS

Many hospitals in California and across the nation may successfully implement HICS and do not need recommendations for doing so. Nonetheless, based upon lessons learned from Stanford, the following recommendations are offered for consideration as a potential predictor of successful HICS implementation. It is suggested the six critical factors form the foundation for effective implementation of HICS and provide a HICS Implementation Model:

1. Executive and Administrative Support

Engage executive leadership to the greatest extent possible in HICS activations. Unlike Stanford, this may be challenging for certain hospitals. While recruiting executives to fill HICS roles during exercises may be too ambitious for some, using the IPGs for discussions on an executive staff meeting agenda may be a good starting place. Providing Appendix F to executives that shows the potential candidates for HICS command positions along with providing accompanying JASs may also be a good starting place. Stanford's example of naming subcommittees of the emergency management steering committee after HICS functions/roles, i.e., logistics, operations, planning, and finance seems to work well.

2. Planning and Tailoring

Planning and tailoring or modifying HICS to meet the individual needs of the hospital or health system is important. Identify an emergency program coordinator or planning coordinator. Include HICS in hospital policies and procedures. Smaller or rural hospitals may only activate a few HICS positions and staff may assume multiple HICS roles; therefore, modify the JAS accordingly. Develop an HCC set up guide with specific step-by-step instructions with photographs that illustrate how to open and activate the HCC. Identify at least three staff who may fill each of the key HIMT roles and include this information in the HCC set up guide. Even if the hospital is in the position to train, drill, and exercise frequently, have “just-in-time” aids in the HCC including hard copies of JASs, IPGs, and IRGs. Create new IPGs or IRGs as Stanford did based upon their evacuation plan. Develop additional HICS positions, as Tainan’s University Hospital did for SARS, and as Stanford did for triage. Name HICS positions that more closely match the titles and duties of staff during non-emergency times. Stanford examples include security officer, ambulatory branch director, materials manager, and engineering and maintenance director.

Stock the HCC with white boards, easels and flips charts to facilitate planning that includes IAP. In addition to having HICS forms on the hospital’s electronic health record software, maintain hard copies of all HICS forms in the HCC. Enlarge and post representations of key HICS forms, such as the HIMT organizational chart and the HICS 202, IAP. Post all briefings and meeting times in a prominent place.

Maintain all emergency planning and response documents on a secure file sharing service that offers cloud storage to enable executive leadership, community partners and other selected entities to view and/or collaborate on documents. Box appears to work well for Stanford.

Incorporate Stanford’s “transfer of command sheet” to HICS documents to facilitate a smooth transition during a change of shift for ICs. (See Appendix E)

3. Training and Retraining

Training and retraining HICS is essential, especially for command and general staff positions. The review of JASs and IPGs during staff meetings may be helpful as a means to sustain HICS knowledge between trainings or exercises.

4. Activations and Exercises

Implement HICS for planned events, not only for emergencies. ICS principles are applicable for any event that requires organization, such as a hospital picnic or party, or any planned disruption of hospital services or routine, e.g., utility change or moving patients to a new tower. When planning an exercise, use a separate HICS structure for the planning and conduct of the exercise. For example, the exercise director would be the incident commander, the person responsible for exercise logistics would be the logistics chief, etc. This implementation can be done for planned events or exercises of any scale to reinforce the responsibilities of the HICS positions and practice the concepts.

5. Communication

Test the redundancies of the communication plan including the testing of generators and confirm "a backup for the backup."[189] Not all hospitals have a mobile communications vehicle that contains the same communications capability of the HCC, but test the identified redundancies that include low technology in the event technology fails. Since hospital personnel typically do not use handheld radios, satellite phones or other auxiliary communications on a regular basis, provide regular opportunities for practice, such as communications drills, and have photographs of communications equipment with precise step-by-step directions for operation that may be used on a just-in-time basis. Document how the hospital will participate in the city or county JIC in the communication plan and practice this plan. Have a hard copy of the communication plan in the

[189] Goralnick and Walls, "Leading through a Disaster," 2.

HCC that contains conference call instructions, wireless Internet instructions, and a floor plan that illustrates the location of specific jacks for VoIP phones and analog phones that correlate with the applicable HICS position and phone number. In addition, maintain the communication plan in redundant locations, including on the hospital's software program, as well as in cloud storage.

6. Coordination with Community/External Partners

Conduct advanced planning with community partners to the greatest extent possible that includes training, drills and exercising. Develop strong relationships with local government including fire, law, and EMS, as well as non-governmental entities, such as local business and Red Cross chapters. Include these partners on emergency preparedness committees and participate in such committees in the community. Review the HVA with community partners on at least an annual basis. Incorporate the emergency management objectives of the city and/or county into the hospital EOP. Determine with local government partners how the hospital will participate in a multi-agency coordination system and document this information in the EOP. Develop contracts or memoranda of understanding with neighboring hospitals or health systems, non-governmental organizations, and vendors to support continuity of operations after a disaster. Participate in healthcare coalitions as defined by jurisdictions. Participate in as many community, regional, and state-level exercises as possible.

These six critical factors form a HICS implementation model and comprise Appendix K.[190] Use Appendix K as an after action survey of the HICS implementation model as an evaluation tool and consider forwarding it to California EMSA for future research.

The Fifth Edition of HICS may be accessed on California EMSA's website for more information at www.emsa.ca.gov.

[190] Appendix K was developed in consultation with Mr. Dan Smiley of the California Emergency Medical Services Authority (EMSA) and was reviewed by Mr. Patrick Lynch, RN also of California EMSA.

B. RECOMMENDATIONS FOR FUTURE REVISIONS OF HICS

Add the HICS implementation model in Appendix K to the next edition of HICS to test this model further as a predictor of successful HICS implementation.

It is recommended that a number of the modifications to HICS developed by Stanford be incorporated into the next version to include the following.

- Add two additional tasks at the beginning to the JAS for the IC: 1. "Stop, take a deep breath, do you have control of the room?" and 2. "Have non-essential personnel not assigned leave the HCC." These are practical steps that add value to this assistive tool.

Add the "transfer of command sheet" to the HICS forms. This optional form would enable a smooth transition between the outgoing IC and incoming IC during a change of shift briefing.

Develop "fast action sheets" or use Stanford's as a baseline to develop these one page documents that contain the top nine to 11 most important action steps HIMT members must take. These sheets may be folded in half and laminated and are less complicated than the JASs. The JASs appear to still have value but are three to four pages in length and may overwhelm some personnel as they appeared to do for one individual during the Asiana response.

Suggest Appendix K be sent to California EMSA for consideration of changes to future HICS editions and to provide data for future research.

C. RECOMMENDATIONS FOR FUTURE RESEARCH

This single case study was limited to the review of documentation and did not include staff interviews or staff surveys. Six critical factors were identified from the tested hypothesis that was supported by the implementation of HICS by Stanford Medicine. These six factors form a HICS implementation model. surveys of the HICS implementation model identified in Appendix K should be collected to further analyze case studies of HICS implementation and the perceived success of HICS during an actual event.

D. APPENDICES

- Appendix A: Steps of Analysis I–IV
- Appendix B: HIMT Organization Chart (fillable version)
- Appendix C: HICS Job Action Sheet Example: Incident Commander Job Action Sheet
- Appendix D: Stanford Governance Structure for the Office of Emergency Management (OEM)
- Appendix E: Transfer of Command Sheet developed by Stanford
- Appendix F: Potential Candidates for HICS Command Positions (Org Chart showing which hospital roles can fill command positions)
- Appendix G: Stanford Code Triage Fast Action Sheets
- Appendix H: Incident Planning Guide for Mass Casualty Incident
- Appendix I: Incident Response Guide for Mass Casualty Incident
- Appendix J: After Action Documentation Review
- Appendix K: After Action Survey of HICS Implementation Model

APPENDIX A. STEPS OF ANALYSIS I–IV

I. What steps did hospital leadership take to implement HICS within a culture of preparedness over the past five years?

- Is there written support of HICS e.g., policy memos?
- Did leadership participate in HICS training and exercises? If yes, how often?
- What is the allocation of financial resources to emergency management?
- Does policy establish minimal HICS training requirements for staff?
- Does the hospital operate in compliance with the National Incident Management System (NIMS)?
- Does the hospital operate in compliance with The Joint Commission emergency management standards?
- Is the hospital compliant with the Centers for Medicare and Medicaid Services emergency management requirements?
- Are the principles of HICS applied more routinely than proclaimed emergencies (e.g., for planning a hospital picnic)?

II. What is the extent of advanced planning with community partners that includes training, drills and exercises?

- Does the hospital exceed the two Joint Commission-required annual exercises?
- Do exercises include community partners? If yes, which partners?
- What is the frequency of training, drills and exercises over the past five years? Internal training, drills, exercises? Training, drills, exercises with community partners?

III. What are the components of the Hospital Command Center's (HCC) Communication Plan and what are the redundancies?

- Is the Communication Plan pre-determined?
- Is a hard copy of the Communication Plan available in the HCC?
- Is the Communication Plan available on the hospital's software program?
- Is there a plan if there is a power outage or lack of IT access?
- Are hand-held radios and satellite phones available?
- To what degree are Public Information Officers (PIO) effectively integrated with one another and the rest of the community system e.g., does the hospital participate in the county Joint Information Center (JIC)?

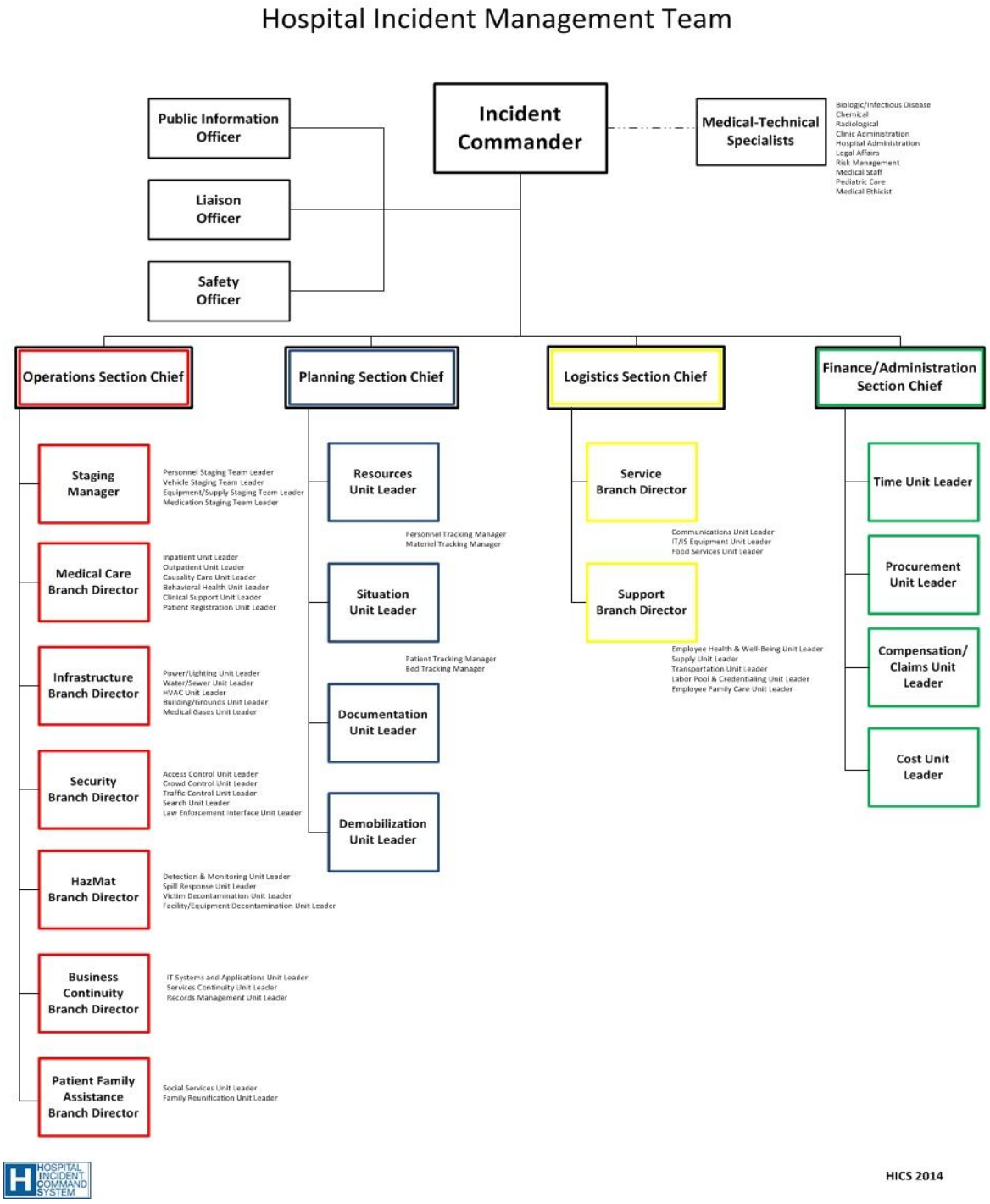
- What other redundancies, if any, are available i.e., low tech and/or high tech?

IV. What measures, if any, were taken to modify HICS to the individual hospital's needs as part of the Emergency Management Plan and as part of the Asiana response?

- Have additional Incident Planning Guides (IPG) been developed?
- Have additional Incident Response Guides (IRG) been developed?
- Have additional potential positions been added to the HIMT Organization Chart?
- Have additional HICS Forms been developed?
- Have additional Job Action Sheets been developed?
- Have other additional documents been developed?
- Were any these modifications to HICS used during the Asiana response? If yes, which ones?

APPENDIX B. HIMT ORGANIZATION CHART

(smaller than scale)



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APPENDIX C. HICS JOB ACTION SHEET EXAMPLE: INCIDENT COMMANDER JOB ACTION SHEET

Mission: Organize and direct the Hospital Command Center (HCC). Give overall strategic direction for hospital incident management and support activities, including emergency response and recovery. Authorize total facility evacuation if warranted.

Date: _____ Start: _____ End: _____ Position Assigned to: _____

Signature: _____ Initial: _____

Hospital Command Center (HCC) Location: _____ Telephone: _____

Fax: _____ Other Contact Info: _____ Radio Title: _____

Immediate (Operational Period 0–2 Hours)	**Time**	**Initial**
Assume role of Incident Commander and activate the Hospital Incident Command System (HICS).		
Read this entire Job Action Sheet and put on position identification.		
Notify your usual supervisor and the hospital CEO, or designee, of the incident, activation of HICS and your HICS assignment.		
Initiate the Incident Briefing Form (HICS Form 201) and include the following information: • Nature of the problem (incident type, victim count, injury/illness type, etc.) • Safety of staff, patients and visitors • Risks to personnel and need for protective equipment • Risks to the facility • Need for decontamination • Estimated duration of incident • Need for modifying daily operations • HICS team required to manage the incident • Need to open up the HCC • Overall community response actions being taken • Status of local, county, and state Emergency Operations Centers (EOC)		
Contact hospital operator and initiate hospital's emergency operations plan.		
Determine need for and appropriately appoint Command Staff and Section Chiefs, or Branch/Unit/Team leaders and Medical/Technical Specialists as needed; distribute corresponding Job Action Sheets and position identification. Assign or complete the Branch Assignment List (HICS Form 204), as appropriate.		
Brief all appointed staff of the nature of the problem, immediate critical issues and initial plan of action. Designate time for next briefing.		
Assign one of more clerical personnel from current staffing or make a request for staff to the Labor Pool and Credentialing Unit Leader, if activated, to function as the HCC recorder(s).		

Immediate (Operational Period 0–2 Hours)	**Time**	**Initial**
Distribute the Section Personnel Time Sheet (HICS Form 252) to Command Staff and Medical/Technical Specialist assigned to Command, and ensure time is recorded appropriately. Submit the Section Personnel Time Sheet to the Finance/Administration Section's Time Unit Leader at the completion of a shift or at the end of each operational period.		
Initiate the Incident Action Plan Safety Analysis (HICS Form 261) to document hazards and define mitigation.		
Receive status reports from and develop an Incident Action Plan with Section Chiefs and Command Staff to determine appropriate response and recovery levels. During initial briefing/status reports, discover the following: • If applicable, receive initial facility damage survey report from Logistics Section Chief and evaluate the need for evacuation. • If applicable, obtain patient census and status from Planning Section Chief, and request a hospital-wide projection report for 4, 8, 12, 24 & 48 hours from time of incident onset. Adjust projections as necessary. • Identify the operational period and HCC shift change. • If additional beds are needed, authorize a patient prioritization assessment for the purposes of designating appropriate early discharge. • Ensure that appropriate contact with outside agencies has been established and facility status and resource information provided through the Liaison Officer. • Seek information from Section Chiefs regarding current "on-hand" resources of medical equipment, supplies, medications, food, and water as indicated by the incident. • Review security and facility surge capacity and capability plans as appropriate.		
Document all key activities, actions, and decisions in an Operational Log (HICS Form 214) on a continual basis.		
Document all communications (internal and external) on an Incident Message Form (HICS Form 213). Provide a copy of the Incident Message Form to the Documentation Unit.		

Intermediate (Operational Period 2–12 Hours)	**Time**	**Initial**
Authorize resources as needed or requested by Command Staff.		
Designate regular briefings with Command Staff/Section Chiefs to identify and plan for: • Update of current situation/response and status of other area hospitals, emergency management/local emergency operation centers, and public health officials and other community response agencies • Deploying a Liaison Officer to local EOC • Deploying a PIO to the local Joint Information Center • Critical facility and patient care issues • Hospital operational support issues • Risk communication and situation updates to staff • Implementation of hospital surge capacity and capability plans • Ensure patient tracking system established and linked with appropriate outside agencies and/or local EOC		

Intermediate (Operational Period 2–12 Hours)	Time	Initial
• Family Support Center operations • Public information, risk communication and education needs • Appropriate use and activation of safety practices and procedures • Enhanced staff protection measures as appropriate • Public information and education needs • Media relations and briefings • Staff and family support • Development, review, and/or revision of the Incident Action Plan, or elements of the Incident Action Plan		
Oversee and approve revision of the Incident Action Plan developed by the Planning Section Chief. Ensure that the approved plan is communicated to all Command Staff and Section Chiefs.		
Communicate facility and incident status and the Incident Action Plan to CEO or designee, or to other executives and/or Board of Directors members on a need-to-know basis.		

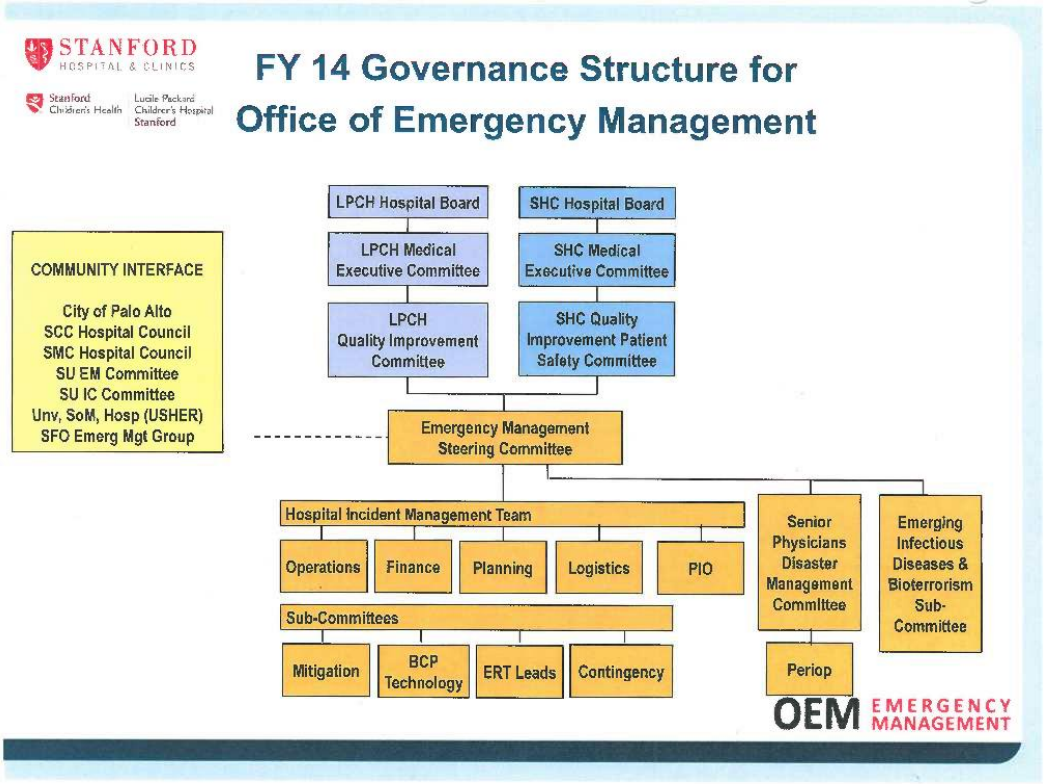
Extended (Operational Period Beyond 12 Hours)	Time	Initial
Ensure staff, patient, and media briefings are being conducted regularly.		
Review and revise the Incident Action Plan Safety Analysis (HICS Form 261) and implement correction or mitigation strategies.		
Evaluate/re-evaluate need for deploying a Liaison Officer to the local EOC.		
Evaluate/re-evaluate need for deploying a PIO to the local Joint Information Center.		
Ensure incident action planning for each operational period and a reporting of the Incident Action Plan at each shift change and briefing.		
Evaluate overall hospital operational status, and ensure critical issues are addressed.		
Review /revise the Incident Action Plan with the Planning Section Chief for each operational period.		
Ensure continued communications with local, regional, and state response coordination centers and other HCCs through the Liaison Officer and others.		
Ensure your physical readiness, and that of the Command Staff and Section Chiefs, through proper nutrition, water intake, rest periods and relief, and stress management techniques.		
Observe all staff and volunteers for signs of stress and inappropriate behavior. Report concerns to the Employee Health & Well-Being Unit Leader.		
Upon shift change, brief your replacement on the status of all ongoing operations, critical issues, relevant incident information and Incident Action Plan for the next operational period.		

Demobilization/System Recovery	Time	Initial
Assess the plan developed by the Demobilization Unit Leader and approved by the Planning Section Chief for the gradual demobilization of the HCC and emergency		

Demobilization/System Recovery	Time	Initial
operations according to the progression of the incident and facility/hospital status. Demobilize positions in the HCC and return personnel to their normal jobs as appropriate until the incident is resolved and there is a return to normal operations. • Briefing staff, administration, and Board of Directors • Approve announcement of "ALL CLEAR" when incident is no longer a critical safety threat or can be managed using normal hospital operations • Ensure outside agencies are aware of status change • Declare hospital/facility safety		
Ensure demobilization of the HCC and restocking of supplies, as appropriate including: • Return of borrowed equipment to appropriate location • Replacement of broken or lost items • Cleaning of HCC and facility • Restock of HCC supplies and equipment; • Environmental clean-up as warranted		
Ensure that after-action activities are coordinated and completed including: • Collection of all HCC documentation by the Planning Section Chief • Coordination and submission of response and recovery costs, and reimbursement documentation by the Finance/Administration and Planning Section Chiefs • Conduct of staff debriefings to identify accomplishments, response and improvement issues • Identify needed revisions to the Emergency Management Plan, Emergency Operations Plan, Job Action Sheets, operational procedures, records, and/or other related items • Writing the facility/hospital After Action Report and Improvement Plan • Participation in external (community and governmental) meetings and other post-incident discussion and after-action activities • Post-incident media briefings and facility/hospital status updates • Post-incident public education and information • Stress management activities and services for staff		

Documents/Tools
• Incident Action Plan • HICS Form 201 – Incident Briefing Form • HICS Form 204 – Branch Assignment List • HICS Form 207 – Incident Management Team Chart • HICS Form 213 – Incident Message Form • HICS Form 214 – Operational Log • HICS Form 252 – Section Personnel Time Sheet • HICS Form 261 – Incident Action Plan Safety Analysis • Hospital emergency operations plan and other plans as cited in the JAS • Hospital organization chart • Hospital telephone directory • Radio/satellite phone

APPENDIX D. STANFORD GOVERNANCE STRUCTURE FOR THE OFFICE OF EMERGENCY MANAGEMENT (OEM)



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APPENDIX E. TRANSFER OF COMMAND SHEET DEVELOPED BY STANFORD

Transitioning the control and management of any disaster event from one Incident Commander to the next Incident Commander assuming lead responsibility for that event is called “transfer of command.” Transition of Command may be anticipated and expected in any expanding incident. Given the evolving nature of a significant event, the process to transition command does not reflect on the competency or performance of the “current” Incident Commander but rather on the need to assure Command role and responsibilities are maintained as response to the event transitions from the emergency response to event recovery.

There are four important steps to assist in the effective transition of command for the active incident, still in progress.

Step 1: An over-arching priority for the oncoming Incident Commander will be to perform an assessment of the incident situation with the existing Incident Commander. This is best accomplished in a “face-to-face” manner.

Step 2: The oncoming Incident Commander must be adequately briefed with a thorough understanding of the event IAP and appreciation of actions taken to date. This briefing must be performed by the current, out-going Incident Commander, and is best accomplished in a “face-to-face” manner, as able.

Step 3: After the transitional incident briefing, the oncoming Incident Commander should make determination as to best and appropriate time for transfer of command. To assure continuity in operations, physical transfer of command for the incident should be performed after the next established time for “change of shift” among the currently in place Command and General Staff officers. This to allow the oncoming Incident Commander the opportunity to phase in transition of command responsibilities while current command and general staff officers, with knowledge of the current status of events and IAP, are still on duty.

Step 4: At the appropriate time, formal notice of the transition in incident command should be made to:

- Executive Leadership
- Command Staff members
- General Staff Officers
- Incident personnel, as appropriate to the ongoing management of the disaster event

Transfer of Command Briefing Checklist

The transitional briefing between out-going and on-coming IC must cover a review of the following:

- Incident History (what has happened):
    - HICS-201 Incident Briefing
- Incident Organization
    - HICS-203 Organization Assignment List
    - HICS-207 Organizational Chart
- Priorities and Objectives
    - HICS-202 Incident Objectives List
    - Demobilization Plan
    - Daily Meeting Schedule
    - Significant outstanding issues or priorities
    - Meeting Summary
    - HICS 251, 261, Safety status of the event to date
    - Significant outstanding issues or priorities
- Current Plan
    - HICS-202 Incident Objectives List
- Resources Ordered/Needed (personnel/materials)
    - Critical resources ordered awaiting completion
- Facilities Established (related to response)
- Status of Communications
- Any Constraints or Limitations
- Incident Potential
    - Issues involving risk and liability to facility or operations

- Delegation of Authority
    - HICS-207 Organizational Chart
- Communication of Transfer of Command
    - Executive Leadership
    - Command Staff members
    - General Staff Officers
    - Incident Personnel, as appropriate

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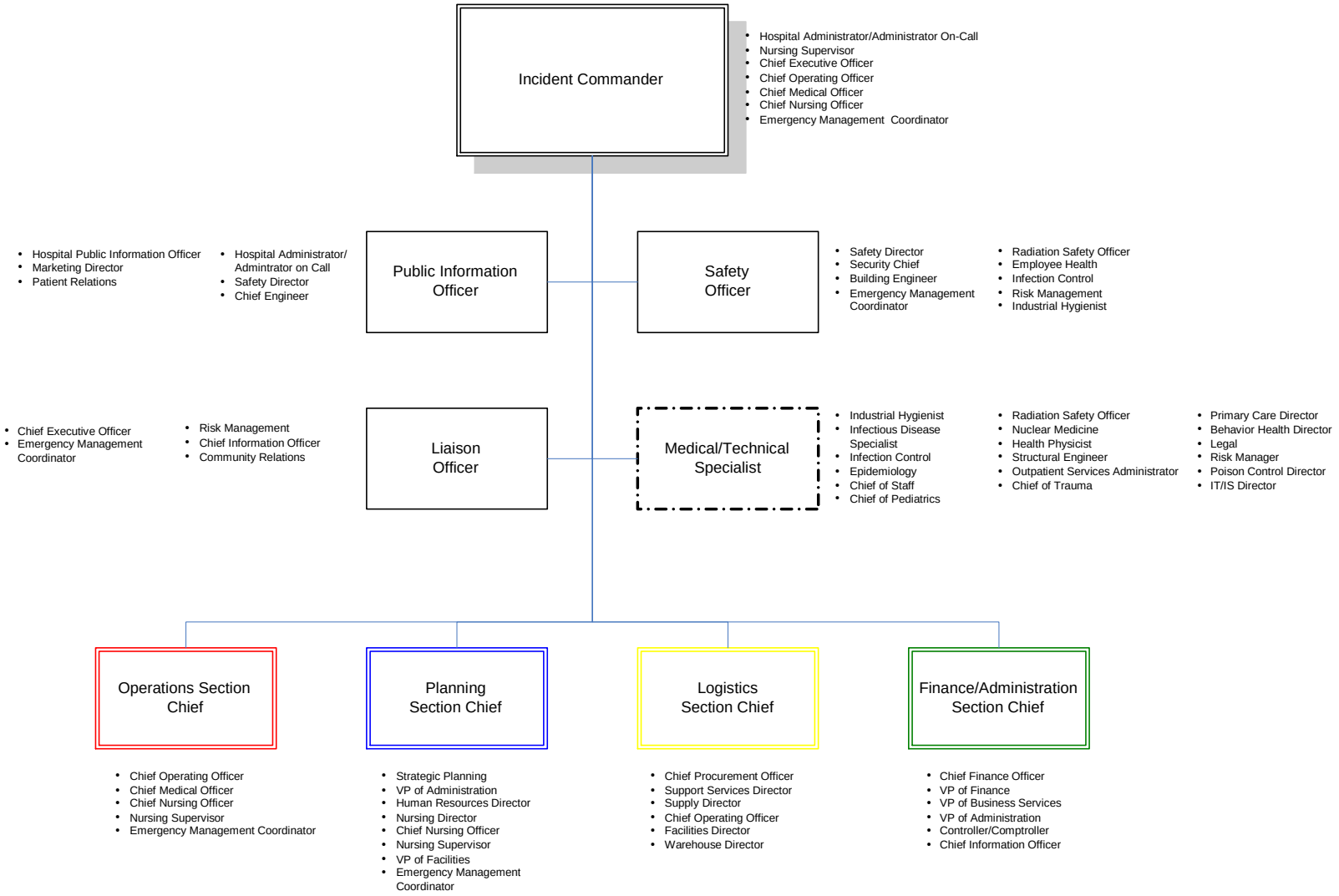
APPENDIX F. POTENTIAL CANDIDATES FOR HICS COMMAND POSITIONS (ORG CHART SHOWING WHICH HOSPITAL ROLES CAN FILL COMMAND POSITIONS)

Purpose: The “Potential Candidates for HICS Positions” crosswalk (next page) provides suggestions for administrative positions commonly found in hospitals and their potential assigned roles in the Hospital Command Center (HCC), when activated. These suggestions are based on similarity to day-to-day position roles during the activation of the assigned role during operation of the HCC.

Use: The crosswalk is intended for pre-event planning and assignment of Hospital Command Center roles. By pre-assigning HCC assignments, the staff can be educated and exercised on their duties and scope of responsibility during an activation, and will be familiar with the associated Job Action Sheet before the event. It is recommended that each HCC Command position have not less than three to five persons pre-assigned to each role to allow for extended operations.

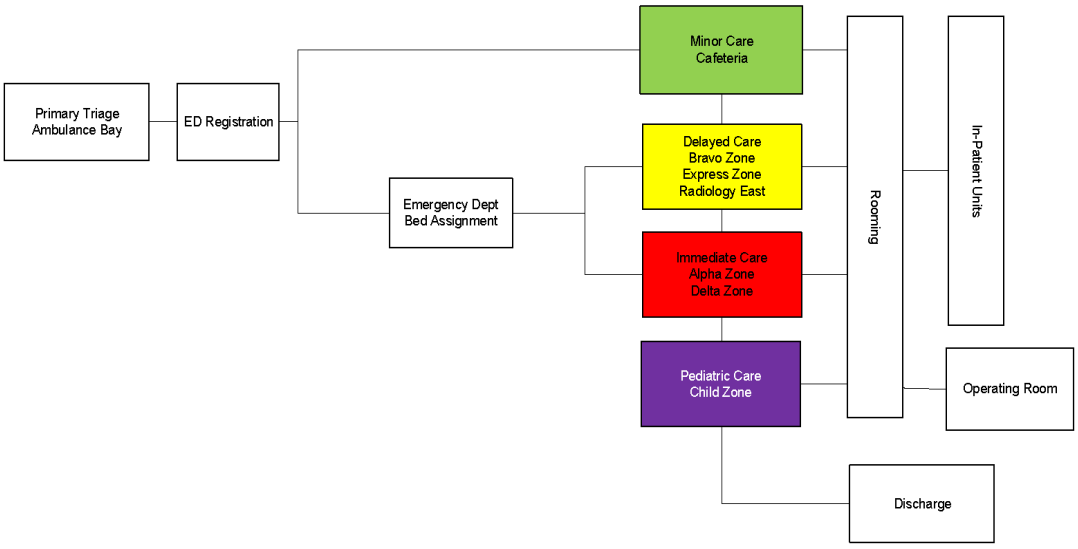

Incident Commander
Hospital Administrator/Administrator On-Call
Nursing Supervisor
Chief Executive Officer
Chief Operating Officer
Chief Medical Officer
Chief Nursing Officer
Emergency Management Coordinator
Public Information Officer
Hospital Public Information Officer
Marketing Director
Patient Relations
Hospital Administrator/ Admintrator on Call
Safety Director
Chief Engineer
Safety Officer
Safety Director
Security Chief
Building Engineer
Emergency Management Coordinator
Radiation Safety Officer
Employee Health
Infection Control
Risk Management
Industrial Hygienist
Liaison Officer
Chief Executive Officer
Emergency Management Coordinator
Risk Management
Chief Information Officer
Community Relations
Medical/Technical Specialist
Industrial Hygienist
Infectious Disease Specialist
Infection Control
Epidemiology
Chief of Staff
Chief of Pediatrics
Radiation Safety Officer
Nuclear Medicine
Health Physicist
Structural Engineer
Outpatient Services Administrator
Chief of Trauma
Primary Care Director
Behavior Health Director
Legal
Risk Manager
Poison Control Director
IT/IS Director
Operations Section Chief
Chief Operating Officer
Chief Medical Officer
Chief Nursing Officer
Nursing Supervisor
Emergency Management Coordinator
Planning Section Chief
Strategic Planning
VP of Administration
Human Resources Director
Nursing Director
Chief Nursing Officer
Nursing Supervisor
VP of Facilities
Emergency Management Coordinator
Logistics Section Chief
Chief Procurement Officer
Support Services Director
Supply Director
Chief Operating Officer
Facilities Director
Warehouse Director
Finance/Administration Section Chief
Chief Finance Officer
VP of Finance
VP of Business Services
VP of Administration
Controller/Comptroller
Chief Information Officer

APPENDIX G. STANFORD CODE TRIAGE FAST ACTION SHEETS

Code Triage - Fast Action Sheet

Casualty Care Unit Leader

- ☐ Establish Communications and receive briefing from the **Operations Chief or Medical Care Branch Director (if established).**
- ☐ Document all key activities, actions and decisions in an Operational Log (HICS Form 214) assign a scribe if necessary.
- ☐ Put on appropriate Personal Protective Equipment (PPE), identification and vest.
- ☐ Designate treatment are team leaders, Triage, Immediate, Delayed, Minor, Expectant.
- ☐ Assist with establishment of treatment areas in additional/new locations if necessary.
- ☐ Instruct all Casualty Care Unit team members to begin patient priority assessment and to designate those eligible for early discharge.
- ☐ Request additional staff and supplies through the **Operations Chief or Medical Care Branch Director (if established).**
- ☐ Meet with the **Operations Chief or Medical Care Branch Director (if established)** to discuss medical care plan of action and staffing in all treatment areas.
- ☐ **Refer all inquiries regarding patient or hospital status to the Public Information Officer (PIO).**

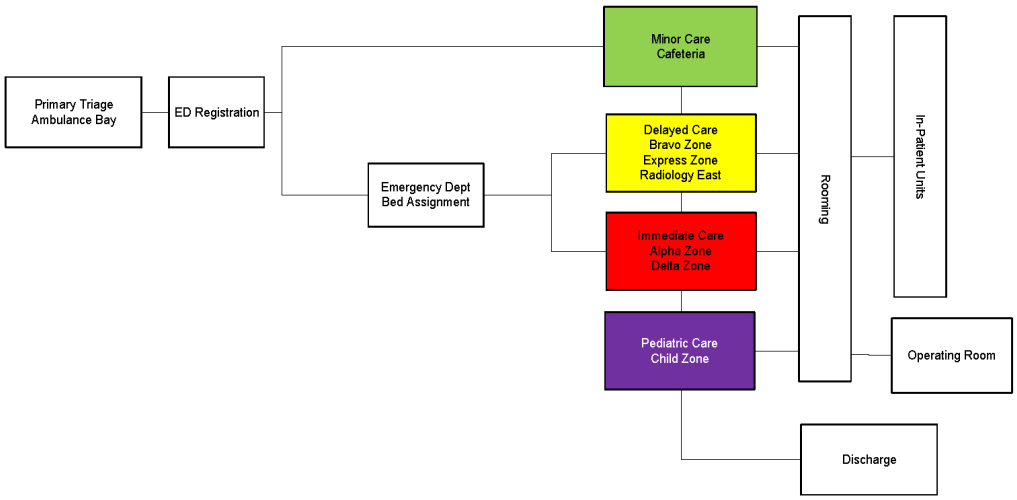


All patients being admitted or going to the OR must go to the Rooming Bed Control desk.
MAKE CERTAIN A DIAGNOSIS AND DESTINATIN IS FILLED ON THE CHART

Code Triage - Fast Action Sheet

Triage Unit Unit Leader

- ☐ Establish Communications and receive briefing from the **Operations Chief or Medical Care Branch Director (if established).**
- ☐ Document all key activities, actions and decisions in an Operational Log (HICS Form 214) assign a scribe if necessary.
- ☐ Put on appropriate Personal Protective Equipment (PPE), identification and vest.
- ☐ Identify patient receiving area and implement patient triage procedures with designated locations for patients with Immediate, Delayed, Minor and Expectant needs.
- ☐ Assist with establishment staging area for transport equipment.
- ☐ Instruct all Triage Unit members to begin patient priority assessment.
- ☐ Request additional staff and supplies through the **Operations Chief or Medical Care Branch Director (if established).**
- ☐ Meet with the **Operations Chief or Medical Care Branch Director (if established)** to discuss medical care plan of action and staffing in all treatment areas.
- ☐ **Refer all inquiries regarding patient or hospital status to the Public Information Officer (PIO).**

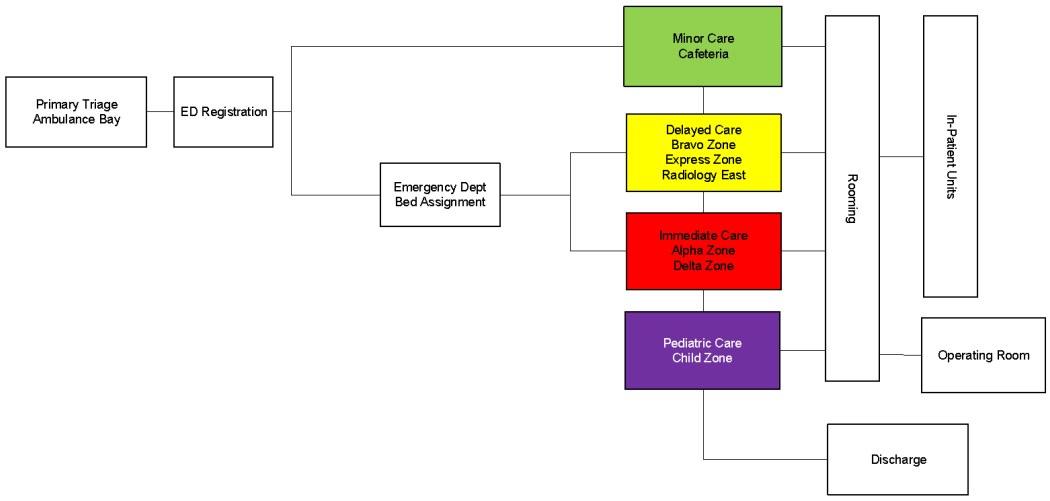


All patients being admitted or going to the OR must go to the Rooming Bed Control desk.
MAKE CERTAIN A DIAGNOSIS AND DESTINATIN IS FILLED ON THE CHART

Code Triage - Fast Action Sheet

Minor Care Team Leader

- ☐ Receive briefing from **Casualty Care Unit Leader**
- ☐ Establish Minor Care in Cafeteria - Obtain Minor Casualty Care Cache
- ☐ Organize and lead medical team
- ☐ Put on appropriate personal protective equipment (PPE), Identification and Vest
- ☐ Assure all personnel have appropriate PPE and Identification
- ☐ Familiarize your team with disaster record, The record must stay with the patient at all times
- ☐ Request additional staff and supplies through the **Casualty Care Unit Leader**
- ☐ Provide appropriate medical care, supervise secondary evaluation of patients to determine level of medical need and move to other treatment units if status changes
- ☐ Work with appropriate specialist to provide optimal care
- ☐ **Refer all inquiries regarding patient or hospital status to the Public Information Officer (PIO)**

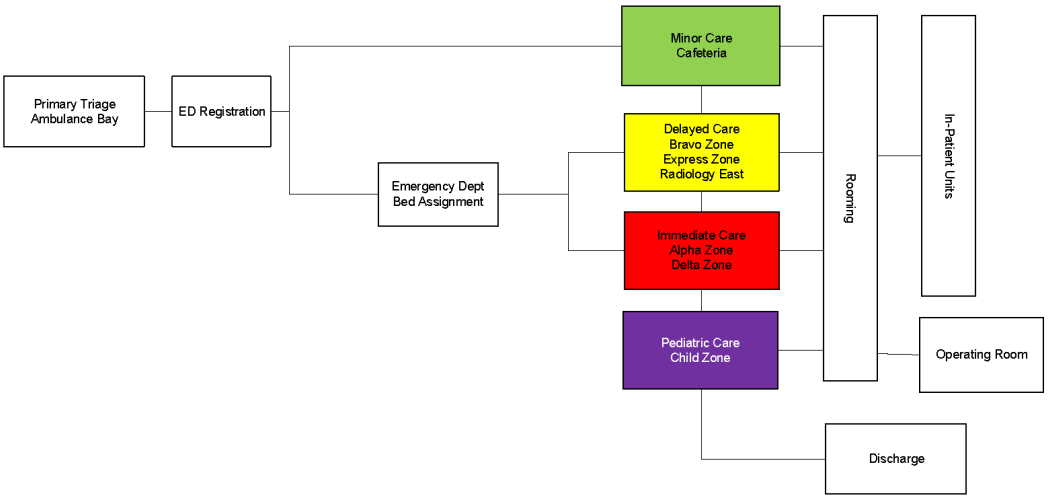


If patient is admitted/transferred they must go to the Rooming Bed Control desk.
MAKE CERTAIN A DIAGNOSIS AND DESTINATIN IS FILLED ON THE CHART

Code Triage - Fast Action Sheet

Delayed Care Team Leader

- ☐ Receive briefing from the **Casualty Care Unit Leader**
- ☐ Establish Delayed Care (C.P., Dif Breathing, Level 1 Pts.) in the Blue Zone/Radiology East
- ☐ Organize and lead medical team
- ☐ Put on appropriate personal protective equipment (PPE), Identification and Vest
- ☐ Assure all personnel have appropriate PPE and Identification
- ☐ Request staff and supplies through the **Casualty Care Unit Leader**
- ☐ Set up critical bedside equipment – **Airway Maint. – IV Setup/Normal Saline – Lab draw**
- ☐ Provide appropriate medical care, supervise secondary evaluation of patients to determine level of medical need and move to other treatment units if status changes
- ☐ Work with appropriate specialist to provide optimal care
- ☐ Monitor/observe patients waiting on OR availability
- ☐ **Refer all inquiries regarding patient or hospital status to the Public Information Officer (PIO)**

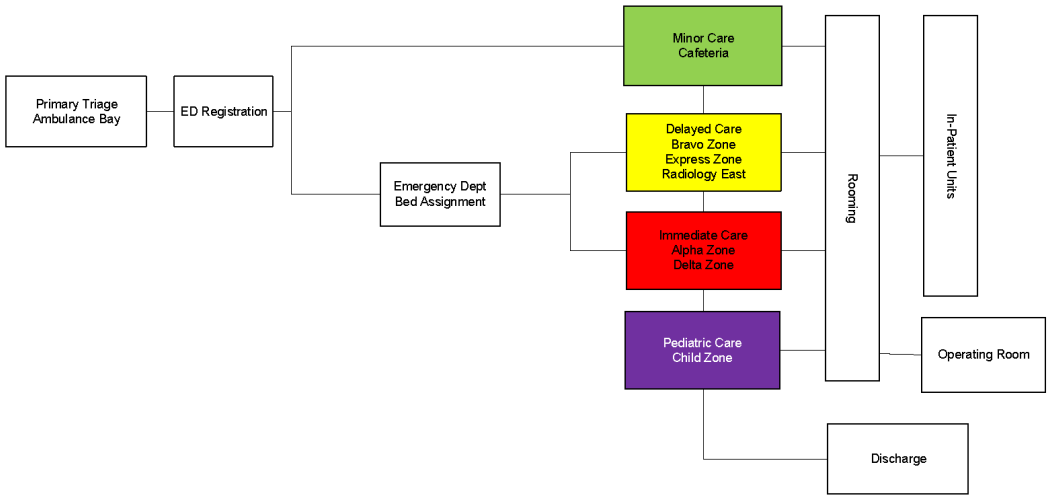


All patients being admitted or going to OR must stop Rooming Bed Control desk.
MAKE CERTAIN A DIAGNOSIS AND DESTINATIN IS FILLED ON THE CHART

Code Triage - Fast Action Sheet

Immediate Care Team Leader

- ☐ Receive briefing from the **Casualty Care Unit Leader**
- ☐ Establish Immediate Care in ED Rooms 1,3,4,5 and Green Zone
- ☐ Put on appropriate personal protective equipment (PPE), Identification and Vest
- ☐ Organize and lead medical team - Assure all personnel have appropriate PPE and Identification
- ☐ Set up critical bedside equipment – **Airway Maint. – IV Setup/Normal Saline – Lab draw**
- ☐ Familiarize your team with disaster record, The record must stay with the patient at all times
- ☐ Obtain downtime slips for radiology and lab test
- ☐ Request additional staff and supplies through the **Casualty Care Unit Leader**
- ☐ Provide appropriate medical care, supervise secondary evaluation of patients to determine level of medical need and move to other treatment units if status changes
- ☐ Monitor/observe patients waiting on OR availability
- ☐ **Refer all inquiries regarding patient or hospital status to the Public Information Officer (PIO)**

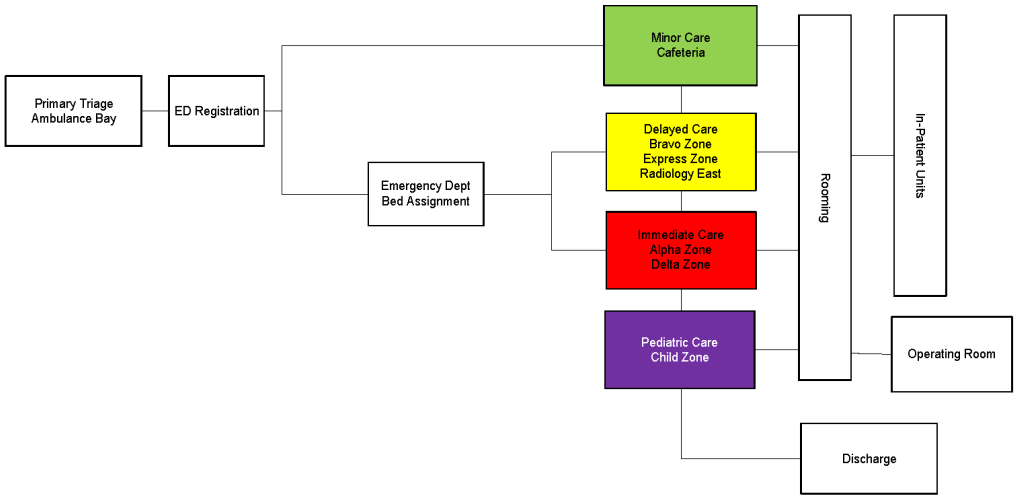


All patients being admitted or going to the OR must go to the Rooming Bed Control desk.
MAKE CERTAIN A DIAGNOSIS AND DESTINATIN IS FILLED ON THE CHART

Code Triage - Fast Action Sheet

Pediatric Care Team Leader

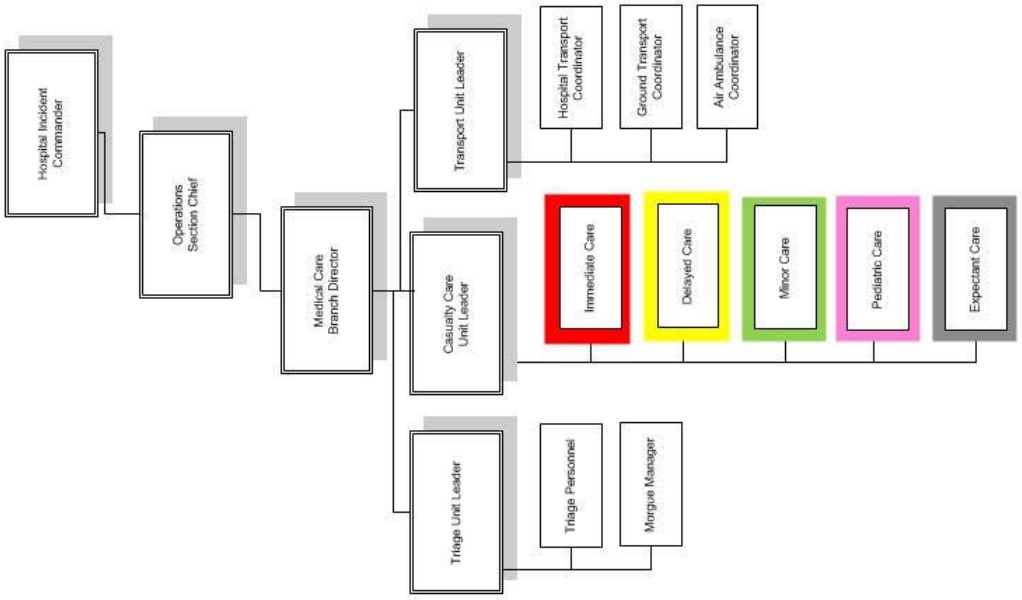
- ☐ Receive briefing from the **Casualty Care Unit Leader**
- ☐ Establish Pediatric Care in Child Zone
- ☐ Put on appropriate personal protective equipment (PPE), Identification and Vest
- ☐ Organize and lead medical team - Assure all personnel have appropriate PPE and Identification
- ☐ Familiarize your team with disaster record, The record must stay with the patient at all times
- ☐ Obtain downtime slips for radiology and lab test
- ☐ Request additional staff and supplies through the **Casualty Care Unit Leader**
- ☐ Provide appropriate medical care, supervise secondary evaluation of patients to determine level of medical need and move to other treatment units if status changes
- ☐ Do not separate children and parents until Child Life Specialist is available to track children
- ☐ Child must be escorted to LPCH Bed Control by a Transporter
- ☐ **Refer all inquiries regarding patient or hospital status to the Public Information Officer (PIO)**



DO NOT REMOVE THIS CARD FROM SLEEVE

Pediatric Care Unit Leader

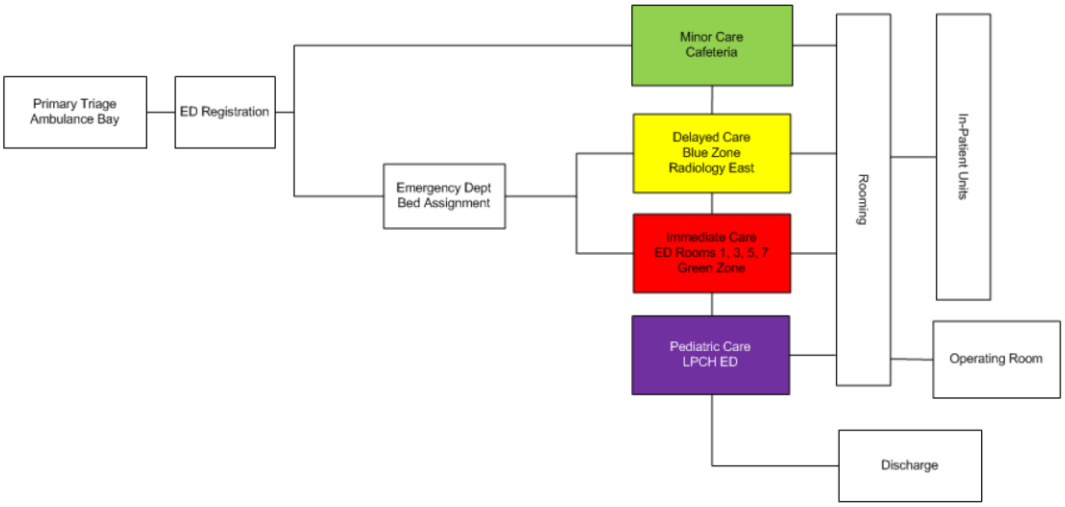
HOSPITAL COMMAND CENTER phone # redacted



Code Triage - Fast Action Sheet

Expectant Care Team Leader

- ☐ Receive briefing from the **Casualty Care Unit Leader**
- ☐ Establish Expectant Care (exceed current resources) in the XXXXXXX
- ☐ Organize and lead medical team
- ☐ Put on appropriate personal protective equipment (PPE), Identification and Vest
- ☐ Assure all personnel have appropriate PPE and Identification
- ☐ Request staff and supplies through the **Casualty Care Unit Leader**
- ☐ Set up critical bedside equipment – **IV Setup/Normal Saline – Lab draw**
- ☐ Provide appropriate medical care, supervise secondary evaluation of patients to determine level of medical need and move to other treatment units if status changes
- ☐ Work with appropriate specialist to provide appropriate care
- ☐ Monitor/observe patients re-triage as resources become available
- ☐ **Refer all inquiries regarding patient or hospital status to the Public Information Officer (PIO)**



All patients being admitted or going to OR must stop Rooming Bed Control desk.
MAKE CERTAIN A DIAGNOSIS AND DESTINATIN IS FILLED ON THE CHART

APPENDIX H. INCIDENT PLANNING GUIDE FOR MASS CASUALTY INCIDENT

A. DEFINITION

This Incident Planning Guide is intended to address issues associated with a mass casualty incident and subsequent patient surge, regardless of the precipitating event, that taxes a hospital's ability to provide care to all patients. Mass casualty incidents can come from many situations, such as transit incidents, mass gatherings, building collapse, and others. Hospitals may customize this Incident Planning Guide for their specific requirements.

B. SCENARIO

Late one afternoon, breaking news on the waiting room television shows reports of a bridge collapse over a nearby river as rush hour begins. Secondary fires have erupted and there are victims in the river. Your hospital is the closest to the incident. 911 dispatch notifies area emergency departments of the mass casualty incident and projects greater than 100 victims. The county Emergency Operations Center is activated. Your hospital's emergency department is at 90% capacity and is holding 16 inpatients waiting for beds. Several victims have begun to self-present on foot with minor injuries. In addition to casualties, you can anticipate a media onslaught, high telephone volume from families looking for relatives, licensed and non-licensed volunteers, and behavioral health counseling needs for patients, families, and staff.

Does your Emergency Management Program address the following issues?	
Mitigation	
1.	Does your hospital address the threat and impact of a mass casualty incident in the annual Hazard Vulnerability Analysis, including the identification of mitigation strategies and tactics?
2.	Does your hospital participate in pre-incident local response planning with public safety officials (e.g., emergency medical services, fire, and law enforcement), local emergency management officials, other area hospitals, regional healthcare coalition coordinators , and other appropriate public and private organizations, including meetings and conference calls to plan and share status?

3.	Does your hospital include mitigation strategies to reduce the risk from a mass casualty incident in your emergency management program?
4.	Does your hospital have agreements with other hospitals to share resources and information?
5.	Does your hospital have established mechanisms with emergency medical services to distribute patients to appropriate hospitals within the area to avoid overwhelming individual hospitals?
Preparedness	
1.	Does your hospital have a Mass Casualty Incident Plan that includes: ☐ A procedure for canceling elective surgeries, procedures, and outpatient appointments? ☐ A procedure for rapid patient registration? ☐ A procedure to track and identify patients? ☐ A procedure to facilitate patient discharge from the emergency department? ☐ A system to quickly move patients waiting to be admitted out of the emergency department? ☐ A procedure to utilize alternate treatment areas within your hospital for overflow victims? ☐ A procedure to facilitate early discharges and transfers out of your hospital? ☐ A system to obtain current bed status, availability, and a census of patients waiting to be admitted? ☐ A procedure to alert relevant staff (emergency department, critical care, surgery, radiology, blood bank, etc.) that will need to be called in? ☐ A mechanism for providing staff with information including notifying them when adequate staff have reported to your hospital? ☐ A procedure to evaluate and activate emergency department diversion status? ☐ A procedure to enforce patient discharge times and a holding area for discharged patients to wait until transportation arrives? ☐ A plan for a staffed observation area for pediatric or other patients that have completed medical care but cannot be discharged? ☐ Agreements with healthcare partners to provide nonessential services to patients? ☐ A procedure to establish a family waiting area or reunification area? ☐ A procedure to effectively manage special needs populations (i.e., deaf, blind, behavioral health, pediatric, and bariatric)? ☐ A procedure to establish a media area?

2.	Does your hospital exercise the Mass Casualty Incident Plan yearly and revise it as needed?
3.	Does your hospital have a plan for prioritizing essential patient care, resources, and triggers for implementing crisis standards of care?
4.	Does your hospital have a trigger and a process to change documentation and ordering of clinical studies during a mass casualty incident?
5.	Does your hospital have a plan to increase emergency department capacity (e.g., doubling rooms, medical gas outlets, point-of-care testing)?
6.	Does your hospital have a process for secondary triage of patients for resources such as computed tomography (CT scan) or operating room (OR) availability?
7.	Does your hospital have a plan to supplement staffing, including use of registry nurses and other licensed healthcare professionals?
8.	Does your hospital have a Volunteer Utilization Plan for the use of solicited and unsolicited volunteers that includes verification of licensure and certification?
9.	Does your hospital have a plan to quickly deploy staff, supplies, equipment, and medications for a mass casualty incident?
10.	Does your hospital have a plan to contact medical staff to support emergency department physicians (e.g., hospitalists, intensivists, surgeons)?
11.	Does your hospital have a procedure for requesting resources and assistance from the local emergency medical services?
12.	Does your hospital have plans to supplement supplies, equipment, and medications for long-term operations with community-wide, regional, state, or national impact?
13.	Does your hospital have a plan to provide employee food, water, and rest areas throughout a prolonged incident?
14.	Does your hospital’s Business Continuity Plan include a line of succession when administrative staff are unavailable?
15.	Does your hospital have a plan to provide dependent care for staff to encourage them to report for duty?

16.	Does your hospital have a process to provide accurate and continuous incident documentation, computerized or manual, that includes: ☐ Patient care? ☐ Incident management (Incident Action Plan, Hospital Incident Command System forms, etc.)? ☐ Incident related expenses?
17.	Does your Mass Casualty Incident Plan address communications including: ☐ Pre-incident standard messages for communicating the risks associated with this incident and recommendations to the public and media? ☐ Participation in the Joint Information System or Joint Information Center in cooperation with local, regional, or state emergency management partners? ☐ Use of social media for communication, including: o Who can use social media? o Who approves the use of social media? o When is use of social media not appropriate? ☐ Procedures for notification of internal and external authorities (local, county, region, state)? ☐ A plan to distribute radios, auxiliary phones, and flashlights to appropriate people and areas? ☐ A plan for rapid communication of weather status (watch, warning)? ☐ A plan for rapid communication of the situation to local emergency management and area hospitals? ☐ A process to identify patients and to notify family members?
Immediate and Intermediate Response	
1.	Does your hospital have a Triage Plan that includes: ☐ Criteria for when to institute triage? ☐ Designated areas for each victim type? ☐ Procedures for mass traumatic injury? ☐ Procedures for biological agent exposure or contamination or both? ☐ Procedures for screening infectious patients? ☐ Procedures for chemical exposure or contamination or both? ☐ Procedures for radiation exposure or contamination or both? ☐ Segregation of exposed versus contaminated patients? ☐ Behavioral health services for anxious or asymptomatic patients?

2.	Does the Mass Casualty Incident Plan include: ☐ Procedures to obtain additional medical support? ☐ Procedures to hold or cancel pending surgeries and outpatient procedures? ☐ Determination of “fitness for duty” (temperature checks, symptom review, etc.)?
3.	Does your hospital have a Fatality Management Plan that addresses: ☐ Integration with local or state Medical Examiner or Coroner? ☐ Preservation of evidence and chain of custody? ☐ Religious and cultural concerns? ☐ Management of contaminated decedents? ☐ Family notification procedures? ☐ Behavioral health support for family and staff? ☐ Documentation?
4.	Does your hospital have a process to facilitate rapid discharge of patients to home or alternate sites?
5.	Does your hospital have a process to track patients who are transferred to other facilities?
6.	Does your hospital have a process to notify family members when patients are moved to other facilities?
7.	Does your hospital have a plan to regularly communicate with patients, staff, and families about the hospital’s status?
8.	Does your hospital have the ability to expedite the cleaning of patient care areas?
9.	Does your hospital have an Alternate Care Site Plan that includes: ☐ Criteria and rapid decision making processes for determining the need to activate? ☐ Provision of appropriate supplies, equipment, and staffing? ☐ Provision of adequate communications and information technology capability once established? ☐ Notification of local emergency medical services of location, type, and acuity of patients to be diverted from the hospital’s emergency department?

10.	Does your hospital have a Volunteer Utilization Plan that includes: ☐ Verification of license and identification? ☐ Providing orientation to the facility and work area, including safety and infection control? ☐ Confidentiality agreement? ☐ Chain of command or supervision? ☐ Assignment of duties? ☐ Communication? ☐ Documentation?
Extended Response and System Recovery	
1.	Does your hospital have a process to determine the need for canceling elective procedures and surgeries and other nonessential services (e.g., gift shop) and activities (e.g., conferences, meetings)?
2.	Does your hospital have a process to reschedule canceled surgeries, procedures, and services in a timely but graduated manner?
3.	Does your hospital have a plan and procedures to ensure continuation of patient care services?
4.	Does your hospital have a continuing process to capture all costs and expenditures related to operations?
5.	Does your hospital have a Demobilization Plan that includes criteria for deactivation of positions, reactivation of services, and the return to normal operations?
6.	Does your hospital have a plan to provide behavioral health support and stress management debriefings to patients, staff, and families, including obtaining services of local or regional resources?
7.	Does your hospital have procedures for reporting and documenting staff exposures and injuries?
8.	Does your hospital have Hospital Incident Management Team position depth to support extended operations?
9.	Does your hospital's Business Continuity Plan address long term events?
10.	Does your hospital have procedures to collect and collate incident documentation and formulate an After Action Report and Corrective Action and Improvement Plan?

APPENDIX I. INCIDENT RESPONSE GUIDE FOR MASS CASUALTY INCIDENT

A. MISSION

To ensure a safe environment for staff, patients, visitors, and the facility when the number of patients severely challenges or exceeds the capability and capacity of the hospital.

B. DIRECTIONS

Read this entire response guide and review the Hospital Incident Management Team Activation chart. Use this response guide as a checklist to ensure all tasks are addressed and completed.

C. OBJECTIVES

- ☐ Identify, triage, and treat patients
- ☐ Provide safe and appropriate patient care, based on scope of response
- ☐ Maintain patient tracking
- ☐ Provide continuity of care for non-incident patients
- ☐ Maintain communications with healthcare and public safety response partners

Immediate Response (0–2 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
Command	**Incident Commander**		Activate Emergency Operations Plan, Mass Casualty Incident Plan, Hospital Incident Management Team, and Hospital Command Center.	
			Establish operational periods, objectives, and regular briefing schedule. Consider use of Incident Action Plan Quick Start for initial documentation of the incident.	
			Notify hospital Chief Executive Officer, Board of Directors, and other appropriate internal and	

Immediate Response (0–2 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
			external officials of situation status.	
	Public Information Officer		Conduct media briefings and situation updates, in conjunction with Incident Commander.	
			Maintain communication with patients, staff, and families regarding current situation and what's being done to address the situation.	
			Monitor media outlets for updates on the incident and possible impacts on the hospital. Communicate information via regular briefings to Section Chiefs and Incident Commander.	
	Liaison Officer		Notify community partners in accordance with local policies and procedures (e.g., consider local Emergency Operations Center, other area healthcare facilities, local emergency medical services, and healthcare coalition coordinator), to determine incident details, community status, estimates of casualties, and establish contacts for requesting supplies, equipment, or personnel not available in the facility.	
			Communicate with local emergency medical services for local, regional, and state bed availability.	
	Safety Officer		Complete HICS 215A to	

Immediate Response (0–2 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
			assign, direct, and ensure safety actions are adhered to and completed.	
			If nontraditional areas are used for patient care and other services, ensure they follow health and safety standards.	
			Direct implementation of safety practices (e.g., sharps disposal, linen control, trash control, biohazard materials control, electrical safety, water, temperature, etc.) in nontraditional areas.	
Operations	**Section Chief**		Refer to Job Action Sheet for appropriate tasks.	
	Medical Care Branch Director		Review hospital census and determine if patient discharges and appointment cancellations are required.	
			Establish a staffing plan for medical direction and nursing care in alternate care sites or nontraditional patient care areas.	
			Identify inpatients for immediate discharge or transfer to other facilities and direct staff to expedite patient discharges.	
			Establish a patient discharge area to free beds until patients can be discharged or transferred and transported.	
			Provide for the rapid clearing and turnover of patient care	

Immediate Response (0–2 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
			beds and areas to expedite patient discharge and admission.	
			Consider extending outpatient hours to accommodate additional patient visits.	
			Consider cancellation of all planned surgeries and outpatient procedures.	
			Prepare for fatalities in conjunction with Medical Examiner or Coroner and local emergency medical services.	
	Security Branch Director		Consider use of facility lockdown to restrict access.	
			Consider establishing alternate traffic routing to facilitate triage and arrival of multiple victims.	
Planning	**Section Chief**		Assess, in collaboration with Operations Section, current staffing and project staffing needs or shortages for the next operational period.	
			Establish operational periods, incident objectives, and the Incident Action Plan in collaboration with Incident Commander.	
			In conjunction with Operations Section, review all surgeries, outpatient appointments, and procedures for cancellation or rescheduling, and make	

Immediate Response (0–2 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
			recommendations to Incident Commander.	
	Resources Unit Leader		Initiate personnel and materiel tracking.	
	Situation Unit Leader		Initiate patient and bed tracking in collaboration with Operations Section (HICS 254–Disaster Victim/Patient Tracking).	
			Gather situational assessment and response data from internal and external sources.	
			Collect and collate patient, bed, personnel, and materiel tracking status and project future resource needs.	
Logistics	**Section Chief**		Coordinate with Planning and Operations Sections to determine, obtain, and transport additional supplies, equipment, medications, and personnel as required.	
	Support Branch Director		Establish Labor Pool and Credentialing Unit if needed.	
			Register, credential, assign, and mobilize solicited and unsolicited volunteers per Volunteer Utilization Plan.	
			Assist the Operations Section with establishing alternate care or nontraditional care sites.	

Intermediate Response (2–12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
Command	**Incident Commander**		Update hospital Chief Executive Officer, Board of Directors, and other appropriate internal and external officials of situation status.	
			Monitor and ensure that communications and decision-making are coordinated with external agencies and healthcare facilities, as appropriate.	
			Establish a schedule to regularly update and revise the initial Incident Action Plan, in collaboration with the Planning Section.	
	Public Information Officer		Continue to provide information to patients, staff, visitors, families, and media regarding situation status and facility measures taken to meet demand.	
			Coordinate information release with the Joint Information Center.	
	Liaison Officer		Continue to communicate with local emergency medical services regarding local, regional, and state bed availability and updating on hospital situation status and critical issues or needs.	

Intermediate Response (2–12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
	Safety Officer		Continue to implement and maintain safety and personal protective measures to protect patients, staff, visitors, and the facility.	
Operations	**Section Chief**		Refer to Job Action Sheet for appropriate tasks.	
	Medical Care Branch Director		Continue patient care and management activities. ☐ Provide re-triage and observation of all patients waiting for further care ☐ Provide crisis standards of care guidelines, if necessary, and prioritization of resources (coordinate with Planning Section)	
			Expedite patient discharge medication processing and dispensing.	
	Patient Family Assistance Branch Director		Establish a family reunification area and provide support staff to facilitate the flow of information.	
			Consider activating a patient information center.	
Planning	**Section Chief**		Update and revise the Incident Action Plan, and distribute to Command Staff and Section Chiefs.	
			Coordinate with Operations Section for	

Intermediate Response (2–12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
			continued consideration of canceling or rescheduling surgeries and elective procedures.	
	Resources Unit Leader		Continue staff and equipment tracking.	
	Situation Unit Leader		Continue patient and bed equipment tracking.	
	Demobilization Unit Leader		Begin planning for demobilization and system recovery.	
Logistics	**Section Chief**		Refer to Job Action Sheet for appropriate tasks.	
	Support Branch Director		Continue to call in additional staff to supplement operations, as directed.	
			Coordinate the transportation services (ambulance, air medical services, and other transportation) with the Operations Section (Medical Care Branch) to ensure safe patient relocation, if necessary.	
			Obtain needed supplies, equipment, and medications to support patient care activities.	
			Establish an employee dependent care area, as appropriate.	
			Rapidly investigate and document injuries or employees exposed to illness; provide appropriate follow-up.	
Finance/	**Section Chief**		Implement procedures to	

Intermediate Response (2–12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
Administration			authorize expedited procurement of emergent supplies, equipment, and medications to meet patient care and facility needs.	
			Track all costs and expenditures of response and estimate lost revenues due to canceled procedures and surgeries and other services.	
	Time Unit Leader		Track hours associated with the emergency response.	

Extended Response (greater than 12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
Command	**Incident Commander**		Establish priorities for restoring normal operations using the facility's Business Continuity Plan.	
	Public Information Officer		Conduct briefings for media, in cooperation with the Joint Information Center.	
			Address social media issues as warranted; use social media for messaging as situation dictates.	
	Liaison Officer		Communicate facility status, report of patient conditions and location to emergency medical services.	
Operations	**Section Chief**		Refer to Job Action Sheet for appropriate tasks.	
Planning	**Medical Care Branch Director**		Review current patient census, capability to continue services, and	

Extended Response (greater than 12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
			timeframe to return to normal operations. Provide recommendations to Incident Commander.	
	Patient Family Assistance Branch Director		Provide behavioral health support and community services information for patients and families.	
	Section Chief		Ensure that updated information and intelligence is incorporated into the Incident Action Plan. Ensure the Demobilization Plan is being readied.	
Logistics	**Documentation Unit Leader**		Collect, organize, secure, and file incident documentation.	
	Section Chief		Refer to Job Action Sheet for appropriate tasks.	
Finance/ Administration	**Support Branch Director**		Monitor health status of staff, and provide appropriate medical and behavioral health follow-up.	
	Support Branch Director Section Chief		Collect unused supplies distributed to alternate care and non-traditional care sites. Restock and redistribute all supplies and medications.	
			Continue to track all costs and expenditures of response and estimate lost revenues due to canceled procedures and surgeries and other services.	
	Time Unit Leader		Continue to track hours associated with the emergency response.	

Extended Response (greater than 12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
Demobilization/System Recovery				
Section	**Officer**	**Time**	**Action**	**Initials**
Command	**Incident Commander**		Approve the Demobilization Plan.	
	Public Information Officer		Conduct final briefings for media, in cooperation with the Joint Information Center.	
			Close the patient information center, if activated.	
	Liaison Officer		Communicate facility status, final report of patient condition and location to local emergency medical services	
Operations	**Section Chief**		Refer to Job Action Sheet for appropriate tasks.	
	Medical Care Branch Director		Deactivate alternate care sites and nontraditional patient care areas and safely close.	
			Reschedule canceled surgeries, procedures, and outpatient appointments.	
			Repatriate transferred patients, if applicable.	
	Business Continuity Branch Director		If record keeping included use of paper-based records, ensure all clinical information is entered into electronic medical records.	
Planning	**Section Chief**		Finalize and distribute the Demobilization Plan.	

Extended Response (greater than 12 hours)				
Section	**Officer**	**Time**	**Action**	**Initials**
			Conduct debriefings and hotwash with: ☐ Command Staff and section personnel ☐ Administrative personnel ☐ All staff ☐ All volunteers	
			Write an After Action Report and Corrective Action and Improvement Plan that includes: ☐ Summary of the incident ☐ Summary of actions taken ☐ Actions that went well ☐ Actions that could be improved ☐ Recommendations for future response actions	
	Documentation Unit Leader		Collect, organize, secure, and file incident documentation.	
			Prepare summary of the status and location of all incident patients, staff, and equipment. After approval by Incident Commander, distribute to appropriate external agencies.	
Logistics	**Section Chief**		Inventory all Hospital Command Center and hospital supplies and replenish as necessary, appropriate, and available.	
Finance/ Administration	**Section Chief**		Compile summary of final response and recovery cost and expenditures, and estimated lost revenues.	

Documents and Tools

Documents and Tools
Emergency Operations Plan, including: ☐ Mass Casualty Incident Plan ☐ Triage Plan ☐ Patient, staff, and equipment tracking procedures ☐ Business Continuity Plan ☐ Behavioral Health Support Plan ☐ Alternate Care Site Plan ☐ Security Plan ☐ Lockdown Plan ☐ Fatality Management Plan ☐ Volunteer Utilization Plan ☐ Emergency Patient Registration Plan ☐ Risk Communication Plan ☐ Demobilization Plan
Forms, including: ☐ HICS Incident Action Plan (IAP) Quick Start ☐ HICS 200 – Incident Action Plan (IAP) Cover Sheet ☐ HICS 201 – Incident Briefing ☐ HICS 202 – Incident Objectives ☐ HICS 203 – Organization Assignment List ☐ HICS 205A – Communications List ☐ HICS 214 – Activity Log ☐ HICS 215A – Incident Action Plan (IAP) Safety Analysis ☐ HICS 221 – Demobilization Check-Out ☐ HICS 251 – Facility System Status Report ☐ HICS 253 – Volunteer Registration ☐ HICS 254 – Disaster Victim/Patient Tracking ☐ HICS 255 – Master Patient Evacuation Tracking
Job Action Sheets
Access to hospital organization chart
Television/radio/Internet to monitor news
Telephone/cell phone/satellite phone/Internet/amateur radio/2-way radio for communication

D. HOSPITAL INCIDENT MANAGEMENT TEAM ACTIVATION: MASS CASUALTY INCIDENT

Position	Immediate	Intermediate	Extended	Recovery
Incident Commander	X	X	X	X
Public Information Officer	X	X	X	X
Liaison Officer	X	X	X	X
Safety Officer	X	X	X	X

Position	Immediate	Intermediate	Extended	Recovery
Operations Section Chief	X	X	X	X
Medical Care Branch Director	X	X	X	X
Security Branch Director	X	X	X	X
Business Continuity Branch Director				X
Patient Family Assistance Branch Dir.		X	X	X
Planning Section Chief	X	X	X	X
Resources Unit Leader	X	X	X	X
Situation Unit Leader	X	X	X	X
Documentation Unit Leader			X	X
Demobilization Unit Leader		X	X	X
Logistics Section Chief	X	X	X	X
Support Branch Director	X	X	X	X
Finance /Administration Section Chief		X	X	X
Time Unit Leader		X	X	X

APPENDIX J. AFTER ACTION DOCUMENTATION REVIEW

The After Action Report is one component of a large confidential binder securely locked that was reviewed on October 28 and 29, 2014 and March 10, 2015 at Stanford's OEM.

The large binder is entitled "*SFO Commercial Aircraft, Incident Response, July 6, 2013, Stanford Hospital and Clinics, Lucille Packard Children's Hospital"*

The binder is organized by five major tabs:

1. HCC Sign-in and Incident Action Plan;

2. HICS Job Action Sheets (JAS), HICS 214s (Unit Logs) and Notes;

3. Department Damage Reports;

4. Debrief Info;

5. After Action Report (AAR) and Timeline of Events

1st tab: HCC Sign-in and IAP:

The following HICS forms were used:

The HICS 252, Section Personnel Time Sheet was initiated at 1:15 on July 6th. The Incident Commander was the Chief Operating Officer. This form is completed throughout activation.[191]

The HICS 201, Incident Briefing, the HIMT chart was filled for Command and General Staff (the Section Chiefs). This form is completed prior to the briefing in the Operational Period.[192]

The 1st briefing was at 2:09 pm, 5 total admissions at this point, the Operating Room was ready to go, the bed availability was 16 in the Intensive Care Unit (ICU), 22 in Intermediate ICU, 26+ medical surgical beds; at 3:00 the hospital was still awaiting 41–74 "minor" patients estimated to arrive (the actual number that later arrived was much smaller).

[191] California EMSA, *The HICS Guidebook*, 2006. Page 403.

[192] Ibid.

The HICS 202 Incident Objectives:[193]

1. Confirm staffing/competencies

2. Confirm capacity

3. Confirm inbound

4. Complete standing up HCC

At 6:40 pm the Red Cross Family Unification Number was provided.

The HICS 203 Organization and Assignment List. This form is completed at the start of the first Operational Period, prior to each subsequent Operational Period, and as additional positions are staffed.[194]

The HICS 204 Branch Assignment List. This is completed at the start of each Operational Period.[195]

The HICS 207 HIMT Organization Chart. Positions filled were all Command positions (Incident Commander, Public Information Officer, Liaison Officer, Safety Officer and 2 Medical Technical Specialists), General Staff positions (Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Chief) and the Medical Care Branch Director and Security Branch Director under the Operations Section; and the Documentation Unit Leader under the Planning Section. This form is completed at the start of each Operational Period and as changes are made.[196]

2nd tab: <u>HICS Job Action Sheets (JAS), HICS 214s and notes:</u>

Job Action Sheets were observed and reviewed for the Incident Commander, the Operations Section Chiefs and the Planning Section Chief (three positions altogether) for the Immediate Operational Period of 0–2 hours and the Intermediate Operational Period of 2–12 hours

The HICS 214a Operational Log was completed by the Planning Chief and Operations Chief and Security Branch Director. This form is completed

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[193] Ibid. This form was renamed the Incident Action Plan or IAP with the Fifth Edition of HICS in order to achieve greater consistency with ICS.

[194] Ibid.

[195] Ibid.

[196] Ibid.

continuously as a tool used to record critical details and major decisions at all levels from activation through demobilization.[197]

The Scribe Minutes Log was also reviewed. This is a log Stanford developed.

3rd tab Department Damage Report

All departments reported they were adequately staffed, four departments recalled staff from home.

4th tab Debrief information and Data Collection sheets/Emails

A total of 125 staff participated in three different After Action/debrief meetings between 7–8 and 8–4-13.

7-8-13 Mass Casualty Triage Debrief, 15 staff signed in to participate

7-9-13 SFO Plane Crash/Code Triage Debrief, 78 staff signed in to participate

8-4-13 MCI AAR Debrief ED/Trauma, 32 staff signed in to participate

Twenty-six (26) data collection forms and 23 emails were reviewed with the focus of identifying comments, positive or negative, relative to HICS. Comments not directly related to HICS are not considered relevant.

No positive comments directly related to HICS on the Data Collection Forms and Emails:

Though there were dozens of positive comments that related to individual and team performance and the efficiency of the HCC, the data collection forms and emails did not contain positive comments that were directly related to HICS.

Two negative comments directly related to HICS on the Data Collection Forms and Emails:

"The HICS Job Action Plans are not as clear as they could be and appear more complex than necessary. There is also no Job Action Plan for a mass casualty event!" These two negative comments were written by one person.

5th tab After Action Report (AAR) and Timeline of Events

Much of the information previously presented in the summary of Stanford's response was taken from the AAR which reviews the performance of the Joint

[197] Ibid. Page 404.

Commission's six Critical Elements of Emergency Management; Communication, Resources and Assets, Staff Responsibilities, Utilities Management, and Patient Clinical and Support Activities.[198]

One positive comment directly related to HICS in the AAR:

One observation under the Communication element on the AAR was a strength directly related to HICS:

"Information traveled through appropriate HICS channels, both in terms of going up to the HCC and back down. The established HICS processes and procedures worked."[199]

No negative comments directly related to HICS in the AAR:

The AAR did not contain negative comments directly relevant to HICS.

[198] Stanford Hospitals and Clinics and Lucile Packard Children's Hospital 2013 SFO Plane Crash Mass Casualty Incident After Action Report/Improvement Plan, For Official Use Only. Page 11.

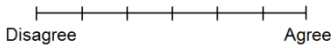
[199] Ibid. Page 12.

APPENDIX K. AFTER ACTION SURVEY OF HICS IMPLEMENTATION MODEL

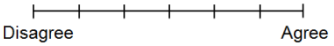
A. Implementation

1. Executive/Administrative Support

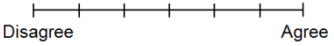
-Executive leadership supports HICS implementation



-Executives participate in HICS activations

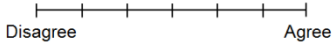


-the budget devoted to emergency preparedness is sufficient

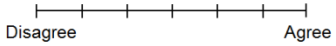


2. Planning and Tailoring

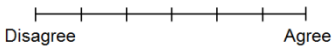
-an Emergency Program Coordinator position is allocated



- HICS Policies and Procedures are implemented

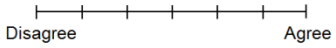


-HICS is modified as needed to meet the hospital's needs

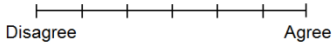


3. Training and Retraining

-Staff are trained in Command and General Staff positions

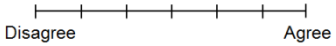


- Retraining is provided in 2 year intervals

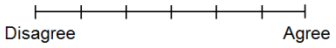


4. HICS Activations and Exercises

-HICS is activated twice yearly

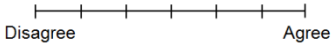


-HICS is activated at least four times yearly

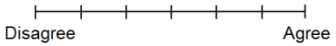


5. Communication

-the plan for internal communication is sufficient and redundant (a backup for the backup)

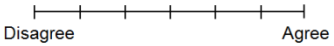


-the plan for external communication is sufficient and redundant



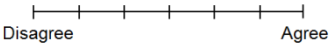
6. Coordination with External/Community Partners

-Coordination with External/Community Partners such as fire, law, EMS, emergency services is sufficient such that hospital preparedness and response is integrated



B. Successful Response

1. The use of HICS assisted the hospital in a successful response.



Comments:

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