Teamwork in Action:
The Asiana Plane Crash Response

Kevin Rose
Emergency Preparedness Specialist and Interim Medical Health Operational Area Coordinator, San Mateo County EMS Agency

Lann Wilder, EMT-P
Emergency Management Coordinator, Interim Hospital Associate Administrator – Emergency Management, Health and Safety and Food Services, San Francisco General Hospital and Trauma Center

Margaret Knudson, MD
Chief of Surgery, San Francisco General Hospital and Trauma Center

Rachael Kagan
Chief Communications Officer, San Francisco General Hospital and Trauma Center
Kevin Rose
Emergency Preparedness Specialist and Interim Medical Health Operational Area Coordinator (MHOAC)
San Mateo County EMS Agency

Kevin Rose is the emergency preparedness specialist for the San Mateo County EMS Agency, where he has worked since 2006. Kevin also currently serves as the Interim Medical Health Operational Area Coordinator (MHOAC) for San Mateo County as well as HPP coordinator, LEMSA coordinator and disaster healthcare volunteers administrator. He served as the MHOAC for the July 2013 Asiana Air Flight 214 Plane Crash at SFO and as the Deputy MHOAC for the September 2010 San Bruno Explosion. Prior to his work with the EMS Agency, Kevin worked as a legislative aide for the San Mateo County Board of Supervisors for five years and as a field representative for Congresswoman Anna Eshoo for two years. He has also worked in political consulting and public relations.

Lann Wilder, EMT-P
Emergency Management Coordinator, Interim Hospital Associate Administrator – Emergency Management, Health and Safety and Food Services
San Francisco General Hospital and Trauma Center

Lann Wilder has been involved in emergency management and emergency medical services for over 27 years. She has held positions as an EMT and paramedic field care provider, supervisor, instructor, quality improvement coordinator, and director of operations for San Francisco Ambulance Service and American Medical Response. Lann has served as a contributor and reviewer for the Hospital Preparedness Exercises Atlas of Resources and Tools by AHRQ, Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response published by the Institute of Medicine, and the most recent update to the Hospital Incident Command System (HICS). In addition to her role as the director of emergency management at San Francisco General Hospital and Trauma Center, Lann also serves as an associate administrator of safety and support services.
Margaret Knudson, MD
Chief of Surgery
San Francisco General Hospital and Trauma Center

Dr. Knudson became involved with the development of trauma systems in California, with a special interest in pediatric trauma, after a fellowship in pediatric surgery at Stanford University. After serving as the associate trauma director at Stanford Medical Center, she joined the teaching faculty at the University of California, San Francisco in 1989. Dr. Knudson is currently a professor of surgery at UCSF, and the principal investigator of the CDC-funded San Francisco Injury Center. Her major areas of research include simulation training for medical personnel, the prevention of thromboembolic complications in trauma patients, the use of ultrasound in trauma evaluation, resuscitation following hemorrhagic shock and injury prevention. Highly respected by her peers, Dr. Knudson was named to the list of U.S. News “America’s Top Doctors,” a distinction reserved for the top 1% of physicians in the nation for a given specialty.

Rachael Kagan
Chief Communications Officer, San Francisco General Hospital and Trauma Center

Rachael Kagan is a seasoned communications professional with expertise in strategic communications, media relations, community relations, crisis communications, public speaking and coaching. She is currently chief communications officer at San Francisco General Hospital and Trauma Center. She also serves on the board of the Women’s Community Clinic in San Francisco. Previously, Kagan served as communications leader for the Alameda County Medical Center, the California Association of Public Hospitals and the federal court-mandated reform of the state’s prison health care system. As a journalist, Kagan covered immigration, education and health care at newspapers in New York, New Jersey and California.
SFO Plane Crash Asiana Air Flight 214
July 6, 2013

Kevin Rose
Emergency Preparedness Specialist and
Interim Medical Health Operational Area Coordinator
San Mateo County EMS Agency

San Mateo County
Population: 718,451
(14th Most Populous in CA)
Size: 449 square miles
(3rd Smallest in CA)
San Francisco Peninsula
San Mateo Bridge (7 miles)
Foothills 2,500 ft. Elevation
San Andreas Fault
Hetch Hetchy Water
Bayside (90+% Pop.)
Coastside (~ 10% Pop.)

San Mateo County
911 Pre-hospital EMS:
Fire First Response
AMR Ambulance
Hospital: Trauma
San Francisco General
Stanford Hospital and Clinics
Hospital: 24/7 ED
Seton Medical Center
Kaiser South San Francisco
Peninsula Medical Center
San Mateo Medical Center
Sequoia Hospital
Kaiser Redwood City
San Francisco International Airport (SFO)
Emergency Response Plan

• SFO Annual Air Crisis Exercise
• Alert 3
  – San Mateo County (SMCO) Code 2000 – Law
  – SMCO Alarm 303 – Fire
  – SMCO – Activation of MCI Plan
• Greater Ambulance Alarm Plan
• Expectation: local and regional surge in trauma, burn, hospital and pre-hospital

Asiana Air Flight 214 Destruction
Asiana Air Flight 214 Destruction (cont.)

- Crash landing of Boeing 777
- Loss of tail and other parts of plane causing trail of airplane debris
- Debris field more than 9 football fields in length from the sea wall to the resting site
- Leaking jet fuel
- Aircraft lavatory waste
- Exposed luggage
- Imploded chutes on right side of plane
- 307 people dispersed from sea wall to crash site
  - 291 passengers
  - 16 flight crew
- Explosion following set-up of tarmac
  Casualty Collection Point
Field Response – Tarmac and Terminal (cont.)

Field Response

Response Times
- 1128: Plane crash
- 1129: First 911 call
- 1130: First AMR ambulance on-scene
- 1305: Tarmac operations cleared – transition to terminal operations
- 1640: Transport of last patient from SFO terminal

Resources
- 52 transport ambulances (85% from SF Fire and AMR)
- 4 air ambulance (USCG and 3 Cal Star)
- 2 buses (SFIA and SamTrans)
- 178+ patients transported within 5 hours

Success: Unified Command

Asiana Air Flight 214 Hospitals
Patients/Receiving Hospitals

Three Trauma Hospitals (110)
- Stanford Hospital (55)
- San Francisco General (53)
- Eden Medical Center (2)

Three San Mateo County Hospitals (29)
- Peninsula (14)
- Kaiser Redwood City (10)
- Sequoia Hospital (5)

Patients/Receiving Hospitals (cont.)

5 Additional San Francisco Hospitals (39)
- UCSF (14)
- CPMC (9)
- St. Francis (7)
- Kaiser SF (5)
- St. Mary’s (4)

Success: Hospital Surge

MHOAC/EMS Notifications

Response Times
- 1140: EMSystem MCI Polling – asking for polling #s (1205; 1300)
- 1142/5: EMS On Call notified
- 1152: All EMS notified, including MHOAC
- 1200-1300: EMS On Call/MHOAC communications with Dispatch, Field and Hospitals
- 1244: Communication with Region – Request for AMB Polling
- 1400: EMS Agency Offices
- 1432: Initial SitRep to OA, Region II, State (1615, 1944)
- 1446: EMSystem Regional Announcements (1454; 1501; 1700)

Resource Requests – None

Success: Situational Awareness
MHOAC/EMS: Bridging Situational Awareness Between Pre-hospital and Hospital

Pre-hospital
- Do you have enough resources for triage/treatment/transport?
- Are you getting the bed(s) you need from hospitals?
- What are your triage tags (Reds/Yellows/Greens) and total count?
- Where are the patients going?
- How many more patients?
- Is the MCI scene cleared?

Hospital
- Are you aware of the situation?
- How are you responding internally (e.g., activation of surge and HCC)?
- Have you heard from the field?
- Are you receiving any patients? Have you received any patients?
- Have you discharged any patients?
- Are you scaling down? Deactivating?

Patient Information
- During event, EMS/MHOAC tries to collect numbers of how many patients were transported and to what hospitals
- Post-event, EMS continues to collect patient counts and begins trying to collect patient demographics from hospitals:
  - # of patients transported (Triage Tag #)
  - # of patients treated at hospital

Post-Event After Action Reporting

Pre-hospital
- 911 ambulance provider and BLS partners
- Fire EMS
- Air ambulance provider
- Dispatch

Hospital
- Safety Officers/Emergency Managers
- ED MDs and RNs
- EMS

EMS
- State/Region/LEMSAs
- SFO (Airlines, ARC, CBP, FBI, EMS, Fire, Ops)
- NTSB (Federal Aviation Disaster Family Assistance Plan)
Discussion Points
...To Be Continued...

- Communication — Link between field, hospital, EMS, Command Centers
- Patient triage/tracking — pre-hospital and hospital utilization of Triage Tag #
- Patient identification — hospital vs. every agency that shows up
- Patient Sharing/Reunification with American Red Cross, NTSB and CBP

Teamwork in Action:
The SFGH Response to the Crash of Asiana 214

Lann Wilder, EMT-P
Emergency Management Coordinator
Interim Hospital Associate Administrator – Emergency Management, Health and Safety and Food Services
San Francisco General Hospital and Trauma Center
Overview

Disaster Response
Clinical and Trauma Care
Communications and Media

Crash 11:28 am

How it happened

1. Police was first on scene, followed by ambulance M1178
2. Police officers on scene provided care for passengers
3. Passengers were moved to triage area
4. Firefighters and paramedics arrived on scene
5. Emergency medical personnel began transporting patients

SFGH Response

Notification and Activation
11:35 – 12:05: Radio and TV reports
12:06: SF EMS Red Alert received
12:17: HICS and Disaster Plan Activated
12:30: Incident Management Team on-site
First patients arrive at ED

“Prepare for the First, the Worst and the Most”

11:35 – 12:05: Radio and TV reports
12:06: SF EMS Red Alert received
12:17: HICS and Disaster Plan Activated
12:30: Incident Management Team on-site
First patients arrive at ED

“Prepare for the First, the Worst and the Most”
“Code Triage” Mass Casualty Plan

Immediate Actions — Every Department Prepares for Surge:
• Clear ED – expedited admits and discharges
• Radiology and EVS move available gurneys to ambulance bay
• Prep OR and PACU for rapid turnover damage control surgeries
• Open inpatient beds
• Open clinic treatment areas for minor/delayed patients

HICS and Incident Action Planning
• Small HICS Team
• Pre-Set Initial IAP
• IMT Roving
• HCC Briefings
• Pediatric Clinic
• Staffing Contingencies

Patients Came in Waves
• About 12:30: 10 patients (8 adults, 2 children): 5 critical patients (1 child) and 5 serious
• 1 – 4 pm: 18 patients, conditions range from critical to good
• 4 – 5 pm: 7 patients
• 5 – 7 pm: 18 patients, all minor category

53 total patients (36 admitted) on day 1
Sunday – Wednesday

- **Sunday:** 9 patients (8 adults, 1 child) arrived at ED, all treated/released
- **Monday:** 4 children seen at Pediatric Urgent Care, treated and released; 17 patients still admitted (6 in ICU)
- **Wednesday:** 1 adult treated and released from ED

Grand total of 67 patients treated:
36 adults, 31 children

Patient Death 7/12/13

"San Francisco General Hospital is sad to announce that a child who was injured in the Asiana Airlines accident died this morning."

Unique Aspects of 214 Crash

- Rarity of plane crashes with > 100 injured
- Unusual mechanisms of injury
- International diplomatic and security issues
- Language and cultural issues
- High number of pediatric patients with no parents present
Complexities of International Security and Family Reunification

- Patients not cleared customs
- Staff from 3 consulates
- Numerous law enforcement and other agencies on-site
- No passports/identification
- Confusion with names
- 1 patient unidentified 2 days
What Worked Well

• Surge preparation
• Patient assessment and treatment
• Kept families together
• Sharing patient names with Red Cross
• “Wrap around care” and 3-step check-out
• Collaboration — “yes we can”
• Media relations
• Schwartz center rounds/staff care

Improvements Needed

• Redundant IMT notification methods
• Patient tracking dashboard
• Better plan for phone calls
• Volunteers/press/lawyers
• Call U.S. State Department for support
• Notify CDPH earlier re: use of tent
• Integration of mental health
• Patient decontamination
Surgical Response to Disasters

M. Margaret Knudson MD, FACS
Chief of Surgery
San Francisco General Hospital and Trauma Center

Training Surgeons for Disasters

“A mass casualty event is not just another busy night in an urban trauma center!” ACS/COT
Mass Casualty Management: A Weekly Event
Elster et al: Implications of Combat Casualty Care for Mass Casualty Care, JAMA 2013

4 Operating Rooms: 2 Patients Each

July 6, 2013, 12:30 pm
- First wave of injured patients arrive
- Six critical condition
- “Burns and inhalation injuries?”
- Severe blunt trauma
- Two very unstable: taken to the OR within minutes
Critical Injuries: First Wave

<table>
<thead>
<tr>
<th>PATIENT</th>
<th>INJURIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>TBI, facial burns, inhalation*, spine</td>
</tr>
<tr>
<td>#2</td>
<td>Major intestinal, spine with paralysis, road burns</td>
</tr>
<tr>
<td>#3</td>
<td>Chest, intestinal, spine with paralysis, mandible, &gt;30% TBSA road burns</td>
</tr>
<tr>
<td>#4</td>
<td>Extremity injury with compartment Sx</td>
</tr>
<tr>
<td>#5</td>
<td>Severe TBI, spine, sternum, ribs</td>
</tr>
<tr>
<td>#6</td>
<td>TBI, spine, sternum, extremity fractures</td>
</tr>
</tbody>
</table>

Chance Fractures: A Rare Occurrence

- Combination of intestinal injuries and spine fractures
- Most commonly seen with lap-belt use
- **Severe flexion over a fixed object**
- Most common injuries: spine, chest
- Two patients with 3rd degree road “burn”

Operating Room: First 48 Hours

<table>
<thead>
<tr>
<th>Crash Related</th>
<th>Other Emergencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage control laparotomy; burns</td>
<td>Hand fracture</td>
</tr>
<tr>
<td>Reduction of fracture; fasciotomy</td>
<td>Appendectomy</td>
</tr>
<tr>
<td>Damage control laparotomy; burns</td>
<td>Stab wound to the abdomen</td>
</tr>
<tr>
<td>Laminectomy; spinal fusion</td>
<td>Wrist fracture</td>
</tr>
<tr>
<td>Spinal decompression</td>
<td>Cranietomy</td>
</tr>
<tr>
<td>Cranietomy</td>
<td>Wound debridement</td>
</tr>
<tr>
<td>Spinal fusion</td>
<td>Wound debridement</td>
</tr>
<tr>
<td>Take-back laparotomy</td>
<td>Infection</td>
</tr>
<tr>
<td>Take-back laparotomy</td>
<td>Fracture</td>
</tr>
<tr>
<td>Fracture</td>
<td>Fracture</td>
</tr>
</tbody>
</table>
Other Unique Challenges

Blood bank supply: >100 U
Judicious monitored use

Keeping Track of Patients/Injuries
Singular Focus: Doing the Right Thing

Potential Toxic Exposure

- Strange metabolic picture:
  acidosis, hypocalcemia, hypotension
- Persisted for days among survivors
- Toxic exposure: jet fuels, foam, cargo?
Emotional Stress: Families

- 2 deaths at the scene
- 1 death in our ICU after several days

The Tale Goes on for Days, Weeks and Months

- Long after the press goes home...
- And the public almost forgets...
- **There are still critically injured patients**
- One patient has already had > 20 operations

Decompression for the Team
SFGH Communications and Media Response

Rachael Kagan
Chief Communications Officer
San Francisco General Hospital and Trauma Center

Timing is everything
Media Response — Day 1

- Hourly briefings
- Mass Casualty Incident data
- Physician speaker
- What people can do
- Social media

Media Response — Day 2

- Regular briefings
- Media hotline
- Email blasts
- Physician/VIP speakers
- Requests for patients/family

Media Response — The Week

- Daily updates
- Website
- Media hotline
- In-depth stories with physicians and nurses
- No patient interviews
- Security issues
Lessons Learned

**Worked**
- Quick
- Accurate
- Reliable
- Consistent
- Collaborative

**Challenges**
- Technology
- Fatigue
- Staff needs

Questions?

Kevin Rose  
(650) 573-2774  
krose@smcgov.org

Lann Wilder  
(415) 206-3397  
lann.wilder@sfdph.org

Margaret Knudson, MD  
(415) 206-4622  
pknudson@sfgsurg.ucsf.edu

Rachael Kagan  
(415) 206-3170  
rachael.kagan@sfdph.org