Weather Hazards & Forecast Challenges across the Commonwealth

Presentation & Panel Discussion
Tuesday, May 17, 2016 1:30-3:00PM
Wednesday, May 18, 2016 8:30-10:00AM

Session Outline

Introduction
Jeff Jumper, PEMA State Meteorologist

Weather Trivia
Peter Jung, Warning Coordination Meteorologist – NWS State College
Fred McMullen, Warning Coordination Meteorologist – NWS Pittsburgh

Seasonality of PA Weather & Forecast Challenges
Dr. John Scala, Certified Consulting Meteorologist & WGAL-TV

Session Outline

Panel Discussion
Moderator
Barbara Watson, Meteorologist-in-Charge – NWS State College

Panel Members:
Peter Jung, Warning Coordination Meteorologist – NWS State College
Fred McMullen, Warning Coordination Meteorologist – NWS Pittsburgh
Dr. John Scala, Certified Consulting Meteorologist & WGAL-TV
Joe Murgo, WTAJ-TV Chief Meteorologist
Jeff Jumper, PEMA State Meteorologist
Panel Questions

How would you describe your audience on social media?
How has it evolved?
How do you expect it to change?

Panel Questions

How do you handle misinformation?

Panel Questions

What is your biggest weather fear for your jurisdiction?
Panel Questions

Which particular weather event type has the greatest effect on you?

Panel Questions

What are your primary sources of weather information?

Why?

Panel Questions

How often do you need a forecast update?

What forecast changes do you feel warrant an update?
Panel Questions

How much lead time do you require in non-severe warnings & advisories?

(i.e., freezing rain, wind chill, fire weather)
Pennsylvania High Impact Weather Trivia

Did this happen in Pennsylvania?
If so, where (and when)?

EF-3 Tornado: Lyons, PA (Berks County) May 30, 1998

Wall Cloud: Allentown, PA (Lehigh County) June 30, 2015
EF-1 Tornado: Lawrence County, PA 2013

Heavy Snow: Terra Alta (Preston County, WV) 2010

EF-2 Tornado: White Horse (Lancaster County) Feb 24, 2016
Large Hail: Danville, PA (Montour County) May 22, 2014

Hurricane Winds - Florida

TS Lee: Lycoming, Dauphin and Sullivan Counties, Sep 5-9, 2011
Heavy Snow: Southern Tier of PA, January 23-24, 2016

Flooding (Rain/Snowmelt) January 19, 1996

EF-3 Tornado: Salisbury, PA (Somerset County) May 31, 1998
Snow Squall: Erie, PA (Erie County) – November 18, 2014
Weather Resources

Local National Weather Service Weather Forecast Offices are your primary point of contact for county specific weather and climate information.

- **National Weather Service – Binghamton, NY**
  - Bradford, Lackawanna, Luzerne, Pike, Susquehanna, Wayne and Wyoming counties
  - [http://www.weather.gov/bgm/](http://www.weather.gov/bgm/)

- **National Weather Service – State College, PA**
  - Adams, Bedford, Blair, Cambria, Cameron, Centre, Clearfield, Clinton, Columbia, Cumberland, Dauphin, Elk, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Lycoming, McKean, Mifflin, Montour, Northumberland, Perry, Potter, Schuylkill, Snyder, Somerset, Sullivan, Tioga, Union, York and Warren counties
  - [http://www.weather.gov/ctp/](http://www.weather.gov/ctp/)

- **National Weather Service – Mounty Holly, NJ**
  - Berks, Bucks, Carbon, Chester, Delaware, Lehigh, Monroe, Montgomery, Northampton and Philadelphia counties

- **National Weather Service – Pittsburgh, PA**
  - Allegheny, Armstrong, Beaver, Butler, Clarion, Fayette, Forest, Greene, Indiana, Jefferson, Lawrence, Mercer, Venango, Washington and Westmoreland counties
  - [http://www.weather.gov/pbz/](http://www.weather.gov/pbz/)

- **National Weather Service – Cleveland, OH**
  - Crawford and Erie counties
  - [http://www.weather.gov/cle/](http://www.weather.gov/cle/)
Weather Resources

Additional information can be found on rivers/hydrology through the River Forecast Centers:

- Mid-Atlantic River Forecast Center – http://www.weather.gov/marfc/
- Ohio River Forecast Center – http://www.weather.gov/ohrfc/

![River Forecast Centers serving Pennsylvania]

Additional information can be found on climate through the following resources:

- **Pennsylvania State Climatologist**
  - http://climate.met.psu.edu/ – Phone: 814-865-8732
- **National Centers for Environmental Information (NCEI)**
  - formerly National Climatic Data Center (NCDC)
    - https://www.ncei.noaa.gov/ – Phone: 828-271-4800
- **Climate.gov**
  - https://www.climate.gov/

Additional weather information can be found through the following resources:

- **Storm Prediction Center** – http://www.spc.noaa.gov/climo/online/
- **National Hurricane Center** – http://www.nhc.noaa.gov/climo/
- **Flood Insurance Rate Maps (FIRMs)**
  - PA Department of Community & Economic Development – http://www.pafloodmaps.com/
- **FEMA Flood Map Service Zone** – https://msc.fema.gov/portal
- **Earthquakes, Energy, Soil, Water Use, Volcanos**
- **Remote Sensing Data**
PEMA’s 2016 Emergency Management Conference
Weather Hazards and Forecasting Challenges across the Commonwealth

Pennsylvania
>46,000 mi² – Ranks 32nd

Mount Davis 3213’
Delaware River 0’

Range of Warm/Cold Season Weather Hazards

Winter of 2014-15
PA DOT - $272 Million across 40,000 miles of Roads
(Budget $203 Million)
Pennsylvania
46,000 mi
Ranks 32

9/8/2011
Wilkes-Barre, PA
September 8, 2011
Image Credit: Matt Rourke, TimesUnion

Flooding, Flash Flooding, & Dam Failure

2015 Pennsylvania THIRA:
A threat and risk analysis for the Commonwealth

What is Pennsylvania’s Number 1 Threat?

Top Ten Include
Winter Storms (#3)
Extreme Temperatures (#7T)
Tornado/Wind Storm (#8)
Hurricane/Tropical System/Nor'easter (#10)
Allegheny River Flooding, Pittsburgh
19-21 January 1996

National Weather Service - Pittsburgh

September 8, 2011
Credit: John Scala

National Flood Insurance Program Coverage:
$250,000 for structure, up to $100,000 for possessions

National Flood Insurance Program Payments Since 1978
Across Pennsylvania Through April 30, 2013: $1,129,962,434

What was PA's national ranking in 2014 for claims paid per policy in force?

Lancaster, PA
September 8, 2011
Credit: John Scala

Ike
Katrina
Irene
Sandy
Average Number of Thunderstorm Days Per Year

National Weather Service

5-year Flash Density Map — U.S.

Largest 50 NCAA Div-I Football Stadiums

Gratz et al (2005)
"I heard thunder but I didn't see any lightning so I'm safe."

"Lightning never strikes the same place twice."

"Heat lightning is a real phenomena."

What makes a thunderstorm severe?

Combination of instability and wind shear.
Brooks et al. 2003

**Seasonal Cycle of Severe**

Credit: John Scala

Campbelltown, PA
July 14, 2004

Credit: John Scala
Doppler weather radar detects all cloud-based rotations before they become tornadoes.
...if only forecasting were this simple

Numerical Weather Prediction

<table>
<thead>
<tr>
<th>Global Models (operational)</th>
<th>Mesoscale Models (operational)</th>
<th>Ensemble Prediction Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOGAPS</td>
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<td>NCEP</td>
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Credit: John Scala
Predicting a Winter Storm – January 22-24, 2016

Credit: John Scala

Total Observed Snowfall for January 22nd - 24th, 2016

NWS/LMK

Forecast Confidence v Uncertainty

Longer Lead Times = More Forecast Uncertainty
Note that Confidence is Highest in Warning and Alert Situations

NWS/LMK
Challenge of Conveying Life-Threatening Weather Information

- Pre-conditioning of response to severe weather
- Individual perception of risk and vulnerability
- Variable tolerances (human, physical, programmatic)
- Communicating range of impacts to diverse audience

Traffic jam - Moore, OK
May 20, 2013

Smithville, Mississippi
April 27, 2011

“…providing more accurate forecasts may not lead to rational decision making.”
Harold Brooks, National Severe Storms Lab

Communicating Risk…

…not all outcomes are predictable
"Disaster risk is growing. We continue to put more people and more stuff in harm’s way, whether it’s coastal communities, earthquake prone areas, or flood plains."

- David Applegate, Assoc. Dir.
  U.S. Geological Survey
Kinzua Viaduct Bridge – constructed 1882, improved 1900…

Credit: John Scala

S Annville Township
Healthy Hardwood
2.5 feet in Diameter

Credit: John Scala
2014 – NFIP $373 Million in Flood claim payouts
PA – 785 claims at $14.36 Million (5)
FL – 3,823 claims at $115.84 Million (1)
According to Munich Re:
- 650 Fatalities
- $15 Billion Losses
- 26,000 Severe Storms
- 6 Atlantic Basin Hurricanes
- 1,300 Tornadoes
- 5,000 Floods

PA (2015) – 15 Fatalities, 15 Injuries, $20.54 Million

Weather Fatalities: Flood, Lightning, Tornado, Hurricane, Heat, Winter, Cold, Wind, Rip Currents
A non-severe thunderstorm can develop in as little as _____ minutes

Credit: John Scala
Central Virginia All Hazards Incident Management Team helps coordinate massive search for Hannah Graham
Command Structure

CPD
- Inv
- PIO

EM
- City/County, UVA
- State

- Law
- Fire
- Authority
- Jurisdiction
- Family
- Support
- EM
- IMT

7/1/2015
This presentation will **NOT** focus on anything related to investigation or evidence by Law Enforcement—**ONLY** the Searches coordinated by Emergency Management
Hannah Graham Search

Charlottesville-Albemarle

Emergency Management

OPERATIONAL PERIOD(S)

Date From: 9/20/2014  Date To: 9/20/2014
Time From: 0600  Time To: 1900

Date & Time Prepared: 9/19/2014 @ 2030
The Search for Hannah Graham
Hannah

- 18 years old female student at UVA
- Northern Virginia native
- UVA ski team
- 5' 11” thin, blue eyes, brown hair
- Left a party on 9/13/14, alone & reportedly intoxicated, on her way home
- Got lost
Video in her apartment building shows her at 2130 hours Friday, 9/12/14

Left party at 0015 hours on Saturday, 9/13/2014

Last heard from on 9/13/14 at 0120 hours in a text to that she was lost

Security video placed her near downtown with someone following her

CPD notified at 1634 hours on Sunday, 9/14/15
Charlottesville, Virginia

- County Seat for Albemarle County
- 45,000 population
- 10 square miles-urban
- Home to the University of Virginia
Charlottesville Public Safety

- Police Chief Tim Longest
- Fire Chief Charles Werner
- Sheriff James Brown
- Emergency Manager Kirby Felts

7/1/2015
The “Face” of the media
Charlottesville, Virginia

City of Charlottesville

Base Map

August 2013

Legend
- City Municipal Boundary
- Parks
- Public Parks
- Public Spaces
  - Downtown Mall
  - Downtown Pavilion

Scale: 1:12,000

Distance: 0, 500,000, 2,000, 3,000 Feet

7/1/2015
Albemarle County, Virginia

- Surrounds the City of Charlottesville
- 93,000 population
- 726 square miles—suburban and rural
- Home to Thomas Jefferson and James Monroe (James Madison nearby)
Albemarle Public Safety

- Sheriff Chip Harding
- Police Chief Steve Sellers
- Fire Chief Dan Eggleston
- Emergency Manager Kirby Felts
University of Virginia

- 20,000 students
- University Police Chief Michael Gibson
- University Office of Emergency Preparedness Director Marge Sidebottom
Virginia Department of Emergency Management

- State Coordinator Jeff Stern
- SAR Coordinator Mark Eggeman
- Region 3 Coordinator Gene Stewart
Last minute instructions
Types of IMTs

Type 5: Local Village and Township Level - a "pool" of primarily fire officers from several neighboring departments trained to serve in Command and General Staff positions during the first 6-12 hours of a major or complex incident.
Type 4: City, County or Fire District Level - a designated team of fire, EMS, and possibly law enforcement officers from a larger and generally more populated area, typically within a single jurisdiction (city or county), activated when necessary to manage a major or complex incident during the first 6-12 hours and possibly transition to a Type 3 IMT.
**Type 3: State or Metropolitan Area Level** - a standing team of trained personnel from different departments, organizations, agencies, and jurisdictions within a state or DHS Urban Area Security Initiative (UASI) region, activated to support incident management at incidents that extend beyond one operational period. Type 3 IMTs will respond throughout the State or large portions of the State, depending upon State-specific laws, policies, and regulations.
Type 2: National and State Level - a Federally or State-certified team; has less staffing than Type 1 IMTs. There are 35 Type 2 IMTs currently in existence, and operate through the U.S. Forest Service and State Foresters.
**Type 1**: National and State Level - a Federally or State-certified team; is the largest staffed most fully equipped and self-contained. Sixteen Type 1 IMTs are now in existence, and operate through the U.S. Forest Service.
Background of AHIMTs

- Post 9/11/2001 - NIMS created to provide a consistent approach for natural and manmade disasters

- Created under Homeland Security Presidential Directive #5

- Funding is based on Regional Cooperation
Background

- Few jurisdictions have the financial, human, or physical resources to implement a large IMT

- Disasters often resulted in numerous small IMTs competing for resources

- Low Frequency/High Risk Events
Benefits of Type 3 AHIMT

- Larger jurisdictions help each other
- Larger jurisdictions help smaller ones
- Good Stewards of our communities
- Develop a larger personnel pool
- Develop a larger equipment pool
- Multiple disciplines increase strength
- Better access to funding
Benefits of a Type 3 AHIMT

- Better decision making
- Unbiased perspective
- Improved productivity
- More emphasis on safety
- Better management of resources
- Better tracking of costs
Key words

- Collaboration
- Cooperation
- Consensus
- Consistency
Pitfalls

- Interpersonal Dynamics
- “Turf Battles”
- Competition
- Personality Conflicts
The Beginning of the Search

- Delay in reporting due to typical college lifestyle
- Investigation began as a typical missing college student
- Soon transitioned into possible criminal activity and Law Enforcement expanded their command structure
- Local EM requested VDEM support
- Attracted National Media attention
One of many media trucks
End Result

- Developed into the largest coordinated search ever conducted in the Commonwealth of Virginia
- The CVAHIMT was able to be very successful in a supporting role and receive many accolades from all
- The downside is that Hannah’s body was found a few weeks later
How we got there

- VDEM began assisting local EM and Fire in support of local PD
- VDEM Coordinator Jeff Stern called the CVAHIMT Program Manager Lee Williams on Thursday, 9/18 to pre-alert us for a potential activation
- Official alert came at 1900 hours for a report to the ICP on 9/19 at 1000 hours
Many reservations by state and local officials on whether an IMT was needed and how we could “add value”

Request for a maximum of 14 members in order to not overwhelm the localities

Advance Team departed at 0700 to get SA and in-briefing
Used our previous AARs and Lessons Learned

- Search for Robbie Wood in Hanover, VA

- Type 1 and Type 2 IMTs on Wildfire Training Assignments
  - Texas
  - New Mexico
  - Washington (2 fires)
  - Montana (3 fires)
Robbie Wood Search
Initial Situational Awareness

- Separate ICP for EM and PD
- EM ICP being relocated to JPJ
- Initial assignment was to support local IC with Plans, Logistics, Safety, and Liaison
- Political plan was to support trained SAR teams with several hundred citizen volunteers
Citizen groups set up a registration website to solicit volunteers.

CERT members would be brought in to assist the CVAHIMT.

The search could not interfere with routine public safety staffing in the area.

The search could not interfere with the public safety communications system.
The PLAN

- Get Unified Command to agree on Objectives
- Develop IAP to support objectives
- Friday afternoon-deliver JIT training to 80 CERT members to support the CVAHIMT in administrative functions
- Develop IAP and OPS Briefing for 1400 volunteers who had signed up online
Command and General Staff Meeting
Additional jobs

- Call back for additional CVAHIMT members!
- Brief approximately 50 media representatives from local and national media outlets
- Coordinate Communications Plan with 5 Virginia Radio Caches
- Conduct Ops Briefing in John Paul Jones Arena for 1400 searchers
Media Briefing
CERT Just in Time Training
Ops Briefing
Ops Briefing
Additional jobs

- Develop check in procedure for citizen volunteers based on health and background
- Develop organization plan for the OSC to be able to manage citizen volunteers-
- Utilized 5 Divisions on Saturday and 6 Divisions on Sunday

7/1/2015
Incident Check in
Pre-registered Check in
Use of Media
Resource Unit
Division Briefings
Division Boundaries
Additional jobs

- Develop Traffic Plan utilizing University Transit Bus System
- Develop Food Unit utilizing University Caterers for John Paul Jones Arena
- Develop Rehab Plan to insure adequate rotation of crews
- Develop Safety Briefing, Medical Plan, and Forensic Plan
Traffic Plan
Food Unit
Additional Jobs

- Staff a Resource Unit to insure accountability
- Staff a Situation Unit to update the IC and OSC throughout the day
- Staff a Liaison Officer to coordinate Assisting and Cooperating Agencies
- Develop a Demob Plan
Website had expanded and we checked in 1865 untrained volunteers and 200 SAR team members

All plans worked according to IAP

Maintained 100% accountability for 2065 operational resources

Treated 3 injuries with only 1 transported (bee sting)
Saturday morning

- Repeaters and portable antennas worked as planned
- LOFR coordinated with 37 Assisting and Cooperating Agencies
- Located numerous clues to have Forensic Unit identify and investigate
- Completed 9397 manhours of searching
Command Post
Plans Section
CVAHIMT Results

- The Benefits will outweigh the obstacles
- Develop Regional Support
- Develop lasting Relationships
Vision

Prepared to help when you need us most.
Mission Statement

The mission of the Central Virginia All Hazards Incident Management Team is to respond upon request; providing a trained, qualified team capable of supporting and assisting communities in the management of events and incidents.
Value Statement

We will serve as stewards of our communities rooted in the value sets of compassion, competency, and commitment.
Team Success

- Requested to work additional ops period
- Coordinated among all agencies
- Numerous accolades from Local and State Agencies
- Recognition from Virginia Secretary of Public Safety, Deputy Secretary, and Coordinator of VDEM
Questions?

Contact:

LeeWilliams@cvahimt.org
(804) 513-1645
Mental Health Crisis Response in the Community For First Responders
A Crisis is defined as a Critical Incident which threatens to overwhelm normal ability to adapt and problem-solve.
First Responders react to Critical Incidents (e.g., accidents, fires, acts of violence) on a daily basis. While the general public or those directly affected by the incident might see these events as a “crisis”, the responders might assess these events as: “not too bad” or “bad, but we got everyone out” or “really bad, but could have been a lot worse.”
Critical Incidents are “unusually challenging events that have the potential to create significant human distress and can overwhelm one’s usual coping mechanisms” (Everly, 2016).
The Federal Emergency Management Agency (FEMA) defines three levels of Critical Incidents:

1. **Emergencies** (Local events that can be effectively managed by local responders)
2. **Disasters** (Events that exceed local resources)
3. **Catastrophies** (Events which exceed all response capacity)
Crisis is the psychological and physical distress that occurs in direct response to the Critical Incident. “Normal” ability to cope and manage the mental, emotional and behavioral reactions is temporarily suspended. This is an extremely uncomfortable state in which the person is flooded with contradictory thoughts and emotions, and there is a strong desire to escape this state as rapidly as possible.
Trauma is the sum of the Critical Incident and Crisis reaction, and refers to the short and long-term impacts of the event on person(s). Trauma has biological, psychological and social impact on a person or group.

1. Biological – Release of stress hormones (epinephrine, norepinephrine, dopamine), which then are depleted.

2. Psychological – shock, numbing, intense anxiety, anger, confusion, dissociation, time distortion

3. Behavioral – Fight, Flight or Freeze
For a Crisis to become a Trauma, there is a complex interaction between the intensity and duration of the Critical Incident, the Personal Biopsychosocial history of the persons effected and the availability of mitigating supports.

<table>
<thead>
<tr>
<th>Event</th>
<th>Personal Biopsychosocial History</th>
<th>Social/Community Supports</th>
<th>Short/Long Term Outcomes</th>
</tr>
</thead>
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Terrorism is a general description for deliberate events, perpetrated by humans, designed to create/evoke trauma and intentionally destabilize individuals and the social support system. Terrorism has also been described as “Psychological Warfare” or “Asymmetric Warfare” as the goal is to defeat the target by demoralizing and engendering fear.
Whether terrorism or not, often the most traumatic events are those wherein a deliberate, purposeful act by one human being on others is committed. These can be large events (e.g., 9/11/2001) or small events (e.g., rape, assault, murder). These types of events often evoke the most powerful feelings (e.g., rage, confusion, blaming).
“Trauma destroys cognitive schemas (our maps about how the world should operate) regarding safety and self efficacy” (Bessel Vanderkolk, 1989).
Crisis Response and Crisis Intervention

1. Crisis Response is the deployment of appropriate resources to the individuals impacted by the event.

2. Crisis Intervention is what those resources do.
Crisis Intervention is to Psychotherapy as First Aid is to Surgery

(Everly and Mitchell, 1999)
Crisis Intervention is an immediate, supportive intervention designed to mediate and stabilize the crisis, not the event. The immediate goal is stabilization, symptom reduction and restoration of normal functioning, or referral for more intensive intervention (Caplan, 1964).
The PIE Model:

1. Proximity – Go to where you are needed
2. Immediacy – Go as quickly as possible to the persons affected
3. Expectancy – The reactions are viewed as “normal reactions to abnormal events”, and that stabilization will happen; that the reactions are not pathological.
World War I and World War II

For combat fatigue (acute stress disorders) “treatment within the sound of artillery” returns 70-80% of soldiers to duty within hours (Salman, 1917)

Removing the soldier from the front returns only 5% of soldiers back to duty (Artiss, 1963)
Common Models of Crisis Intervention

1. Psychological First Aid (e.g., American Red Cross)
2. Mental Health First Aid (Adult and Children)
3. SAFER-R (Everly, 1995)
4. RAPID PFA (Johns Hopkins’ CPHP)
5. Resilient Moment Communications Model
6. Pastoral Crisis Intervention (Everly, 2000)
7. Critical Incident Stress Management (Primarily for first responders)
All Crisis Intervention Models have Key Elements (U.S. Department of Health and Human Services, 2004)

1. Protection from future harm
2. Providing opportunity to talk, but without pressure
3. Non-judgmental listening and reflection
4. Displaying genuine compassion
5. Identify basic needs and get these met
6. Ask for feedback and try to address concerns
7. Discourage negative coping (e.g., alcohol)
8. Encourage positive coping (e.g., return to family routines, exercise, relaxation techniques)
9. Encourage social connections
10. Offer further support if appropriate (e.g., followup)
11. Referral to professional or support services as appropriate
Example: The SAFER-R Model (Everly, 1995)

1. Stabilization - Remove the persons from the immediate event area if needed. Connect with the person and meet basic needs (e.g. get a cup of coffee, water. Introduce yourself and your role. Ask: “What do you need right now? How can I be of help?”
Example: The SAFER-R Model (Everly, 1995)

2. Acknowledgment of the Crisis - This is the person describing the event, often with emotions, but sometimes in a numbed state. “What can you tell me about what happened?” The effort here is not to evoke more emotions, but to honor the reaction and keep the person more cognitive to gain some emotional regulation. “How are you doing now?” can anchor the person into the current moment.
Example: The SAFER-R Model (Everly, 1995)

3. Facilitation of Understanding - This is often referred to as “normalization of the reaction to terrible”. Human emotional reaction to overwhelming stress are normal reactions to abnormal events. Hormonal changes in response to stress are part of our normal adaptive reactions. People react in many ways, but these reactions are temporary and reflect our brain resetting itself after an overload.
4. Encourage Adaptive Coping - The use of social support is key to recovery. Being able to talk about and reflect is critical, but in the initial moments of crisis, often there is a loss of future orientation and a diminished capacity to use normal coping skills. Here, the intervention allows for emotional release, cognitive restructuring, delaying of impulsive reactions, drawing from the person’s own coping history to find things that may help. Simple things such as slowing down breathing rate, pacing conversation at a normal rate, making good eye contact, and being present can be the key.
Example: The SAFER-R Model (Everly, 1995)

5. Restoration of Adaptive, Independent Functioning or Referral -
Here, the goal is to summarize the previous four steps and have a plan for the next step. Most persons will have achieved a level of consolidation at this point, and may require little follow up. Others may need a referral to more structured services such as mental health assessment, ongoing pastoral counseling, or emergency room if the distress is so intense that safety cannot be assured. Integration into the normal support system is the best outcome, enlisting family, friends, church and other social networks.
Resilience

In crisis intervention, resilience refers to the “ability of an individual, group, organization, or even entire population, to rapidly and effectively rebound from psychological and/or behavioral perturbations associated with critical incidents, terrorism, and even mass disasters” (Everly, 2012, p.7).
Elements that Factor Resilience:

1. Actively facing fears and trying to solve problems
2. Regular physical exercise
3. Optimism
4. Having a moral compass
5. Promotion of social supports, friendships and positive role models
6. Being open minded and flexible in problem solving
The key purpose of crisis intervention is to support, stabilize, normalize, and build resilience. To that end, crisis intervention fosters but does not interfere with natural supports and recovery.
Special Issues in Crisis Intervention: When more may be needed

On occasion, more serious acute symptoms may develop in response to a traumatic event. Recognizing these symptoms is helpful to decide when a referral may be needed. Individuals exposed to Critical Incidents may have histories of mental health concerns that may worsen during the immediate crisis, or in the short/longer term timeframe.
Common Traumatic Reactions (Acute)

The initial reaction to acute traumatic stressors are often shock, disbelief and a strong need to restore some type of equilibrium. Often an immediate sense of being numb, dissociated, and time “standing still” or slowing occurs. Extreme reactions can be Acute Stress Disorder, where the individual initially is numb, then becomes flooded with intense anxiety, flashbacks, nightmares, depersonalization, derealization, anhedonia, and denial/avoidance. In an extreme case, Brief Psychotic Disorder can occur, wherein the individual loses contact with reality and develops delusions, hallucinations, incoherence and disengaged or catatonic behavior. A total delusional denial of the event can occur. Children may regress to earlier developmental functioning (bed wetting, clinging to caretakers) and emotions may swing eventually from intense fear, anger, and sadness to numbing emptiness.
Common Traumatic Reactions (Chronic)

Bereavement refers to the common reaction to loss, usually of a significant other. The other common term is Grief. Even an expected loss can be traumatic, and normal reactions include sadness, emptiness, sleep disturbances, loss of appetite, moodiness, irritability, social withdrawal and temporary disruption of “normal” activities. The dysphoria tends to come in waves and is associated with the lost person or activity (job). Positive recollections are mixed with feelings of sadness, and these reactions tend to balance over time. While the individual may have thoughts of joining deceased or have fantasies of restoration, full suicidal thoughts are not usually seen. Everyone grieves at their own pace, and there is no timetable for “getting over it”. The quality of coping with the loss changes over time.
Common Traumatic Reactions (Chronic)

**Major Depression** occurs when deep sadness or loss of pleasure in activities (anhedonia) presents for at least two weeks and is accompanied by highly negative thoughts (self-blame, worthlessness, excessive guilt) and biological symptoms of sleep, appetite and energy disturbances. Loss of mental focus and suicidal thoughts are also present. Major Depression is not simply tied to the loss or trauma, but spreads out into overall self-perception, where deep suffering and loss of hope develop. Major Depression is highly associated with completed suicide, with overall estimates of 10% mortality.
Common Traumatic Reactions (Chronic)

Persistent Complex Bereavement Disorder (with or without traumatic loss) is offered in DSM-5 as another possible loss/trauma disorder. Here, after the death of a significant other, the individual continues to be obsessed with the deceased for at least 12 months after the death. Here, the person who died becomes a life focus to the exclusion of personal identity and functioning. The death is not accepted, positive memories are not incorporated, bitterness, anger, withdrawal from other social connections, a loss of future goals/planning and avoidance of reminders of the loss are noted. A major risk for this disorder is a dependent relationship on the deceased or the loss of a child. Prevalence is 2.4 – 4.8%.
Common Traumatic Reactions (Chronic)

Post Traumatic Stress Disorder occurs when the impacts of the traumatic event become sealed in a person’s reactions. After an exposure to a traumatic event or events, there are four major sets of symptoms which can slowly emerge over the course of six months: 1) intrusive recollections (flashbacks, nightmares), 2) persistent avoidance of triggers associated with the trauma, 3) negative alterations in mood/cognition such as amnesia numbing, detachment, anhedonia, 4) alterations in arousal and reactivity (exaggerated startle response, hypervigilance, reckless or self-destructive behaviors). For children, re-enactment in play and regression to earlier developmental levels is seen with temper tantrums, withdrawal, clinging as symptoms. Risk for PTSD is associated with biological, psychological and social factors prior to trauma, and recovery is associated with ability to use supports. The prevalence is 8.7% in the U.S., with symptoms in most individuals slowing reducing over months and years. However, persistent PTSD may occur in 5-10% of those diagnosed.
Other Types of Reactions to Loss/Trauma

While all persons experience loss and trauma, each person’s own unique biopsychosocial and cultural background greatly influences how these stressors are experienced. There is no “right” or “wrong” reaction. Anxiety, sadness, anger and temporary loss of normal functioning is not unusual. A failure to openly express emotions is also not unusual, and should not imply that the individual is reacting badly. It is necessary to connect with an individual and dialogue with them without imposing any assumptions about how they “should” react. When severe symptoms emerge as noted above, professional assessment may be warranted.
Special Issue: Suicide Risk and Assessment

- Suicide is defined as the intentional taking of one’s own life
- Suicide kills approximately 42,000 persons each year in the U.S. (CDC, 2014)
- Crisis events can increase suicide risk in vulnerable individuals (e.g., those with pre-existing mental health concerns)
- Suicides may increase after a natural disaster (the population rate after Hurricane Katrina increased from 9/100,000 to 21-28/100,000 by 2005)
THE BIG LIE

If you ask someone if they are thinking of killing themselves, it will cause them to do it.

NOT ASKING INCREASES RISK
ASK

“Have you been thinking of hurting or killing yourself?”
If yes, use the C-C-D-R Crisis Intervention.  
(Everly, 2015)

1. **Clarify**: “Do you really want to die, or do you simply want to change your life?”

2. **Contradict**:  
   • Suicide is a permanent solution to a temporary problem  
   • Suicide will damage others by creating “permission effect”  
   • Suicide is a reaction to hopelessness; help is available

3. **Delay**: This is not a time to decide this.

4. **Refer**: Always refer for mental health assessment
Called “Compassion Fatigue”, this syndrome reflects a psychological breakdown in the ability to maintain effectiveness in service. May show up as irritability, depression, fatigue, pessimism, procrastination, sleep disturbance, and substance use.
How to Burnout Well
(Everly, 2015)

1. Be a perfectionist, accept nothing less
2. Never exercise
3. Remember: the glass is half empty
4. Never eat breakfast and load up on junk food
5. Blame all of your life failures on everyone else, your parents, your boss, the government, etc.
6. Accept responsibility for everyone all the time
7. Control everyone and everything at all times
8. Sleep as little as possible
9. Feel guilty and never take time off
10. Use drugs and alcohol to cope
A Better Plan

1. Physical exercise
2. Cognitive exercise
3. Meditation/relaxation response
4. Interpersonal support
5. Active optimism – positive attitude
6. Know your limits – respect yourself
7. Faith – something more than you
Questions

And

Discussion
EMERGENCY BEHAVIORAL HEALTH INTEGRATION IN EMERGENCY MANAGEMENT

Presented By:
Pennsylvania Department of Human Services
Office of Mental Health and Substance Abuse Services
Emergency Behavioral Health (EBH)

- Effective and organized intervention
- Strives to stabilize emotions and reactions to a crisis or disaster
- When emotional health and welfare are threatened
- Survivor, family members, first responders and community

www.dhs.pa.gov
Crisis & Disaster Behavioral Reactions

• Most people affected by crisis/disaster function normally within the stress of everyday life

• Reactions to disaster are normal and understandable
### 3 Types of Responses

<table>
<thead>
<tr>
<th>Physiological</th>
<th>Cognitive &amp; Intellectual</th>
<th>Emotional &amp; Behavioral</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fatigue</td>
<td>• Disorientation</td>
<td>• Sorrow/sadness</td>
</tr>
<tr>
<td>• Headache</td>
<td>• Inability to make decisions</td>
<td>• Grief</td>
</tr>
<tr>
<td>• Sleeplessness</td>
<td>• Confusion</td>
<td>• Fear</td>
</tr>
<tr>
<td>• Increased heart</td>
<td>• Intrusive thoughts</td>
<td>• Irritability</td>
</tr>
<tr>
<td>rate</td>
<td>• Distorted logic, judgment, reasoning</td>
<td>• Shame</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anger</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lashing out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reckless behavior</td>
</tr>
</tbody>
</table>

[www.dhs.pa.gov](http://www.dhs.pa.gov)
Benefits of EBH Intervention

• Prevents unnecessary disruptions of Emergency Response Operations

• Reduces the likelihood/occurrences of PTSD & ASD

• Contributes to the safety, security and comfort of those affected by crisis/disaster

• Contributes to community cohesion necessary for recovery

www.dhs.pa.gov
Types of EBH Programs

- PFA - Psychological First Aid
- DCORT - Disaster Crisis Outreach & Referral Team
- CCP - Crisis Counseling Program
- CISM - Crisis Incident Stress Management
- KCIT - Keystone Crisis Intervention Team
- NOVA - National Organization for Victim Assistance

www.dhs.pa.gov
Psychological First Aid (PFA)

- Establishes human connections in a non-intrusive, compassionate manner
- Enhances safety while providing physical and emotional comfort
- Calms and orients emotionally overwhelmed and distraught survivors
- Helps survivors identify immediate needs
- Gathers information as necessary
- Offers practical assistance and information to address immediate needs and concerns
Disaster Crisis Outreach & Referral Team (DCORT)

- Team of individuals trained in EBH interventions
- Assists individuals impacted by crisis/disaster
- Provides emotional support and therapeutic activities
- Eases stress, fosters compassionate presence, aids in community resilience
- On-scene interventions
- Deployed by county EMA and/or the county mental health authority
- Not all counties use the term DCORT to describe their EBH response teams
Crisis Counseling Program (CCP)

- Grant program offered through FEMA and SAMHSA after a Presidentially Declared Federal Disaster
- Assists individuals and communities in recovering from effects of natural & human-caused disasters
- Community based outreach & psycho-educational services
- Goal to return survivors to pre-disaster level of functioning
- Provides in-community disaster assistance
Crisis Incident Stress Management (CISM)

- Method of helping first responders and others involved with incidents that leave them emotionally and/or physically affected
- A process that enables peers to help their peers understand problems that might occur after an event
- This process also helps people prepare to continue to perform their services or in some cases return to a normal lifestyle

http://www.icisf.org/about-us/
Keystone Crisis Intervention Team (KCIT)

– Empowers local communities to support crime victims in recovery from traumatic incidents

– Activation: Official request made by person or agency having authority at the crime scene

– Toll-free 24/7 Hotline 855-SOS-KCIT or 855-767-5248
National Organization for Victim Assistance (NOVA)

- Private, non-profit membership organization of victim assistance and witness assistance professionals
- Assists individuals, groups and communities
- Develops, utilizes, and builds natural resources of strength and resilience in emotional aftermath of disaster
- Response dependent upon community invitation
- Values of NOVA: compassion, accountability, collaboration, and passion
EBH Needs:

• Survivors, families & friends, and communities at large have different EBH needs during different phases of crisis and disaster

• No single source can address all necessary services & needs

• Awareness of community partners and assets and planning in advance for collaboration is a necessary part of an EBH Plan
Identifying Community EBH Resources/Partners

EBH

- DCORT
- County Mental Health
- Community BH Providers
- State DHS-OMHSAS
- Federal-FEMA/SAMHSA
- EMA
- Local & County Govt.
- VOADS
- Faith Based
- Health Care

www.dhs.pa.gov
VOADS – Voluntary Agencies Active in Disaster Examples:

<table>
<thead>
<tr>
<th>American Red Cross</th>
<th>Salvation Army</th>
<th>Lutheran Disaster Relief</th>
<th>Mennonite Disaster Services &amp; UMCOR</th>
<th>Team Rubicon</th>
</tr>
</thead>
<tbody>
<tr>
<td>• EBH/PFA</td>
<td>• Food Canteen</td>
<td>• Child Care</td>
<td>• Recovery</td>
<td>• US Military Veterans</td>
</tr>
<tr>
<td>• FAC</td>
<td></td>
<td>• Spiritual Care</td>
<td>• Rebuilding</td>
<td>• Self-contained</td>
</tr>
<tr>
<td>• Shelter/Mass Care</td>
<td></td>
<td>• Long Term Recovery</td>
<td>• Community Development</td>
<td>to clean up &amp; re-build</td>
</tr>
</tbody>
</table>
• Use preparedness events to promote EBH educational readiness and awareness
• Discuss EBH planning needs in advance
  • FAC logistics
  • Quiet rooms
  • Training
  • Procedures

Prior to Event

During Event
• Type of response
• Determination of teams/responders
• Logistics
  • Child Care
  • Resources and resource materials
  • Counseling
  • Spiritual care, etc.

Post Event
• EBH referrals
• Community meetings, memorials etc.
• Comprehensive Emotional Health (physical needs)
  • Economic/Social Service Benefits
  • Recovery/Re-building needs
  • Connection with collaborative services

Identifying Community EBH Resources/Partners
Three I’s for Successful Integration

– IDENTIFY
– INVITE
– INTEGRATE
Identify:

• Utilize planning meetings to identify potential EBH needs and response protocols- Who, What, When & Where
• Familiarize yourself with available county resources and with the processes for requesting outside assistance
• Determine which response systems will be utilized for each potential event
• Design deployment protocols
Invite:

- County resources/teams to the planning table
- EBH training
- EBH teams to community meetings and AAR meetings
- EBH teams to participate in trainings and exercises

Importance of inviting EBH teams to trainings and exercises:

- Increases EBH team knowledge of the roles of other disaster responders
- Increases knowledge of other responders about EBH concerns and capabilities
- Keeps teams connected, ready, and motivated
- Strengthens relationships
Integrate:

• Formalize plans to include EBH response in the County Emergency Operations Plan
• By integrating the response, survivors will receive a spectrum of assistance not confined to one discipline
• Consultation services and assistance available through DHS OMHSAS EBH Program
• Robyn Kokus 717-510-8563 or rkokus@pa.gov
• www.paprepared.net
Risks: Avoid Making a Bad Day Worse

Troy Neville, MS, CEM, CBCP, ISO 22301 LI, FO-III, ISO

2016 Pennsylvania Emergency Management Conference
Emergency Management, Business Continuity, COOP and Risk Management are all in the bad day business. Causes and contributing factors of bad days can usually be grouped into four broad categories: hidden or ignored risks, incorrect assumptions, risk controls and plans not covering the worst-case, and ineffective incident or crisis management.

In this session we will explore real world events to highlight changes that should be incorporated into continuity and response plans to try to avoid making a bad day worse.
Troy Neville, MS, CEM, CBCP

- 25+ years: information technology, business continuity, fire rescue, emergency management, disaster response

- Certified Business Continuity Professional (CBCP)
- DRIII Instructor

- Certified Emergency Manager (CEM)

- ISO 22301 Lead Implementer

- Fire Officer III
- Fire Service Instructor II
- Incident Safety Officer
Troy Neville, MS, CEM, CBCP

CURRENT
- DRII Instructor
  - Millersville University - CDRE
- Business Continuity Process Manager
  - Top 10 U.S. Bank
- Facility Vulnerability Assessment Team
  - SCTF-BI&I
- Deputy Emergency Management Coordinator
  - Manheim Township
- EOC Volunteer
  - Lancaster County EMA

PREVIOUS
- Technical Specialist/Engineer/Firefighter
- Communications, Damage Assessment Officer, EPLO
  - American Red Cross
- Information Technology

EDUCATION
- M.S. Emergency Management
  - Millersville University
About CDRE

- Master of Science: Emergency Management (MSEM) - Online
- Master of Social Work/MSEM Joint Degree
- Minor in Environmental Hazards and Emergency Management
- Research funded through:
  - National Science Foundation
  - FEMA
  - PEMA

www.millersville.edu/cdre
Poll: Which best describes what you do?

1. Private sector business continuity/coop
2. Private sector health/safety/security
3. Public sector business continuity/coop
4. Public sector health/safety/security
5. Fire/EMS/Hazmat/Law enforcement
6. Health care (public or private)
7. Emergency management (public or private)
8. Other
Risk management and business continuity are in the “bad day” business
Bad Days Are Inevitable
The Bad Day Business

- Prevent bad days where we can
- Prepare for the bad days we cannot prevent
- Mitigate the impact bad days can have
- Respond to bad days when they happen to:
  - Keep people safe
  - Sustain critical operations
  - Stop the bad day from getting worse
- Recover from bad days to make things as close as we can to the way they were
Tomorrow could be a bad day
Resilience is often overestimated
People can be the weakest link
Risk Management and Business Continuity/COOP/EM

- Risk management and business continuity are in the “bad day” business
- Bad days are inevitable
- Tomorrow could be your next bad day
- Resilience is often overestimated
- People can be the weakest link

...yet bad days still happen - sometimes with catastrophic consequences
Some definitions

- **Vulnerability** - is a weakness or susceptibility to damage or harm
- **Risk** - Potential for exposure to loss which can be determined by using either qualitative or quantitative measures
- **Threat** - A combination of the risk, the consequence of that risk, and the likelihood that the negative event will take place
Risk Management and Business Continuity

- Threat and associated Risk
- Vulnerability
- Control
- Impact

Assets
- Employees
- Infrastructure
- Information
- Public
- Reputation

Risk Management
- Prevention
- Mitigation

Business Continuity
- Response
- Recovery
Threat/Risk and Vulnerability

1% per year

0.2% per year
Risk Assessment Process

- Identify Hazards
  - Fire
  - Explosion
  - Natural hazards
  - Hazardous materials spill or release
  - Terrorism
  - Workplace violence
  - Pandemic disease
  - Utility outage
  - Mechanical breakdown
  - Supplier failure
  - Cyber attack

- Assets at Risk
  - People
  - Property including buildings, critical infrastructure
  - Supply chain
  - Systems/equipment
  - Information Technology
  - Business operations
  - Reputation of or confidence in entity
  - Regulatory and contractual obligations
  - Environment

- Impacts
  - Casualties
  - Property damage
  - Business interruption
  - Loss of customers
  - Financial loss
  - Environmental contamination
  - Loss of confidence in the organization
  - Fines and penalties
  - Lawsuits
Impacts to consider

- **Strategic**
  - Risks that are an inherent part of the business environment and have an effect on business objectives and performance

- **Financial**
  - Risks that are part of a unit's environment relating to people, culture, organizational structure and values that can impact overall organization effectiveness

- **Organizational**
  - Risks associated with the use of systems and technology, including availability, capacity integrity, operational support, functionality, systems integration and change management

- **Technology**
  - Risks relating to enforceability of contracts, interpretation of laws, compliance with law and impact of regulation

- **Operational**
  - Risks related to the perceptions of an organization's value, contributions and strategic direction by internal and external stakeholders

- **Legal/Regulatory**

- **Reputational**

<table>
<thead>
<tr>
<th><strong>Liquidity, Cap &amp; Funding</strong></th>
<th><strong>Credit</strong></th>
<th><strong>Market</strong></th>
<th><strong>People</strong></th>
<th><strong>Process</strong></th>
<th><strong>Events</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inability to raise debt or equity capital as needed for short-term liquidity or long-term growth, as well as uncertainty in pricing or sales of assets or liabilities</td>
<td>Exposure to loss relating to a change in the credit-worthiness of a counter-party, collateral, customer or partner that may impact the counter-party's ability to fulfill its obligations under a contractual agreement</td>
<td>The uncertainty in the future market value of a portfolio of assets and/or liabilities</td>
<td>The risk of loss resulting from people</td>
<td>The risk of loss resulting from inadequate or failed processes</td>
<td>The risk of loss resulting from an unexpected event that interferes with normal business</td>
</tr>
</tbody>
</table>
Risk Assessment Process – Issues

- Impacts
  - Difficult to quantify
  - Lack of historical data on impacts
  - Should be based on worst case

- Probability and Magnitude
  - Reliable probabilities do not exist for all risks
  - Low probabilities often ignored
What can make a bad day worse?

1. Hidden (or ignored) risks
2. Incorrect (or deficient) assumptions
3. Controls and plans not covering worst-case scenario
4. Ineffective incident or crisis management [response risk]
1. Hidden or Ignored Risk
1. Hidden (or ignored) risks

- Simple mistakes can have catastrophic impacts
- Risks can be ‘hiding’ in plain sight
- How many risks are truly hidden?
Simple mistakes

1. Hidden or ignored risks

What would you do if a low water warning light is displayed on your car dashboard?
Dana Corporation – June 2007

1. Hidden or ignored risks

State of Tennessee - DLWD
Hidden Risks?

- 2005 – Hurricane Katrina
- 2008 – Financial crisis
- 2009 – Toyota accelerator pedal
- 2010 – BP Deepwater Horizon disaster
- 2011 – Fukushima Daiichi nuclear disaster
- 2012 – Paulsboro NJ train derailment
- 2014 – GM ignition switch recall
- 2014 – Elk River WV chemical spill
- 2014 – Dallas TX Ebola crisis
- 2015 – Flint MI water crisis
- 2015 – Takata airbag recall
2013 WEST, TEXAS

- 30 tons ammonium nitrate
- Development occurred closer to plant
- Explosion 20 minutes after 911 call reporting fire
- 15 dead, 200+ injured
1. Hidden or ignored risks
Tornados – Southwest MO

1. Hidden or ignored risks
Joplin MO – May 2011

EF-5
200 mph winds
1. Hidden or ignored risks

740 PA Tornadoes (1950-2014)
Tornado Threat

- Are you doing enough to protect your employees?
  - Wireless Emergency Alerts awareness?
  - Shelter areas identified?
  - Posters in lunch rooms?
  - Follow-up: did they actually take shelter?
  - Disciplinary action for failure to take shelter?
What kind of risk management thinking?
# What kind of risk management thinking?

<table>
<thead>
<tr>
<th>“TRADITIONAL” THINKING</th>
<th>RM/BC THINKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>- CO detectors not required by code</td>
<td>- Employee safety #1</td>
</tr>
<tr>
<td>- Systems serviced and inspected annually – what could go wrong?</td>
<td>- CO is a real risk</td>
</tr>
<tr>
<td>- Wait for a bad day</td>
<td>- Install CO detectors to prevent a bad day</td>
</tr>
<tr>
<td></td>
<td>- Inspect/test CO detectors to make sure they work</td>
</tr>
<tr>
<td></td>
<td>- Do not allow vendors to tamper with detector</td>
</tr>
<tr>
<td></td>
<td>- Train staff on what CO alarm is and what to do</td>
</tr>
</tbody>
</table>
Culture of Risk Management?

1. Hidden or ignored risks
A near miss is an opportunity for you and your organization to prevent a future bad day.
The Near Miss – a missed opportunity to prevent a bad day

- May precede or foreshadow a future bad day
- Some accept risk if good outcomes over time
  - “Everything went well, just like last time!”
  - “No one was hurt, another success!”
- Others have outcome bias
  - Focus on good outcome not potential risks in process
  - “See, it worked. You worry too much!”
Recognize and Learn From Near Misses

- Heed high pressure situations (time/cost)
- Learn from deviations from expected outcomes
- Uncover root causes
- Demand accountability
- Consider worst-case scenarios
- Evaluate projects/responses at every stage
- Reward owning up

1. Hidden (or ignored) risks

- Risks can be ‘hiding’ in plain sight
  - Employee awareness
  - Effective communication
- Risk management culture
  - “See Something, Say Something”
  - Responsive and involved top management
- Near miss: opportunity to prevent a bad day
- Learn from the mistakes of others – don’t wait until it happens to you
2. Incorrect (or deficient) assumptions
2. Incorrect (or deficient) assumptions

- Probability
- Consequence
- Workforce availability
- Time of day
- Duration
- Communication
- Utilities
- Geographic impact
- Supply chain/IT vendors
- People
## Probability: 100 Year Flood

<table>
<thead>
<tr>
<th>Historical Crests for Red River of the North at Fargo</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) 40.84 ft on 03/28/2009</td>
</tr>
<tr>
<td>(2) 39.72 ft on 04/18/1997</td>
</tr>
<tr>
<td>(3) 39.10 ft on 04/07/1897</td>
</tr>
<tr>
<td>(4) 38.81 ft on 04/09/2011</td>
</tr>
<tr>
<td>(5) 37.34 ft on 04/15/1969</td>
</tr>
<tr>
<td>(6) 37.13 ft on 04/05/2006</td>
</tr>
<tr>
<td>(7) 36.99 ft on 03/21/2010</td>
</tr>
<tr>
<td>(8) 36.69 ft on 04/14/2001</td>
</tr>
<tr>
<td>(9) 35.39 ft on 04/09/1989</td>
</tr>
<tr>
<td>(10) 34.93 ft on 04/19/1979</td>
</tr>
<tr>
<td>(11) 34.41 ft on 04/02/1978</td>
</tr>
<tr>
<td>(12) 33.31 ft on 05/01/2013</td>
</tr>
<tr>
<td>(13) 33.26 ft on 07/04/1975</td>
</tr>
<tr>
<td>(14) 30.88 ft on 06/09/2007</td>
</tr>
</tbody>
</table>

Eight 100-year floods in 17 year span
Consequence: When the worst-case happens

- 5 sub-levels
- Cable vault flooded
- Generator fuel tanks and pumps below ground – failed
- Some customers outages lasted 2 weeks

Verizon Main Office
140 West Street, New York
Workforce Availability

- Work from home dependencies
- Home disaster – family comes first
- Key personnel not available
- Reduced staffing levels
Do your plans and exercises assume that a disruption will occur at the worst possible time?
Duration

THREAT OF DISRUPTION

- Power
- Water/Sewer
- Internet
- Flood
- Earthquake
- Chemical spill
- Pandemic
## Duration of event and resulting impact and disruption

<table>
<thead>
<tr>
<th>Threat of Disruption</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>1 hour</td>
</tr>
<tr>
<td>Water/Sewer</td>
<td>2 hours</td>
</tr>
<tr>
<td>Internet</td>
<td>4 hours</td>
</tr>
<tr>
<td>Flood</td>
<td>12 hours</td>
</tr>
<tr>
<td>Chemical spill</td>
<td>24 hours</td>
</tr>
<tr>
<td>Pandemic</td>
<td>2 days</td>
</tr>
<tr>
<td></td>
<td>3 days</td>
</tr>
<tr>
<td></td>
<td>1 week</td>
</tr>
<tr>
<td></td>
<td>2 weeks</td>
</tr>
<tr>
<td></td>
<td>6 months</td>
</tr>
</tbody>
</table>

2. Incorrect or deficient assumptions
Communication

- Power dependency
  - Wireless-only home phones
  - VOIP service
- Cell phone only
- Voice mail down
- Phone lines not forwarded
- Email reliance
- Notification system
Utilities

Harrisburg workers await parts to fix broken water pipe that has closed Capitol, HACC

Major Comcast, Verizon Outage Affecting Internet Customers After Line Cut
Geographic Impact

PROXIMITY TO IMPACT

- Company sites
- Employee homes
- Customer sites
- Critical vendor’s site
- Recovery sites
Regional Impact

2. Incorrect or deficient assumptions
Vendors/Supply Chain

- Do you perform a vendor risk assessment?
- Do you review their BC plans?
- Do you review their BC/DR test results?
- Do they notify you if they have a disruption?
- Do you have alternate suppliers?
Metro bus driver quarantined after passenger yells 'I have Ebola!'

An L.A. Metro bus passenger wearing a mask yells, "Don't mess with me; I have Ebola!"

By Veronica Rocha
People always:
- Do what is expected
- Do the right thing
- Do things the right way
- Follow procedures
- Put the customers first
- Put the company second
- Plan for the worst
- ????????????????????????????
2. Incorrect (or deficient) assumptions

- Assumptions telegraph:
  - What will cause a bad day
  - When plans will fail
  - What will make a bad day worse

- Low probability/catastrophic consequence events need greater attention (black swan event)

- Vendor/supply chain dependencies are risks that require treatment
3. Controls and plans not covering worst case scenario
3. Controls not covering worst-case scenario

- Second-guessing history
- Using budgets to dictate risk controls
- Ignoring worst-case or near worst-case
Gaylord Opryland Resort

3. Controls not covering worst-case

The Tennessean
Gaylord Opryland Resort

- Flood wall rated as 100-year
- USACE recommended 500-year flood wall
- Owner did not build – too costly
- 500-year flood occurred
- $250 million loss

- Owner built $12 million 500-year flood wall
The Fukushima accident was, however, preventable....

The methods used by TEPCO and NISA to assess the risk from tsunamis lagged behind international standards in at least three important respects:

• Insufficient attention was paid to evidence of large tsunamis inundating the region surrounding the plant about once every thousand years.

• Computer modeling of the tsunami threat was inadequate. Most importantly, preliminary simulations conducted in 2008 that suggested the tsunami risk to the plant had been seriously underestimated were not followed up and were only reported to NISA on March 7, 2011.

• NISA failed to review simulations conducted by TEPCO and to foster the development of appropriate computer modeling tools.

Plant Design

3. Controls not covering worst-case
Historical Data

- Fukushima Daiichi design-basis
  - 3.1 meter tsunami
  - Based on impact from 1960 Chile earthquake (9.5)
- Since 1498 (in and around Japan)
  - 12 tsunamis > 10 meters
  - 6 tsunamis > 20 meters
- NISA and TEPCO didn’t believe tsunami was a serious threat
- NISA now requires 15 meter seawalls
Cyber - Target

- HVAC vendor was source
- Remote access to Target payment processing system
- HVAC staff computer infected
- Credential information stolen
- Information used to exploit Target systems
Power Outage – August 2003
Estimated power system impact from a Carrington-level event

FIGURE C.3 (a; left) 4800 nT/min geomagnetic field disturbance at 50° geomagnetic latitude scenario. The regions outlined are susceptible to system collapse due to the effects of the GIC disturbance. The region impacted would be of unprecedented scale and involve populations in excess of 130 million. (b; right) A map showing the at-risk EHV transformer capacity by state for this disturbance scenario. Regions with high percentages could experience long-duration outages that could extend multiple years. Source: Geomagnetic Storms and Their Impacts on the US Power Grid. Metatech Corp. 2010

- Estimated probability of a Carrington-level event in next 10 years: 12%
Active Shooting

3. Controls not covering worst-case
Continuity plans are the risk control of last resort, what to do when the impact could not be prevented, to allow the organization to continue critical functions.
3. Controls not covering worst-case scenario

- You are planning for bad days:
  - How bad of a bad day?
  - What assumptions do you make?
  - Do you understand the controls in place and their design limits?
  - Have you identified additional controls to cover worst-case?
  - If you don’t plan for worst-case, what will you do if/when the worst-case or near worst-case happens?
4. Ineffective incident or crisis management

Response Risk
# Emergency Response Plan

<table>
<thead>
<tr>
<th>BEFORE ARRIVAL OF FIRST RESPONDERS</th>
<th>AFTER ARRIVAL OF FIRST RESPONDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protect lives, property and environment</td>
<td>Coordinate incident management with FR</td>
</tr>
<tr>
<td>Manage incident</td>
<td>Account for employees</td>
</tr>
<tr>
<td>Situational awareness</td>
<td>Situational awareness</td>
</tr>
<tr>
<td>Direct employee actions</td>
<td>Direct employee actions</td>
</tr>
<tr>
<td>Emergency communications</td>
<td>Initiate formal BC response plan</td>
</tr>
<tr>
<td>Account for employees</td>
<td>Update stakeholders</td>
</tr>
</tbody>
</table>

4. Ineffective Crisis Management
## Incident Response Plan

<table>
<thead>
<tr>
<th>ISO 22301 8.4.2</th>
<th>NFPA 1600 6.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify impact thresholds</td>
<td>Protective actions for life safety, property, operations, environment, and entity</td>
</tr>
<tr>
<td>Assess nature and extent</td>
<td>Warning, notifications and communication for response</td>
</tr>
<tr>
<td>Provide for welfare</td>
<td>Resource management</td>
</tr>
<tr>
<td>Initiate response</td>
<td>Crisis communication</td>
</tr>
<tr>
<td>Procedures for activation, operation and coordination of response</td>
<td>Donation management</td>
</tr>
<tr>
<td>Resource management</td>
<td></td>
</tr>
</tbody>
</table>
4. Ineffective Incident or Crisis Management

- Lack of situational awareness
- Failure to manage risks during response
- Lack of subject matter expertise
- Crisis communication failures
Situational Awareness

4. Ineffective Incident Management
Situational Awareness
Lack of situational awareness

- Events are dynamic
- New risks emerge
- Existing risks change
- Strategies and tactics have to change to address risks and ensure **incident priorities** are being net
Sources of information

- Internal stakeholders
- External stakeholders
- Traditional media
- Social media
- Emergency services
- Subject matter experts
- Peer

- Have you engaged them pre-crisis?
- What can they provide?
- How can they be contacted?
- Do you have sufficient resources to monitor, gather, analyze and disseminate critical information?
Faulty perception
  - Novel situation
  - Lack of experience
  - Filter or silo effect
Complacency
Overload
Fatigue
Poor communication
Situational Awareness
Best Practices

- Build pre-event connections with sources and subject matter experts
- Dedicate a person or team to situational awareness
- Maintain the big picture
  - Current, emerging and changing threats
- Prioritize incoming information
- Continually evaluate if current status aligns with response objectives

KEY TAKEAWAY
Situational Awareness
Best Practices

- Develop standard format for effectively disseminating information
  - Not multiple reply all email chains in an hour
- Use same SA processes for all incidents and exercises to increase familiarity and proficiency
# Situational Awareness Best Practices

<table>
<thead>
<tr>
<th>Incident Response Team</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Situation Report</strong></td>
</tr>
</tbody>
</table>

**Event:**

**Issued:**

**Date:**

**Time (24hr):**

**Incident Category:**
- **Level:**
- **Reason:**
- **Escalation:** No

**Event Summary:**

**Impacted Location or Business Unit(s):**

**Impact (actual or expected):**
- **Employees:**
- **Customers:**
- **Facilities:**
- **Services:**
- **Financial:**
- **Reputational:**
- **Regulatory:**
- **Legal:**

**IRT Structure:**
- **IRT Commander:**
- **IRT Participants:**
- **EOC:**
- **Bridge Line:**
- **IRT Activation:** Not Required At This Time – Stand-By – Activated – Stand Down

**Actions Taken (since last update):**
- **IRT:**
- **[Location/Unit]:**
- **Security:**
- **Facilities:**
- **IT:**
- **HR:**
- **Legal:**
- **Corp Comm:**

**Unmet Needs:**
- **IRT:**
- **[Location/Unit]:**
- **Security:**
- **Facilities:**
- **IT:**
- **HR:**

**Critical Information (since last update):**

- **Source:**

**Response Priorities:**

- **[#1]:**
- **Responsibility:**
- **[#2]:**
- **Responsibility:**
- **[#3]:**
- **Responsibility:**

**Planned Actions:**

- **IRT:**
- **[Location/Unit]:**
- **Security:**
- **Facilities:**
- **IT:**
- **HR:**
- **Legal:**
- **Corp Comm:**

**Internal Communications:**

- **Intranet:** None
- **Mass Notification:** None
- **Email:** None

**External Communications:**

- **Traditional Media:** None
- **Social Media:** None
- **Public Website:** None

**Supplemental Information:**

**Next Update:**

**Prepared By:**
Failure to manage risks during response
Problem versus Crisis

PROBLEM

- Normal operations
- Daily
- Routine problem solving
- Focus on resolution
- Usually low level threat to organization
# Problem versus Crisis

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CRISIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal operations</td>
<td>Unexpected</td>
</tr>
<tr>
<td>Daily</td>
<td>Non-routine</td>
</tr>
<tr>
<td>High frequency</td>
<td>Low frequency</td>
</tr>
<tr>
<td>Routine problem solving</td>
<td>Produces uncertainty</td>
</tr>
<tr>
<td>Focus on resolution</td>
<td>Creates opportunities</td>
</tr>
<tr>
<td>Usually low level threat to</td>
<td>High level threat to organization</td>
</tr>
<tr>
<td>organization</td>
<td></td>
</tr>
<tr>
<td>Low risk</td>
<td>High risk</td>
</tr>
</tbody>
</table>
Risk Management - Response

4. Ineffective Crisis Management

Source: Gordon Graham
High Risk/Low Frequency

Source: Gordon Graham

NDT
- No time to think
- Must rely on training and experience
- Significant risk of bad outcome
- People #1

DT
- Time to think
  - SLOW DOWN
  - Make good decisions with good situational awareness
  - Not thinking leads to bad outcomes
  - People STILL #1
High Risk/Low Frequency

IMMEDIATE LIFE SAFETY

NDT
- No time to think
- Must rely on training and experience
- Significant risk of bad outcome
- People #1

DT
- Time to think
  - SLOW DOWN
    - Make good decisions with good situational awareness
    - Goal is to AVOID bad outcomes or make bad day worse
    - People STILL #1

EVERYTHING ELSE!
Once life safety addressed

IMMEDIATE LIFE SAFETY

NDT
- No time to think
- Must rely on training and experience
- Significant risk of bad outcome
- People #1

DT
- Time to think
  - SLOW DOWN
    - Make good decisions with good situational awareness
    - Goal is to AVOID bad outcomes or make bad day worse
    - People STILL #1

EVERYTHING ELSE!

4. Ineffective Crisis Management
4. Ineffective Crisis Management
Risks must be effectively identified and managed in **all** phases of a comprehensive emergency management and business continuity program.

- Failure to do so can make a bad day worse.
Risk Management for Incident and Crisis Management

- Life safety is always #1
- What ‘box’ are you in?
- Establish written goals and priorities
  - What is the most important action you need to take now?
- Maintain situational awareness
- Look for new risks or risks that changed
- Communicate priorities and risks
Lack of subject matter expertise
Paulsboro NJ – November 2012

4. Ineffective Crisis Management
4. Ineffective Crisis Management

**Paulsboro NJ – 7 months later**

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INVESTIGATION: PAULSBORO DERAILMENTS "DEATH ZONE"

Investigation: Paulsboro derailments "Death Zone"

July 26, 2013 7:29:42 PM PDT

Action News

PAULSBORO, NJ - July 26, 2013 -- For the first time, we are getting a look at the dangerous levels of vinyl chloride that Paulsboro residents may have been exposed to following last November’s train derailment. Information just released by the National Transportation Safety Board shows more people than first thought were potentially exposed to deadly levels of that toxic chemical.

Action News took a look at the area where experts were warned the general population could experience life-threatening health effects or even death.
Paulsboro NJ – “Death Zone”

This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

FACTS
Paulsboro, NJ
Location: 39.834044° N / 75.237884° W
Event Time: 1200Z (0700 Local)
30NOV2012
Amount: Vinyl Chloride
Dissemination: Train derailment/Leak
Weather: 12 km NAM
Model: HPAC 5.1
Static Population Estimates:
LandScan 2011
Can you recognize when you are in over your head?

Good people with good intentions but insufficient information or expertise can make a bad day worse.
4. Ineffective Crisis Management

- Untrained/uncoached spokesperson
- Lack of pre-crisis social media presence
- Not building positive relationships with stakeholders (before, during and after)
- Not listening to stakeholders
- Not communicating early and often with stakeholders
- Stating absolutes in the face of uncertainty
- Improper messaging
GermanWings Airline Crash
BP Oil Spill
Managing The Message

A tweet by BP Global PR from May 24th, 2010, reading: 

"Proud to announce that BP will be sponsoring the New Orleans Blues Festival this summer w/ special tribute to Muddy Waters. #bpcares"

1:52 PM May 24th via web
Retweeted by 100+ people
## Crisis Communication

### KEY TAKEAWAY

- When will they be notified and by whom? How frequently will they be updated?

### WHO

- Employees
- Management
- Customers
- Shareholders
- Families
- Tenants
- Public
- Regulatory bodies

### HOW

- Phone
- Email
- Text
- Conference bridge
- Notification system
- Social media
- Traditional media
- Correspondence
Crisis Communication

**BEFORE**
- Define goals for crisis communication
- Develop partnerships with groups important to the organization
- Develop strong positive stakeholder relationships

**DURING**
- Stakeholders = partners
- Listen to stakeholders
- Communicate early
- Acknowledge uncertainty
- Assure that you will maintain contact
- Avoid absolutes until information verified
- Do not over-reassure stakeholders about impacts

**KEY TAKEAWAY**
Successful Communication Strategy

- Focus on needs of customers
- Make a commitment to effective communication
- Integrate communications into planning and operations
- Be transparent
- Ensure that your information is accurate
- Release information in a timely manner
- Make spokesperson available and accessible
- Create a connection with audience
- Build a partnership with media and “first informers”

Dealing with uncertainty

- Explain that risks are often hard to assess and estimate.
- Explain how risk estimates were obtained and by whom.
- Announce problems and share risk information promptly, with appropriate revelations about uncertainty.
- Tell people that what you believe either (a) is certain, (b) is nearly certain, (c) is not known, (d) may never be known, (e) is likely, (f) is unlikely, (g) is highly improbably, and (h) what can be done to reduce uncertainty.
- Tell people that what you believe now may turn out to be wrong later.

Reputation

You do not own it – it is assigned to you by others:

- What you say - intent
- What you do - action
- Direct experience by stakeholder
- Peer perspectives

Source: Griggin, Andrew. Crisis, Issues and Reputation Management.
Organizations that institute strong, positive value positions, such as openness, honesty, responsibility, accountability, and trustworthiness, with key organizational stakeholders before a crisis happens are best able to create renewal following the crisis.

Situational Crisis Communication Theory (Reputation)

- Instructing Information
  - People are priority – how to stay safe
- Adjusting information
  - Coping with crisis (what, when, where, why, how)
- Adjusting posture
  - Break relationship between crisis/organization
- Diminishing posture
  - Organization had little or no control of event
- Rebuilding posture
  - Apology and compensation
- Bolstering posture
  - Build positive connection with stakeholders
4. Ineffective Incident or Crisis Management

- Develop systems and resources to maintain situational awareness
- Identify and manage risks during response
- Identify and humbly use subject matter expertise
- Develop and test crisis communications plans against multiple scenarios
What can make a bad day worse?

1. Hidden (or ignored) risks
2. Incorrect (or deficient) assumptions
3. Controls and plans not covering worst-case scenario
4. Ineffective incident or crisis management
Questions?

Troy Neville, MS, CEM, CBCP
tneville@comcast.net
THE GOOD, THE BAD, THE GREAT

IMT & EOC Coordination on the September 2013 Floods

Amy Danzl
Boulder Office of Emergency Management
BOULDER EOC

- Situational Awareness
- Resource Mobilization
- Coordination & Partnerships
- Forge & Implement Dynamic Solutions
- Policy Group Management
WHY IT MATTERED

- 1102 People Evacuated by Air
- 558 Animals Evacuated by Air
- 707 People Evacuated by Road
- Only Four Deaths
RELATIONSHIPS, CONFLICTS & FAILURES
IMTS & EOCs: COMMONALITIES

- Results
- Mutual SA & Info Support
- Restore order in chaos.
- Uniquely trained.
- Problem solving oriented.
IMTS & EOCS: DIFFERENCES

- Command & Control versus Coordination & Support.
- Scope: incident footprint versus the whole community.
- Authorities: single line versus multiple authorities.
- 12-hour versus undefined operational periods.
  - Planning Cycle.
  - Staff Transitions.
  - Briefings.
  - Media.
- Dynamic versus static IAPs.
- Style of Management.
- Skill sets and training.
IMTS & EOCs: COMPLEMENTATION

**IMTs**
- Command & Control
- Primary Objective: Life Safety
- Needs Additional Resources
- Needs Additional Coordination
- Manages the Incident

**EOCs**
- Support & Coordinate
- Primary Objective: Unmet Needs
- Fills Resource Requests
- Coordinates with MAC or Policy Groups
- Manages the Coordination of the Event Surrounding the Incident
DELEGATION VS. DECLARATION
DELEGATION VS. DECLARATION

Delegations

- Wildfire Model.
- Well practiced in Colorado.
- Delegate authority.
  - Can specify which authorities are delegated and which are maintained.
- Local to Sheriff to State (EFF) to Federal (FMAG).

Declarations

- All-Hazards Model.
- Every special district (including fire districts) is responsible for declaring their own disaster in order to access funds.
- Everyone maintains their authority (and responsibility to pay).
  - Flood: Boulder EOC authorized resource orders because the County and State were paying.
- Local to County to State to Federal (Stafford Act, “Major Disaster” w/potential IA and PA)
DELEGATION VS. DECLARATION

Delegations

- Funding: Upfront cost-share agreement, usually costing the local jurisdiction nothing or very little.
- Under EFF or FMAG, the State of Feds can hire contractors (such as volunteer firefighters) to prevent the emergency from escalating.

Declarations

- Funding: 75% reimbursement of eligible expenses come weeks, months or years later.
  - Payment of staff is equal to that paid prior to the disaster.
  - Response: $3.2m, Reimbursable: $1.6m.
- Utilizes an Emergency Operations Plan (EOP) and annexes.
  - Must be followed to be eligible for reimbursement.

Questions?
FLOOD EXPERIENCE: COMMAND VS. SUPPORT

- Jurisdictions maintained authority
- FPDs became branches or divisions
- Mission clarity
SOLUTIONS: COMMAND VS. SUPPORT

▶ Delegation:
  ▶ Mission definition
  ▶ Pre-script
  ▶ Education for all-hazards
  ▶ Conflict resolution process
  ▶ EOP + Annexes

▶ Transition:
  ▶ Roles and responsibilities
  ▶ Unique capabilities
  ▶ Relationship and communication
FLOOD EXPERIENCE: AUTHORITY TO ORDER

- All-Hazards Declaration: authority and payment
- County and State Cost Share
- IMT subject to agreement - Preorder
- Interagency Dispatch
SOLUTIONS: AUTHORITY TO ORDER

- Nuances in transition meeting
- Resource Mobilization Standards
  - Developing statewide curriculum
- More informed all-hazards IMT response
- Ductile: able to undergo change of form without breaking.
FLOOD EXPERIENCE: ALL-HAZARDS COMPLEXITY

- Footprint - shower units, catering, office trailers.

- Hundreds of special districts: water districts, ditch companies, school districts, 22 fire protection districts, multiple cities and townships.

- Financial impacts
SOLUTIONS: ALL-HAZARDS COMPLEXITY

- Scoping: duration and pre-order
- Understanding the geo-political environment
  - IMT status and mobilization board in WebEOC
- Developed Field 213RR for pre-IMT deployment
- Creative collaboration - Fuel pump security
FLOOD EXPERIENCE: THE GREAT

- Got the job done!
- Sheriff’s confidence and trust in our IMT3.
- Learned the all-hazards environment.
- Honest desire to improve teams statewide based on learning from this all-hazards incident.

“Peace cannot be kept by force. It can only be achieved by understanding.”

–Albert Einstein
QUESTIONS?
Amy Danzl
Deputy Director
Boulder Office of Emergency Management
Boulder, Colorado

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