When the System Is Overwhelmed: Protecting the Provider During Biodisaster

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Program Objectives

- **Prepare staff for dealing with the unexpected and longer-term consequences of catastrophic systems use.**
- **Provide information that staff can use to prevent burnout and assist fellow workers and their families.**

First Responders to Tokyo Sarin Attack

- **Didn't initially recognize source of threat.**
- **No field decontamination of victims undertaken on site.**
- **No simple removal of clothing instituted.**

First Responders to Tokyo Sarin Attack

- **Subsequent decontamination of subways and trains required massive support from Japanese self-defense forces wearing special protective chemical suits, which were initially in short supply.**

First Responders to Tokyo Sarin Attack

- First responders entered subway in standard duty clothing without respirators.
- 135 of 1,364 medical first responders (9.9%) were poisoned by sarin -- developed acute symptoms and couldn't function.

First Responders to Tokyo Sarin Attack

- 700+ first responders developed at least minor symptoms of sarin poisoning as it vaporized and bled off victims' clothing during rescue or transport to hospital.

First Responders to Tokyo Sarin Attack

- EMTs poisoned in ambulances where ventilation was poor.
- In hospital, 23% of medical first responders, who had direct contact with patients, developed symptoms of acute sarin poisoning.
- Hospital staff
  - Incidence of ASD – 5%
  - Incidence of PTSD – 3%

Kikwit

- City in the Democratic Republic of Congo, with population estimated at 200,000–400,000 inhabitants.
- The city has two hospitals. Kikwit general (350 beds) and Kikwit II (100 beds).
- When the Ebola outbreak initially occurred, it wasn't clear if people were suffering from a bacillary dysentery or a viral hemorrhagic fever such as Ebola.

Transmission and Symptoms

- Ebola is transmitted by contact with infected secretions such as blood and saliva.
- Initial symptoms consist of fever, asthenia, myalgia, arthralgia, abdominal pain, diarrhea, headache, injected conjunctiva, maculopapular rash, and sore throat.

Transmission and Symptoms

- Advanced symptoms included kidney and liver failure, hiccups, tachypnea and internal and external bleeding.
- Survivors improve at the two-week mark.

Infection Time Period

- People can be infected anywhere from two days to three weeks before becoming symptomatic.
- In Kikwit, Democratic Republic of the Congo, mean documented incubation time was six days.
- Once symptomatic, people usually die within two to six days.

Initial Infection of Staff

- Late April - A hospital employee was operated on for what was thought to be an acute abdomen.
- One week later - The operating staff began showing symptoms and dying.
- Many patients and staff members fled the hospital.

Initial Infection of Staff

- The only people who remained were volunteer health workers and patients too sick to leave (e.g. TB ward).
- On May 4 - An isolation unit was created, but not turned into a truly effective unit until May 11-14 due to limited resources and knowledge.

Beginning of The Outbreak

- The hospital had limited supplies of:
  - Protective-barrier supplies (masks, gowns, bed covers)
  - Fresh water (needed diesel fuel to power the pumps)
  - Electricity
  - Waste disposal systems and latrines
  - IV tubing and supplies
  - Medications

"Odoch Walter [seated], 21, was vomiting blood. An ambulance driver is spraying him before he puts him in the vehicle. In case he did have Ebola, they were trying to keep him and the ambulance 'clean.'
"To be sprayed like that in the face, by this person who's completely covered in plastic and rubber and treats you as a threat to their life—it's all pretty horrible. He died two days later."

Supplies Arrived

- Problems encountered:
  - Varying forms and styles of supplies with no consistency (difficult to train and become familiar with).
  - Supplies were inappropriate for tropical climate (e.g., goggles not face shields).
  - Hoarding.
  - Theft.

By the Time Help Arrived

- 164 identified cases - of which 134 died (82%).
- 63 health workers infected - of which 47 died (75%).
- Approximately 40% of cases were in health workers.
- After May 11, 93 new cases were reported.
- In total, of the 36 healthcare workers on the isolation units, 8 died (22%).

Staff Psychological Issues

- Staff working on the isolation units reported becoming psychologically isolated and stigmatized.
  - Family (afraid of becoming ill, nursing mothers could not nurse).
  - Neighbors (rumor of healthcare workers intentionally killing people, unable to shop local markets).
  - Medical staff not working on the isolation unit avoided those who did.

Additional Staff Stress

- Staff were taking care of colleagues who were infected and dying.
  - Constant daily reminder of personal risks.
  - Resulted in either isolation from sick colleagues or engaging in denial of own risks.
  - Infected staff who survived, experienced trouble with neighbors and survivor's guilt.

Staff Stress

- Many staff did well during the initial crisis, but began to show signs of psychological stress when the crisis became more routine.
- Post-emergency letdown even though crisis continued.
- At that point, they had to face issues of daily living (buying food), daily safety issues, and still dealing with a life-threatening situation/virus.

Staff Stress

- Less busy with more time to reflect.
- Have time to appreciate loss of colleagues.
- Anticipation waiting for next wave of illness.

Helpful Factors

- Maintain a sense of professionalism.
- If an individual loses their professional identity, they are more likely to be devastated, particularly if it was their major or only motivating or sustaining factor. Staff conflict, administrative struggles, or professional disapproval are particularly dangerous to identify at these times.

Helpful Factors

- Need to maintain identity through positive teamwork, support from colleagues, shared responsibilities, and recognition of sacrifices made in the line of duty.

Lessons Learned

- Be prepared to take care of the entire region or city.
- Have a plan to handle usual emergencies such as pregnancy, appendicitis, MLS, trauma.

Lessons Learned

- Use liaisons with government officials, and if possible have an individual whose job it is to obtain needed resources such as gasoline and to keep possession of resources (i.e., prevent looting).
- Expect an initial loss of staff, either through illness or people leaving their posts.

Lessons Learned

- Must provide incentives or recognition for staff, whether they are volunteers or permanent members. If not they will desert during the time of crisis or be demoralized after the event, inhibiting rebuilding.
- Need to fight the elements as well as the illness.

Lessons Learned

- Maintain the physical strength of staff with food, water, and safe place to take breaks.
- Provide protection for your hospital staff and, if possible, their families.
- Understand the culture in which an outbreak occurs.

Hurricane Katrina – New Orleans

- Pre-storm
  - 22 area hospitals
  - 4400 beds (3.03 beds per 1000, national average 3.26)
  - 7,000 patients with HIV

Hurricane Katrina – New Orleans

- Post-storm (as of April 13, 2006)
  - 24% of population has not returned
  - Only 15 of 22 local hospitals re-opened
  - Only 2000 hospital beds available (1.99 beds per 1000)
  - Tulane medical school lost 1/3 of its faculty
  - LSU medical school, lost 1/4 of its faculty

Scope of Problem

- Red Cross caring for 50,000 people in shelters.
- Approximately one million residents went to hotels or friends and family.
- 9,000 hospital beds lost (for whole area affected by storm).
- Most of those left behind were poor with no resources.

Universal Problems for All Hospitals

- Lighting
- Air-conditioning
- Telephone service
- Elevators - patient and material transport
- Refrigerators
- Ventilators
- Security/rumor control

Medical Problems Faced

- Complications in patients with untreated chronic disease
- Loss of or inability to fill medications
- Inability of patients to contact their local physicians
- Difficulty caring for patients on ventilators
- Challenges of evacuating a large number of sick individuals
- Dehydration

Media

- One hospital administrator was quoted as saying, “the media is our rescue plan now.”
- Hospital staff contacted local news and radio programs which helped to notify local and national officials of plight.
- National attention from CNN caused renewed efforts by the National Guard to evacuate certain locations.

Safety and Security

- Hospitals became a target for looters and violence.
  - Money
  - Drugs
  - Supplies
  - Hostages
  - Unclear motivation (Why shoot down a rescue helicopter?)

Lessons Learned

- Maintain internal structure of control to maintain order, sense of purpose, and hope.
- Be prepared to make decisions that are best for your institution without external approval.
- Try to contact external authority.
- Don't wait to be contacted.

Lessons Learned

- Do not expect or count on external authority to be aware of your situation or needs.
- Even though national disaster response plans call for institution to be self-sufficient for 48 hours, it is best to prepare for 7 days.
- Have surge capacity for patients, families of staff, and storm refugees.

Lessons Learned

- Have voluntary spiritual and psychological support available for groups and individuals.
- Psychological support should be supportive, practical, and focused on the here and now. "Do not open doors which cannot be closed."

Lessons Learned

- Have safe areas for staff to decompress and rest if possible.
- Try to provide for staff needs, such as food, hydration, and creature comforts when possible (coffee, clean underwear).
- Use media to highlight needs of your institution.

Lessons Learned

- Have a family/communication liaison officer to help with rumor control and to aid staff and families dealing with issues regarding family.
- Have a means of internal radio communication – VHS radios.

Hurricane Katrina Analysis of the Response Effort

- Hurricane Katrina dealt some familiar blows in emergency response: the failure of communication systems and resultant difficulties in coordination challenged response efforts in this disaster as with others before it.

Hurricane Katrina Analysis of the Response Effort

- Katrina also pushed some response elements, such as plans for surge capacity in the healthcare workforce, to their limits for the first time in recent memory.

Hurricane Katrina Analysis of the Response Effort

- The public health and medical response to Katrina has also called attention to the matter of disaster planning in healthcare facilities, and the potential role of health information technology in expediting the care of displaced persons.

Hurricane Katrina Gaps in Emergency Preparedness

- Hospitals and medical providers overwhelmed, with doctors and nurses often working with few supplies, in unsanitary conditions, and without electricity.

Hurricane Katrina Gaps in Emergency Preparedness

- Insufficient measures taken to care for the chronically ill, those in nursing homes, and the disabled in the event of a mass emergency or needed evacuation.

Hurricane Katrina Gaps in Emergency Preparedness

- Stoppage in the chain of delivery of food, water, medicine, and other supplies due to the nation's "just in time economy."
- Disruption of emergency communication systems.
- Inconsistencies in infectious disease and public health hazard response.

Hurricane Katrina Gaps in Emergency Preparedness

- Providing limited, slow, and inconsistent information to the public.

Spanish Lady Flu

- 1918-1920 – data reconsidered.
- Estimated deaths – 62 million. Healthcare facilities in major US cities overwhelmed. System failed when large number of staff infected. Patients sent home to live or die. No treatment available.
- 96% of deaths would occur in developing countries.
- 3-4% of deaths would occur in developed world.

Spanish Lady Flu

- 1918-1920 mortality rates
  - Denmark 0.2%
  - USA 0.3%
  - Philippines 2.8%
  - Bombay, India 6.2%
  - Central India 7.8%
- Would double death rate in single year from all causes.

Bird (Avian) Flu

- H5N1 – Similar to 1918 flu virus.
- Population highly vulnerable – 1918 flu disproportionately killed young people in the prime of life.
- Relenza and Tamiflu being stockpiled to lessen impact of virus, reduce transmission, possibly prevent infection. Drugs work by blocking ability to multiply beyond the infected host cell.

Bird (Avian) Flu

- Government also stockpiling N95 respirators, ventilators, and surgical masks.
- Government working to develop effective vaccines. It would take 6 months to develop effective vaccine after epidemic begins.

Avian Flu Pandemic

- Monitoring and surveillance – 1st line of defense.
- Would impact every community in US in 6-8 weeks and would likely return in wave after wave, with each wave lasting 2-3 months.
- US deaths estimated at 2-10 million, depending on effectiveness of containment, distribution of supplies, effectiveness of vaccine, and virulence of virus.

Avian Flu Pandemic

- 10's to 100's of millions of deaths worldwide.
- Would interfere with total social fabric of country government, police, schools, travel, work, healthcare, and economy.
- At any given time, 3-10% of the population could be infected. Over course, more than 50% of population will be infected.

Avian Flu Pandemic

- 90% of public suspicious of government's role to render assistance after Katrina.
- Flu would sweep over entire nation in 64-85 days.
- Little opportunity to shift resources.
- No help or supplies from next community as all affected and stressed by resources available.

Avian Flu Pandemic

- Any community's survival will depend on local and state planning and preparations.
- Susceptibility to the virus will be universal.
- 50% of infected patients will seek outpatient care.
- Multiple waves of infection over 1-2 years.

Avian Flu Pandemic

- Each outbreak will last 6-8 weeks.
- Vast need for credible information.
- Massive social and economic disruption – quarantines
  - Trucks don't roll, airports shut, schools closed, travel restrictions, people encouraged to stay home.

Harvard School of Public Health Study, October 20, 2006

- 78% of population would follow public health directives to curtail activities for 1 month.
- 98% would avoid people infected with flu.
- 85% would isolate entire family if any one member became ill.

Harvard School of Public Health Study, October 20, 2006

- 24% would have no one to care for them if they became ill.
- 26% would experience severe financial problems if they missed even 7-10 days of work.
- 57% would be in serious financial trouble if they missed one month of work.

Surge Capacity Critical Needs

- Beds (including beds for trauma and burn care patients)
- Isolation capacity
- Healthcare personnel/volunteer health professionals
- Pharmaceutical caches

Surge Capacity Critical Needs

- Personal protective equipment (masks, respirators, gloves, gowns)
- Decontamination
- Behavioral (psychosocial) health considerations
- Communications and information technology

Pandemic Influenza (Avian Flu H5N1)

- Plan to close facilities due to reduced manpower.
- Train to recognize signs and symptoms of influenza.
- Quarantine/isolate patients voluntarily at home.

Pandemic Influenza (Avian Flu H5N1)

- Enhance communication to decrease rumors and panic.
- Establish resource stockpile – N95 masks, gloves, surgical masks, alcohol-based hand cleaner, eye shields/safety glasses, disposable gowns, compressed oxygen, Tamiflu, Relenza.

Pandemic Influenza (Avian Flu H5N1)

- No mutual aid – Other communities affected and shut down as well.
- No distant community surge capacity.
- 40% of workforce lost to illness.

Pandemic Influenza (Avian Flu H5N1)

- Response agencies and HCWs at greatest risk.
- Community education first line of defense.
- If you haven't stockpiled it, you won't have it.

Pandemic Influenza (Avian Flu H5N1)

- Integrate emergency response plan with all other existing plans. Carefully consider legal aspects – quarantine, involuntary confinement, ability to bury or cremate without family permission, curfews, closing business, forced relocation of residents, suspension of habeas corpus, freedom of press.

Pandemic Influenza (Avian Flu H5N1)

- Implement infection control plan. Integrate with occupational health plan.

Pandemic Influenza (Avian Flu H5N1)

- Determine and stockpile pre-outbreak, the needed:
  - Personal protective equipment for infection control.
  - Fuel planning on a 40% reduction in supply.

Pandemic Influenza (Avian Flu H5N1)

- Determine and stockpile pre-outbreak, the needed:
  - Supplies for food preparation during the pandemic, both for the response workplace and emergency responders' homes and families.

Pandemic Influenza (Avian Flu H5N1)

- Determine and stockpile pre-outbreak, the needed:
  - Tamiflu or Relenza – 2 weeks for each infected patient and HCW. Continued dosing for HCWs directly caring for patients.
  - Develop special commodity distribution system.

Pandemic Influenza (Avian Flu H5N1)

- Determine and stockpile pre-outbreak, the needed:
  - Facilities to care for or quarantine 40-50% of HCWs. Identify substitute workers, develop substitute scheduling of workforce.

Pandemic Influenza (Avian Flu H5N1)

- Determine and stockpile pre-outbreak, the needed:
  - Anticipate not having access to mutual aid or state/federal support during an outbreak – They will not have resources to send support to you!
- Supplies will be limited.
- Distribution system will fail.

Pandemic Influenza (Avian Flu H5N1)

- Only resources available for protecting responders will be what was obtained prior to the pandemic.
- Provide seasonal influenza vaccines and pneumovax II to emergency responders and their immediate families. Crossover immunity may provide some level of protection from the H5N1 virus.

Pandemic Influenza (Avian Flu H5N1)

- Cross-train other professions to free up EMTs.
  - UPS and FedEx drivers to drive ambulances.

Severe Acute Respiratory Syndrome (SARS)

- First novel infectious disease of 21st century.
- Sudden onset.
- Cause unknown (now know SARS-CoV).
- Rapid spread around world.
- 8,400 infected, 20% were HCWs.

SARS

- Onset epidemic – Guangdong Province, China. November 2002 (Singapore epidemic) 800+ deaths.
- Major threat to global public health – global havoc. 8400 cases in 29 countries.
- Index case – Hong Kong – Admitted to hospital on February 21, 2003. High infectivity, unknown nature of virus, significant morbidity and mortality.

SARS

- 305 of infected were HCWs
- Eight front-line workers died
- March 2003 – 400+ cases
- No new cases since June 22, 2003 in Hong Kong
- June 27, 2003.
  - 1,755 documented cases
  - 299 deaths

Factors Impacting Healthcare Workers

- Unknown cause
- Uncertainty of what they were dealing with – How to cope with, contain/stop spread, treat
- Rapid spread of disease – staff at risk
- Need for full respiratory and infectious precautions when exposed to patients

Factors Impacting Healthcare Workers

- Redeployment of manpower in receiving hospitals to boost staff on SARS wards
- Day-to-day changes in command structure
- Extreme physical and psychological pressure
- Uncertainty in infectious control and nursing procedure

Factors Impacting Healthcare Workers

- Overwork in nursing
- Staff feeling "taken for granted"
- Staff separated from families, fearful of infecting their spouses and children
- Loss of patient/staff boundaries – specific staff roles blurred – disease could affect anyone – quickly – forced to work out of area of knowledge

Psychological Effects

- Fear of death
- Staff and patient/patient family anxiety at confinement
- Fear of hospitals
- Wide range of staff emotions: anxiety, depression, anger at authorities, denial of danger, developing phobias and OCD, interpersonal rigidity
- Claustrophobia in protective gear – can't breath

Participants Truth

- Nurses' myriad of emotions caring for SARS patients.
  - Abandoned by administration
  - Powerlessness
  - Physical, mental, emotional stress associated with long hours and dying patients – "losing the battle"
  - Unfamiliarity with illness, work location, physical equipment

Participants Truth

- Nurses' myriad of emotions caring for SARS patients.
  - Enhanced personal vulnerability (I am canary in the coal mine)
  - Interpersonal stress – short tempers – conflicts with coworkers – resentment at doctors who were not there
  - Unfamiliarity with new rules and work environment

Participants Truth

- Anger at constant changes in chain of command and directives
- Chronic frustration
- Dramatically enhanced personal vulnerability
- Direct threat to self-identity, life, interpersonal skills, previously held beliefs

Participants Truth

- Empathy for their patients and fellow staff who worked hard "band of brothers" and rejection of "slackers, freeloaders, and butt kissers." Polarization of staff, anger at scapegoats

Powerlessness

- Core feeling
- Couldn't communicate fear
- What they faced was unknown
- Autonomous actions prohibited
- Unable to help patients in a competent manner
- Staff rounding, training and communication time reduced as stress increased

Unfamiliarity

- Didn't know the disease
- Treatment
- What to expect
- Risks
- Progression of disease
- Communicability
- Staff they would work with or their level of competence
- How they were seen by others
- New rules

Unfamiliarity

- How to work in negative pressure isolation rooms
- Constant engagement of N95 masks or higher level of respiratory protection when on duty
- Constant need for gloves, gowns, eye protection, Barrierman suits
- Careful hand and instrument hygiene and room sanitation
- Strict isolation procedures

System Strain

- Entire region affected
- No hospital had adequate staff or resources after the first week of the outbreak
- Sudden demand for skilled professionals and specific respiratory supplies – neither available. Solution – Work with what you have. Dip gloves rather than reglove; 12-18-hr shifts for nurses

System Strain

- Inadequate public health and hospital capacity –worsened as healthcare staff themselves became sick and died
- Healthcare workers threatened, workers from distant sites did not rush to sign up for service

SARS in Hong Kong 2003 –
Stress and Psychological Impact Among Frontline Healthcare Workers

- 68% of staff showed high levels of stress.
- 57% experienced psychological distress.

SARS in Hong Kong 2003 –
Stress and Psychological Impact Among Frontline Healthcare Workers

- Anxiety, insomnia, lability of mood, depression, diminished frustration tolerance, irritability with family and coworkers, ASD
- Most related to personal vulnerability, role stress, a sense of helplessness, and perceived lack of support in the workplace

Factors in Disasters that Produce Especially High Rates of Severe and Persistent Psychological Effects

- Widespread injuries
- Loss of life/fear of death
- Massive property damage or disruption of social fabric
- Massive financial strain on community or individuals

Factors in Disasters that Produce Especially High Rates of Severe and Persistent Psychological Effects

- Prolonged helplessness
- Uncertainty of future
- Separation from family
- Undefined prolonged threat (virus, radiation, etc.)

SARS in Hong Kong - 2003

- Questionnaire to all staff in 14 EDs within public sector – stress – 1-10 at time received, not at time of highest stress, sent 3 months after outbreak
- First outbreak – March 2003 – Prince of Wales Hospital
- By epidemic's end, 341 staff infected – 20% of all SARS cases in Hong Kong – 10 of staff who responded contracted SARS

SARS in Hong Kong - 2003

- Cases in doctors - 53; nurses - 188; aides - 65
- In ER, doctors - eight; nurses – seven; aides - one

SARS in Hong Kong - 2003

- Staff distress more than doubled.
- Mean distress level on 10-point scale.
  - Prior to SARS – 2.5
  - Post SARS - 6.19
- Doctors – 5.91
- Nurses – 6.52
- Aides – 5.44

SARS in Hong Kong - 2003

- Six major sources of distress:
- Vulnerability/loss of control - physician identity was "caregiver, victim, and spreader of disease." Professor Cameron - "This was the first time I felt threatened by the work I did."

SARS in Hong Kong - 2003

- Health of self
- Unpredictable spread of virus
- Health of family and others
- Changes in work
- Being isolated

SARS in Hong Kong - 2003

- Scores for nurses on six items of distress were significantly higher than for doctors.
- Aides scored higher than doctors, but not nurses in worrying about families and others' health.

Preferred Coping Mechanisms by Disciplines

- Physicians – Acceptance, planning, intellectualization, thinking about how to confront stressor, active coping methods
- Nurses – Behavioral disengagement – giving up or withdrawing effort from attempt to obtain goal
- HCA – self-distraction, psychological disengagement, daydreaming, sleep, indifference

Coping Strategies Most Successful

- Combination of acceptance, active coping, and positive reframing were most effective.
- Venting and using instrumental social support was also highly effective for nurses, but not physicians.

Coping Strategies Most Successful

- Self-distraction
- Behavioral disengagement
- Using emotional support
- Denial
- Planning
- Substance use

Coping Strategies Least Successful

- Humor
- Religion
- Self-blame

When the System is Overwhelmed

- Being in control is important to alleviate anxiety and enhance function
- Self direction
- Ability to improvise
- Team support
- Ability to control workload and schedule at the unit level

When the System is Overwhelmed

- Strong positive empathetic leadership with frequent input from both above and below
- Staff support services need to be:
  - Flexible
  - Private
  - Collegial
  - Unintrusive

When the System is Overwhelmed

- Administrators need to understand higher stress levels, particularly in nurses, and that healthcare workers were more concerned with health of families.

Building a System to Support Staff

- Instrumental social support, provides assistance, information, or advice to staff on what to do.

Building a System to Support Staff

- Opportunity to interact and vent:
  - Staff lounges
  - Nursing feedback sessions to administration
  - Team meeting defining problems, strengths, things that work, special resources, and what administration is doing to meet staff and patient needs

Building a System to Support Staff

- Opportunity to interact and vent:
  - If administration listens – helpful
  - If administration nonresponsive – destructive
    - Disrupts morale and increases helplessness
  - Staff must specifically tell administration what they need, not whine about what they don't have

Building a System to Support Staff

- Opportunity to interact and vent:
  - Administration must work to supply needs or explain why.

Building a System to Support Staff

- To diminish fear/vulnerability – Provide equipment and training, adequate numbers of staff, staff clinic, training of how to accomplish procedures.

Building a System to Support Staff

- Venting (focusing on emotions, frustrations, and fears) was useful for nurses and aides, but a bad strategy for physicians who were perceived as leaders and needed to be viewed as strong, in command by staff. Venting tended to increase physicians' distress and frustration levels.

Building a System to Support Staff

- Administrators needed to cognitively change role and "support" staff, not "control" them.
- Venting by junior doctors working in ED increased anxiety and depression during crisis by placing them in opposition to senior command structure.

Building a System to Support Staff

- Active coping by physicians – (i.e., problem solving, planning, positive leadership of team, positive reframing, caring for staff, imparting information, and being present at as many staff and shift meetings as possible reduced anxiety and somatic complaints in both doctors and staff.)

Building a System to Support Staff

- Random negative interference by distant or unknown administrators was a significant negative stress on staff and magnified, rather than reduced, problems.
- Let the teams work and support them.
- Solve problems – don't control.

Building a System to Support Staff

- The more negatively staff viewed administration, the less likely they were to reach out and ask for help or advice (instrumental social support).

Building a System to Support Staff

- Troubled staff were less likely to open themselves up to patients for fear of exposing their emotional vulnerabilities, leaving the sick patient with mechanical care when they were most needy of human interaction and emotional support.

SARS in Singapore

- 10,511 of 15,025 HCWs responded (70%)
- Onset epidemic – November 2002 – Southern China
- Spread across globe – 7 months
- Affected 8,422 persons in 29 countries, killing 908

SARS in Singapore

- 21% of all cases worldwide were HCWs
- Toronto had highest incidence of HCWs affected – 43%
- Singapore had second highest - 40.8%

SARS in Singapore

- Singapore epidemic lasted March 12 – June 4, 2003
- 238 cases confirmed/33 deaths, including 5 HCWs

SARS in Singapore Stress Factors

- 76% great risk of falling ill
- 69.5% all HCWs accepted risk – 6.5% didn't report for work. 21% "emotionally" unable to work – ASD
- 56% increased work stress
- 53% increased workload
- 49% social stigmatization
- 31% ostracism by family members

SARS in Singapore Stress Factors

- 31% ostracism of family members – People avoid my family because of my job
- 77% felt appreciated by society
- 96% felt personal protective measures were effective
- 93% felt institutions had good policies and that they were well informed

Singapore Contrasted to Ontario

- Preventative measures implemented early; good public health input
- Government had media campaign to herald courage of HCWs
- Workers' committees met with administration

Singapore Contrasted to Ontario

- N-95 respirators were all individually fitted, full protective gear enforced
- Above and below communication was excellent
- Treatment teams coordinated and got daily updates

Things to Do in Outbreaks

- Mitigate effects of interpersonal isolation
  - Staff lounges
  - Provide phone, video phone
  - Buddy system, rotating duties to lessen need for constant work in full gear
  - Provide onsite distraction, sleeping areas
  - Careful consideration of quarantine
  - Restrictive interpersonal rules, hospital or unit access, movement in hospital

Things to Do in Outbreaks

- Mitigate fear of infectious risk
  - Reduce uncertainty, clear communication, fit equipment, ensure adequate supplies of protective equipment
- Attend to effect of media portrayals of healthcare workers. Public's fear of HCWs infecting others when off duty, stigmatizing them and their families

Things to Do in Outbreaks

- Provide time, space, and expertise to foster reflection and adaptation.
  - Staff needs to know they are having ordinary responses to an extraordinary event – anxiety, fatigue, rumination, social withdrawal, etc.

Things to Do in Outbreaks

- Provide practical support
  - Food/beverages to wards
  - Told job not in jeopardy if they become ill, paycheck will continue
  - Praise
  - Staff lounge

Things to Do in Outbreaks

- Provide adequate training, supplies, communication.
  - Toronto ICU nurses wanted greens for work. Hospital administration said no, too expensive, get stolen, not necessary for infection control. Nurses said no greens policy jeopardized their families and demeaned them. Wouldn't work for "stupid bean counters." Finally able to sign out greens.

Spring of Fear
The SARS Commission
Executive Summary, Dec. 2006

- The Commission has not heard of any country or any health system that foresaw SARS. No one foresaw the sudden emergence of an invisible unknown disease with no diagnostic test, no diagnostic criteria, uncertain symptoms, an unknown clinical course...

Spring of Fear
The SARS Commission
Executive Summary, Dec. 2006

- ...an unknown incubation period, an unknown duration of infectivity, an unknown virulence of infectivity, an unknown method of transmission, an unknown attack rate, an unknown death rate, an unknown infectious agent and origin, no known treatment and no known vaccine."

Psychological Effects of SARS on HCWs

- Toronto – 66% of staff had increased anxiety, fear of infection, fear contagion, fear of stigmatization, loneliness, boredom, anger, uncertainty, fear of death, increased concern for family's health, fatigue, ruminative worry, emotional withdrawal from patients, anger at system.

Psychological Effects of SARS on HCWs

- 31% tested positive for high levels of emotional distress (ASD)
- Taiwan – 75% of HCWs experienced high psychiatric morbidity (per Dr. Mian-Yoon) (ASD)
- Singapore – 21% of HCWs experienced high psychiatric morbidity (ASD)

Spring of Fear

- SARS emerged from jungles of central China
- Killed 44 in Ontario, infected 375 others
- Forced thousands into quarantine
- Brought health system of greater Toronto to its knees
- Hospitals closed, patients denied visitors

Spring of Fear

- Cancer treatments, heart and other surgeries postponed, clinics canceled
- Sick and dying suffered without consolation of their families
- Dead disposed of quickly in the absence of family and friends
- No ready diagnostic test
- Produced economic disaster for Canada, Ontario, and greater Toronto

Spring of Fear

- Totally devastating on family life
- 65% of nurses in Ontario felt their health and safety were compromised (per Ontario Nurses Association survey)
- 55% of nurses felt they and their work were not adequately respected and that the system didn't care about them
- "Nobody listens to nurses"

Spring of Fear

- A nurse's child asked "Mommy, are you going to die?"
- "I was torn between staying and quitting because my husband was scared."
- "The neighbors wouldn't let their children play with my daughter."

Spring of Fear

- "Administration didn't know what they were doing and wouldn't listen to the people who did."
- "Everybody in our hospital was vying for power."

Toronto Studies

- Nurses reported a greater impact on morale, psychological stress, and job dissatisfaction than MDs.
- Doctors found support outside hospital, while nurses relied more on peer support.

Toronto Studies

- Nurses felt less powerful, more helpless, more frustrated, less informed, and less involved in decision making than doctors.
- Nurses felt infection control procedures were not strict enough. Physicians were satisfied with procedures.

Toronto Studies
Risk Factors for Development of Psychiatric Symptoms

- Being a nurse
- Having to wear full protective clothing over long periods, which increased isolation
- Having children
- Direct contact with known SARS or suspected SARS patients
- Being quarantined

Toronto Studies
Risk Factors for Development of Psychiatric Symptoms

- Having "attachment insecurity" (i.e., anxious dependence on partner associated with difficulty sharing thoughts and feelings)
- Experiencing job stress or conflict during and/or post epidemic
- Experiencing social rejection at work or home

Toronto Studies
Risk Factors for Development of Psychiatric Symptoms

- Coping through avoidance of crowds and colleagues
- Previously strained marriage
- Isolation
- Past history of anxiety, depression, or substance abuse, particularly alcohol; borderline personality traits

Spring of Fear

- "SARS took hold because of a confluence of systemic weaknesses in worker safety, infection control, and public health. There were 21 deep systemic flaws identified in the public health infrastructure and serious shortcoming in health protection and emergency management laws."

Spring of Fear

- "The public health system was broken, neglected, inadequate, and dysfunctional. It was unprepared, fragmented, uncoordinated. It lacked adequate resources, was professionally impoverished, and was generally incapable of fulfilling its mandate."

Spring of Fear

- The trust of health workers in the ability of government, safety laws, and their employers to safeguard them and their colleagues was broken. Health workers learned that those in charge were poorly informed and inadequately advised to make pronouncements on worker safety and personal protective equipment.

Spring of Fear

- A prime example was the lack of awareness throughout the health and hospital system of the legal requirements for respirator fit testing.

N95 Respirator

- One of the most contentious issues
- Was by Ontario law (1993 statutes) to be fitted to protect staff working with SARS patients
- Were not fitted in Ontario, were "hot bunked."

N95 Respirator

- Hospital administrators and health bureaucracies resisted advice and enforcement on hospital turf by independent worker safety experts, infection control experts, and the provincial Ministry of Labor. They rejected the precautionary principle that reasonable action to reduce risk, like the use of the N95 respirators, need not await absolute scientific certainty.

N95 Respirator

- When CDC experts arrives, hospital administrators "pushed back against outside advice" – a "culture of control."
- Both infection control and worker safety failed to protect nurses and HCWs during SARS.

N95 Respirator

- Misinformed and ignorant administrators argued that N95s were unnecessary since SARS was spread by large droplets and was not airborne. Therefore, all that was needed were surgical masks. Recent studies show both SARS (a coronavirus) and influenza are spread by both airborne and droplet transmission, as well as environmental contamination.

N95 Respirator

- Of the 375 who contracted SARS in Ontario, 72% were infected in a healthcare setting, 45% were HCWs.

Ontario

- On February 23, 2003, Mrs. K. returned home from a visit to Hong Kong. Unknowingly infected with SARS after staying at the same hotel as a doctor from China's Guangdong Province, she died at home from apparent heart failure on March 5.

Ontario

- Her son, Mr. T., was admitted to Scarsborough Grace Hospital on March 7. Suffering from a febrile respiratory illness, he waited in the crowded emergency ward for over 16 hours.

Ontario

- During these hours, he transmitted SARS to two other patients, sparking a chain of infection that spread through the Scarborough Grace Hospital, then to other hospitals through patient transfers, ultimately killing 44 and sickening more than 330 others.

Ontario

- When Mr. T. presented at Grace Hospital on March 7, health workers did not know to be on the lookout for unusual respiratory illnesses. Unlike their counterparts in British Columbia, they had not been alerted to the emergence of a mysterious new disease in China and Hong Kong.

Ontario

- Three years after SARS, there is still no means to communicate quickly and effectively with Ontario's physicians.

2003 Toronto SARS Timeline

- May 23 –
  - Press conference – New cases of SARS have appeared at the St. John's Rehabilitation Center
  - Also a "few" patients are being investigated for SARS at the North York General Hospital
  - Media pushed for info – feeding frenzy
  - Government reports wrong

2003 Toronto SARS Timeline

- May 23 –
  - A major outbreak had erupted at North York General. SARS back with a vengeance.
  - Psychological impact enormous on medical community and public – been lied to, deceived, government incompetent.
  - Precautions reinstated – Disease again subsided.

2003 Toronto SARS Timeline

- May 23
  - In SARS II – 118 new hospital cases
  - 54 health workers
  - 64 patients or visitors
  - Nine patients contracted SARS away from hospital, seven were family of HCWs
  - Of the 127 new cases, 17 died

2003 Toronto SARS Timeline

- May 23
  - SARS II had terrible impact on morale of HCWs.
  - When new cases emerged, staff was told it was not SARS, precautions not needed, you are overreacting. It was SARS!
  - 39 workers at North York General Hospital had fallen ill with SARS after they were told SARS was over.

North York General Hospital

- Front-line nurses and physicians had a few psychiatric patients that they believed had SARS.
- The hospital believed that SARS had been ruled out. The hospital repeated this message to staff and tried to convince staff that they were wrong, there was no SARS, they were safe. No precautions were needed.

North York General Hospital

- Staff were given assurances by administration with a confidence that was not warranted under the circumstances.

North York General Hospital

- Staff angered that their concerns were dismissed and the messages of the hospital administration were disconnected from front-line staff input and concerns. "Administrators think the hospital belongs to them. They don't listen to doctors and nurses! What do we know?!"

Probable and Suspect SARS Cases Contracted in Health Care Settings

Category	Phase 1	Phase 2	Total Number Suspect and Probable Cases	Percentage of Total Number of Cases (375)
Health Workers	118	51	169	45%
Patients	23	35	58	15%
Visitors	20	23	43	11%
Total	161	109	270	72%

Vancouver General

- On March 7, British Columbia's index patient, who had stayed at the same hotel in Hong Kong as Mrs. K, was admitted to Vancouver General suffering from SARS, but there was no further spread.

Vancouver General

- A combination of robust worker safety and infection control culture at Vancouver General, with better systemic preparedness ensured that British Columbia was spared the devastation that befell Ontario.

7 Systemic Problems Seen in "Every Hospital and Government Agency"

- Communication
- Planning and preparation
- Accountability: Who's in charge? Who decides who does what? Who listens to who?
- Worker safety

7 Systemic Problems Seen in "Every Hospital and Government Agency"

- Systems: infection control, surveillance, independent safety inspections
- Resources: people, systems, money, labs, infrastructure
- Precautionary principle: action to reduce risk should not await scientific certainty

Recommendations

- Health institutions develop and implement effective means to communicate to their workers information regarding the outbreak, health risk, containment strategy, and measures to protect workers, patients, and visitors.

Recommendations

- Provide a path for communication and consultation with front-line staff.
- Health concerns of health workers need to be taken seriously and workers must be made to feel safe, even if this means continuing with levels of heightened precautions that experts believe are no longer necessary.

- During SARS, front-line doctors, nurses, and other health workers had the greatest clinical experience in diagnosing and treating SARS patients. Yet, there was no process in place to ensure that their voices and experience were heard.

Ontario Ministry of Health on Long-Term Care for the Public's Health

- Plan for the development and use of psycho-educational programs in emergency preparedness training.
- Plan to assist staff deal with work stress, anxiety, and depression associated with epidemics.
- Plan to teach good coping skills.

Ontario Ministry of Health on Long-Term Care for the Public's Health

- Plan to ensure the availability of psychological support programs for HCWs as part of the emergency plan. The plan should specifically address the isolation, stigmatization, fear staff encountered, and adopt proactive approaches and training to manage work fatigue and workload stress.

- To arm the public health system with more powers and duties without the necessary resources is to mislead the public and to leave Ontario vulnerable to outbreaks like SARS.

Upcoming Programs

Pandemic Influenza: Planning and Execution for Law Enforcement Response

Wednesday, February 28, 2007

8:30 a.m. - 11:30 a.m. (Central Time)

For complete listing of upcoming programs visit our website: www.adph.org/alphtn