The Next Disaster: How Prepared Are We? What Health Care Providers Need to Know About Vulnerable Populations at Their Sites of Care

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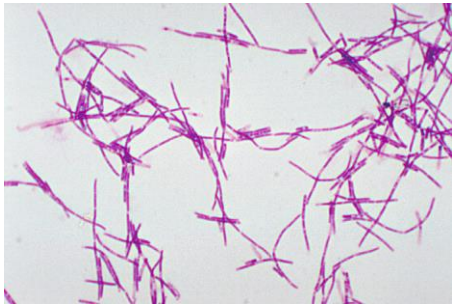
- ✓ The funding agency did not participate in the design, preparation, or finalization of this education program.

Our Wonderful World Is Also a Dangerous Place

September 11, 2001



Anthrax	2001
SARS	2003
Tsunami	2004
Bombings	2005
Hurricanes	2005
Avian Flu	2006
Swine Flu	2009
Haiti Quake	2010
Tsunami	2011
Ebola	2014
What's next?	'15

Is health care prepared? Are you?

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Topics for This Program

- ✓ Need for Disaster Training
- ✓ Preparedness Issues by Vulnerable Population
- ✓ Diagnosing & Treating Older Adults
- ✓ Bioterrorism and Emerging Infections
- ✓ Mental Health and Ethical Issues
- ✓ Preparing Your Facility for All Threats
- ✓ Communication and Resources

Learning Objectives

Upon completion of this program, learners should be able to perform the following:

- ✓ Identify factors placing diverse populations of persons at increased risk resulting from a public health emergency or acts of terrorism.
- ✓ Recognize signs and symptoms in elderly persons exposed to biological agents, emerging infectious diseases and other public health emergencies
- ✓ Recognize the psychosocial, mental health, and ethical issues in bioterrorism response as it affects the treatment of older adults.
- ✓ Prepare your clinic/facility to meet any disaster, whether natural in origin or human-caused.

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Groups of Vulnerable Populations – At Greater Risk During & After Disasters

- ✓ Economically Disadvantaged Persons (12.6% of U.S.)
- ✓ Certain Ethnic and Cultural Groups (25% identify as being non-white)
- ✓ Limited English Proficiency Persons (8.1% of U.S.)
- ✓ Persons with Physical Disabilities (18% total: 12% severe; children 6-14, 11%; persons 80 and older, 72%; 10.7 million persons 6 and over need assistance with ADLs; 11.8% need ambulation assistance)
- ✓ Persons with Psychiatric Diagnoses (22% of adults; 5% chronic depression or anxiety)
- ✓ Isolated Populations; seasonal workers + 3.5 million homeless
- ✓ Age-specific Populations – Pediatric (25%) and Geriatric (13%)

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Medical, Psychosocial, and Overlap Considerations – Pediatric Population Issues*

Physical and Medical Considerations

- ✓ **Anatomy & Physiology**
  - Different from adults
  - Specialty training needed for treatment (inclusion of pediatric medical specialists)
  - Anatomical differences: airway, head injury susceptibility, more rapid skin absorption of agents or toxins**,** dehydration

*M.S. Wingate and R.E. Roush, "Age-Specific Populations," CDC Vulnerable Populations Collaborative Group, Atlanta, GA, 2007.

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Medical, Psychosocial, and Overlap Considerations – Pediatric Population Issues

- ✓ **Pharmacology: Dosages, Side Effects, Adverse Reactions**
  - Equivalent pediatric supplies needed in Strategic National Stockpile (SNS)
  - Weight considerations
- ✓ **Dependency upon Pediatric Medical Equipment and Basic Supplies**
  - Inadequate and insufficient supply of pediatric-specific medical equipment on ambulances and in emergency departments
  - Surge capacity at pediatric facilities is limited
  - Basic supplies for daily living, including, formula, baby food, bottles, diapers, cribs, clothes, etc

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Medical, Psychosocial, and Overlap Considerations – Pediatric Population Issues

Practical Considerations

- ✓ **Dependency upon Guardians for Safety, Security, and Emotional Needs**
  - Family unity/reunification due to children's dependency upon caregivers
  - Need for post-disaster identification system
  - Protection of children in shelters from sexual predators

- ✓ **Child Care and Needs for Guardians to Find Basic Resources**
  - Use schools and child care facilities in community disaster plans
  - Give special consideration for homeless and orphaned children.

Medical, Psychosocial, and Overlap Considerations – Pediatric Population Issues

- ✓ **Increased Incidence of Prenatal Complications and Premature Births (pre- and neonatal medicine)**
  - Ensuring surge capacity in labor and delivery**,** newborn nursery, and neonatal intensive care wards
  - Pregnant women seeking medical attention
  - Understanding of third trimester pregnancy–related complications and premature births and the impact that these might have on the pediatric population
- ✓ **Children with Special Health Care Needs**
  - In addition to the unique attributes of typically developing children, there is a substantial population (up to 30 percent) that requires additional medical, behavioral**,** or psychological attention.
  - ADHD, ventilator-dependent, diabetes, autistic, feeding tube, etc

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Medical, Psychosocial, and Overlap Considerations – Geriatric Population Issues

Physical and Medical Considerations

- ✓ Even robust elders can experience longer periods of time to fully recover from the ill effects of disasters than younger adults.
- ✓ Frail elders, though, are among those nearly always disproportionately affected by disasters of all types.
- ✓ Limitations in mobility due to arthritis and other neurodegenerative diseases can increase dependency and the risk of injury.
- ✓ Those relying on assistive living devices such as oxygen machines, powered wheelchairs, and feeding tubes, or those in nursing homes, will need special attention.
- ✓ Dehydration during summer emergencies and loss of thermoregulation of body heat during winter emergencies – therefore, appropriate shelter, clothing, food and fluid intake are important.

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Medical, Psychosocial, and Overlap Considerations – Geriatric Population Issues

✓ Elders with dementia will require additional measures for medical, behavioral, or psychological attention.

✓Any alone-living elder with co-morbid conditions and those at risk for falling are particularly vulnerable.

✓Pre-existing health conditions and sensitivities have a significant influence on how seniors are impacted by disasters. The presence of degenerative diseases and processes such as coronary heart disease, osteoporosis or diabetes is known to influence disaster morbidity and mortality among older adults.

✓Seniors with chronic conditions are also at risk for falls during a disaster due to disorientation, disruption of their environment or other sustained injuries.

Medical, Psychosocial, and Overlap Considerations – Geriatric Population Issues

- ✓ Mobility limitations make it difficult to take cover or evacuate.
- ✓ Diminished sensory awareness (vision or hearing) creates challenges for rapid evacuation, maneuvering in unfamiliar environments or avoiding hazards during a disaster.
- ✓ Greater likelihood that warnings and instructions may be missed or not understood.
- ✓ Reduced senses of taste and smell, common with aging, increase the risk of eating spoiled food following a power outage.
- ✓ Individuals whose health conditions require equipment such as oxygen generators, ventilators or electric wheelchairs also face serious risk during the loss of electrical power – a common outcome of many types of disasters.

Medical, Psychosocial, and Overlap Considerations – Geriatric Population Issues

Psychosocial Considerations

- Changes in decisional capacity resulting from mild cognitive impairment increase dependency.
- Changes in cognitive abilities impinge on capacity to understand the impending events and follow directions.
- Returning the environment to normal as quickly as possible via "psychological first aid" and facilitating use of restorative resources is vital to reduce stress.
- Older people may experience PTSD later than younger adults, so 6- and 12-month follow-up is needed.

✓ The true psychological impact of disasters may actually be unclear as mental health problems such as depression often go undiagnosed in the older adult populations.

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Medical, Psychosocial, and Overlap Considerations – Geriatric Population Issues

- ✓ Housing disruption can also have a significant psychological impact on older adults. Residents of NH's and in LTC face particular difficulty with changes in housing and often become disoriented and distressed.
- ✓ Older people experience losses differently from younger people, in that perception of their losses tends to be more severe. Much of what is lost during a disaster may hold greater symbolic meaning or sentimental value and may be considered irreplaceable.
- ✓ Seniors who live alone or who are isolated are at particular risk. They are more likely to be hidden from the formal social service and health care networks, or are left alone to cope during and following an emergency.
- ✓ Disasters can severely disrupt social networks that provide support to older adults - lost supports can create and/or compound health problems.

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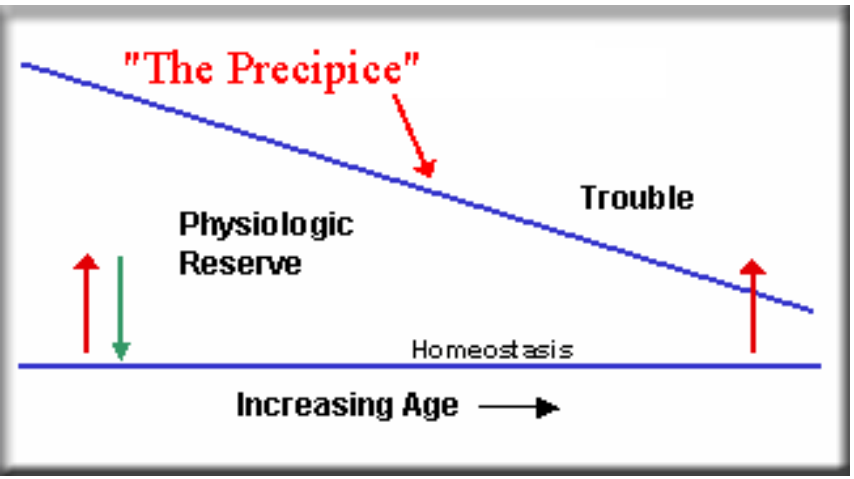
Medical, Psychosocial, and Overlap Considerations – Geriatric Population Issues

Practical Considerations

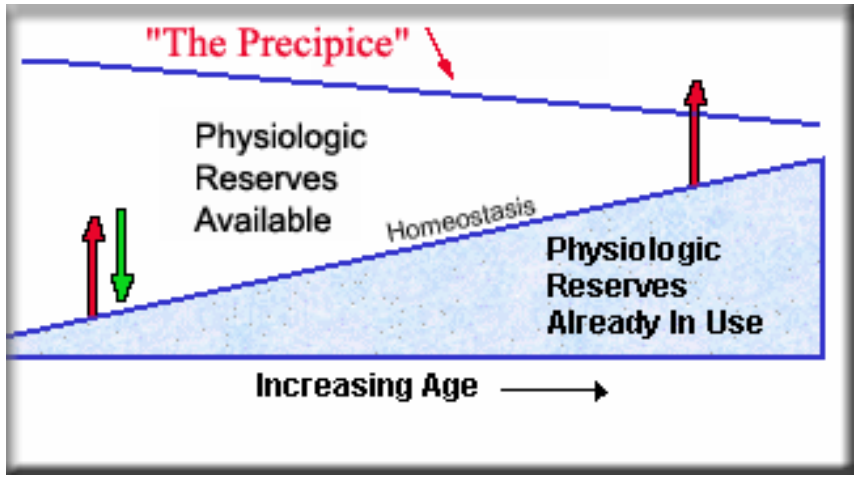
- ✓ In addition to the unique attributes associated with frailty (i.e., limitations in mobility and slower response time), others, including robust elders, who have recently been discharged from acute care hospital stays may be adversely affected due to their short-term vulnerable states.
- ✓ If evacuated, frail elders must have meds, dentures, eyeglasses, and the assurance that their pets will have adequate care.
- ✓ If sheltered-in-place, preventing loss of electricity and having potable drinking water are key factors, as are having sufficient numbers of caregivers.

Model of Impaired Homeostasis – Homeostenosis



Traditional view

New interpretation



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Homeostatic Changes with Age

Organ/body system vulnerabilities

- ✓ Baroreceptors – postural hypotension, syncope
- ✓ Thermoregulation – hypothermia
- ✓ Cardiac reserve – fluid overload
- ✓ Renal perfusion – nocturia, drug toxicity
- ✓ Bones – osteoporosis
- ✓ Eyes – impaired night vision

Barrier Defense Changes With Age

- ✓ Skin – thinner barrier with reduced blood flow
- ✓ Lungs – less active cough reflex
- ✓ Stomach – reduced gastric acid
- ✓ CNS – absence of fever
- ✓ Immune system – reduced cell-mediated immunity

Older People Show Less Response to Severe Infections

- ✓ Patients with pneumoccocal infection where the bacteria grew from their blood.
- ✓ ≥65 were more frequently without fevers, had lower peak temperature, and had higher mortality.
- ✓ Screening for infection in older people can't have absolute temperature cutoff = many will be missed.
- ✓ Less response does not mean less severe infection.

Gleckman, 1981, Chassagne, 1996

Clinical Features by Age:

	20-49	50-64	65+
Unclear History	12%	23%	44%
Temp <100	9%	15%	29%
Peak Temp	104	103	102
WBC<10,000	26%	40%	34%
Mortality	14%	32%	44%

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Older People Die Without "Lethal Exposure"

- ✓ Lower exposure to BT agents may be all that's needed to kill frail elders.
- ✓ 94 y.o. Connecticut women died of Anthrax (Nov. 2001) after presumed cross contamination of her mail. No evidence of *B.anthracis* found in her mail or home. She may have been innoculated with 1 spore.
- ✓ She did not seroconvert.

Source: Barakat L et al., in Henderson DA et al. Bioterrorism, 2003

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Diagnosing Older Adults

- ✓ suspicion of exposure is critical element in Dx
- ✓ consider altered presentation of disease and impact of immunosenescence
- ✓ obtain appropriate diagnostic studies
- ✓ collect specimens before initiating treatment
- ✓ alert laboratory personnel regarding special specimens and their handling
- ✓ consider exposure, sensitivity, and adaptability

G. Taffet, 2004

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Older People May Be Our Sentinels

- ✓ elders may be exposed to many noxious agents
- ✓ elders have greater sensitivity to the noxious agents due to age plus disease factors
- ✓ observing older people may be way to monitor the community -- our "**canaries**"!

Source: WV Appalachian Archives

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Summary of Geriatrics Points: Don't…

- ✓ let immunization status comfort you,
- ✓ let lack of symptoms fool you,
- ✓ depend on an old immune system,
- ✓ ignore your potential sentinels,
- ✓ take comfort from a less than "lethal exposure,"
- ✓ forget that age robs clinicians of using, hallmarks like pulse/temp discrepancy,
- ✓ forget beta-adrenergic and pro-cholinergic agents can confound symptoms, and
- ✓ don't forget to treat depression and anxiety.

G. Taffet, 2004

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HRSA Projects in Bioterrorism & Emergency Preparedness in Aging – BTEPA

- ✓ Western Reserve GEC at Case Western University
- ✓ Consortium of New York GEC at NYU
- ✓ Gateway GEC of Missouri and Illinois at St. Louis Univ.
- ✓ Ohio Valley/Appalachian Region GEC at University of KY
- ✓ Stanford GEC at Stanford University
- ✓ Texas Consortium GEC at Baylor College of Medicine
- ✓ Mather LifeWays PREPARE Program

See this article: http://aging.slu.edu/newsletters/SLUFall2004_Vol3.pdf

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Context and Perspective – BTEPA

GEP&R

- ✓ older persons have altered levels of immune function,
- ✓ higher risk of infectious illness and reduced response to antibiotics,
- ✓ few health care workers have had adequate training in BTEPA,
- ✓ even robust elders have a greater risk in natural disasters; thus,
- ✓ we need all-hazards approach to geriatric emergency preparedness and response – **GEP&R** – including mental health issues in any disaster.

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The Threats

- ✓ 9/11/01, anthrax scare, and Institute of Medicine report on bioterrorism
- ✓ Internet search produced 314,000 references on bioterrorism (J. van de Leuv, JAMA, 289(12):1574)
- ✓ Citations focused almost solely on the 6 Class A Agents identified by Centers for Disease Control and Prevention (CDC) – no mention of frail elders' needs
- ✓ SARS
- ✓ Natural Disasters – earthquakes, floods, extreme temperatures, hurricanes, tsunamis, wild fires
- ✓ Wars and displaced populations – lack of hygiene
- ✓ Avian and Swine Influenza, H5N1 H1N1 Strains
- ✓ Other emerging infections – Think Ebola

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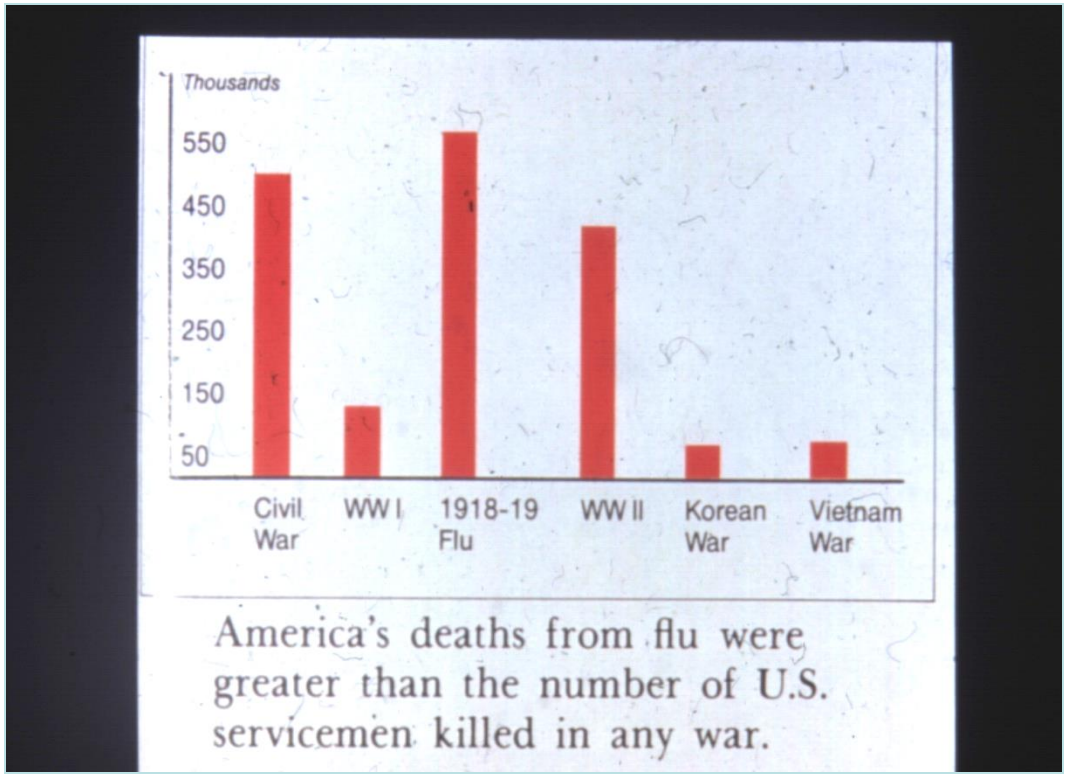
Our Role in Emerging Threats

- ✓ Think “pre-event” preparedness
- ✓ Develop local relationships
- ✓ Education and training
- ✓ **Communicate** to our patients/public
  - What is their risk?
  - What is being done to protect them?
  - How can I protect myself?
  - How can I protect my colleagues?
  - What else do we need to know?

RB McFee, 2004

Mother Nature as Terrorist: Influenza Pandemic – Past and Future



- Spanish flu ~ millions
- Vaccine preventable deaths > 30,000 deaths per year
- Avian flu & other emerging infections ????

RB McFee, 2004

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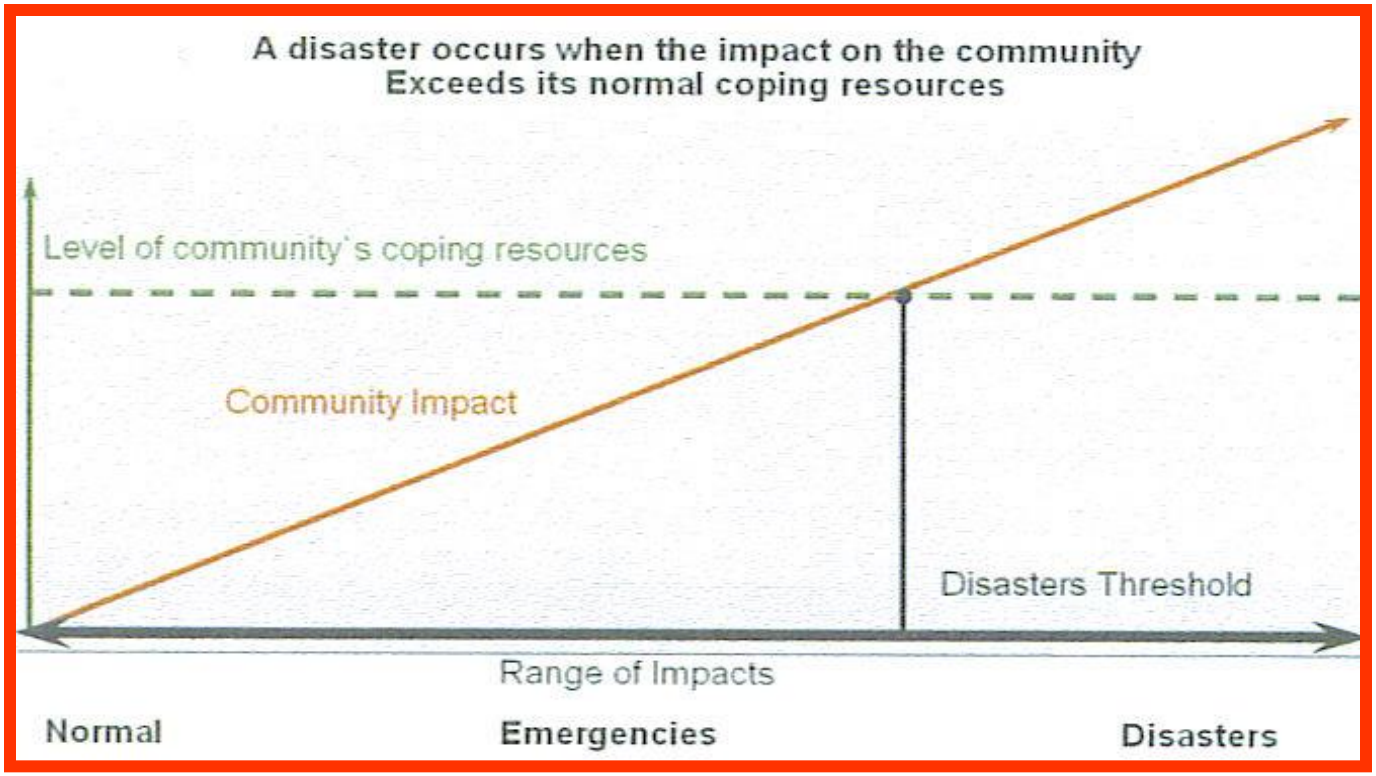
Mother Nature's Wrath

- ✓ Basic needs: shelter, fuel, clothing, bedding, household items
- ✓ Mobility: incapacity, transport
- ✓ Health: access to services; appropriate food, water, sanitation; psychosocial needs
- ✓ Family and social: separation, dependents, changes in social structure, loss of status
- ✓ Economic and legal: income, information, documentation

Source: HelpAge International. 2001. "Older People in Disasters and Humanitarian Disasters: Guidelines for Best Practice." Available online as a pdf file: http://www.reliefweb.int/library/documents/HelpAge_olderpeople.pdf

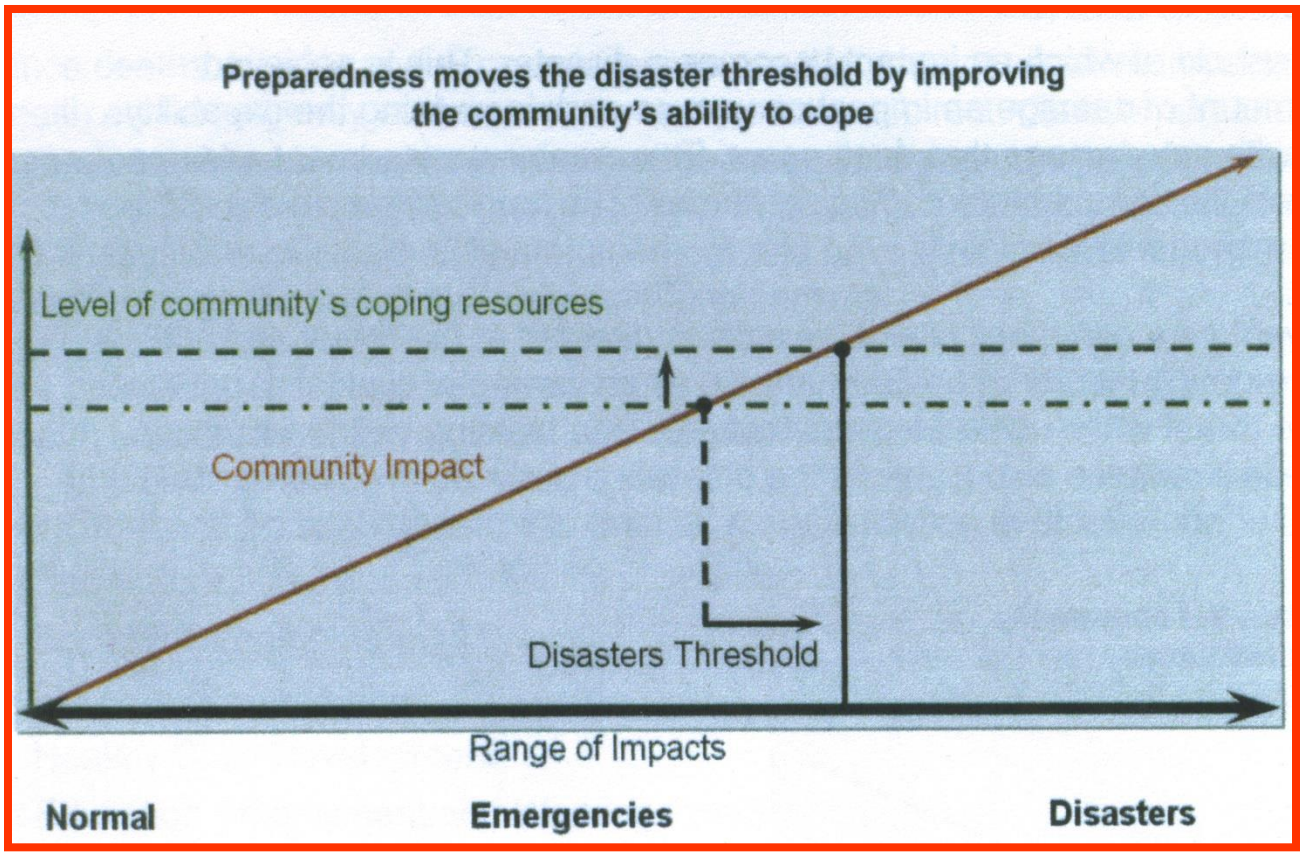
When is an Emergency a Disaster?



A community's coping resources are its people, materials, equipment, and services used to meet demand created by an incident.

Source: Canadian F/P/T Network for Emergency Preparedness and Response, 2004

Preparedness Moves the Disaster Threshold



Preparedness measures – e.g., sandbagging and evacuating vulnerable populations before flooding occurs – increases the disaster threshold, permitting the community to cope better.

Source: Canadian F/P/T Network for Emergency Preparedness and Response, 2004

The Disaster Cycle

Need for International Training

- ✓ **GEP&R** – Geriatric Emergency Preparedness & Response issues are global …since 1995, heat waves, extreme cold, and floods in Europe plus earthquakes and weather-related disasters around the world have killed almost a million with over 2.5 billion people affected and costing $738 billion in US dollars .

- ✓ Older people are always among those disproportionately affected.

- ✓ The Public Health Agency of Canada's Division of Aging and Seniors has started a global initiative on GEP&R issues.

Public Health Agency of Canada | Agence de santé publique du Canada

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Need for National Training in GEP&R

- ✓ <50% health care workers have had bioterrorism and emergency preparedness training, only 1 in 10 have had geriatrics-specific training

- ✓ Health care workers, acute and LTC administrators, 1st responders/receivers, and ED staff need training in treatment and geroethics of triage

Need for Local Training in GEP&R

- ✓ Heat waves – France
- ✓ Extreme cold – England
- ✓ Floods – Manitoba and U.S. Midwest
- ✓ Wild fires – Australia and California
- ✓ Tsunamis – S. Asia
- ✓ Earthquakes – Pakistan
- ✓ Hurricanes – Katrina, Rita, Wilma, Ike and Sandy!
- ✓ Avian Influenza (H5N1), then Swine Flu (H1N1)
- ✓ Haiti Earthquake
- ✓ Japan Tsunami, March 11, 2011
- ✓ China Bird Flu (H7N9), April 22, 2013
- ✓ Africa Ebola Spring and Summer 2014
- ✓ Weaponized biological agents
- ✓ Your hometown
- ✓ Your family
- ✓ Your residents/patients

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Sendai, Japan Earthquake and Tsunami, March 11, 2011

The Associated Press
TOKYO -- New data from Japan's National Police Agency show that two-thirds of the victims identified so far in last month's tsunami were elderly - and most of them drowned.

The agency said in a release this week that as of a month after the March 11 disaster, 65 percent of the 11,108 confirmed fatalities of known age were 60 or older.

Another 1,899 identified victims were of unknown age. Adding those who are still missing, the earthquake and resulting tsunami killed an estimated 27,500 people.

Read more: http://www.miamiherald.com/2011/04/20/2178303/majority-of-japan-tsunami-dead.html#ixzz1KJWQQsP5

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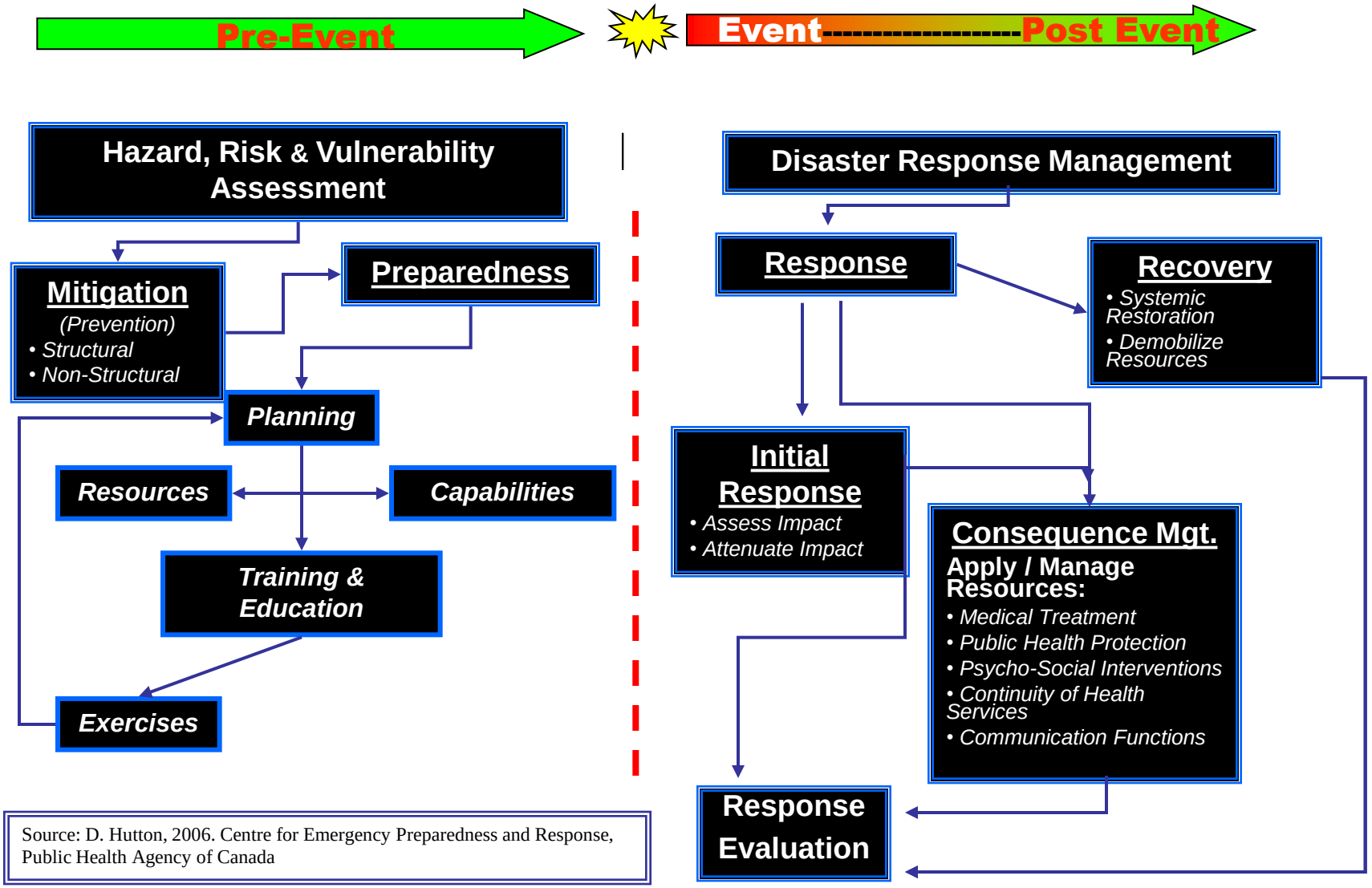
Heeding Lessons from Previous Tsunamis -- Warnings Written in Stone

- ANEYOSHI, Japan — The stone tablet has stood on this forested hillside since before they were born, but the villagers have faithfully obeyed the stark warning carved on its weathered face: “Do not build your homes below this point!”

You, the Local Health Care Professional, in GEP&R



Source: D. Hutton, 2006. Centre for Emergency Preparedness and Response, Public Health Agency of Canada

What You Need to Know and Can Do Regarding All Hazards

- ✓ What is the threat?
- ✓ What are the vulnerabilities?
- ✓ What special geriatric preparedness issues need to be addressed?
- ✓ What needs to be done?
- ✓ What can we do now?
  - community risk assessments
  - training, training, training
  - communications
  - empower seniors
  - preventive actions

BNICE Acronym

- ✓ Biological weapons
- ✓ Nuclear/radionuclides
- ✓ Incendiary devices
- ✓ Chemical agents
- ✓ Explosive materials

Source: RB McFee, 2004

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General Concepts of Bioterrorism

- ✓ major risk is retention of inhaled particles
- ✓ toxins may cause direct pulmonary or systemic toxicity
- ✓ exposure via inhalation, ingestion, and skin contact
- ✓ signs and symptoms not apparent for several days after attack
- ✓ mass casualty pattern first clue to bioterrorism
- ✓ Dx via CDC Level 4 Special Pathogens Lab shown in photo

D. Lakey, 2004

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Biological Agents

- ✓ High-priority agents pose a risk to national security because they
  - can be easily disseminated or transmitted from person to person
  - result in high mortality rates and have the potential for major public health impact
  - might cause public panic and social disruption
  - require special action for public health preparedness

Anthrax

Smallpox

Plague

Tularemia

Botulism

Viral Hemorrhagic Fevers

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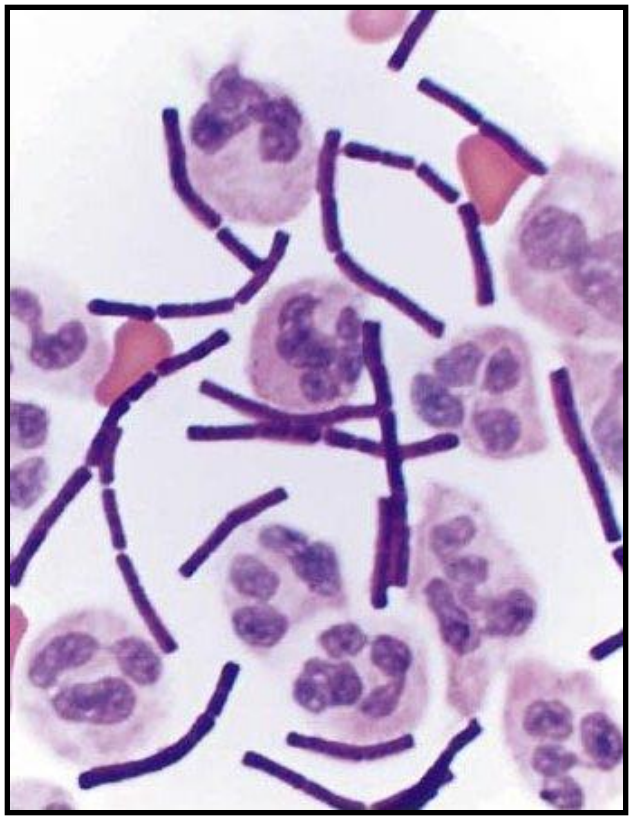
Anthrax: Overview

- ✓ *Bacillus anthracis*
  - a spore-forming bacteria
  - infects sheep, goats, cattle
  - woolsorter's disease
  - incubation: 2 - 60 days
- ✓ 3 forms of clinical disease
  - inhalation
  - cutaneous
  - gastrointestinal



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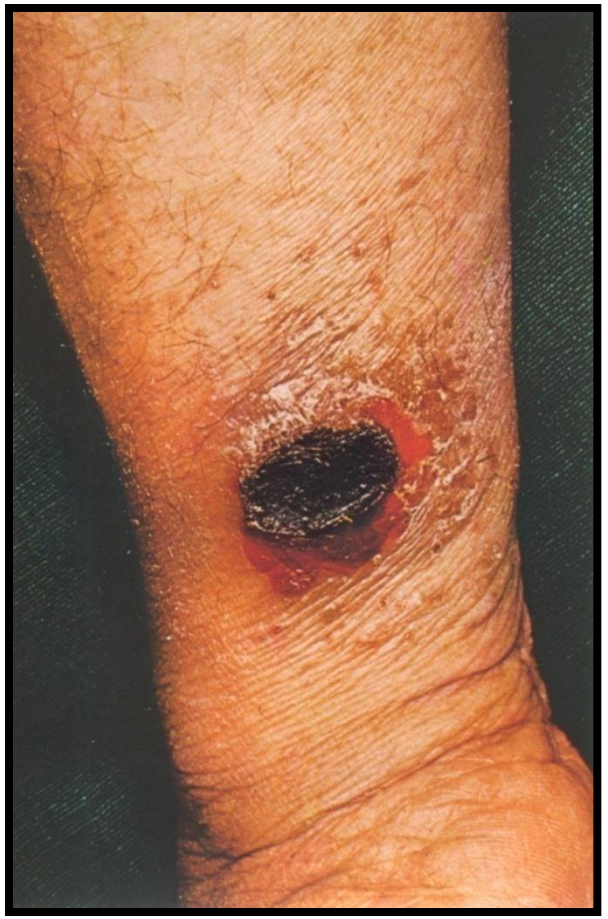
Anthrax: Cutaneous

- ✓ Deposition of spores on skin with previous cuts or abrasion
- ✓ <u>Presentation</u>
  - – initially local edema/swelling
  - – progresses to an itchy bump, then to a blister
  - – finally a painless, depressed scab (eschar)
- ✓ <u>Prognosis</u>
  - – untreated, mortality is 20%
  - – treated, mortality is about 0%



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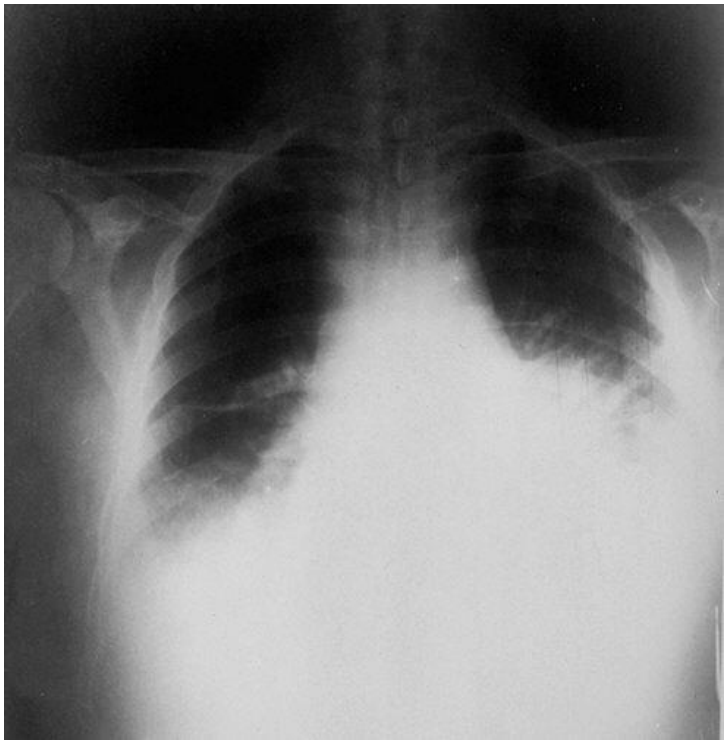
Anthrax: Inhalation

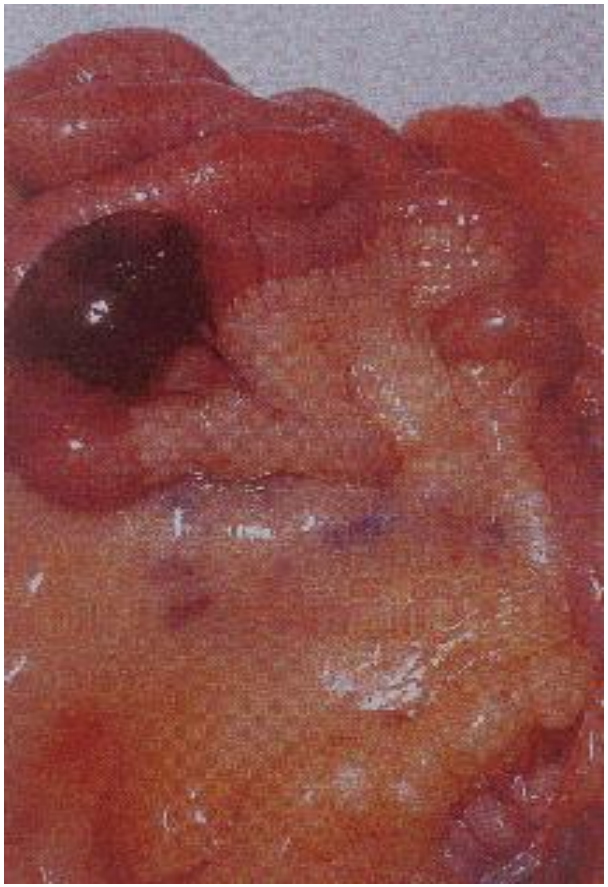
Presentation

- ✓ initially non-specific “flu-like” symptoms – fever, fatigue, chest pain, muscle aches
- ✓ abrupt respiratory failure at day 2 to 4 days
- ✓ widened mediastinum and/or pleural effusions on chest radiology



Anthrax: Gastrointestinal

- ✓ Upper GI disease
  - oral or esophageal ulcer
  - regional enlargement of lymph nodes
  - edema
  - sepsis
- ✓ Lower GI Disease
  - nausea, vomiting, bloody diarrhea, acute abdomen



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Is it: (numbers = % patients)

anthrax, flu, or ILI?

✓ Elevated Temp	• 70	74	73
✓ Fever/chills	• 100	86	85
✓ Cough	• 90	90	90
✓ SOB	• 80	6	6
✓ Chest discomfort	• 60	35	23
✓ HA	• 50	88	85
✓ Myalgia	• 50	88	88
✓ Sore throat	• 20	80	80
✓ Vomiting/nausea	• 80	12	12

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Emerging Infectious Diseases

- ✓ SARS – We've already had one round…will there be others?
- ✓ Avian Influenza, H5N1 Strain – When will it arrive in this country?
- ✓ Other drug-resistant bacteria – could MRSA be weaponized?
- ✓ What about TB?
- ✓ What would have happened if **H1N1** played out as it had been thought it might? We watched a possible pandemic unfold with >surveillance via 24/7 news, Internet connectivity, "Tweets" & other social media.

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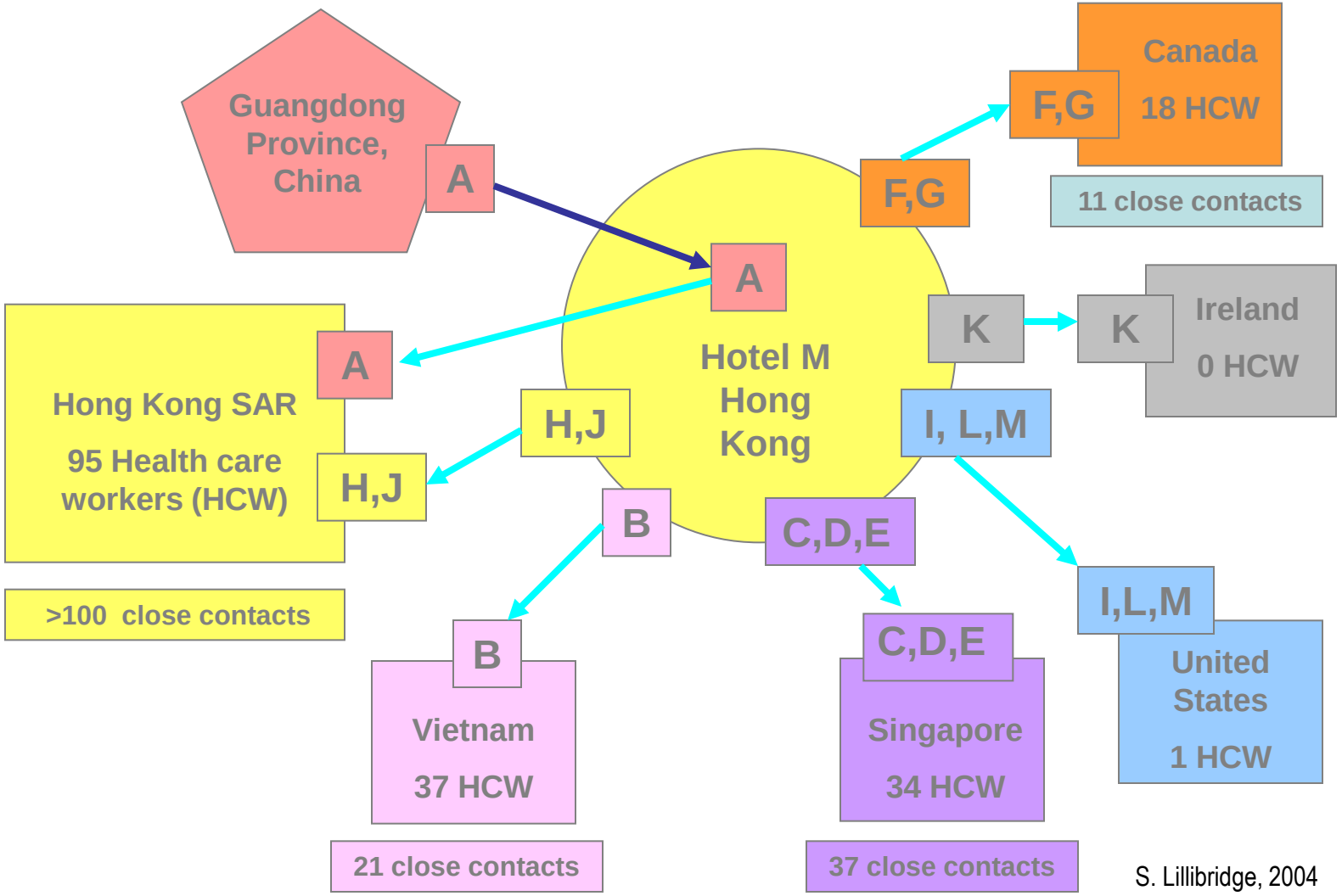
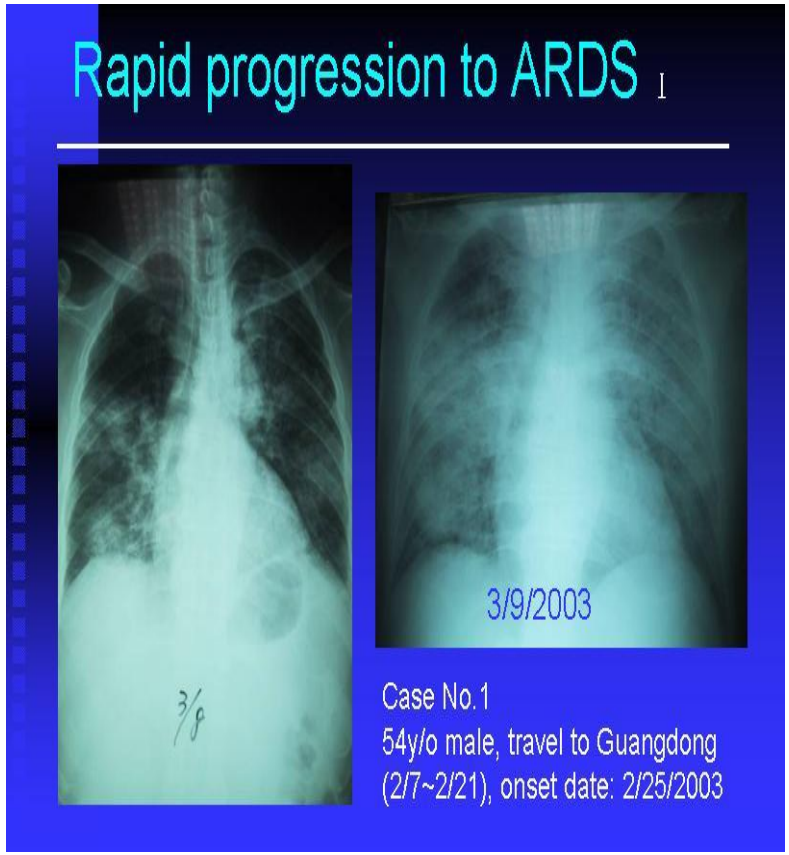
SARS Spread from Hotel M
Reported as of March 28, 2003



S. Lillibridge, 2004

SARS Clinical Progression

- ✓ 3-10 days incubation period
- ✓ 4-20% Mortality
- ✓ No response to antibiotics
- ✓ Factors affect Disease Severity and Fatality
  - age over 40
  - other health conditions
  - Health care workers



D. Lakey, 2004

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SARS in Toronto

- ✓ Outbreak of SARS, early March 2003: 1st case diagnosed March 13, peaked mid-March; resurgence early May with peak in mid-May; ended mid-June
- ✓ March 28th Baycrest received a directive (**Code Orange**) to take SARS prevention measures
- ✓ >15,000 persons underwent voluntary quarantine in greater Toronto area
- ✓ 44 deaths,100 health care workers infected, 3 deaths

M. Gordon, 2006

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Prevention at Baycrest

- ✓ screening all entrants to Centre
- ✓ isolation gowns, gloves, masks and eventually goggles for all direct care
- ✓ prohibition of contact by residents by anyone other than a staff member
- ✓ 15 days of no visits by family members or private companions

M. Gordon, 2006

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Checking for Temperature

M. Gordon, 2006

Resident Care at Baycrest

M. Gordon, 2006

Preparedness Issues

The Four Pillars of GEP&R

- ✓ Mitigation – identifying threats and resources, taking preventive actions
- ✓ Preparedness – planning, training + exercises
- ✓ Response – acting decisively with Incident Command structure
- ✓ Recovery – getting back to normal, feeling safe again, analyzing response mode for next event

Key: How many health professionals have been trained for disasters where you live?

Mental Health Issues

- ✓ all persons in a disaster are affected
- ✓ effects are intra-individual and collective, i.e., community-wide
- ✓ expect behavioral and somatic changes
- ✓ think about the pre-event, event, and post-event phases of any disaster, whether human-caused or natural in origin
- ✓ plan for sufficient numbers of mental health professionals to be trained and available
- ✓ goal is to let all persons affected have remission of symptoms and to feel safe again

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Manifestations of MH Syndromes Affected by Age-related Changes

- ✓ sensory deprivation
- ✓ delayed response
- ✓ chronic conditions
- ✓ multiple loss effect
- ✓ hyper/hypothermia vulnerability
- ✓ transfer trauma
- ✓ language and cultural barriers

Source: W. Oriol et al. “Psychosocial Issues for Older Adults in Disasters.” DHHS Pub. No. ESDRB SMA 99-3323. Substance Abuse and Mental Health Services Administration, Washington, D.C., 1999.

Understanding Reactions to Disasters

Typical Reactions include:

- ✓ anxiety and depression
- ✓ withdrawal and isolation
- ✓ fear of crowds or strangers
- ✓ problems going to sleep
- ✓ alcohol or other drug use
- ✓ fear of darkness
- ✓ fear of being alone
- ✓ sensitivity to loud noises
- ✓ somatic complaints
- ✓ guilt, anger, grief
- ✓ reliving past traumas

C. Fasser, 2004

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Providing Support: Psychological First Aid

- ✓ Mobilize available mental health professionals: psychologists, social workers, counselors, ministers, local mental health authority, Area Agency on Aging and others.
- ✓ Develop a plan and strategies for support.
- ✓ Recognize that some will seek support but others may need to be sought out.
- ✓ Depending on degree of trauma, don't institute immediate psychotherapy.

A. Sherman, 2004

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Victimhood and Resilience

- ✓ London subway bombings of July 7, 2005 revealed much about explosions.
- ✓ How do we help people cope with the unimaginable?
- ✓ Conventional wisdom suggests people affected by disasters need immediate psychological help.
- ✓ 12 controlled trials of persons in traumatic events found immediate psychological counseling made matters worse in the long-term.
- ✓ What people need immediately after a disaster is support of family and friends to help them get back to a semblance of normalcy – e.g., paying bills, relocating, etc.
- ✓ Depression and PTSD can be treated later.
- ✓ 18+ mos. persons with PTSD vs. none had vascular, musculoskeletal, and dermatologic problems & OP can have delayed reactions 12 mos. post event.

Source: S. Wessely, *NEJM*, August 11, 2005; 353:548-550;
A. Dirkzwager, *Psychosomatic Med*., June 2007

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Effects of Terrorism on Elderly People*

- ✓ Expect acute distress immediately after disasters – e.g., 44% of American adults experienced symptoms 3-5 days after 9/11/01 – symptoms subside at the 2 and 6-month marks

- ✓ Resilience is successful adaptation to difficult or challenging life experiences. Inoculation" theory protects some elders; others are more vulnerable to stress due to comorbid conditions and limited abilities

- ✓ Key questions:
  a) How good are the individual's coping skills in general?
  b) How has the person responded to past stress?
  c) Does he/she have a history of mental illness or physical limitations?
  d) How has this person been impacted by the unique factors of the current situation?

- ✓ Little difference in rates of PTSD among older and younger people. PTSD can occur after 6 mos., which for older people is a more common occurrence.

- ✓ Degree of exposure to horrific or life-threatening events and recurrent recollections of event, numbing or avoidance activities, and increased physiologic arousal > than 1 month are key signs of PTSD.

*Source: Hall, Ryan, Hall, Richard, Chapman, Marcia. Clinical Geriatrics 2006; 14 (9):17-24.

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Cultural Competence in Times of Disaster

- ✓ culturally competent health care providers are critical in disaster management.
- ✓ language differences and sensory/cognitive
- ✓ impairments adversely affect communications
- ✓ one source for training in Culturally and Linguistically Appropriate Services (CLAS) is Stanford University's Geriatric Education Center -- http://www.stanford.edu/group/ethnoger

R. Roush, 2004

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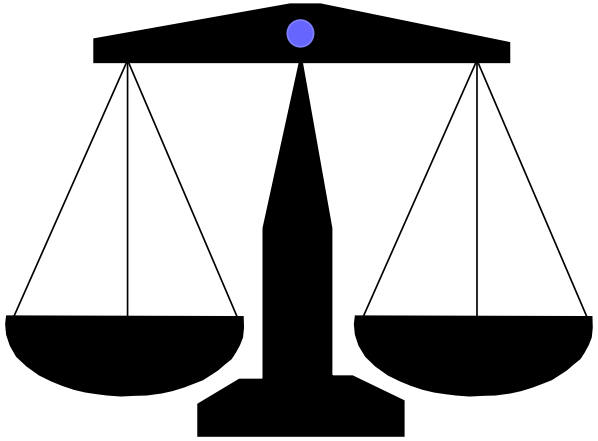
Emergencies, Ethics & the Elderly

Issues to Consider:

- ✓ Individual rights vs. common good
- ✓ Quarantine
- ✓ Resource allocation & triage
- ✓ Geroethics ensures no inadvertent age discrimination



S. Wittjen, 2004

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Difficult Ethical Decisions

The overriding question to consider is this:

"When do the safety needs of the community take precedence over the rights of the individual?"

(London, pgs. 18-22)

Population Issues in Preparedness

- ✓ Community **vulnerability (needs)** & **capacities (assets)**.
- ✓ Coping but also adaptability
- ✓ Population health perspective
  - income and socio-economic status
  - social networks and supports
  - education
  - age and gender
  - physical and psychological health
  - integrated, comprehensive planning approach merging emergency management with health promotion and community development.

D. Hutton, 2005

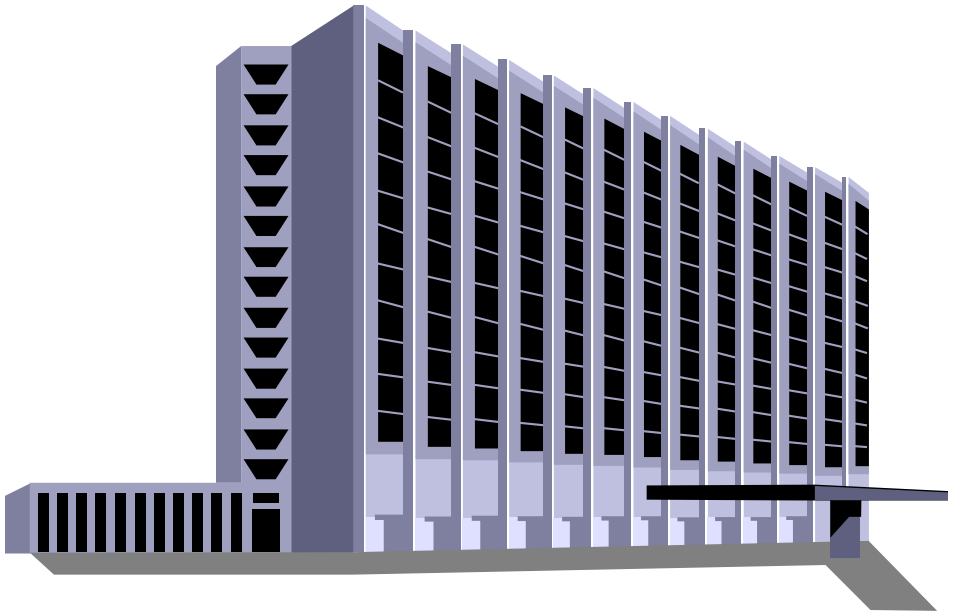
Personal Issues in Preparedness

- ✓ Community-residing elders
- ✓ Elders in Long-term care settings
- ✓ Three critical questions
  - What are my risks of natural or human-caused disasters where I live?
  - What information do I need to lower my risks and where can I find this information?
  - Why is it important for me to seek and act on this information?

Preparing Your Facility to Meet All Threats

- Health care organizations are required to establish and maintain a written program to ensure effective response to disasters or emergencies affecting the care environment. [JCAHCO, 2001]

- JCAHCO Recommendations for America's communities -- http://www.jointcommission.org/NewsRoom/PressKits/PlanningGuide/executive_summary.htm



Key Questions to Ask

- ✓ Does the health care facility where you work have a plan to manage internal and external threats?
- ✓ Does the plan include recognition of the special needs of older patients or residents?
- ✓ What do you need to know to participate in developing or executing such a plan?
- ✓ Who is in charge administratively in an emergency?
- ✓ How is an emergency declared?

G. Goodman, 2004

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Incident Command: Relevance to Health Care Providers

- ✓ Incident Command System defines who is in charge and describes how an emergency is declared
- ✓ Employs a logical management structure, defined responsibilities, clear reporting channels, and common nomenclature to help unify hospitals with other emergency responders

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Acute Care Providers

- ✓ Emergency center triage of elders may put them at the “end of the line” because of medical complications from aging itself.
- ✓ Medication regimens appropriate to treat a biological agent might be inappropriate for an elderly person.
- ✓ Such typical aging conditions as limited mobility, dementia, hearing/vision impairments could create a burden on limited staffing.

Long-term Care Providers

- ✓ Due to high turnover, training of nurse aides and nurse assistants needs to be on-going.
- ✓ Medications for treating a biological agent may not be available in a LTC setting.
- ✓ Medication regimens appropriate to treat a biological agent might be inappropriate for an elderly person.
- ✓ Underlying medical conditions typical of aging – dementia in particular – might make relocating residents for treatment almost impossible.

Aging Services Organization Plans

- ✓ Train nurses in the community and in skilled nursing facilities
- ✓ Involve families of LTC residents
- ✓ Work with older people about a) personal plans; b) lists of medications, doses, times of administration; c) identification items and personal contact information; d) types of assistive devices; and e) checkbooks, credit cards, etc.
- ✓ Plan on 72 hours of everything needed
- ✓ Assist evacuation of frail elders or treat in place

HW Lach, et al., 2005

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Natural vs. Human-caused Disasters

- ✓ Similar concerns for frail elders whose lives are disrupted by hurricanes, floods, wild fires, power outages
- ✓ Could experience interruption of home care services if damage is widespread and large numbers of people are affected – i.e., their informal caregivers
- ✓ Even robust elders are affected more than younger people in times of natural disasters
- ✓ Same concerns for making people feel safe again

Source: Fernandez, LS, et al., *Prehosp Disast Med* 2002;17(2):67-74

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Pharmacy Issues

- ✓ Procurement of medication
- ✓ Receipt of orders: new & refills; personal; emergency unit
- ✓ Administration and disposition of medication: prescriptions; dosage frequency
- ✓ Storage and maintenance of medication: shelf life; temperature/refrigeration; classification
- ✓ Security: controlled substances; IV's and equipment
- ✓ Inventory levels; control and records management
- ✓ Expired medication
- ✓ Personnel: pharmacist; pharmacy technician, nurse, other
- ✓ Meds for evacuation kits
- ✓ Dispensing meds in disasters without doctor's orders – New service, RxResponse will coordinate delivery of meds to evacuees or those sheltering in place. See this website: http://www.rxresponse.org/web/guest/home2.

P. Turner, 2007

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Rural Issues

- ✓ Smaller hospitals with fewer health care providers and necessary supplies for disasters
- ✓ Could have surge capacity problems if large numbers of people flee urban areas seeking a seemingly safer environment
- ✓ Watersheds for urban areas are often in rural areas, thus could become targets for terrorists
- ✓ Older people living farther from towns can present transportation problems to access care or emergency shelters

Source: J.W. Flowers, 2004

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Evacuation Issues

- ✓ Decision to shelter in place or evacuate can be a tough call. When in doubt, sheltering in place is generally the better choice
- ✓ Research needed on helping LTC administrators with the “tipping point” to make such decisions
- ✓ New technological approaches may help alleviate concerns of evacuation – GPS to track buses and get help to stranded ones
- ✓ AT&T and Texas’ SNETS (special needs evacuation tracking system) uses hand-held scanners and chip-implanted wristbands to ensure evacuees arrive safely and can be located by loved ones
- ✓ Works for pets, too!

Hurricanes Katrina, Rita, Wilma

- ✓ 74% of Katrina deaths were people 60+ y.o.
- ✓ 7 weeks after Katrina, 45% PTSD
- ✓ Rita relocated many Katrina evacuees from Houston
- ✓ Only 44 of 130 NH in Greater Houston area had evacuation plans
- ✓ Of the 44, five used school buses w/o AC
- ✓ Many used the same bus companies
- ✓ Some shelters to be used were closed
- ✓ 41 died during Rita evacuation, 23 on one bus

Lessons Learned and Used for Ike

- ✓ Added NH reps to state emergency planning & maintained NH bed inventory
- ✓ Local ambulances had priority lists & had designated medical emergency lanes
- ✓ Made sure facilities didn't use same services, especially busses
- ✓ Developed and maintained registries of vulnerable populations
- ✓ Practiced plans often
- ✓ Didn't call for mandatory evacuation of all areas at once from areas A,B,C,
- ✓ Evacuated special needs population first, then low-lying areas A,B, and C
- ✓ Told City of Houston proper to shelter-in-place
- ✓ More people heeded preparation warnings, e.g., generators and water
- ✓ And state and federal recovery efforts began sooner

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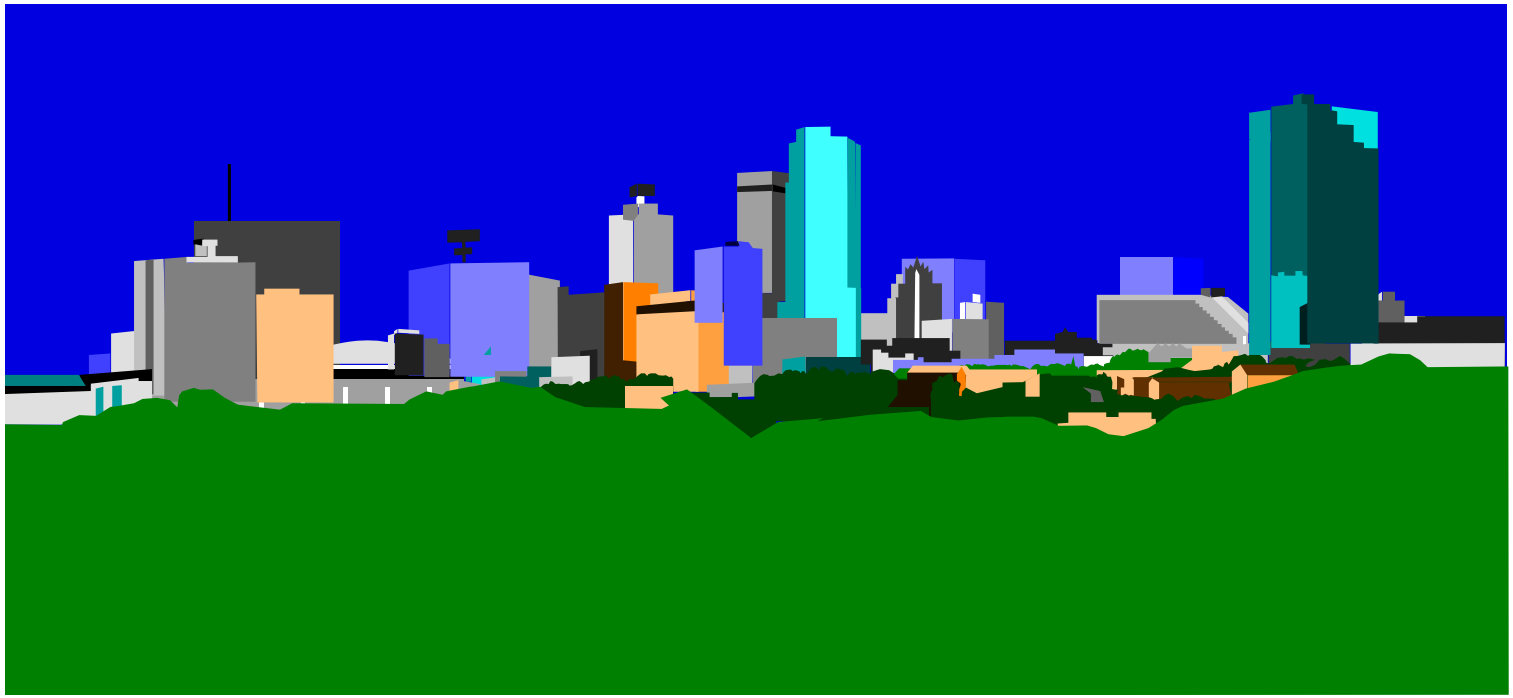
Lessons Learned for Future

- ✓ Evacuation and shelter-in-place plans need to be specific to needs of diverse elders
- ✓ Periodically survey potential shelter sites re: capacity and retrofitting needs
- ✓ Practice plans with special attention to communications and technology
- ✓ Use immediate post-event to debrief what went wrong, what went well
- ✓ Remember we're always in a pre-event mode

Communications and Resources



Roles and Responsibilities: Pre-event Public Health Emergency

Public Health

- ✓ Disease surveillance
- ✓ Respond to outbreaks
  - Investigation
  - Control and prevention
- ✓ Laboratory support
- ✓ Participate in planning activities
- ✓ Training

Hospitals & Health Care Workers

- ✓ Disease reporting
- ✓ Immediately notify public health of unusual group expressions of illness or outbreaks
- ✓ State laboratory utilization
- ✓ Participate in planning activities
- ✓ Exercise plans
- ✓ Training

D. Lakey, 2004

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Roles and Responsibilities: During a Public Health Emergency

Hospitals & Health Care Workers

- ✓ Implement notification protocols
- ✓ Activate staff
- ✓ Implement response plans/guidelines
- ✓ Coordinate efforts with public health
- ✓ Provide care
- ✓ Coordinate health-related information
  - public health officials
  - citizens
  - media outlets

D. Lakey, 2004

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Roles and Responsibilities: Post-Event Public Health Emergency

Public Health and Hospitals & Health Care Workers

- ✓ Evaluate response
- ✓ Review after-action reports
- ✓ Coordinate/implement changes to plans and procedures
- ✓ Implement recovery plans

D. Lakey, 2004

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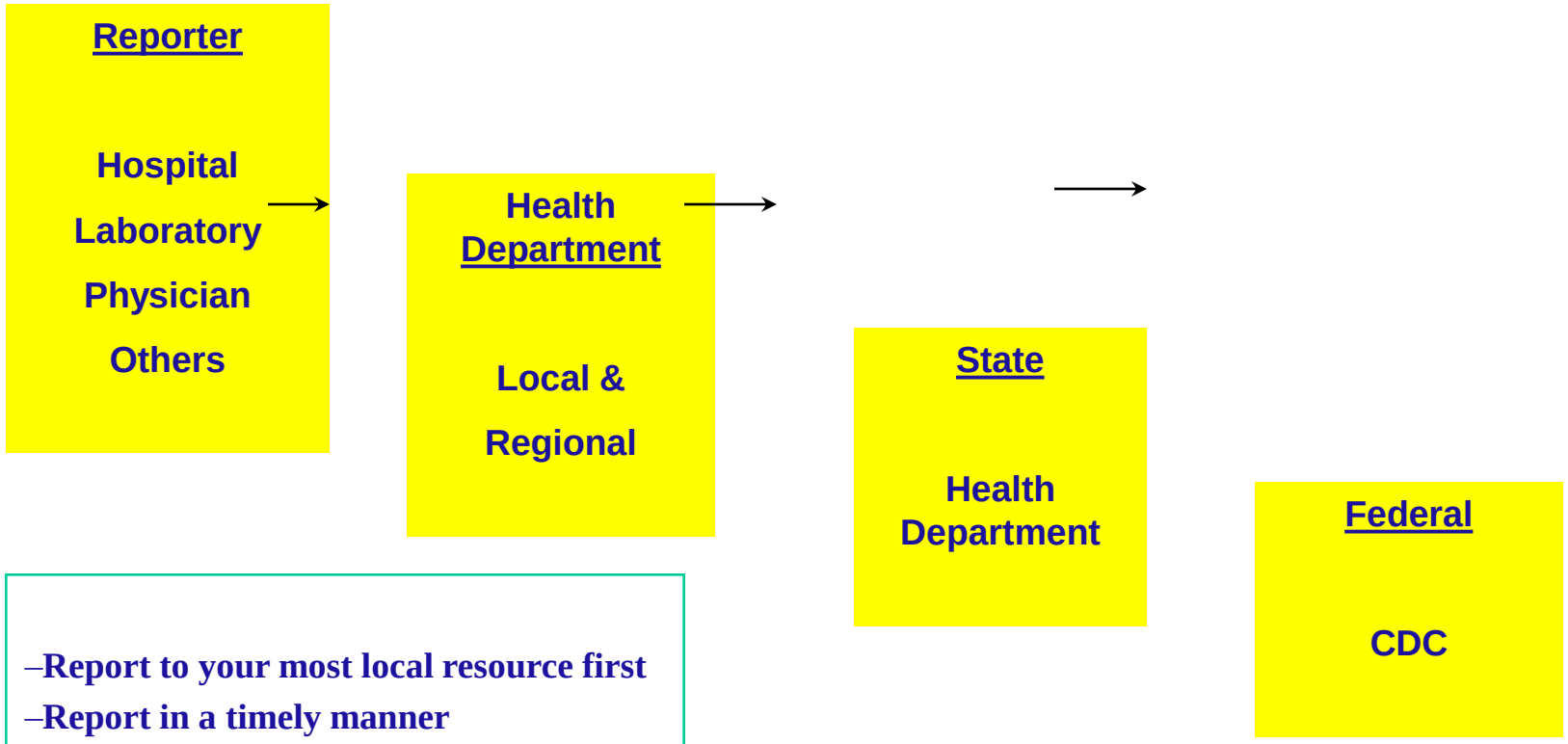
Notification of Public Health System



–Report to your most local resource first
–Report in a timely manner
–Report all the needed information
- •Clinical
- •Demographic
- •Laboratory

D. Lakey, 2004

Emergency Preparedness Plans for Older Adults

Community Plans

D iagnose early
I mpaired communication
S upplies
A nimal evacuation
S cripts
T ransport
E motional needs
R apid response

Individual Plans

P rescriptions
R ecognition
E ssential supplies
P ersonal items
A nimals
R esource numbers
E vacuation strategy
D ocuments

John Morley, M.D., GSA Symposium, San Diego, CA, November *2003*.

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Preparedness Steps in *Healthcare and Aging**

- ✓ 1st step – knowing where our frail elders are before, during, and after disaster
- ✓ 2nd step – training frontline health care providers on how older people present differently
- ✓ 3rd step – teaching all-hazards approach on physical, mental, and psycho-social issues
- ✓ 4th step – ensuring that providers know about culturally and linguistically appropriate communication strategies and services
- ✓ 5th step – making sure health care providers and older persons are involved in planning for such practical considerations as evacuations, shelters, and receiving emergency alerts

*Roush, RE. Responding to elders during disasters: what healthcare professionals need to know. Healthcare & Aging, Winter 2007; 14 (4): 1-2.

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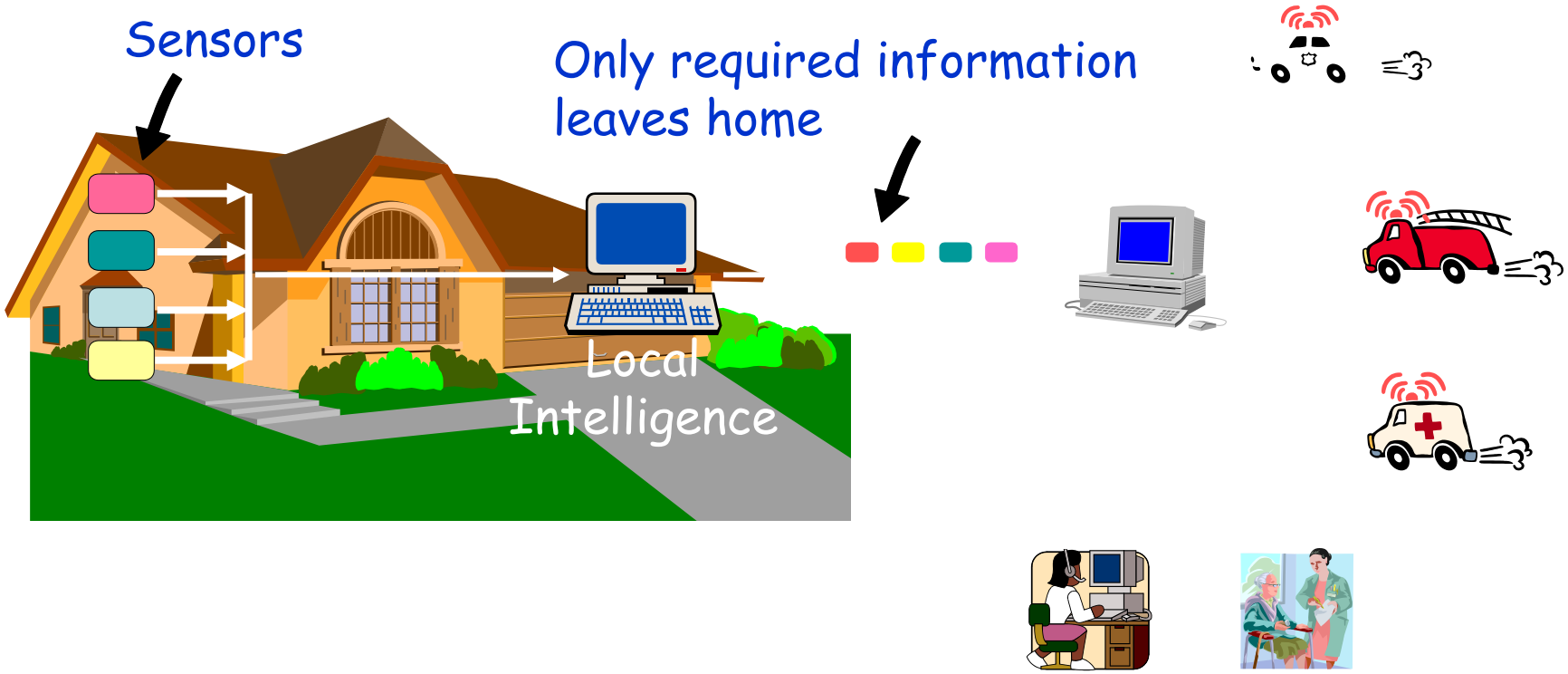
Smart Homes for Preparedness: Gerontechnology



Indications for Smart Home Technology & Personal Emergency Response Services – PERS

- ✓ What are the leading medical indications – CVD, frequent faller, recent hospitalization?
- ✓ What are the main social indications – living alone, no informal caregivers nearby, can't afford in-home help?
- ✓ What other conditions should be considered in making a Rx for PERS – vision, hearing, mobility, cognition?
- ✓ Are the smart home features bundled with a reverse-alert capability?

PERS Helps Elders Age in Place by….

- ✓ Alerting caregivers to emerging problems, thereby reducing risks of hospitalization
- ✓ Providing 24/7 “circle of safety” when PERS & motion sensor monitoring have bi-directional communications capability
- ✓ Recognizing and better understanding residents’ conditions
- ✓ Facilitating eldercare agencies to fill gaps in coverage and direct care where most needed
- ✓ Reducing anxiety of family caregivers
- ✓ Mitigating effects of disasters when reverse alerts are used

Why PERS & GEPR?

- ✓ Congregant care communities are where the density of older people at risk is far higher than among community-dwelling elders
- ✓ PERS offer the potential to support disaster management /emergency preparedness for registered users in predefined geographical areas
- ✓ 24/7 PERS help mitigate risks when systems have bi-directional communications capability
- ✓ Mitigation requires interoperability between care-givers, both at a distance and those on site

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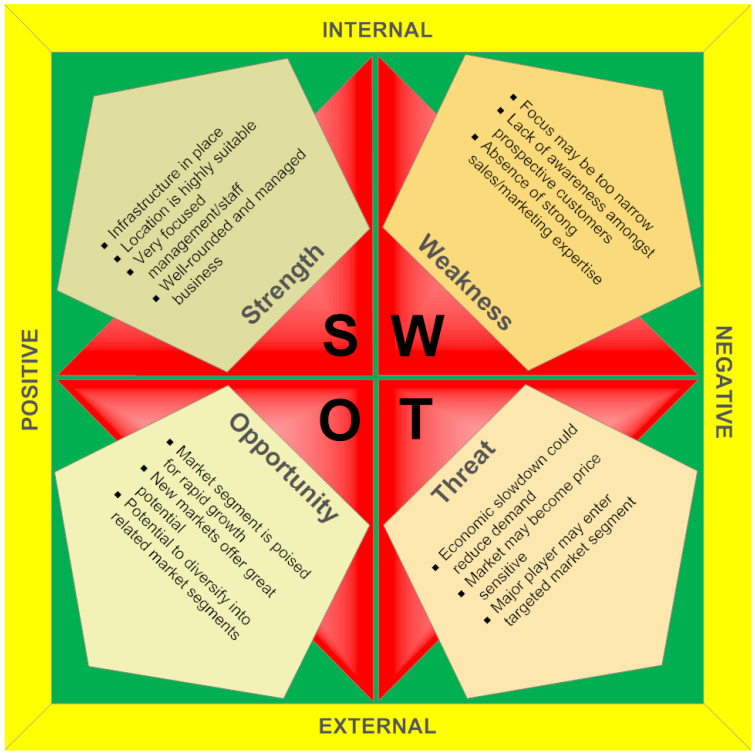
Results of Gerontechnology Study on PERS

SWOT analysis of 28 PERS companies

✓PERS communications systems are not generally designed for mass broadcast nor are on-person alert devices usually designed for incoming notices.

✓Most PERS do not have structural and operational requirements in place to respond to disaster management so specific groups of older adults could be contacted.

✓Geographic coverage is fragmented: a region may be covered by multiple PERS providers, resulting in even greater difficulty for a local authority to distribute messages.



Public Health Agency of Canada

Agence de santé publique du Canada

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Center for Aging Services Technologies – CAST

CAST Members with Reverse Alert Capability

- ✓ CAST director Majd Alwan, PhD, in a personal communication on May 14, 2010, stipulated that, to his knowledge, only two PERS companies have reverse alert capability <malwan@agingtech.org>.

- ✓ Touchtown's e-Notify system was recently used to warn residents of Holley Creek Retirement Community near Denver, CO, to take appropriate action as they were in the path of a tornado. http://www.touchtown.us/welcome/products/safety-devices.aspx

- ✓ Wellcore's bi-directional communication capability converts text messages to voice, forwarding them to residents regarding up-coming events. While not used yet for disaster messages, the "on the go" feature uses GPS with compatible mobile phones to locate residents should they leave the facility for any reason. http://www.wellcore.com

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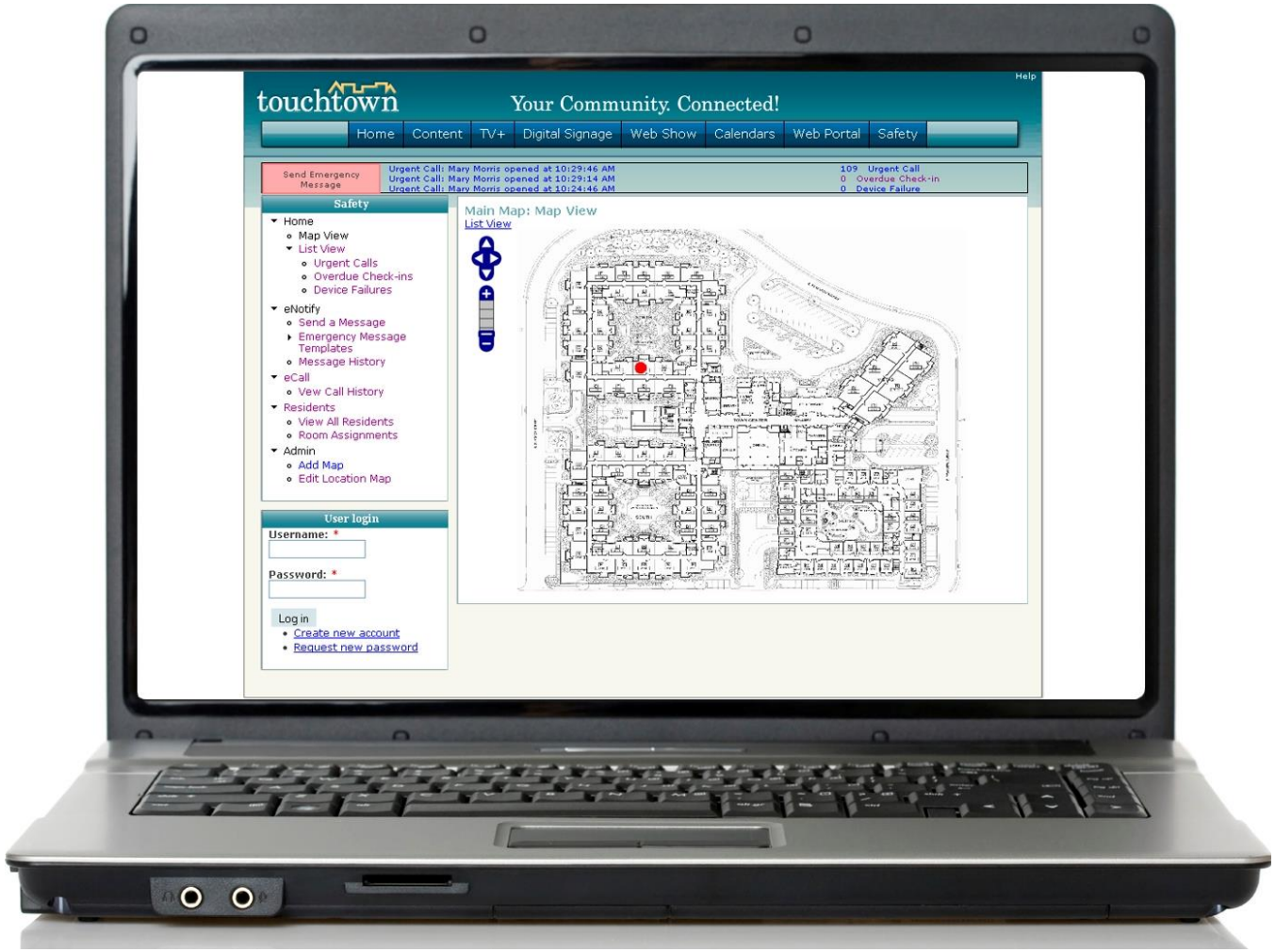
Touchtown's e-Notify System

Touchtown Command Center Showing Location of Unit Acknowledging “OK”



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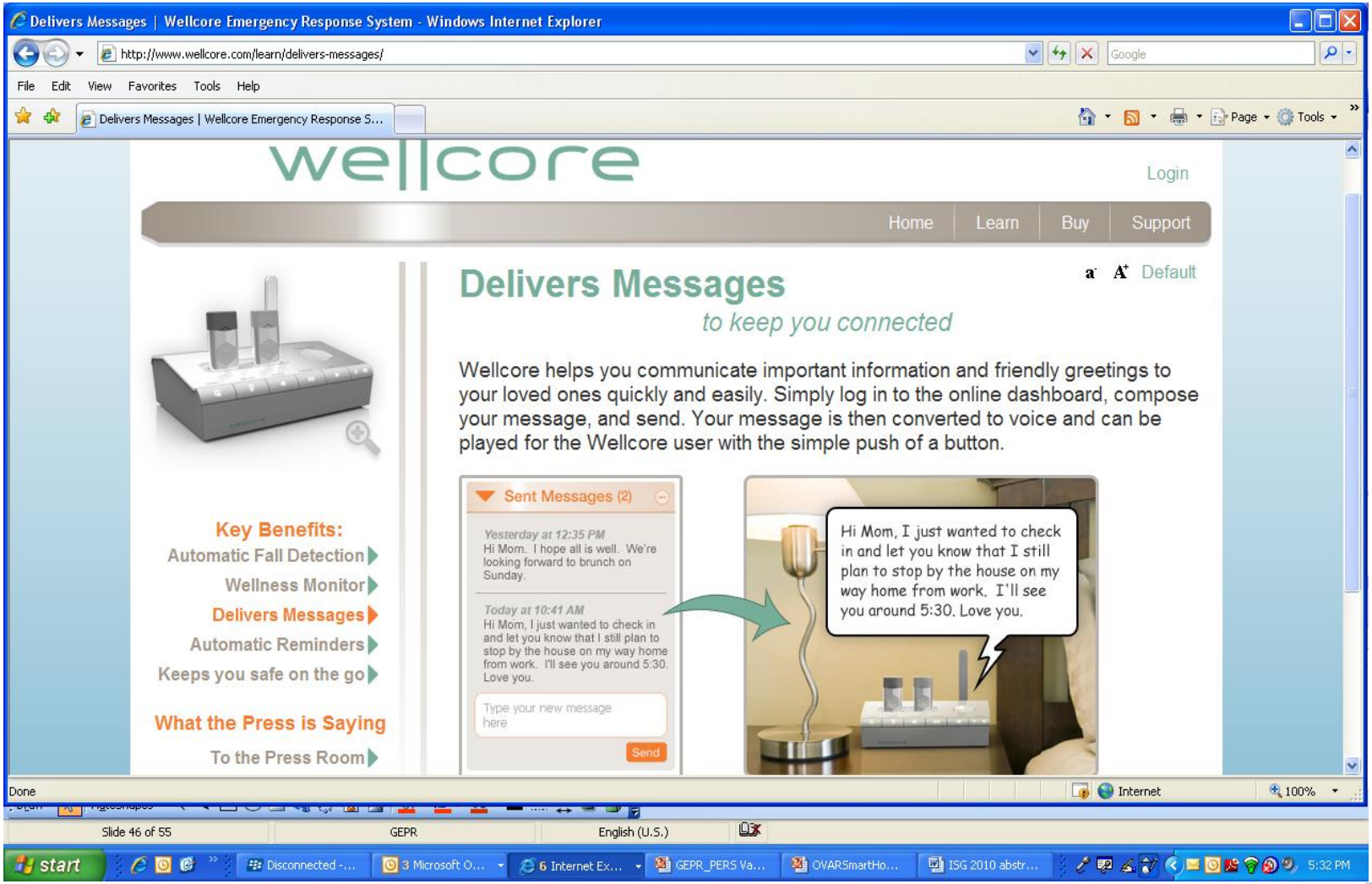
Wellcore's Bi-directional Communications Capability



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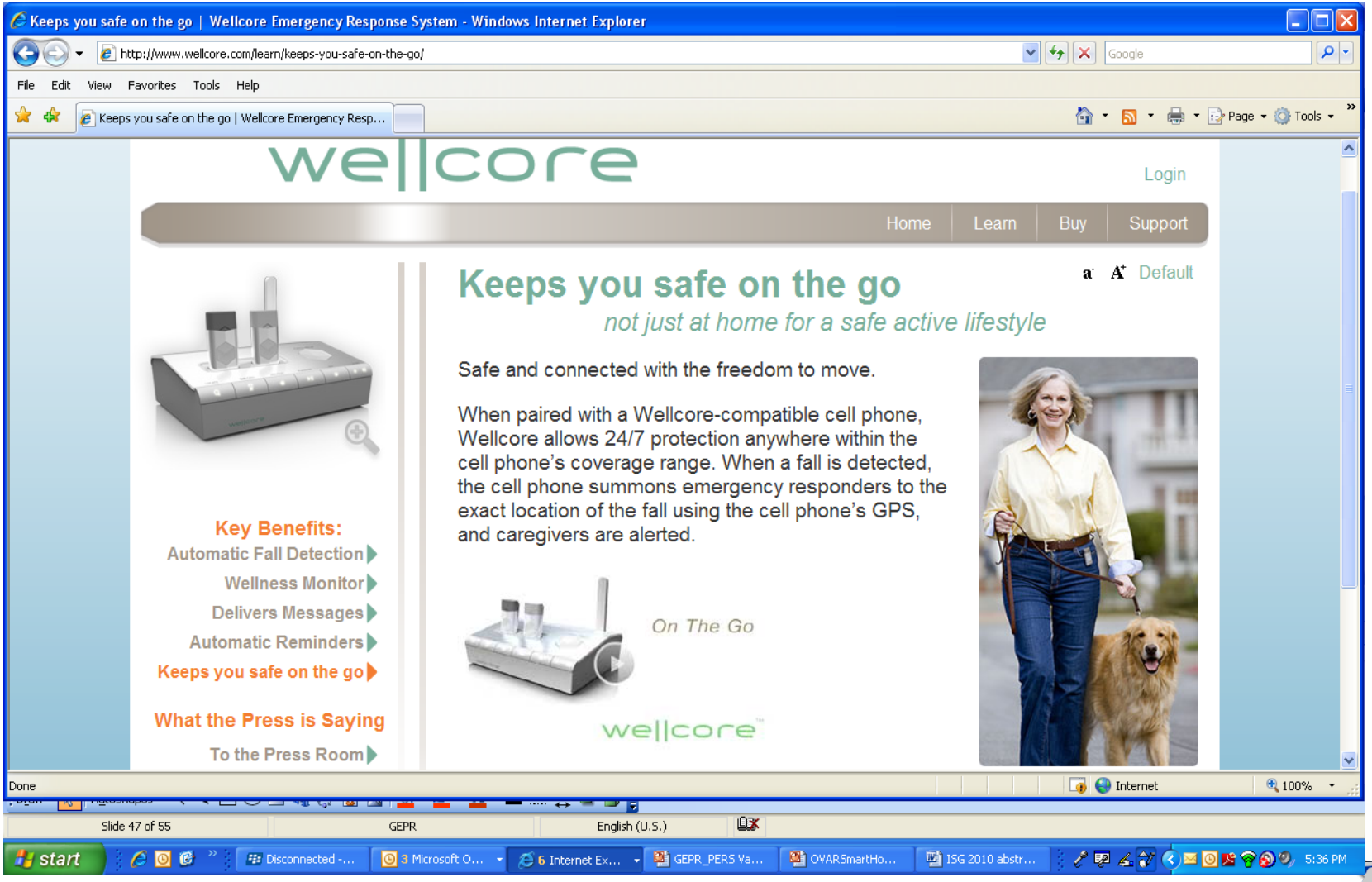
Wellcore's "On-the-Go" Feature Uses GPS and Residents' Mobile Phones



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Smart Homes of the Future: Aging Trekkie Welcomes R2D2

Last Point, One Last Time

✓Remember we're always in the pre-event mode of the next emergency or disaster – so be prepared!

✓And someday, in your own old age, you will need assistance – perhaps with GEP&R

Summary

- ✓ The world has changed
- ✓ Healthcare workers (HCWs) must be able to recognize biological, chemical and other public health emergencies, including natural ones
- ✓ HCWs need to have specialized training for each vulnerable population – the young, the old, the disabled
- ✓ HCWs must be able to protect themselves and their co-workers during a public health emergency
- ✓ HCWs need to learn how to properly work and support the public health system
- ✓ **GEP&R** planning and frequent exercises are essential

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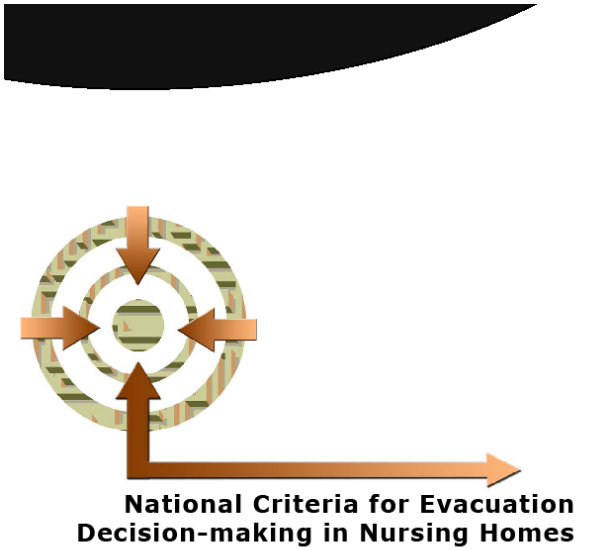
Online Resources 1

- Decision-making Criteria for Evacuation of Nursing Homes
  - http://www.fhca.org/emerprep/evacsurvey.pdf
- GAO Report on Evacuation of Hospitals and Nursing Homes Due to Hurricanes
  - http://www.gao.gov/new.items/d06790t.pdf
- Older people in disasters and humanitarian crises: Guidelines for best practice Center for Disease Control
  - http://www.helpage.org/Resources/Manuals



Florida Health Care Association

USF UNIVERSITY OF SOUTH FLORIDA

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Online Resources 2

- **AAHSA On-line Disaster Community**
  http://aahsa.communityzero.com/disasterhelp

- **American Red Cross**
  American Red Cross: Disaster Preparedness for People With Disabilities
  http://www.redcross.org/services/disaster/beprepared/disability.html

  American Red Cross: Disaster Preparedness for Seniors by Seniors
  http://www.redcross.org/services/disaster/beprepared/seniors.html

- **Federal Resources**
  Department of Health and Human Services: Disasters and Emergencies
  http://www.hhs.gov/emergency

  Centers for Disease Control and Prevention - Pandemic and Avian Flu
  www.pandemicflu.gov/

  Pandemic Influenza Planning Checklist
  http://www.pandemicflu.gov/plan/LongTermCareChecklist.html

  Home Health Care Services Pandemic Influenza Planning Checklist
  http://www.pandemicflu.gov/plan/healthcare.html

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Online Resources 3

- AARP – “We Can Do Better: Lessons Learned Protecting Older Persons in Disasters”
  http://www.aarp.org
- Public Health Agency of Canada Pandemic Flu Plan
  http://www.phac-aspc.gc.ca/ep-mu/index.html
- HRSA Projects in Bioterrorism & Emergency Preparedness in Aging -- BTEPA
  - Western Reserve GEC at Case Western University
  - Consortium of New York GEC at NYU
  - Gateway GEC of Missouri and Illinois at St. Louis Univ.
  - Ohio Valley/Appalachian Region GEC at University of KY
  - Stanford GEC at Stanford University
  - Texas Consortium GEC at Baylor College of Medicine

  http://aging.slu.edu/newsletters/SLUFall2004_Vol3.pdf
- HIPAA Privacy Rule: Disclosure for Emergency Preparedness – A Decision Tool
  http://www.hhs.gov/ocr/hipaa/decisiontool
- DHHS Office of Inspector General’s 2006 Report, “Nursing Home Emergency Preparedness and Response during Recent Hurricanes”
  http://oig.hhs.gov/oei/reports/oei-06-06-00020.pdf

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Online Resources 4

- ✓ SAMHSA – Managing Stress Before, During, and After an Event http://www.mentalhealth.samhsa.gov/publications/allpubs/SMA-4113/chapter2.asp#ch2event
- ✓ Anxiety Disorders Assoc. of America – PTSD http://www.adaa.org/GettingHelp/ AnxietyDisorders/PTSD.asp
- ✓ American Association for Geriatric Psychiatry – http://www.aagponline.org/prof/disaster.asp
- ✓ Duke University Web Reference Guide – http://psychiatry.mc.duke.edu/Clinical/DisasterMentalHealth.html
- ✓ Disaster Mental Health International – http://www.disastermentalhealth.com

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Table Top Exercises

1. Pretend you work in a LTC facility: you receive information from the local public health agency that an outbreak of some severe ILI has occurred in another facility a few miles away. What steps would you take to prepare your facility should this condition begin to spread?

2. If you care for elders in the community, what are the top five things you should tell them about being prepared for various emergencies?

3. List at least three things you might need to do to be better prepared to help yourself and your family in times of disasters.

Contact Information for GEP&R Issues

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