Addressing Social and Health Disparities in Public Health Emergencies:
Issues in Emergency Preparedness and Response

Maleeka Glover, ScD, MPH, CHES

CDR US Public Health Service
Senior Epidemiologist and Scientist
Centers for Disease Control and Prevention
OVERVIEW

CONTEXT: CDC Role in Public Health Emergencies

CONSIDERATIONS: Social Vulnerability and Health

CHAMPIONS: Public Health Scientists

CHALLENGE: Preparing for Future Health Threats
CDC ROLE IN EMERGENCY RESPONSE

Federal Context for Managing Emergencies
CONTEX: CDC Role – NIMS, FEMA, and CDC

NIMS: NATIONAL INCIDENT MANAGEMENT SYSTEM
NIMS: NATIONAL INCIDENT MANAGEMENT SYSTEM

→ In place since 2004, overhauled after 2005 Hurricanes (Katrina, Rita, Wilma);
CONTEXT: CDC Role – NIMS, FEMA, and CDC

NIMS: NATIONAL INCIDENT MANAGEMENT SYSTEM

→In place since 2004, overhauled after 2005 Hurricanes (Katrina, Rita, Wilma);

→Enables Federal, State, Tribal, local govt, private sector, non-governmental orgs to work together;
NIMS: NATIONAL INCIDENT MANAGEMENT SYSTEM

→ In place since 2004, overhauled after 2005 Hurricanes (Katrina, Rita, Wilma);

→ Enables Federal, State, Tribal, local govt, private sector, non-governmental orgs to work together;

→ Applies to all incidents, regardless of cause, size, location, or complexity;
NIMS: NATIONAL INCIDENT MANAGEMENT SYSTEM

→ In place since 2004, overhauled after 2005 Hurricanes (Katrina, Rita, Wilma);

→ Enables Federal, State, Tribal, local govt, private sector, non-governmental orgs to work together;

→ Applies to all incidents, regardless of cause, size, location, or complexity;

→ Provides consistent national template:
  • FEMA coordinates across all agencies
  • 15 Emergency Support Functions (ESFs)
  • Each ESF has assigned coordinating agency
NIMS: NATIONAL INCIDENT MANAGEMENT SYSTEM

→ In place since 2004, overhauled after 2005 Hurricanes (Katrina, Rita, Wilma);

→ Enables Federal, State, Tribal, local govt, private sector, non-governmental orgs to work together;

→ Applies to all incidents, regardless of cause, size, location, or complexity;

→ Provides consistent national template:
  • FEMA coordinates across all agencies
  • 15 Emergency Support Functions (ESFs)
  • Each ESF has assigned coordinating agency

CONTEXT: CDC Role – NIMS, FEMA, and CDC

CDC: ESF 8 – Medical Care and Public Health
Build emergency response capabilities across and beyond CDC
Training, exercising, and evaluation
Internal communications and information technology
Facilities management and operations
Crisis and Emergency Risk Communication
Incident management and response
Information collection, integration, and sharing
Infectious disease surveillance and control
Coordinate and support field operations logistics
Policies, plans, procedures, and partnerships

CONTEXT: CDC Role – SOME of CDC’s RESPONSIBILITIES

Build emergency response capabilities across and beyond CDC

- Training, exercising, and evaluation
- Internal communications and information technology
- Facilities management and operations

Crisis and Emergency Risk Communication

- Incident management and response
- Information collection, integration, and sharing
- Infectious disease surveillance and control

Coordinate and support field operations logistics

- Policies, plans, procedures, and partnerships

CONTEXT: CDC Role – HOW CDC BUILDS OUTBREAK RESPONSE CAPABILITIES

- Emergency Operations
  - Modeling Coordinated Response using an Incident Command System
  - Creating Rapid Response Teams at County, District & National levels

- Laboratory
  - Increasing Laboratory Testing capacity to identify an outbreak’s source
  - Setting Up Sample Transportation networks for specimens
CONTEX: CDC Role – HOW CDC BUILDS OUTBREAK RESPONSE CAPABILITIES

- **Emergency Operations**
  - Modeling Coordinated Response using an Incident Command System
  - Creating Rapid Response Teams at County, District & National levels

- **Laboratory**
  - Increasing Laboratory Testing capacity to identify an outbreak’s source
  - Setting Up Sample Transportation networks for specimens

- **Workforce**
  - Training Disease Detectives to track new and potential cases
  - Teaching Health Workers how to prevent the spread of disease
CONTEXT: CDC Role – HOW CDC BUILDS OUTBREAK RESPONSE CAPABILITIES

- Emergency Operations
  - Modeling Coordinated Response using an Incident Command System
- Laboratory
  - Increasing Laboratory Testing capacity to identify an outbreak's source
  - Setting Up Sample Transportation networks for specimens
- Workforce
  - Training Disease Detectives to track new and potential cases
  - Teaching Health Workers how to prevent the spread of disease
- Surveillance
  - Establishing Outbreak Detection and reporting systems
  - Promoting Systematic Investigation through active case finding
Crisis & Emergency Risk Communication (CERC)

The right message at the right time from the right person can save lives. CDC’s Crisis and Emergency Risk Communication (CERC) draws from lessons learned during past public health emergencies and research in the fields of public health, psychology, and emergency risk communication. CDC’s CERC program provides trainings, tools, and resources to help health communicators, emergency responders, and leaders of organizations communicate effectively during emergencies. Please email cercrequest@cdc.gov with any questions or requests for trainings or materials.
The right message at the right time from the right person can save lives. CDC’s Crisis and Emergency Risk Communication (CERC) draws from lessons learned during past public health emergencies and research in the fields of public health, psychology, and emergency risk communication. The program provides trainings, tools, and resources to help health communicators, emergency responders, and leaders of organizations communicate effectively during emergencies. Please email cercrequest@cdc.gov with any questions or requests for trainings or materials.
• The consequences for vulnerable populations partly depend on effective health risk communications.

• Strategic planning should fully consider how life circumstances, cultural values, and perspectives on risk influence behavior during a pandemic.

• Sociocultural, economic, psychological, and health factors can jeopardize or facilitate public health interventions.

• If ignored, communication gaps for vulnerable populations could result in unequal protection across society.
Threats are personal.

Be first, be right, be credible.

Express empathy, promote action, show respect.

Anticipate barriers.
Contact Tracing Can Stop Infectious Disease Outbreaks

The right message

From the right person (entity) CDC provides content, health authorities add own branding

At the right time

Can save lives
Credibility comes from trust and expertise.
Consider cultural competency.

Humility and openness are crucial to effective communication.
CONSIDERATIONS: Social Vulnerability and Health – CDC Responses

- Hurricanes Katrina, Rita, and Wilma
- Haiti Earthquake, Deepwater Horizon, Haiti Cholera Outbreak
- Zika Outbreak, Flint Water Contamination

Years:
- 2001: West Nile Virus
- 2002: Columbia Space Shuttle Disaster; SARS; Monkey Pox
- 2003: Norovirus; California Wildfires; Anthrax
- 2004: Marburg Virus; Hurricanes Katrina, Rita, and Wilma
- 2005: Tropical Storm Ernesto; Mumps; E. Coli
- 2006: XDR/MDR TB; Hurricane Dean
- 2007: Salmonella and E. coli Outbreaks; Hurricane Dolly; Tropical Storm Edouard; Hurricanes Gustav, Hanna, and Ike
- 2008: Satellite intercept; Salmonella Typhi Outbreak; Presidential Inauguration; H1N1 Influenza
- 2009: NH Anthrax; Haiti Earthquake; Deepwater Horizon Oil Spill; Haiti Cholera Outbreak
- 2010: Japan Earthquake and Tsunami; Hurricane Irene; Polio Eradication Response
- 2011: Meningitis Outbreak
- 2012: H7N9: Middle East Respiratory Syndrome Coronavirus (MERS-CoV); Multistate Cyclospora Outbreak
- 2013: MERS-CoV: Unaccompanied Children Ebola Outbreak
- 2014: DoD Sample Investigation
- 2015: Zika Virus; Flint Michigan Water Contamination
- 2016: Zika Outbreak, Flint Water Contamination
SOCIAL VULNERABILITY AND HEALTH

Defining Vulnerable Populations
CONSIDERATIONS: Defining At-Risk and Vulnerable Groups

**HHS**: Individuals with other needs in addition to medical needs that may limit ability to access or receive medical care

- Individuals specifically recognized as *medically* vulnerable or at-risk by federal statute:
  - Senior citizens
  - Pregnant women, infants, children
  - Tribal populations; racial and ethnic minority populations
CONSIDERATIONS: Defining At-Risk and Vulnerable Groups

HHS: Individuals with other needs in addition to medical needs that may limit ability to access or receive medical care

→ Individuals specifically recognized as medically vulnerable or at-risk by federal statute:
  • Senior citizens
  • Pregnant women, infants, children
  • Tribal populations racial and ethnic minority populations

→ Individuals with social vulnerabilities that place them at higher risk of adverse effects of external hazards:
  • Poverty
  • Lack of access to a vehicle
  • Overcrowded living conditions
  • Racial and ethnic minority populations
CONSIDERATIONS: Defining At-Risk and Vulnerable Groups

**HHS:** Individuals with other needs in addition to medical needs that may limit ability to access or receive medical care

→ Individuals specifically recognized as *medically* vulnerable or at-risk by federal statute:
   - Senior citizens
   - Pregnant women, infants, children
   - Tribal populations racial and ethnic minority populations

→ Individuals with *social vulnerabilities* that place them at higher risk of adverse effects of external hazards:
   - Poverty
   - Lack of access to a vehicle
   - Overcrowded living conditions
   - Racial and ethnic minority populations

→ Individuals who may need additional assistance in emergencies, due to:
   - Acute or chronic illness or disease
   - Cognitive, psychological, physical impairment
   - Homelessness, low wage and migrant work
   - Institutionalization or incarceration
   - Limited English proficiency, refugee, immigration
   - Pharmacological or other dependency
   - Physical, psychological, or sexual abuse
   - Single parent, foster parent, or elder care household
At-Risk Individuals may have additional needs before, during, and after a public health emergency, across functional areas.

- Communication (esp. comprehension and response)
- Transportation (esp. access to adequate transportation)
- Independence in:
  - Medical care (esp. if not self-sufficient)
  - Decisions (may require supervision)
  - Activities of daily living

Minorities are disproportionately represented among at-risk groups.
SOCIAL VULNERABILITY AND HEALTH

Lessons Learned in CDC’s Emergency Responses
SVI: Social Vulnerability Index – CDC tool that uses Census Bureau data to rank and map each Census tract on 14 sentinel social vulnerability variables

→ Ranks assigned on four related themes

→ Tracts receive separate rankings for each plus an overall SVI rank

→ CDC uses this information in emergency response planning
Hurricane Katrina makes landfall on August 29, 2005.

By the end of September, 2005, 75 Louisiana, Mississippi, and Alabama counties/parishes are declared Federal Disaster Areas, making them eligible for federal disaster relief.
**EXAMPLE: Perinatal populations before the storms**

CONSIDERATIONS: Social Vulnerability and Health – Hurricanes Katrina, Rita, and Wilma

<table>
<thead>
<tr>
<th></th>
<th>Areas affected by Katrina</th>
<th>All of AL, MS, LA</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td># Births</td>
<td>74,859</td>
<td>166,972</td>
<td>4,089,950</td>
</tr>
<tr>
<td>% LBW</td>
<td>11.1</td>
<td>10.6</td>
<td>7.9</td>
</tr>
<tr>
<td>% VLBW</td>
<td>2.3</td>
<td>2.1</td>
<td>1.4</td>
</tr>
<tr>
<td>% PTB</td>
<td>16.9</td>
<td>16.2</td>
<td>12.3</td>
</tr>
<tr>
<td>IMR (2002)</td>
<td>n/a</td>
<td>9.0</td>
<td>7.2</td>
</tr>
</tbody>
</table>

→ 56,000 pregnant women
→ 75,000 infants (<12 mo)
→ Lowest breastfeeding rates nationwide
  • <50% ever BF (<40% in Orleans Parish)
  • <20% any BF @ 6 months of age
EXAMPLE: Perinatal outcomes *after* the storms

→ Near universal displacement [to shelters / locations unprepared for families]
EXAMPLE: Perinatal outcomes *after* the storms

→ Near universal displacement [to shelters / locations unprepared for families]

→ 121 infants evacuated [many hospitalized and premature infants were separated from parents during evacuation – some reunifications were >2 weeks later]
EXAMPLE: Perinatal outcomes after the storms

→ Near universal displacement [to shelters / locations unprepared for families]

→ 121 infants evacuated [many hospitalized and premature infants were separated from parents during evacuation – some reunifications were >2 weeks later]

→ As of September 2008, 1,220 children were still on Katrina missing persons list
2009 H1N1 INFLUENZA OUTBREAKS
APRIL 2009-JANUARY 2010
2009 H1N1 Influenza: OUTCOMES AMONG INDIVIDUALS → Socio-culturally at-risk due to:

- Race/Ethnicity
- Barriers to care access
- Social Barriers
- Myths, mistrust, misinformation
Age-Adjusted 2009 H1N1 Related Hospitalization Rates by Race/Ethnicity; Emerging Infections Program (EIP) 2009-2010.
2009 H1N1 Influenza: OUTCOMES AMONG INDIVIDUALS

→ Medically at-risk due to:
  - Age
  - Pregnancy
  - Developmental Disability
  - Underlying Medical Condition
2009 H1N1 Hospitalizations – Frequency of Underlying Conditions in Adults; Emerging Infections Program (EIP) April 15, 2009-February 16, 2010 (n=4,987*)

*85% of adults with underlying condition
“...socio-economic reasons could account for differences in 2009 H1N1 hospitalization rates by race/ethnicity, including issues related to access to care, preponderance of underlying health conditions among certain ethnic or minority groups and self care or care seeking behaviors.”
2009 H1N1 Influenza: Differences in Vulnerability

“...socio-economic reasons could account for differences in 2009 H1N1 hospitalization rates by race/ethnicity, including issues related to access to care, preponderance of underlying health conditions among certain ethnic or minority groups and self care or care seeking behaviors.”

Why?
2009 H1N1 Influenza: Differences in Vulnerability

“...socio-economic reasons could account for differences in 2009 H1N1 hospitalization rates by race/ethnicity, including issues related to access to care, preponderance of underlying health conditions among certain ethnic or minority groups and self care or care seeking behaviors.”

Why?

→ **MEDICALLY AT-RISK individuals’ needs, consequences are familiar, recognized, expected to be prioritized:**
  - Pregnant Women
  - Children
  - Persons with Disability

→ **SOCIO-CULTURALLY AT-RISK individuals’ needs, consequences are less familiar, recognized priorities:**
  - Racial/Ethnic minorities
  - Lower SES individuals
  - Immigrants
2009 H1N1 Influenza: Differences in Vulnerability

“...socio-economic reasons could account for differences in 2009 H1N1 hospitalization rates by race/ethnicity, including issues related to access to care, preponderance of underlying health conditions among certain ethnic or minority groups and self care or care seeking behaviors.”

Why?

→ MEDICALLY AT-RISK individuals’ needs, consequences are familiar, recognized, expected to be prioritized:
  • Pregnant Women
  • Children
  • Persons with Disability

→ SOCIO-CULTURALLY AT-RISK individuals’ needs, consequences are less familiar, recognized priorities:
  • Racial/Ethnic minorities
  • Lower SES individuals
  • Immigrants

What can be done?
Why?

→ MEDICALLY AT-RISK individuals’ needs, consequences are familiar, recognized, expected to be prioritized:
  • Pregnant Women
  • Children
  • Persons with Disability

→ SOCIO-CULTURALLY AT-RISK individuals’ needs, consequences are less familiar, recognized priorities:
  • Racial/Ethnic minorities
  • Lower SES individuals
  • Immigrants

What can be done?

Culturally competent preparedness and response addresses each population’s specific needs:

• Improve public health and community health safety net systems
• Ensure policies minimize economic burdens and improve isolation and quarantine compliance
• Create, tailor, disseminate practical, culturally and linguistically appropriate communication
American Journal of Public Health Supplement: Protecting the Health of Vulnerable Populations During an Influenza Pandemic

http://ajph.aphapublications.org/content/vol99/issueS2/index.dtl
PUBLIC HEALTH SCIENCE
Champions in Emergency Response
HEALTH EQUITY MEANS THAT EVERY PERSON HAS AN OPPORTUNITY TO ACHIEVE OPTIMAL HEALTH REGARDLESS OF:

- THE COLOR OF THEIR SKIN
- LEVEL OF EDUCATION
- GENDER IDENTITY
- SEXUAL ORIENTATION
- THE JOB THEY HAVE
- THE NEIGHBORHOOD THEY LIVE IN
- WHETHER OR NOT THEY HAVE A DISABILITY

Effective strategies address the needs of all at-risk groups:

- Medically at-risk
- Socio-culturally at-risk
- Other underlying at-risk populations
SOCIAL EPIDEMIOLOGY:

What is it?
The interdisciplinary conception of emergency and the recognition that social, psychological and institutional factors influence all aspects of care.

Why is it necessary?
To understand the social pathways of transmission and barriers to care.
Geographic areas at highest risk for spread of Zika virus were also home to highest-risk populations.
Disproportionate risk for tribes required CDC to develop and implement a multifaceted strategy to build capacity for Zika preparedness, prevention, and control.
ZIKA VIRUS: Tribal Health Equity Strategy

→ Fostered and developed partnerships across Zika response and tribes
ZIKA VIRUS: Tribal Health Equity Strategy

→ Fostered and developed partnerships across Zika response and tribes

- Established CDC Tribal Liaison role in State Coordination Task Force
- Created tailored communication resources specifically for tribal audiences
- Collaborated and co-planned with Indian Health Service
- Provided Technical Assistance to HHS Regional Offices, Secretary
- Convened national and regional Zika calls, presentations, webinars for stakeholders
- Briefed CDC and Congressional leaders
ZIKA VIRUS: Tribal Health Equity Strategy

- Fostered and developed partnerships across Zika response and tribes
  - Established CDC Tribal Liaison role in State Coordination Task Force
  - Created tailored communication resources specifically for tribal audiences
  - Collaborated and co-planned with Indian Health Service
  - Provided Technical Assistance to HHS Regional Offices, Secretary
  - Convened national and regional Zika calls, presentations, webinars for stakeholders
  - Briefed CDC and Congressional leaders

→ Encouraged and funded collaboration
CHAMPIONS: Reducing Disparities and Increasing Equity in Emergencies

ZIKA VIRUS: Tribal Health Equity Strategy

→ Fostered and developed partnerships across Zika response and tribes
  - Established CDC Tribal Liaison role in State Coordination Task Force
  - Created tailored communication resources specifically for tribal audiences
  - Collaborated and co-planned with Indian Health Service
  - Provided Technical Assistance to HHS Regional Offices, Secretary
  - Convened national and regional Zika calls, presentations, webinars for stakeholders
  - Briefed CDC and Congressional leaders

→ Encouraged and funded collaboration
  - Zika Action Plan (ZAP) Summit – engaged Tribal Advisory Committee, National Indian Health Board, and AAIP
  - Created Cooperative Agreement with the National Indian Health Board
  - Encouraged states to work with tribes to coordinate Zika planning and response strategy implementation
  - Convened and attended listening sessions with tribal leaders
  - Engaged academic partners to identify and address research priorities
2017 NORTH ATLANTIC HURRICANE SEASON

Half of all tracked storms landed in US
- 4 in Texas
- 3 in Puerto Rico
- 2 in USVI and Florida each
- 1 in 6 Southeast States

1 in 4 became MAJOR Hurricanes
- Harvey
- Irma
- Jose
- Ophelia (no landfall)
Cmdr. Michael Chaney, chaplain from Naval Medical Center Portsmouth and the head chaplain embarked on the Military Sealift Command hospital ship USNS Comfort (T-AH 20), speaks to the mother and father of the first baby born on Comfort since 2010, Sara Victoria. Comfort is underway operating in the vicinity of San Juan, Puerto Rico. The Department of Defense is supporting the Federal Emergency Management Agency, the lead federal agency, in helping those affected by Hurricane Maria to minimize suffering and is one component of the overall whole-of-government response effort. (U.S. Navy photo by Mass Communication Specialist 2nd Class Stephane Belcher/Released)
PARENTS NEED:

Clean, safe space to:
- Rest / sleep
- Socialize with baby
- Feed
- Prepare food
- Store milk / food
- Change diapers

INFANTS NEED:

Clean, safe space to:
- Rest / sleep
- Socialize with others
- Feed

Coast Guard members stop to greet a ten-month old survivor of Hurricane Maria after working with civilian friends to deliver humanitarian aid to remote regions of Caguas. Donated food, cleaning supplies and medicine were collected and distributed to houses in buckets. U.S. Coast Guard photo by Chief Warrant Officer 3 Anastasia M. Devlin.
CHALLENGE

Preparing for Future Public Health Threats
THE ROAD AHEAD: Addressing Disparities in Emergencies

→ Community-level strategies:
THE ROAD AHEAD: Addressing Disparities in Emergencies

Community-level strategies:

- **Leverage existing strengths**: shared knowledge, resilience and ability to work closely together;
- **Increase** community/local/state resources;
- **Foster relationships** throughout social environment and community settings;
- **Address social determinants** of health;
- **Grow** community trust, support, respect, leadership, partnerships; and
- **Embrace and acknowledge** history.
CHAMPIONS: Reducing Disparities and Increasing Equity in Emergencies

THE ROAD AHEAD: Addressing Disparities in Emergencies

→ Community-level strategies:
  • Leverage existing strengths: shared knowledge, resilience and ability to work closely together;
  • Increase community/local/state resources;
  • Foster relationships throughout social environment and community settings;
  • Address social determinants of health;
  • Grow community trust, support, respect, leadership, partnerships; and
  • Embrace and acknowledge history.

→ Federal and partner strategies:
THE ROAD AHEAD: Addressing Disparities in Emergencies

Community-level strategies:

- Leverage existing strengths: shared knowledge, resilience and ability to work closely together;
- Increase community/local/state resources;
- Foster relationships throughout social environment and community settings;
- Address social determinants of health;
- Grow community trust, support, respect, leadership, partnerships; and
- Embrace and acknowledge history.

Federal and partner strategies:

- Improve community capacity to prepare for, prevent, respond to, and recover from public health threats;
- Increase analyses of the impact of public health emergencies on vulnerable populations and disparities in receiving or participating in public health interventions; and
- Optimize communications and intervention strategies to mitigate disease burden on vulnerable populations.
THE ROAD AHEAD: Addressing Disparities in Emergencies
THE ROAD AHEAD: Addressing Disparities in Emergencies

→ Shared priorities:
  • **Refine and grow partnerships** to improve communications with hard-to-reach/at-risk populations
  • **Maximize available expertise** to address barriers to preparedness
  • **Prioritize advance planning** to build on what has worked in the past
  • **Work together** to maximize outcomes
THE ROAD AHEAD: Addressing Disparities in Emergencies

→ Shared priorities:
  • Refine and grow partnerships to improve communications with hard-to-reach/at-risk populations
  • Maximize available expertise to address barriers to preparedness
  • Prioritize advance planning to build on what has worked in the past
  • Work together to maximize outcomes

IMPROVED STRATEGIES → Better outcomes → Reduced inequities
Thank you!

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
Thank you!

One more thing…..
Thanks again!

Questions?

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.