Understanding Disasters in the Gulf Coast

Anthony H. Speier, Ph.D.
Assistant Secretary, Office of Behavioral Health
Louisiana Disasters 10 to 20 Years Ago (1992 – 2001)

1992
Hurricane Andrew

1998
Tropical Storm Frances & Hurricane Georges

2001
Tropical Storm Allison
Louisiana Disasters During the Last 10 Years (2002 – 2011)

- 2002: Tropical Storm Isidore & Hurricane Lili
- 2004: Hurricane Ivan
- 2005: Hurricanes Katrina & Rita
- 2008: Hurricanes Gustav & Ike
- 2010: Deepwater Horizon Oil Spill
- 2011: Mississippi River Flooding
Typical Phases of Disaster Response and Recovery

Source: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration
Snapshot of Crisis Counseling Program (CCP) Service Model

Secondary Services
- Media and Public Service Announcements
- Distribution of Educational Material

Primary Services
- Public Education Presentations
- Community Networking
- Support Groups
- Brief Educational or Supportive Contact
- Assessment, Referral, and Resource Linkage
- Individual Crisis Counseling

Source: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration
Snapshot of Specialized Crisis Counseling Services (SCCS)

SCCS 5-Step Model

1. Interview to assess needs of survivor
2. Team meeting to discuss appropriate services
3. Contact with survivor to provide SCCS
4. Case is reviewed in weekly supervision meeting
5. Final visit with survivor
Louisiana Crisis Counseling Programs:
Scope of Impact on Community

- **Hurricanes Katrina, Rita and Gustav CCP Services:** Over 4.2 million face-to-face CCP encounters with survivors.
- **Hurricanes Katrina, Rita and Gustav SCCS Services:** Over 17,000 face-to-face SCCS encounters with survivors.
- **Deepwater Horizon Oil Spill Services:** Over 138,000 face-to-face encounters with survivors.
- **Over 4.35 million face-to-face encounters through crisis counseling programs in Louisiana since 2005.**
Behavioral Health Services Following the Deepwater Horizon Oil Spill Disaster

Behavioral health model components:

- **Louisiana Spirit Coastal Recovery Counseling Program**
  - Community and individual outreach-engagement-intervention-referral administered through the local behavioral health entities
  - Based on the Substance Abuse and Mental Health Services Administration (SAMHSA) Crisis Counseling Program (CCP) model

- **Clinical treatment services for mental and substance abuse disorders**
  - Services linked with pharmacological supports and managed through local behavioral health entities

- **State-level best practice monitoring and technical assistance**
  - Provider competency in specific disaster behavioral health interventions
  - Workforce training in trauma, grief/loss, life adaptation/change, addiction/substance abuse intervention and treatment
  - Quality assurance and best practice fidelity assessment
  - Ongoing evaluation and surveillance of population and individual indicators of psycho-social well-being
# Common Risk Factors Among Survivors

## Hurricanes Katrina, Rita and Gustav:
- Damage to Home, Community and Belongings
- Prolonged Displacement from Home
- Prolonged Separation from Family
- Evacuation with Little or No Time to Prepare
- Unemployment and Other Financial Loss
- Past Trauma

## Deepwater Horizon Oil Spill:
- Past Trauma, Including from Prior Disasters
- Close Friends and Family Impacted by the Oil Spill
- Employment in an Industry Affected by the Oil Spill
- Unemployment and Other Financial Loss
Common Adverse Reactions

• Feeling Depressed or Hopeless
• Feeling Anxious or Fearful
• Poor Sleep or Feeling Fatigued
• Difficulty Concentrating or Making Decisions
• Irritability or Anger
• Intrusive Memories/Nightmares
• Concerns about Ability to Overcome Problems
• Lost Enjoyment
• Reactions that Interfered with Relationships
• Physical Health Issues
What Helps Survivors

• Believing that it is ok to ask for help
• Feeling empowered to help themselves
• Taking better care of themselves
• Feeling confident about themselves
• Accessing needed resources
• Maintaining supportive relationships
Knowledge Gleaned following Cumulative Traumas in Louisiana

Louisiana Office of Behavioral Health SERG Project
Behavioral Health Surveillance
Howard Osofsky, M.D., Ph.D.,
Joy Osofsky, Ph.D.
Tonya Hansel, Ph.D.,
Erin Reuther, Ph.D.
Adult Psychosocial Needs Assessments

- Data collected via survey from impacted parishes in two phases
  - Phase 1: June 2010 – May 2011
  - Phase 2: June 2011 – December 2011
  - Phase 3: June 2012 – present

- Funded by SAMHSA Emergency Response Grant (SERG), Coastal Recovery Grant, and DHH Office of Behavioral Health
Adult Psychosocial Needs Assessments

- Areas assessed:
  - Demographic items
  - Impact of Hurricane Katrina
  - Impact and concerns about oil spill
  - Mental health symptoms – PTSD, serious mental illness, depression, and anxiety
  - Physical health symptoms
  - Alcohol use
  - Resiliency
  - Quality of life
  - Added section on impact of recent flooding in spillways
Adult Data Parish Distribution

- Phase 2: 1532 assessments collected from 13 parishes

<table>
<thead>
<tr>
<th>Parish</th>
<th>Number of surveys collected as of 12/13/11</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Bernard</td>
<td>286</td>
<td>19</td>
</tr>
<tr>
<td>Plaquemines</td>
<td>267</td>
<td>18</td>
</tr>
<tr>
<td>Orleans</td>
<td>252</td>
<td>17</td>
</tr>
<tr>
<td>Jefferson</td>
<td>222</td>
<td>15</td>
</tr>
<tr>
<td>Terrebonne</td>
<td>198</td>
<td>13</td>
</tr>
<tr>
<td>Lafourche</td>
<td>115</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>153</td>
<td>10</td>
</tr>
<tr>
<td>Total surveys</td>
<td>1493</td>
<td>100</td>
</tr>
</tbody>
</table>
Adult Data ($N=1532$)

Income and Impact

• **Annual Income in 2009**

<table>
<thead>
<tr>
<th>Income</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under $20,000</td>
<td>49</td>
</tr>
<tr>
<td>$21,000-$40,000</td>
<td>27</td>
</tr>
<tr>
<td>$41,000 +</td>
<td>24</td>
</tr>
</tbody>
</table>

• **64%** said the oil spill has caused at least moderate disruption in their work, social life, and/or family responsibilities.

• **37%** applied for financial assistance following the oil spill.

• **15.2%** received compensation.
## Oil Spill Concerns

<table>
<thead>
<tr>
<th>Oil Spill Concerns</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health concerns about food sources from local waters</td>
<td>74</td>
<td>81</td>
</tr>
<tr>
<td>Damage to wildlife and the natural environment</td>
<td>84</td>
<td>80</td>
</tr>
<tr>
<td>Loss of usual way of life</td>
<td>66</td>
<td>72</td>
</tr>
<tr>
<td>Loss of job opportunities</td>
<td>60</td>
<td>72</td>
</tr>
<tr>
<td>Loss of tourism</td>
<td>55</td>
<td>56</td>
</tr>
<tr>
<td>Loss of personal or family business</td>
<td>33</td>
<td>42</td>
</tr>
<tr>
<td>Personal health effects</td>
<td>50</td>
<td>62</td>
</tr>
<tr>
<td>Needing to relocate</td>
<td>24</td>
<td>33</td>
</tr>
</tbody>
</table>
### Adult Data (N=1532) Mental Health

#### Mental Health Symptoms Comparison to Phase 1

<table>
<thead>
<tr>
<th>Mental Health Symptoms</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious Mental Illness (K-6)</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>PTSD (PCL-C)</td>
<td>16</td>
<td>18</td>
</tr>
</tbody>
</table>

**Note.** Cutoff scores: K6 >13; PCL >50. These data and results are preliminary. Further analyses are needed before formal conclusions can be drawn.
**Adult Data (N=1532)**

**Mental Health**

- **Phase 2 Additional Mental Health Symptom Indexes**

<table>
<thead>
<tr>
<th>Mental Health Symptoms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (CESD)</td>
<td>35</td>
</tr>
<tr>
<td>Anxiety (GAD)</td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>22</td>
</tr>
<tr>
<td>Moderate</td>
<td>14</td>
</tr>
<tr>
<td>Severe</td>
<td>16</td>
</tr>
</tbody>
</table>

*Note. Cutoff scores: CESD $\geq 11$; GAD, Mild $\geq 5$, Moderate $\geq 10$, Severe $\geq 15$. These data and results are preliminary. Further analyses are needed before formal conclusions can be drawn.*
Adult Data (N=1532)

Mental Health

- **Physical Health Symptoms**

<table>
<thead>
<tr>
<th>Physical Symptoms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>63</td>
</tr>
<tr>
<td>Feeling tired out or low in energy</td>
<td>63</td>
</tr>
<tr>
<td>Back pain</td>
<td>60</td>
</tr>
<tr>
<td>Trouble sleeping</td>
<td>60</td>
</tr>
<tr>
<td>Pain in your arms, legs, or joints</td>
<td>57</td>
</tr>
<tr>
<td>Stomach pain</td>
<td>43</td>
</tr>
</tbody>
</table>

- **Alcohol Use**
  - 10% of individuals increased alcohol use after the oil spill
  - 6% met CAGE criteria for current abuse
  - 7% met CAGE criteria for current dependence
Location, location, location!

Areas of mental health concern for individuals affected by the oil spill by zip:
Resiliency

• 57% reported that they were often or nearly always resilient
• 89% reported that they were at least sometimes resilient
• 59% said that they were able to keep their spirits up when they suffer hardships
• 56% said that they overcome discouragement when nothing you try seems to work

Osofsky, J., Osofsky, H., Hansel, T., & Reutner, E.
Katrina and Other Hurricanes

• Effects of other traumas
  • 46% had home destroyed
  • 75% had home damaged
  • 63% lost income
  • 64% lost personal property other than home
  • 73% had friend or family member with home destroyed

Osofsky, J., Osofsky, H., Hansel, T., & Reuther, E.
Effects of Oil Spill – Mental Health

![Bar chart showing the effects of oil spill on mental health](image)

- **Serious Mental Illness**
- **PTSD**
- **Depression**
- **Mild Anxiety**
- **Moderate Anxiety**
- **Severe Anxiety**

Osofsky, J., Osofsky, H., Hansel, T., & Reuther, E.
Effects of Oil Spill – Physical Health

- Stomach Pain
- Back Pain
- Headaches
- Chest Pain
- Heart Pounding or Race
- Shortness of Breath
- Nausea, Gas, Indigestion
- Tired or Low in Energy
- Trouble Sleeping

AFFECTED

NOT AFFECTED

Osolsky, J., Osolsky, H., Hansel, T., & Reuther, E.
Effects of Oil Spill – Quality of Life
Phase 3
Psychosocial Assessments

• Began following 2\textsuperscript{nd} anniversary of DWH
• Following up with participants from Phase 1 and Phase 2 for longitudinal data
• Assessing same areas of functioning in abbreviated form. Using same mental health measures to track needs over time.
• Currently, N = 639
CHILD AND ADOLESCENT DATA
Child and Adolescent Data

- Areas assessed: impact of oil spill, oil spill concerns, impact of Hurricane Katrina, adapted NCTSN screening tool
- Data for St. Bernard has preliminary analysis ($N = 3559$); 25% met cut-off for mental health services.
Child and Adolescent Oil Spill Data

Osofsky, J., Osofsky, H., Hansel, T., & Reuther, E.
Post Spill Child and Adolescent Data (all parishes)

- Above Cutoff for Mental Health Services
  - Oil Spill Affected: 50%
  - Not Affected: 20%

- Requested Counseling
  - Oil Spill Affected: 10%
  - Not Affected: 20%
Child and Adolescent Data (St. Bernard Parish, N=3559)

<table>
<thead>
<tr>
<th>Oil Spill Variables</th>
<th>Percent of Endorsement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reported Disruptions</strong></td>
<td></td>
</tr>
<tr>
<td>Social life/leisure activities</td>
<td>13%</td>
</tr>
<tr>
<td>Family life</td>
<td>11%</td>
</tr>
<tr>
<td>School work</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Concerns</strong></td>
<td></td>
</tr>
<tr>
<td>Harm to animals</td>
<td>57%</td>
</tr>
<tr>
<td>Harm to environment</td>
<td>55%</td>
</tr>
<tr>
<td>Loss of fishing, hunting, or water activities</td>
<td>52%</td>
</tr>
<tr>
<td>Eating local fish and seafood</td>
<td>48%</td>
</tr>
<tr>
<td>Getting sick</td>
<td>28%</td>
</tr>
<tr>
<td>Loss of parents job/work</td>
<td>16%</td>
</tr>
<tr>
<td>Having to move</td>
<td>13%</td>
</tr>
<tr>
<td>Loss of personal/family business</td>
<td>12%</td>
</tr>
</tbody>
</table>
Child and Adolescent Data (St. Bernard Parish, N=3559)

- Students Need for Mental Health Services (Referral vs. Non-referral) and (Impacted by Oil Spill vs. Not Impacted)

![Diagram showing the distribution of students based on need for mental health services and impact of oil spill.]

- 75% No referral
- 25% Refer
- 19% Impacted by Oil Spill
- 6% Not Impacted

Legend:
- Dark gray: No referral
- Light gray: Refer
- Yellow: Impacted by Oil Spill
- Purple: Not Impacted
Child Assessments

• Child specific needs receive inefficient attention
• Locating needs is not the issue as schools provide a natural target point for services
• Child assessments help identify who needs services and which types are needed
• Treatment types can include = psychoeducational, trauma treatment, or strengths based/resiliency
• Annual assessments can coincide with academic year
• Brief discussion with school counselor, parents or child following evaluation
Long Term Effects of Oil Spills and Community Models for Response

Lawrence A. Palinkas, Ph.D.
Albert G. and Frances Lomas Feldman Professor of Social Policy and Health
School of Social Work
University of Southern California
palinkas@usc.edu
Questions Related to Deepwater Horizon Oil Spill

Will there be any long-term health impacts related to the oil spill?
Who will be most vulnerable to these impacts?
What can we do to mitigate or prevent these impacts?
Exxon Valdez Oil Spill
Oiled Mayors Study

• Methods
  – Ethnographic fieldwork in 22 communities
  – Quantitative survey of 600 households in 13 communities
  – Cross-sectional 1 yr post-spill

• Assessment of Exposure (Not, low and high)
  – Affected area used by household
  – Participation in cleanup
  – Other contact with oil
  – Property damaged or lost
  – Damage to commercial fishing areas
  – Effects on hunting, fishing and gathering
Oil spill

Tier I
Environmental
- Cleanup
- Economic impacts
- Cultural impacts
- Health impacts
- Litigation

Tier II
Community
- Reduced social support
- Increased social conflict
- Uncertainty

Tier III
Intrapersonal
- Psychiatric disorders
- Substance abuse
- Physical symptoms
- Domestic violence
- Child behavior

Risk and resilience characteristics
Cleanup Activities

• Exxon’s cleanup contractor, VECO, hired approximately 11,000 people for cleanup work
  – Cleaning oil off beaches
  – Vessel operators to lay booms
  – Worker transportation, housing, support

• 147 (24.7%) of the households were engaged in cleanup activities

• Cleanup employment and activities helped to offset some of the economic losses, but also produced shortages in available employees in some economic sectors.
Economic Impacts
Summary of Oil Spill Impacts on Oiled Mayors’ Study Areas by Sector

Dollar Amount ( Millions )

Commercial Fishing
Seafood Processing
Other Basic
Support
All Industries

- Gear and Equipment
- Land and Buildings
- Profits
## Changes in Traditional Subsistence Activities, Alaska, 1990

<table>
<thead>
<tr>
<th>Compared with same period in 1988</th>
<th>Exposure Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Exposed Decreased</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Time spent hunting, fishing and gathering*</td>
<td>475</td>
</tr>
<tr>
<td>Time spent with people from other households hunting, fishing and gathering*</td>
<td>459</td>
</tr>
<tr>
<td>Amount of harvested resource foods shared with others*</td>
<td>470</td>
</tr>
<tr>
<td>Amount of harvested resource foods received from other families*</td>
<td>382</td>
</tr>
<tr>
<td>Number of household members hunting, fishing and gathering*</td>
<td>436</td>
</tr>
<tr>
<td>Opportunities for children to learn hunting, fishing and gathering skills*</td>
<td>454</td>
</tr>
</tbody>
</table>

*x²* test for trend *p < 0.0001* (Source: Palinkas et al., 1993)
Health Care System Impacts
Emergency Medical Services Calls, City of Valdez 1988-89

(Source: Impact Assessment, Inc., 1990)
Litigation

• In 1994, an Anchorage jury awarded $287 million for actual damages and $5 billion for punitive damages.
• In 2002, Judge Holland announced that he had reduced the damages to $4 billion.
• In 2006, 9th Circuit Court of Appeals cut the damages award was cut to $2.5 billion.
• In 2008, U.S. Supreme Court limited punitive damages to the compensatory damages, which for this case were calculated as $507.5 million.
• During the past 20 years since litigation was initiated, 6,000 of the original 38,000 plaintiffs have died.
# Changes in Traditional Social Relations, Alaska, 1990

<table>
<thead>
<tr>
<th></th>
<th>Exposure Status</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High Exposed</td>
<td>Low Exposed</td>
<td>Not Exposed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Not getting along as well</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>compared with same</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>period in 1988</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse or partner**</td>
<td>444</td>
<td>25</td>
<td>14.5</td>
<td>7</td>
<td>4.6</td>
</tr>
<tr>
<td>Children living at home**</td>
<td>371</td>
<td>14</td>
<td>10.1</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Other relatives living at home**</td>
<td>188</td>
<td>11</td>
<td>17.2</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>Relatives not living at home**</td>
<td>536</td>
<td>24</td>
<td>11.6</td>
<td>9</td>
<td>4.9</td>
</tr>
<tr>
<td>Neighbors and friends**</td>
<td>565</td>
<td>28</td>
<td>13.1</td>
<td>9</td>
<td>4.5</td>
</tr>
<tr>
<td>People from other communities**</td>
<td>447</td>
<td>28</td>
<td>13.7</td>
<td>14</td>
<td>7.8</td>
</tr>
<tr>
<td>Co-workers*</td>
<td>483</td>
<td>20</td>
<td>10.6</td>
<td>15</td>
<td>8.9</td>
</tr>
<tr>
<td>Increased conflicts with</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outsiders**</td>
<td>593</td>
<td>106</td>
<td>47.5</td>
<td>47</td>
<td>22.6</td>
</tr>
<tr>
<td>Friends**</td>
<td>591</td>
<td>89</td>
<td>40.3</td>
<td>30</td>
<td>14.4</td>
</tr>
</tbody>
</table>

x^2 test for trend * p < 0.05; ** p < 0.001  
(Source: Palinkas et al., 1993; Russell et al., 1996)
Association between exposure to oil spill and disruption of social relations

(Source: Palinkas, 2009)
TIER III IMPACTS
Prevalence of Generalized Anxiety Disorder, PTSD, and Depressive Symptoms in Exxon Valdez Study Respondents (N=593) by Exposure Status, 1990

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Odds Ratio</th>
<th>95% C. I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAD</td>
<td>3.6</td>
<td>2.2–5.9</td>
</tr>
<tr>
<td>PTSD</td>
<td>2.9</td>
<td>1.5–5.4</td>
</tr>
<tr>
<td>CESD ≥ 18</td>
<td>2.1</td>
<td>1.2–3.8</td>
</tr>
</tbody>
</table>

(Source: Palinkas et al., 1993)
# Problems with Alcohol and Drug Abuse by Exposure Status, Alaska, 1990

<table>
<thead>
<tr>
<th>Social Unit &amp; Problem</th>
<th>% High Exposed</th>
<th>% Low Exposed</th>
<th>% Not Exposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Drinking*</td>
<td>56.8</td>
<td>40.4</td>
<td>5.0</td>
</tr>
<tr>
<td>More Drug Use*</td>
<td>50.4</td>
<td>43.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Family &amp; Friends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Drinking*</td>
<td>29.3</td>
<td>15.3</td>
<td>2.8</td>
</tr>
<tr>
<td>More Drug Use*</td>
<td>21.2</td>
<td>10.8</td>
<td>1.7</td>
</tr>
</tbody>
</table>

* $x^2$ test for trend $p < 0.0001$

(Source: Palinkas et al., 1993; Russell et al., 1996)
Incidence of Reported Domestic Violence by Exposure Status, Alaska, 1990

Within Community

* x² test for trend p < 0.0001

Within Family

(Source: Palinkas et al., 1993; Russell et al., 1996)
Impact of oil spill on physical health

- E.g., heart disease, high blood pressure, diabetes, thyroid problem, cancer, asthma, ulcer, bronchitis, chronic cough, skin rashes

* p < 0.01, ** p < 0.001 compared to health status prior to spill
† p < 0.01, ‡ p < 0.001 by exposure status

(Source: Impact Assessment, Inc., 1990)
Impact of oil spill on mental health visits


(Source: Impact Assessment, 1990)
Prevalence of Generalized Anxiety Disorder, PTSD, and Depressive Symptoms in Exxon Valdez Study Respondents (N=593) by Cleanup Participation Status, 1990

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Odds Ratio</th>
<th>95% C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized Anxiety Disorder (GAD)</td>
<td>2.3</td>
<td>1.5–3.7</td>
</tr>
<tr>
<td>PTSD</td>
<td>1.8</td>
<td>1.0–3.4</td>
</tr>
<tr>
<td>CESD ≥ 18</td>
<td>1.9</td>
<td>1.1–3.2</td>
</tr>
</tbody>
</table>

Participated vs Not Participated
# Prevalence of Posttraumatic Stress Disorder by Exposure and Ethnicity, Exxon-Valdez Oil Spill

<table>
<thead>
<tr>
<th>Type of exposure</th>
<th>Alaska Natives (N=188)</th>
<th>Euro-Americans (N=371)</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Yes (%)</td>
<td>No (%)</td>
</tr>
<tr>
<td>Affected area used by household</td>
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<td>8.1</td>
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<tr>
<td>Participation in cleanup</td>
<td>20.8**</td>
<td>6.9</td>
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<tr>
<td>Other contact with oil</td>
<td>18.5</td>
<td>8.9</td>
</tr>
<tr>
<td>Property damaged or lost</td>
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<td>Damage to commercial fishing areas</td>
<td>18.9**</td>
<td>6.1</td>
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<td>Effects on hunting, fishing and gathering</td>
<td>19.8**</td>
<td>5.2</td>
</tr>
<tr>
<td>Not exposed</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>Low exposed</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>High exposed</td>
<td>25.0**</td>
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</table>

* * p < .05; ** p < .01; *** p < .001

(Source: Palinkas et al., 2003)
Effects of oil spill on families and children

• Exposure to the oil spill was associated with parents reports
  – Decline in relations with other children in community
  – Children have more difficulty sleeping
  – Children’s grades in school have declined
  – Children get upset when someone talks about the spill
  – Bedwetting is a new problem for one of my children
  – Children do not like being left alone
  – Children fight more with other children
  – Children have more difficulty getting along with parents
  – Children have more difficulty getting along with siblings

(Source: McLees-Palinkas, 1994)

<table>
<thead>
<tr>
<th>Diagnostic Category</th>
<th>Exposure Status</th>
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<td>% High Exposed</td>
<td>% Low Exposed</td>
<td>% Not Exposed</td>
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<td>Parent</td>
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<td>Parent</td>
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\( x^2 \) test for trend  * \( p < 0.05 \);  ** \( p < 0.001 \)

(Source: McLees-Palinkas, 2004)
Lessons Learned

- Differences between oil spills and natural disasters
  - Exposure to oil spills have a longer duration than exposure to natural disasters
    - Creates “toxic communities”
    - More likely to result in chronic stress rather than acute stress
    - Symptoms persist for longer periods of time
  - Oil spills more likely to involve litigation
    - Litigation a form of re-experiencing the event
    - Litigation compromises ability to conduct research
Lessons Learned

• Differences between oil spills and natural disasters
  – Participants in spill cleanup activities
    • Separation from families for prolonged periods
    • Conflicts between those who did and did not accept cleanup jobs
    • Witnesses to destruction of ecosystem
  – Conflict between residents dependent on oil industry and residents whose livelihoods have been adversely affected by the same industry
MITIGATION, PREVENTION AND PREPAREDNESS
Tier I Interventions

• Health care system infrastructure
• Economic redevelopment and employee training programs
• Cultural exchange-based interventions to identify alternatives to subsistence/recreational activities
• Policies to insure equitable distribution of cleanup jobs
• Policies to speed litigation or reduce need for litigation.
Health Care System Infrastructure

• Structural components that should be in place before an event to minimize consequences (Meredith et al., 2011).
  – internal organizational structure and chain of command
  – resources and infrastructure
  – knowledge and skills

• Integration of physical, mental, and behavioral health services
  – mandated by Affordable Care Act of 2011
Economic Development and Employee Retraining

• Short term responses
  – Offer assistance in recovery of oil-spill related losses.
  – Implement debt refinancing, loan forgiveness, and tax relief for businesses that experienced spill-related losses.

• Long-term responses
  – Investment in economic sectors less likely to be impacted by oil spill contamination.
  – Offer financial incentives for continuing education of local residents who lost jobs due to oil spill.
Cultural Exchange Interventions

• Designed to support cultural transformations through global-local collaborations.

• Working with local residents to identify culturally appropriate substitutes for subsistence-based cultural activities.
  – Facilitating interactions with residents of other communities adversely impacted by previous oil spills or technological disasters.
  – Implementing evidence-based techniques designed to promote communication, collaboration and compromise between impacted residents and outsider responders.
Equitable Distribution of Cleanup Employment

- Unequal distribution of employment opportunities a major source of social conflict and individual stress.
- Give preference to local residents in employment.
  - Minimizes burden on local infrastructure with sudden increase in population and demand for services.
- Enforce policies and procedures designed to insure equal access to cleanup employment.
  - Between households
  - Between communities
  - Between regions
Litigation Policies

• Litigation a major source of long-term stress among Exxon-Valdez victims (Gill, 2007; Picou et al., 2004).

• Improved support systems for litigants.
  – Access to social and psychological services.
  – Access to information on litigation status.

• Evidence-informed policy on compensatory and punitive damages.
  – Calculation of quality-adjusted life years (QALYs) associated with exposure to oil spills and Tier I-III impacts.
Tier II Interventions

- Community leadership to foster social cohesion
- Use of evidence-based practices to build and sustain social support networks
- Risk communication interventions.
Community Leadership Training

• Training in disaster response
  – Development of an Incident Command System for disaster response.
  – Adaptation of existing ICSs for response to oil spills.

• Integration of local leadership in regional, state and national disaster response programs
  – Maintenance of local control of disaster response.

• Training in conflict management and coalition building
  – Adoption of principles of “mutual self-interest”
Social Support Networks

• Social Skills Training
  – Identification of positive sources of support
  – Techniques for effective communication of needs and acquisition of resources.
  – Techniques for management of support demands or social conflict
  – Identification and training of opinion leaders

• Peer-to-Peer Programs
Risk communication interventions

• Effectiveness of risk communication interventions in reducing adverse health outcomes
  – Risk communications interventions have been shown to have beneficial effects, particularly if they include individual risk assessments or focus on treatment options (Edwards et al., 2000)

• Natural disaster preparedness interventions
  – Introduction to Risk Communication
    http://www.jhsph.edu/preparedness/training/online/crisis_communication.html
  – CDC’s Crisis and Emergency Risk Communication training program
Tier III Interventions

• Identification of at-risk populations
• Evidence-based practice to build individual and community resilience
• Targeted use of evidence-based practices to treat ongoing symptoms and disorders.
Identification of At-Risk Populations

• Previously traumatized
  – Other disasters (e.g., hurricanes, earthquakes)
  – Other traumatic events (e.g., Vietnamese refugees)

• Children and families

• Cleanup workers

• Underserved populations
  – ethnic minorities,
  – socioeconomically disadvantaged

• Workers in natural resource-dependent industries (e.g. fisheries)
Evidence-Based Resilience Programs

• **The Strengthening Families Program (SFP)**
  – a family skills training program designed to increase resilience and reduce risk factors for behavioral, emotional, academic, and social problems in children 3-16 years old

• **Coping with Work and Family Stress**
  – a workplace preventive intervention designed to teach employees 18 years and older how to deal with stressors at work and at home.
Evidence-Based Treatment Programs

- **Cognitive Behavioral Intervention for Trauma in Schools (CBITS)**
  - A school-based, group and individual intervention designed to reduce symptoms of post-traumatic stress disorder (PTSD), depression, and behavioral problems, and to improve functioning, grades and attendance, peer and parent support, and coping skills.

- **Psychological First Aid (PFA)**
  - an evidence-informed modular approach for assisting people in the immediate aftermath of disaster and terrorism: to reduce initial distress, and to foster short and long-term adaptive functioning.
Thank you

Questions?
Disaster Duo: Environmental Health and Community Psychosocial Health

Different Types of Disasters
- Different types of disaster create different effects
  - Affected by type, scope, agent, timing
  - Natural (act of God)
  - Technological (Man-Made)

Technological Disasters
- Four factors that make them different
  - Duration of Impact
  - Unexpectedness
  - Absence of identifiable low point
  - Perception of control (Baum et al., 1983)
- Longer lasting effects
- Greater community dissension

What is a Community?
- Space and Boundaries -- Place
- Social Institutions -- Assets
- Social Interactions -- Coherence
- Social Control -- Values, Customs

Types of Trauma
- Individual trauma
- Community trauma -- “a blow to the basic tissue of social life” (Erikson, 1976)
  - Less visible, but more damaging
  - Protective factors, such as social support and resources-at-hand, can affect both perception and the capability to response
Variables affecting Risk Perception

- Controllable
- Known
- Equitable
- Voluntary
- Old risk
- Uncontrollable
- Unknown
- Inequitable
- Involuntary
- New risk

Most significant influence on development of stress is loss of control over event (Tucker, 1995)

CASE STUDIES:

WHAT IS OLD IS NEW AGAIN….

Sacramento Train Derailment

At night on July 14th, 1991: 97-car Southern Pacific train derailed in Northern California

19,000 gallons of pesticide metam sodium was leaked

"Pea green foam" and "noxious" smell started to develop in Sacramento River

Health Effects and Intervention

- Most were unaware of the spill until the morning, when almost 1,000 sought medical care for acute symptoms of toxicity
  - Headache
  - Eye irritation
  - Nausea
  - Diarrhea
  - Chest tightness
- Prisoners who helped in cleanup developed severe skin rashes

Mental Health Effects

- 4 months after the disaster, spill residents scored significantly higher on a battery of psycho-social tests (Hypochondria, Depression, Hysteria, Psychasthenia)
- Higher diastolic blood pressure – Higher cortisol levels than control group (Bowler, et al., 1994)
- Residents exposed were at a significantly greater risk for PTSD several years later
- Perception of exposure caused stress, independent of whether there was real exposure (Bowler, et al., 1998)

Agriculture Street Landfill

- Old city dump in New Orleans operated from 1909 to 1960s
- By 1951, over 250 tons of unregulated highly toxic waste was being deposited daily
- Low-income community developed on site in 1969
- 1990 Census identified 390 residential units (~1,000 people) on the site, which is predominately (over 97%) African-American and middle-to-low income
Community health survey

- In 1986, average blood lead level of children living on site was 12.5 ug/dL.
- High levels of health complaints:
  - 40% Chest pains
  - 40% Dizziness
- This is "a community that suffers from an inordinate number of health complaints".
- "There are obvious signs of severe mental stress related to the community crisis. Many residents appear to have reached a breaking point."

The Agriculture Street Landfill Health Survey, Beverly H. Wright, Ph.D., Oct. 21, 1994.

Public Health assessment

- Former landfill with contaminants in soil, dust, air, garden produce; residents maybe exposed through ingestion, dermal contact and inhalation.
- Fenced-in, undeveloped area a public health hazard; trespassing occurs frequently.
- Residential area-no apparent public health hazard.
- Moton elementary school- no public health hazard.
- Blood lead levels of most children below levels of concern.
- Community concerns: health problems, site clean-up, runoff of contaminants during flooding, maintenance of undeveloped area.
- Recommendations: limit exposure; undeveloped area should not be zoned residential until contamination is reduced.


Head Off Environmental Asthma in Louisiana

- Recruitment Schools social events
- Pre- Clinical Screening Telephone Calls
- Clinical Screening Assessment Baseline and 12 Months Health status information
- Genetic Study - Samples Banked
- Environmental Assessment Baseline, 6 mos, 12 mos Home "health"
- AC/ Environmental intervention Just in case guidance
- 3 mo. Follow-up Tel. Interviews for all Participants for 12 months Asthma-free days Environmental questions

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HEAL community defined

- **Place**: Flooding status is a delineation of “place” in the study superseding the traditional “neighborhood”.
- **Assets**: HEAL study participants are predominantly defined by the lack of core system assets: Health care, Housing, Homes of learning (schools)-- the 3H’s benchmarking disaster recovery.
- **Coherence**: Faith-based, civic and other community organizations continue to play a pivotal role in post-Katrina New Orleans; a fertile foundation to build community resilience.
- **Values and Customs**: New Orleans is culturally endowed with a rich set of values and customs and a unique social control paradigm for sustainable community development.

HEAL Study Objectives

- **Characterize post Hurricane Katrina**
  - Environmental exposures to mold
  - Healthcare and social disruption . . . and the impact on children with asthma.
- **Evaluate effectiveness of an environmental and asthma counselor intervention**
- **Eligibility Criteria**
  - 4-12 years
  - Physician diagnosed moderate to severe asthma.
Domains of Threat to the Health of Gulf-Coast Communities

Indicators of Health

The range of personal, social, economic, and environmental factors that influence health status are known as indicators or determinants of health.

Determinants of health fall under several broad categories:
- Policymaking
- Social factors
- Health services
- Individual behavior
- Biology and genetics

Striking Disparities in Mental Health Care

- Minorities have less access to, and availability of, mental health services
- Minorities are less likely to receive needed mental health services
- Minorities in treatment often receive a poorer quality of mental health care
- Minorities are underrepresented in mental health research

BUILDING BACK BETTER
A 12-Month Update on UNICEF’s Work to Rebuild Children’s Lives and Restore Hope since the Tsunami

FUTURE RESEARCH

“It is not acceptable for scientists to only inform and educate communities. We need to listen and learn from the community if we are to engage in more informed and more relevant research.”

Maureen Lichtveld, IOM. October 20, 2005
Susceptibility

- Underlying health conditions affect the degree of preparedness
  - In Gulf South:
    - Health disparities
    - Decades of Environmental Health Contamination
    - Persistent disaster-related adverse psychosocial consequence
- A community’s ability to address areas of susceptibility reflects its vulnerability

Resilience

- Influenced by the 3-H’s
  - Housing
  - Homes of learning (schools)
  - Health Care
- Access to and quality of these factors directly affects disaster recovery, and should be considered a predictor of community resilience

Possible Areas of Research

- Resilience
  - Promoting protective factors
  - Improving recovery
- What makes seemingly similar individuals/communities reach different mental health outcomes?

Community Susceptibility-Resilience Conceptual Framework

- Resilience and Susceptibility are two forces that determine the vulnerability of a community
- Susceptibility is a function of exposure
- Resilience is a function of response to that exposure (de Boer 2000)
Community-based participatory research
Target population of pregnant women and women of reproductive age living in SE Louisiana
- Determine the effect of the DWH disaster on mental health
- Determine pre- and post- DWH disaster attitudes related to environment and seafood
- Build community resilience through embedding disaster interventionists

Group exercise
- You have just been hired by Mayor Mundorf of Roosevelt City as a disaster health specialist
- After a recent flood from heavy rains, communities living near an old hazardous waste landfill have complained about headaches and skin rash.
- The community is VERY upset—despite multiple requests Mayor Mundorf has not taken any action
- The mayor asks you to develop three messages he can share at an upcoming community meeting; he is up for re-election...
- Use the 3x9 rule to develop your messages
DISASTER PSYCHOSOCIAL ASSESSMENT AND SURVEILLANCE TOOLKIT

Disaster-PAST
Disaster-PAST contributors alphabetized by last name:

Anne Ciccone, Psy.D.
Garcia Bodley
Tonya Hansel, Ph.D.
Maureen McDonough, LMSW
Lauren McShan, LMSW
Howard Osofsky, M.D., Ph.D.
Joy Osofsky, Ph.D.
Erin Reuther, Ph.D.
Lisa Schuster
Anthony Speier, Ph.D.
Kulvadee Thongpibul, Psy.D.
Cassandra Wilson
Disaster-PAST

- designed for surveillance of community mental health and psychosocial functioning following disasters
- purpose of understanding the ongoing need in recovering communities.
- empirically informed knowledge of mental health needs can aid in attaining an appropriate level of services to people and places that are most in need.
All recommended scales for surveillance are free and publicly available.
The toolkit is designed for use by any agency or entity that has a need to know the psychosocial needs of a community following a disaster.
Why screen with the Disaster—PAST?

WHO WHAT WHERE WHEN AND HOW
Mental health screening will help to explain which communities and populations are most in need of mental health services following a disaster, as well as to what extent they have been affected.

It can also allow for identification of certain demographic and risk factors that may serve as risks for developing certain types of mental health problems such as depression or posttraumatic stress symptoms following a disaster.
Data-informed knowledge can help to determine what levels of services are needed.

This can allow a funding source to direct an appropriate level of services to those in need.
Using assessment and surveillance techniques will help to determine where services are most needed and where they are most utilized by the population.

By tracking demographic information such as zip codes and area of residence (or another location identifier) prior to the disaster, it can also aid in anticipating where services will be needed once individuals begin returning home in the cases of mass migration due to a disaster.
The toolkit provides recommendations of when it may be helpful to conduct psychosocial assessment and surveillance following disaster.

- can inform services provided within the timeline of Federal Emergency Management Agency (FEMA) Crisis Counseling Assistance and Training Program (CCP) services.
- provides a recommended timeline of when to conduct psychosocial assessment and surveillance in the event a national disaster is not declared or in international disasters.
- can be used for ongoing evaluation of mental health services and for long-term surveillance of mental health needs.
Demonstrating needs overtime
Screen early and often to show ongoing, newly emerging and changing needs.
Coincide with FEMA CCP timeline
- Immediate Services Program (ISP) — 14 to 60 days
  - Declaration of disaster up to 60 days – brief screening
- Regular Services Program (RSP) — 9 months
  - 60 to 180 days — full screening linking to service provision, may include some overlap ISP time due to ISP extension
  - 6 months to 1 year post disaster — continued service linkage and reassessments for ongoing needs
- Ongoing screenings to assess longer term needs on an annual basis or coinciding with extended programs
The primary purpose of the toolkit is to provide information and recommendations on how to conduct psychosocial surveillance following a disaster, including how to:

- choose constructs and appropriate screening tools
- how to sample individuals to participate in the assessments, including the benefits of collaboration
- guidelines for how to use the information to inform provision of services.
Overview Disaster Past

Immediate Screening Phase
*Up to 60 days Post Disaster*

Data Analysis, Knowledge Dissemination

Development of Full Screening Tool, Sampling Approach, IRB if needed, Collaboration
Recovery Screening Phase

60 days to 1 Year Post Disaster

Data Analysis
Knowledge Dissemination

Update Screening Tool for Time Relevance
Extended Screening Phase
Ongoing More than 1 Year Post disaster

Data Analysis
Lessons Learned
Continued Collaboration
Knowledge Dissemination
Future Disaster Preparation
Website:

http://www.medschool.lsuhsc.edu/psychiatry/disasterpast.aspx