Injury Related Morbidity and Mortality Following Tornadoes in Alabama on April 27, 2011: Survey Instrument Training

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Outline
- Tornado overview
- Alabama tornado outbreak – April 27
- Case-control Study Design
- Conducting telephone interviews
- Survey questions
- Role play

Enhanced Fujita Scale (EF Scale)

<table>
<thead>
<tr>
<th>Estimated wind speed (mph)</th>
<th>EF-0</th>
<th>EF-1</th>
<th>EF-2</th>
<th>EF-3</th>
<th>EF-4</th>
<th>EF-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-85</td>
<td>86-110</td>
<td>111-135</td>
<td>136-165</td>
<td>166-200</td>
<td>&gt;200</td>
<td></td>
</tr>
</tbody>
</table>
Intense U.S. Tornadoes (1950-2011)

Intense U.S. Tornadoes and Deaths

Death by Home Type

Primary Prevention
- Avoid exposure
- Get underground
  - Storm shelter
  - Basement

Secondary Prevention
- Bystander assistance
  - Extrication
  - Basic first aid
- EMS stabilization and triage
  - Severe injuries to a trauma center
  - Minor injuries to a non-trauma center
- Rapid treatment
Tornado Injuries

Tornado Outbreak: Alabama, April 27, 2011

- April 25-28, 2011
- 362 tornados in southern states
- >350 deaths
- >1,500 injured
April 27: Alabama Tornado Outbreak

- 2 waves of severe weather
  - Early morning: EF-1 to EF-3
  - Afternoon: EF-1 to EF-5
- 62 tornadoes

April 27: Alabama Tornado Timeline

<table>
<thead>
<tr>
<th>Time (CST)</th>
<th>Counties</th>
<th>EF-Scale</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:20-4:00 p.m.</td>
<td>Marion, Franklin, Lawrence, Limestone, Madison, AL</td>
<td>5</td>
<td>72</td>
</tr>
<tr>
<td>2:45-3:00 p.m.</td>
<td>Monroe MS, Marion, AL</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>3:50-4:45 p.m.</td>
<td>Tuscaloosa, Jefferson, AL</td>
<td>4</td>
<td>66</td>
</tr>
<tr>
<td>5:30-6:00 p.m.</td>
<td>St. Clair, Calhoun, AL</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>6:19-6:56 p.m.</td>
<td>DeKalb, AL</td>
<td>5</td>
<td>26</td>
</tr>
</tbody>
</table>

Before (2010)

Source: NOAA (http://www.noaanews.noaa.gov/stories2011/pdfs/NOAA%20Tuscaloosa%20Flyover%20Low-Res.pdf)

After (April 29, 2011)

Source: NOAA (http://oceanservice.noaa.gov/al_tornado/images.html#18)

Tornado Damage – Tuscaloosa

Source: NOAA (http://oceanservice.noaa.gov/al_tornado/images.html#18)
Overall Goal of Study

- Improve public health preparedness and response

Objectives

- Identify risk factors for injury
  - Location
  - Before and during
  - Exposure to warning messages
  - Actions taken
- Assess psychological distress
  - e.g., PTSD
Study Methods
• Case-control study

Case-control Study
• Case selection
  – Medical chart review of all adult patients (≥18) seeking medical care for tornado related injuries
  – Potential cases invited by hospital letter
  – Cases contact us directly to participate

Case-control Study
– n ≈ 300 cases
– Telephone interviews

Selection Bias
• May not be representative of general population

Case-control Study
• Control selection
  1. Acquaintances identified by cases
  2. FEMA lists of individuals who received financial assistance
  3. Responses to press release

Case-control Study
• Control selection criteria
  – In the path OR avoided being in path
  – Uninjured
    • Did not receive treatment
Contacting Controls
• Multiple controls for each case (2-4)
• Telephone interviews
• List of control contacts
  – Including names and contact information
• SurveyMonkey electronic data entry

Data Collection Timeline
• Medical chart data extraction
  – December
• Case interviews
  – December +
• Control interviews
  – January +

Conducting Telephone Interviews

Telephone Surveys
• Strengths:
  – Interviewer can explain and probe
• Weaknesses:
  – Screening devices
    • e.g., caller ID
  – Respondent may be distracted by things going on in their location
  – May refuse to participate

Case Respondents
• Only contacting cases that provided us with their info
• We expect they will want to give narrative account of the event

Control Respondents
• Many controls contacted us
  – Already interested in participating
• Acquaintance controls should also be highly likely to participate
Interviewer Roles

- Contact respondents
- Elicit cooperation of respondents – motivate
- Implement respondent selection rules
- Manage question and answer process
- Record answers electronically

Tips to Minimize Interviewer Effects

- Set expectations for respondent performance
  - Communicate high standards
- Focus on task
- Refrain from expressing personal views or opinions

Tips to Minimize Interviewer Effects

- Explain question and answer process to respondent
- Read questions as they are worded
- Record answers as given
- Probe non-directively

Initial Contact General Instructions

- Use your first name
- Verify that it is a good time to do the interview or set up alternate time
- Don't provide return call number
- Leave voicemail
  - Use script

Initial Contact General Instructions

- Important to complete interviews
- Important to interview as many of identified controls as possible
- Only interview controls aged >=18

Contacting Case Respondents

- Important to get information about potential controls
- Acquaintances are generally considered better controls than “friends”
Questionnaire Format
• Familiarize yourself with survey
• Skip patterns
• Question text is in bold
• [INTERVIEWER: ....] → Do not read this text out loud

Prompted vs. Un-prompted
• Prompted → read all response choices
  – Do not read “unknown” or “other”
• Un-prompted → do not read response choices
• Questions indicate whether prompted or un-prompted
• If not indicated → do not prompt

Questionnaire Other Notes
• Call back if disconnected
• Can go backward to change answers in survey, but only until submitted

Questionnaire Other Notes
• If interviewee needs to stop before end:
  – Stop and thank
  – Set up time to continue
  – Transfer answers to paper copy, so you can re-enter electronic data and pick up where you left off

More Information
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