Disaster Evacuation for Older Adults Designated as Homebound

PATRICK DOSTAL MD
AGENDA

1) Disaster preparedness and older adults
2) Development of a novel instrument
3) Data collection in University of Pennsylvania’s primary homecare practice
4) Qualitative and quantitative results
5) Implications for modifying instrument and future disaster planning
Population age 65 and over and age 85 and over, selected years 1900–2010 and projected 2020–2050

(Federal Interagency Forum on Aging-Related Statistics, 2012)
RESEARCH EVIDENCE

- Evidence of susceptibility within USA
  - First Nationwide Survey (Tala M Al-Rousan et al., Jan 2014)
    - 12% ≥ age 80 “Cannot perform immediate exit in case of emergency without help from another person”
Evidence of susceptibility internationally
- 2003 France – Heat wave
- 2004 Aceh, Indonesia - Tsunami
- 2005 Kashmir, Pakistan – Earthquake
- 2007 Pisco, Peru - Earthquake
- 2008 Sichuan, China - Earthquake
- 2011 Fukushima, Japan – Tsunami & nuclear disaster

Older adults suffered disproportionate impacts
Emergency responders not aware of distinct needs
Older adults unable to evacuate homes
Evidence of susceptibility within USA

- **2000-2005 Heat wave of Arizona**
  - Age-adjusted mortality rates greatest among those ≥75 years

- **2005 Hurricane Katrina**
  - 49% of deaths ≥ 75 years
  - 36% of deaths in residences

- **2012 Hurricane Sandy**
  - 50% of deaths ≥ 65 years
  - Leading direct cause of death = drowning, >50% of these at home
  - Special needs shelters were unprepared
LEGAL IMPLICATIONS

- Government has a legal duty to protect disabled individuals in disaster situations
  - Disaster Relief Act Amendments of 1974
  - Americans with Disabilities Act 1990/2008

  - Develop registry of homebound and vulnerable individuals
  - Develop outreach and recovery plan
Is Philadelphia Prepared?

  - 343 Pages - no mention of the disabled
Consider Special Needs in Evacuation Plan

- Will you need help to evacuate? Determine who will help you and how you will get to a safe place or shelter.
- Make sure you have a method for reaching your emergency contacts.
- Locate all usable exits from each room and from your building. Make a habit of knowing where the exits are whenever you are in a new location (such as shopping malls, restaurants, movies and theaters).
- Know evacuation plans for all places where you spend time. Every building’s plan is different. Find out if there are floor marshals, and if they are responsible for evacuation plans. Be sure to let them know what special assistance you may need in an emergency.
- Have a backup transportation plan in case your usual method is not available.
- Practice your plans through regular drills. If you practice drills, you can evacuate with greater ease during a real emergency.
- Practice dealing with different conditions and unexpected situations, such as blocked paths or exits.
A WORD OF CAUTION...

- Evacuations lead to morbidity and mortality:
  - **Hurricane Gustav 2008**
    - 119 at-risk nursing homes
    - 82% of nursing homes evacuated (5036 residents)
    - 18% of nursing home sheltered-in-place
  - Compare 30-day & 90-day mortality in nursing homes that evacuated vs those who sheltered in place
  - Compare mortality to previous years
  - Used MDS data to look specifically at those with dementia and control for confounding variables
For those with high CPS scores:

- 2.8% absolute risk increase in death at 30 days
- 3.9% absolute risk increase in death at 90 days

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<tr>
<th></th>
<th>Death 30 Days</th>
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<th>Death 90 Days</th>
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<tr>
<td>Sheltered in place</td>
<td>4.00%</td>
<td>2.84%</td>
<td>3.04%</td>
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<td>Evacuated</td>
<td>3.32%</td>
<td>4.86%</td>
<td>6.72%</td>
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AIMS

- Study homebound older adults regarding their willingness and ability to comply with a theoretical mandatory evacuation order in Philadelphia

- Characterize medical and functional ability of homebound older adults to inform needs for medical shelters
METHODS

Survey Development

- Reviewed previous literature
- Discussed survey with
  - City of Philadelphia Commission on Aging
  - City of Philadelphia Office of Emergency Management
- Devised survey to define health status and evacuation willingness and ability
- Multiple revisions:
  - Mentors
  - Capstone class
  - Homecare team
- IRB Approved for human subjects research
METHODS

- **Homebound Older Adult Survey**
  - Completed in home by Ralston home care providers during usual care

- **Medical Decision Surrogate (MDS) Survey**
  - Completed over the phone with MDS
“I would like to ask some questions about a mandatory evacuation. A mandatory evacuation would happen if public officials ordered you to leave your home for your own safety because of something like a flood or a fire.

First I want you to tell me what words come to mind when you think about a mandatory evacuation. For example, if I said ‘sports’ you might say, ‘uniform’, ‘sore loser’, or ‘winning’. What words come to mind when you think about a mandatory evacuation?”
SURVEY

Demographics & Health History: (As assessed by healthcare provider)

Ethnicity:
- [ ] Caucasian
- [ ] African American
- [ ] Hispanic
- [ ] Asian
- [ ] More than one
- [ ] Other

Cognition:
- [ ] Intact
- [ ] MCI
- [ ] Dementia

Patient needs assistance with:
- [ ] Y [ ] N  Bathing
- [ ] Y [ ] N  Transferring
- [ ] Y [ ] N  Dressing
- [ ] Y [ ] N  Continence
- [ ] Y [ ] N  Toileting
- [ ] Y [ ] N  Feeding

What equipment does the patient need to physically exit the home to the street curb?
- [ ] None
- [ ] Cane
- [ ] Walker
- [ ] Wheelchair/scooter
- [ ] Stretcher
- [ ] Other ________________

Patient receives the following therapies:
- [ ] Oxygen
- [ ] Nebulizer
- [ ] BiPAP/CPAP
- [ ] Ventilator
- [ ] Suctioning
- [ ] Insulin
- [ ] Warfarin
- [ ] Foley catheter
- [ ] Ostomy care
- [ ] Wound dressings
- [ ] Wound vacuum
- [ ] Electric bed or mattress
- [ ] Feeding tube/pump
- [ ] Other: ________________

Living arrangement:
- [ ] Lives alone
- [ ] Lives with family
- [ ] Lives with other

Senior sleeps on:
- [ ] Ground Floor
- [ ] Upper Floor

Elevator: [ ] Yes  [ ] No
Stair lift: [ ] Yes  [ ] No

How many different medications are taken daily? ________________
**Survey**

**Survey Questions Directed Towards the Homebound Senior**

If there were a mandatory evacuation, would you be willing to evacuate?
- ☐ Definitely
- ☐ Probably
- ☐ Maybe
- ☐ Not at all

If you were told to evacuate to an emergency shelter, would you be willing to go there?
- ☐ Yes  ☐ No

Why not? __________________________________________
__________________________________________________
__________________________________________________

Do you have somewhere to stay outside of your neighborhood if you decided to evacuate?
- ☐ Yes  ☐ No

Where would you go? __________________________
______________________________________________
______________________________________________

Are you able to leave your neighborhood using your personal support network? (Without using public assistance)
- ☐ Yes  ☐ No

Are there pets in the home?
- ☐ Yes  ☐ No

If you couldn’t take your pets with you, would you be willing to evacuate?
- ☐ Yes  ☐ No

Have you ever evacuated your home in an emergency?
- ☐ Yes  ☐ No

What was the emergency? ______________________
______________________________________________
______________________________________________

How much of the time do you think you can trust Philadelphia government to do what is right?
- ☐ Always
- ☐ Most of the time
- ☐ Some of the time
- ☐ Never
"What concerns do you have if there were a mandatory evacuation?"

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Total Practice: 228
Surveys Completed: 57 Total (25%)
- 37 In-home surveys
- 20 Telephone surveys
# Demographics

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<th>Age</th>
<th>Average (range)</th>
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<tr>
<td></td>
<td>85 (64-105)</td>
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<tr>
<td>Sex</td>
<td>% (n)</td>
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<tr>
<td>Female</td>
<td>74% (42)</td>
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<td>Male</td>
<td>26% (15)</td>
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<tr>
<td>Insurance</td>
<td>% (n)</td>
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<tr>
<td>Medicare</td>
<td>64% (37)</td>
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<tr>
<td>Medicare Advantage</td>
<td>35% (20)</td>
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<thead>
<tr>
<th>Ethnicity</th>
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<tr>
<td>African American</td>
<td>81% (46)</td>
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<tr>
<td>Caucasian</td>
<td>18% (10)</td>
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<tr>
<td>Asian</td>
<td>2% (1)</td>
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<tr>
<td>Other</td>
<td>0% (0)</td>
</tr>
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<tr>
<th>Cognition</th>
<th>% (n)</th>
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<tr>
<td>Intact/MCI</td>
<td>56% (32)</td>
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<tr>
<td>Dementia</td>
<td>44% (25)</td>
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**Do you live with your senior?**

- **Yes**: 60%
- **No**: 40%

**How often do you see your senior?**

- **Daily**: 80%
- **Weekly**: 20%
- **Monthly**: 10%
- **Less than Monthly**: 0%
What words come to mind when you think about a mandatory evacuation?

- Leave: 40%
- Urgency: 20%
- Fear/Chaos: 15%
- Assistance Needed: 15%
- Concern for Living Situation: 10%
- Nothing: 10%
- Safety: 10%
- Disaster Types: 5%
- Don't Understand: 5%
- Necessary: 5%

*Responses included if given by ≥2 people*
Have you ever evacuated your home in an emergency?
If there were a mandatory evacuation, would you be willing to evacuate?

- Definitely: 80%
- Probably: 20%
- Maybe: 0%
- Not at All: 0%

If you were told to evacuate to an emergency shelter, would you be willing to go there?

- Yes: 80%
- No: 20%
How much of the time do you think you can trust Philadelphia government to do what is right?

- Always: 10%
- Most of the time: 40%
- Some of the time: 50%
- Never: 10%
WILLINGNESSNESS

Are there pets in the home?

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<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>20%</td>
<td>80%</td>
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If you couldn’t take your pets with you, would you be willing to evacuate?

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<tr>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>7%</td>
<td>93%</td>
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</table>
Are you able to leave your neighborhood using your personal support network? (Without using public assistance)
MOBILITY

Senior sleeps on

% without access to elevator or stairlift

60%
What equipment does the patient need to physically exit the home to the street curb?
MOBILITY

Do you have somewhere to stay outside of your neighborhood if you decided to evacuate? (Assuming transportation is not an issue)
MEDICAL/FUNCTIONAL NEEDS

Activities of daily living assistance needs

Bar chart showing the percentages of assistance needs for different activities:
- **Bathing**: 100%
- **Dressing**: 75%
- **Toileting**: 50%
- **Transferring**: 75%
- **Continence**: 50%
- **Feeding**: 25%
# of daily medications
7.8 (range = 0-24)
What concerns do you have if there were a mandatory evacuation?

- How to physically exit the home: 30%
- None: 25%
- Where to go: 15%
- Concern for supplies: 10%
- Have to leave: 5%
- Concern for families and friends: 5%
- Concern for being alone: 5%
- Concern for health: 5%
- Concern for ability to return home: 5%
- Concern for assistance: 5%
- Question evacuation order: 5%
- Fear of shelter: 5%
- Concern for availability of care: 5%

*Responses included if given by ≥2 people*
CONCLUSIONS

1) Significant evacuation assistance is needed for adults designated as homebound in Philadelphia
   - Physical assistance to exit the home
   - Assistance in providing shelter
2) Special needs shelters must be prepared to care for adults at nursing home level of care

- **Medication management**
  - Warfarin
  - Insulin

- **Medical supply needs**
  - Electric beds
  - Oxygen
  - Nebulizers

- **Basic ADL assistance**

- **Skilled care needs**
  - Wound care
  - Ventilator management
3) An outreach campaign needs to address public concerns

- Readiness of special-needs shelters
- Pet-ready shelters
- Partnership between City of Philadelphia & emergency organizations
FUTURE DIRECTIONS

- Improve & increase sample size
- Re-evaluate survey as screening tool
- Coordinate with Office of Emergency Management
ACKNOWLEDGEMENTS

- MPH Team:
  - Heather Klusaritz PhD, MSW
  - Rosemary Frasso PhD, MSc, CPH
  - Susan Levy MD, MPH
  - Capstone students

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  - Mary Ann Forciea MD
  - Jean Yudin CRNP
  - Stephanie Johnson CRNP
  - Bruce Kinosian MD
  - Leslie Carson MD
  - Leah Salp BSN, RN, CHPN
CONTACT INFORMATION

- Patrick Dostal “Geriatric Patrick”
- patrick.dostal@uphs.upenn.edu
REFERENCES

- Stafford Disaster Relief and Emergency Assistance Act
Preparedness for Natural Disasters Among Older US Adults: A Nationwide Survey

Tala M. Al-rousan, MD, Linda M. Rubenstein, PhD, and Robert B. Wallace, MD, MSc

- “Nationally representative cohort study” using Health and Retirement Study. Jan, 2014

  - “Can perform immediate exit in case of emergency without help from another person” = 88% for ≥ age 80
DEFINITION OF HOMEBOUND

- As per CMS guidelines:
  - An individual shall be considered “confined to the home” (homebound) if the following two criteria are met:
    - Criteria 1:
      - Because of illness or injury, need the aid of supportive devices such as crutches, canes, wheelchairs, and walkers; the use of special transportation; or the assistance of another person in order to leave their place of residence
      OR
      - Have a condition such that leaving his or her home is medically contraindicated.
    - Criteria 2:
      - There must exist a normal inability to leave home;
      AND
      - Leaving home must require a considerable and taxing effort.
DESTINATION

- Where would you go?
  - Mostly with families
    - 2 mentioned church
    - 1 mentioned hotel
  - Large variation of places
    - Center City
    - Suburbs
    - New Jersey
    - Boston
    - South Carolina
- Concerns
  - “With daughter, but worried about steps”
FUNCTIONAL STATUS

Cognition

Intact | MCI  | Dementia

- Intact: 50%
- MCI: 10%
- Dementia: 30%
How many different medications are taken daily?

7.8 (range = 0-24)
What words come to mind when you think about a mandatory evacuation?
WILLINGNESSNESS

Not willing to go to shelter

- Rather go somewhere else
- Not sure
- Wouldn't like it there
- Shelter cannot accommodate needs

Number of responses
What concerns do you have if there were a mandatory evacuation?

Number of responses:
- 0% for 0 responses
- 50% for 1 response
- 20% for 2 responses
- 10% for 3 responses