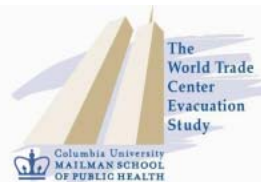


# Pre-existing health conditions, and injury patterns in 9/11/2001 WTC evacuees

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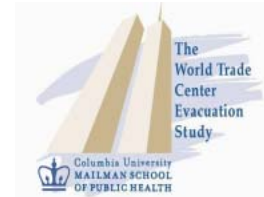
Kristine Qureshi, RN, DNSc  
Robyn M. Gershon, MS, DrPH  
Martin Sherman, PhD



*Project conducted at:  
Columbia University  
Mailman School of Public Health  
New York, NY*

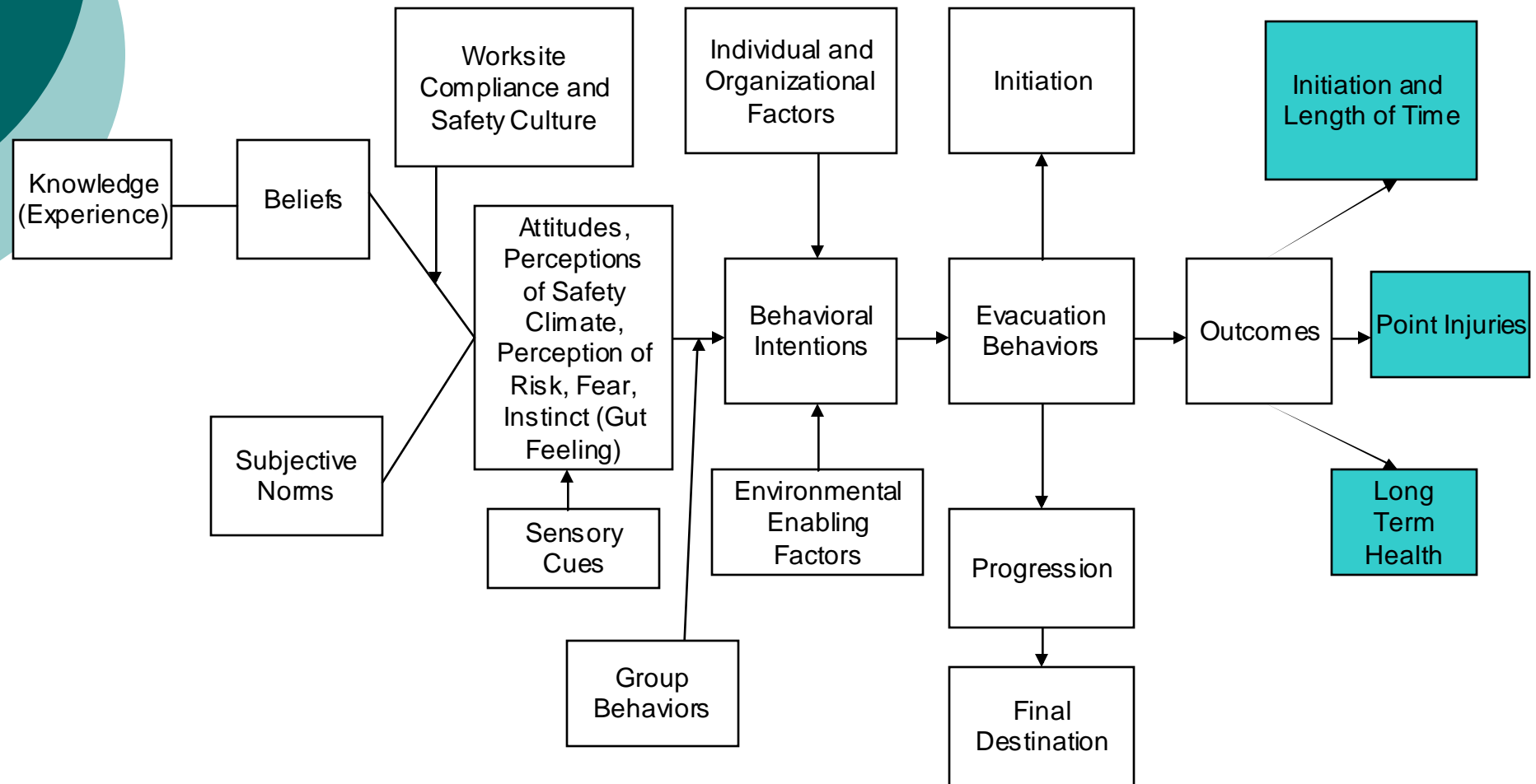
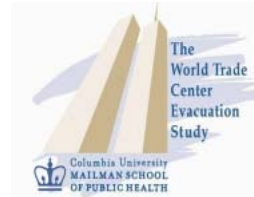
# WTC Evacuation Study: Overall project aim

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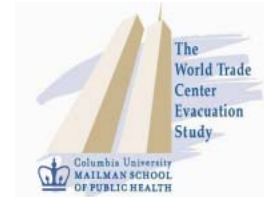
- Identify the facilitators and barriers to successful evacuation of the WTC on 9/11/01 within the context of individual, organizational, and environmental factors

# WTC Evacuation Study Model



# Method

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Convenience sample of 1444 former WTC (Tower 1 and Tower 2 employees) completed a 95 item survey questionnaire



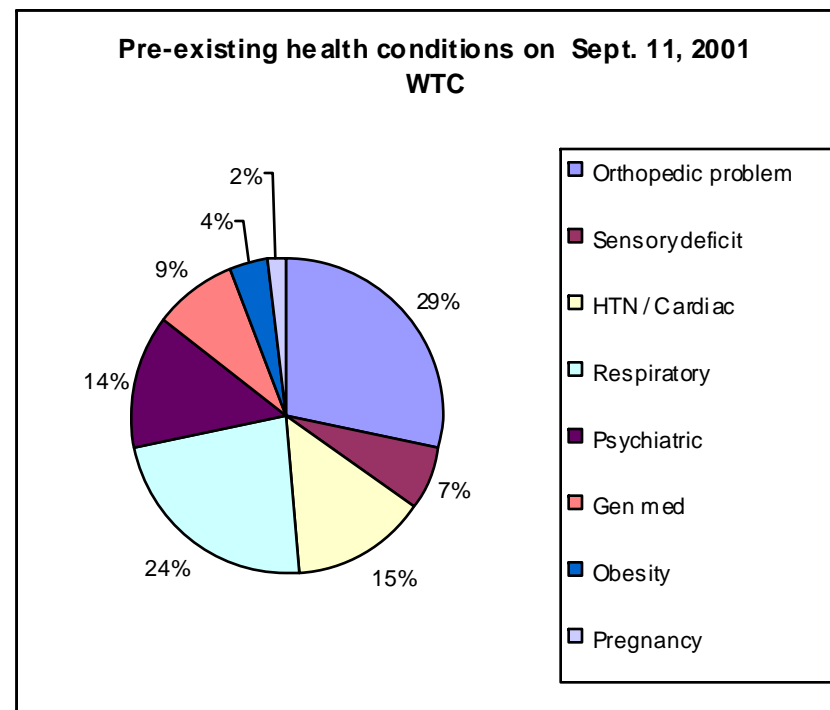
# Sub-questions

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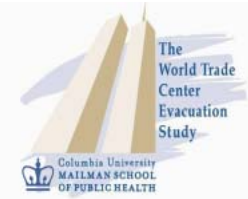
- What were the point and long term injuries of evacuees?
- What were some factors related to sustaining a point or long term injury?

## Pre-existing health conditions

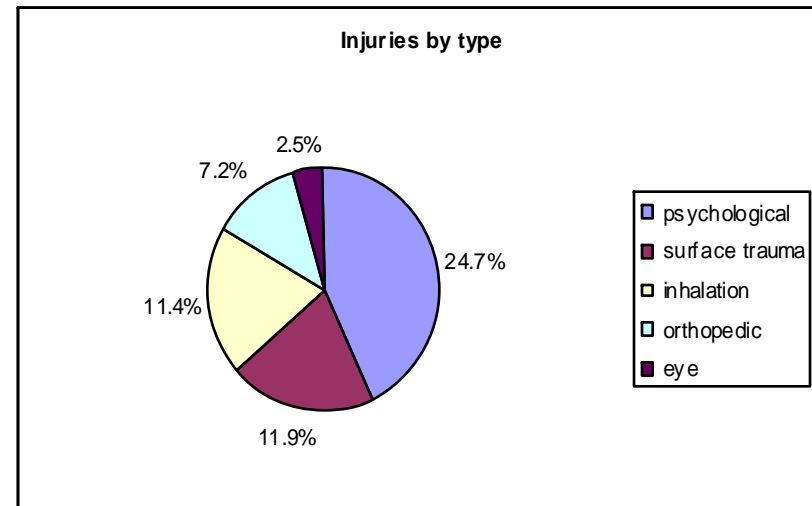
- 375 (37%) of the evacuees in the study reported having a pre-existing health condition
- Of those who had a pre-existing condition: 14% psych/mental health problem



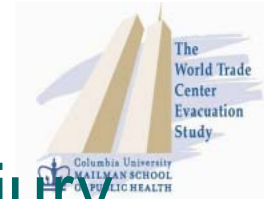
# Injuries sustained during the evacuation



- 531 (37%) of the evacuees in the study reported sustaining at least one injury during the evacuation
- Most of the point injuries were psychological



# Individual factors related to increased likelihood of sustaining any type of injury



<b>Individual factors</b>	<b>OR</b>	<b><i>P</i></b>	<b>95% CI</b>
Inappropriate footwear	3.091	0.000	1.791-5.335
Changed shoes before evacuation	2.602	0.019	1.14-5.94
Pre-existing health condition	2.16	0.000	1.70-2.74
Female gender	1.91	0.000	1.41-2.60
Had a co-worker who died	1.83	0.001	1.30-2.58
Less education	1.66	0.002	1.19-2.30
Sensed a serious problem	1.65	0.001	1.23-2.23



# Environmental factors related to increased likelihood of sustaining an injury



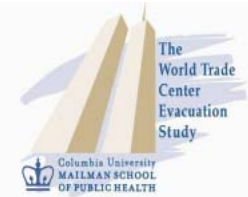
<b>Environmental factors</b>	<b>OR</b>	<b><i>P</i></b>	<b>95% CI</b>
Fire present on floor	2.79	0.002	1.42-5.46
Loss of electrical power on floor	2.24	0.021	1.11-4.52
Multiple environmental cues	1.60	0.002	1.19-2.15
Smoke on floor	1.58	0.021	1.07-2.36
Felt plane impact on building	1.41	0.042	1.01-1.98
Damage to walls on floor	1.17	0.004	1.19-2.47

# Organizational factors related to increased likelihood of sustaining an injury



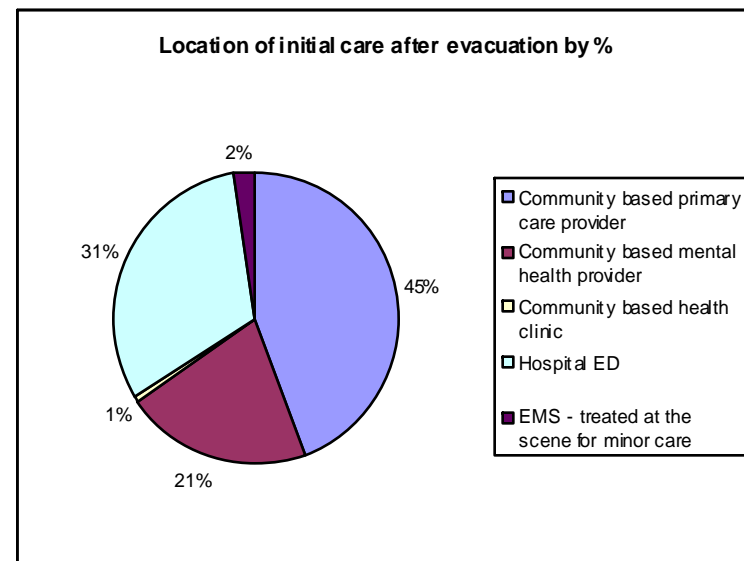
<b>Organizational factors</b>	<b>OR</b>	<b><i>P</i></b>	<b>95% CI</b>
Thought supervisor would not approve	6.441	0.008	1.329-31.22
Fear that leaving would hurt employment	4.92	0.010	1.293-18.682
Union membership	2.63	0.003	1.35-4.90
Required multiple prompts to initiate evacuation	1.93	0.000	1.42-2.62
Needed directions (unfamiliar with exit route)	1.542	0.004	1.147-2.072

# Where people sought health care for injuries after the evacuation

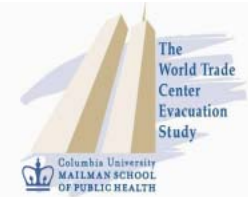


- 379 (26%) of the respondents sought healthcare services after the evacuation
- The majority (66%) sought care in some sort of community based health care setting

<u>Setting</u>	<u>N</u>
● CB primary care	167
● CB mental health	80
● CB clinic	4
● Hospital	119
● EMS (at scene)	9

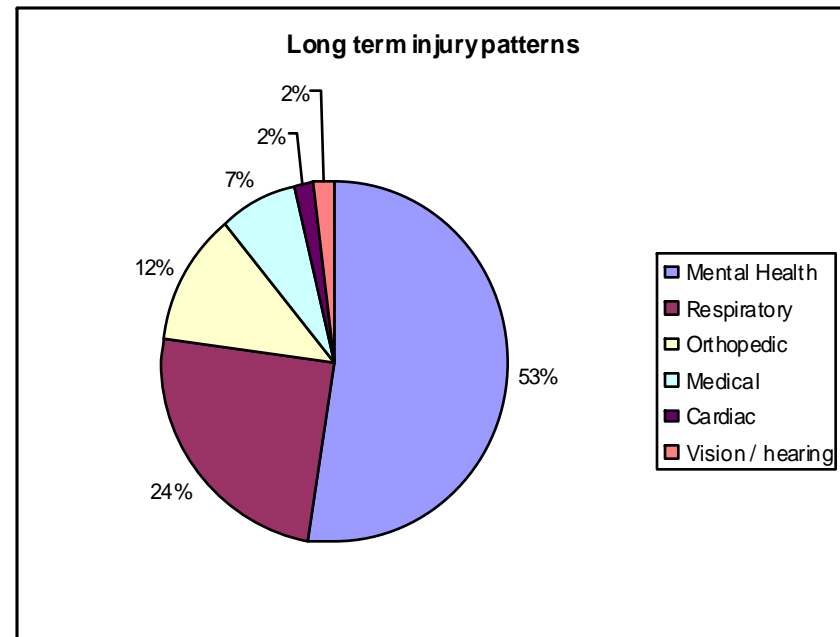


# Long term injury patterns

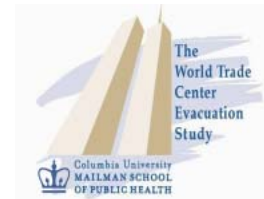


221 persons (15.4%) of the evacuees report having at least one long term injury related to evacuation of the WTC on 9/11 (Some reported more than one condition.)

<u>Condition</u>	<u>N</u>
Mental Health	132
Respiratory	61
Orthopedic	30
Medical	18
Cardiac	5
Vision / hearing	5



# Factors related to long term health problems



<b>Factors</b>	<b>OR</b>	<b>P</b>	<b>95% CI</b>
Multiple injuries during evacuation	12.08	0.000	7.135-19.978
Felt supervisor would not approve evacuation	7.277	0.001	1.925-27.513
Pre-existing disability or medical condition	3.003	0.000	1.993-4.526
Felt not physically capable of evacuating	2.612	0.001	1.486-4.590
Female gender	2.49	0.000	1.670-3.710
Inadequate footwear	2.07	0.006	1.220-3.513

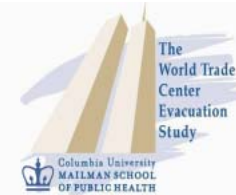
# Long term mental health problems

132 (9.2%) reported having long term mental health problems as a consequence of 9/11 and the evacuation

## Factors related to long term mental health problems

Factors	OR	<i>P</i>	95% CI
Pre-existing mental health problem	10.685	0.000	5.961-19.151
Pre-existing health condition or disability	6.021	0.001	3.647- 9.941
Pre-existing sensory deficit	4.835	0.001	2.028-11.524
Pre-existing respiratory condition	4.626	0.000	2.730- 7.839

# Summary

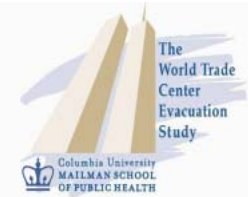


- The most frequently reported injury among evacuees was psychological insult/injury.
- A substantial proportion of evacuees reported long term health problems, most associated with the psychological injury or respiratory insult that they sustained during the evacuation.
- Persons with a pre-existing disability or health problem were at an increased risk for sustaining an injury during the evacuation process.
- The vast majority of all injuries were treated (point and long term) in the community setting.
- Most evacuees sought their care from their own community based personal physician.



# Implications

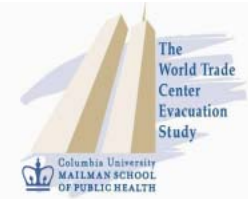
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These findings should be considered in terms of preparedness planning and post-disaster response and recovery efforts.

- More emphasis must be made towards preparing community based providers to screen for, detect and treat mental health problems as a result of disaster events.
- The incidence of post event mental health problems is so high that population based mental health interventions should be considered.





# Thank you, questions?

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- Project conducted at the Columbia University Mailman School of Public Health.
- Project supported by the Centers for Disease Control
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