

# Preparing for mass-casualties:



Improving staff preparedness and hospital operations through multidisciplinary simulation training in disaster management

July 14, 2016: A lorry smashes into a crowd in Nice, France, killing 86 people, injuring 434.

<http://abcnews.go.com/International/nice-lockdown-amid-fears-terror-attack/story?id=40590537>

## Authors

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# Introduction

While many hospitals have disaster plans, few exercise these plans or test their staff under realistic scenarios [1].

Simulation tools such as the Emergo Train System® (<http://www.emergotrain.com>) provide a way to test systems and staff preparedness.

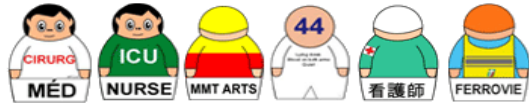
*“After the Paris attacks... we did [simulation] exercises involving 60 actors [in May]. [This] helped prepare us for the night of July 16” [2]*

*Clinicians from the Pasteur 2 Adult Hospital*

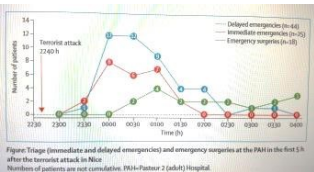
## Objectives

To measure changes in staff perceived preparedness to manage mass-casualty incidents

## Methods



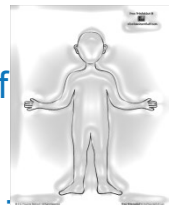
Emergo Train System (ETS) <http://www.emergotrain.com> provided the structure. Eighty-seven (87) gubers created. Setting: Gold Coast University Hospital (Queensland)



Injury severities and times of arrival modelled on Pasteur 2 Adult Hospital's experience, Nice terror attacks on 16 July 2016 [2].

<http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736%2816%2932128-6.pdf>

Types of injuries modelled on summary report of intentional vehicle attacks [3]



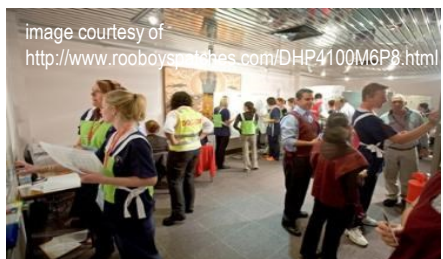
Pre- and post- surveys assessed knowledge, skills and confidence

11

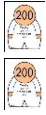
Lying down  
Open abdominal  
injury

<https://it.linkedin.com/in/emergo-train-system-bologna>

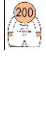
image courtesy of  
<http://www.rooboysschets.com/DHP4100M6P8.html>



# Results



**98** participants



**88** (89.7%) completed at least one survey



**96.8%** of respondents found exercise useful



Mean scores improved **0.9** for confidence, **0.4** for skills, & **0.5** points for knowledge (all  $p < .001$  paired t-test)

Figure 1. Discipline of 88 survey respondents

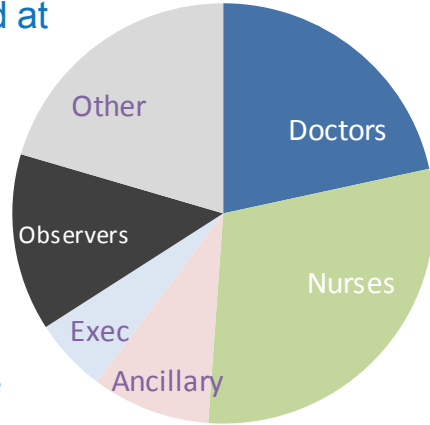


Figure 2. Absolute pre- and post- exercise score changes for 53 participants

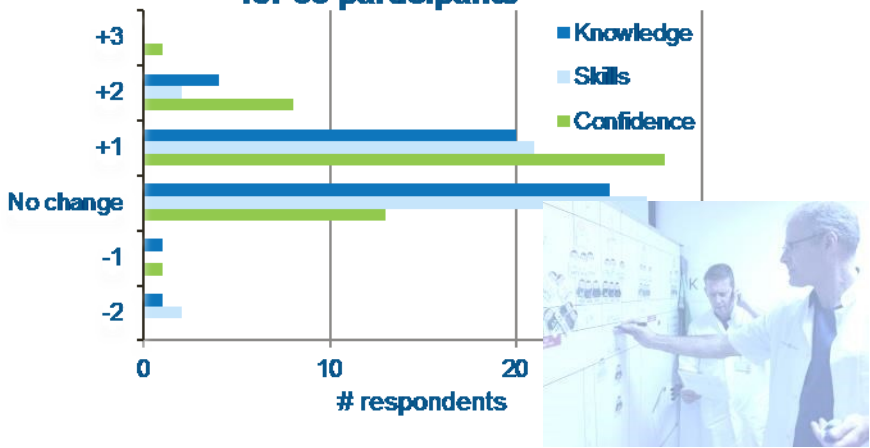
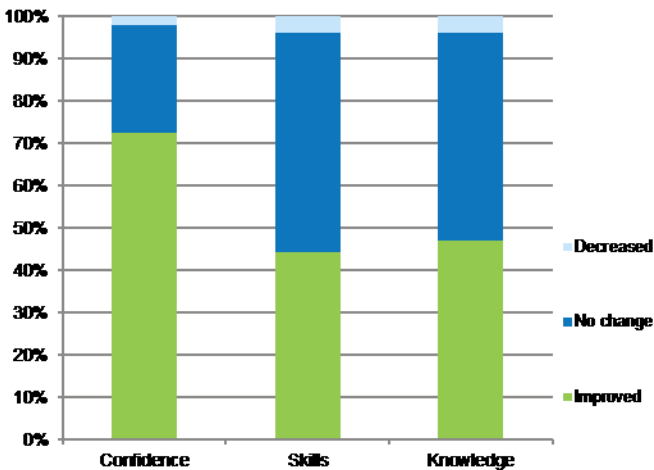


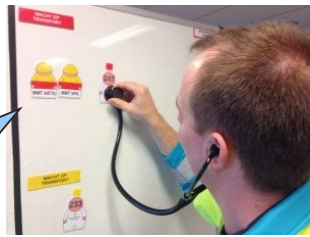
Figure 3. Changes in pre and post exercise scores for 53 participants



# Other system learnings

- Mass communication systems to call in staff needed: all relevant departments, regularly tested
- All specialties need a senior clinician in the ED
- EDs require:
  - ✓ A dedicated nurse is needed to manage blood products and ROTEM
  - ✓ A radiologist assigned to reporting results;
  - ✓ Runners and admin staff for discharges
  - ✓ A welfare officer and extra social work support
  - ✓ A designated area for families
  - ✓ A plan for staff fatigue
  - ✓ A reporting/ command and control flow chart in all areas.
- Roles must be clear (tabards worn);
- Many staff weren't aware of the organization's disaster plan. Exercises like this help individuals and organizations prepare.
- ETS requires less space and human resources than other types of simulation, but has disadvantages

*Oh my! I can't hear a heart beat!  
"Can't we make it more realistic?"*



<https://www.ambulanceblog.nl/traumacentrum-zuidwest-nederlands-oefensystematiek/>

## Conclusion

### Organizational investment in simulation

- **Identifies system opportunities** and
- Improves staff **knowledge of, skills for and confidence in managing mass casualty incidents.**

## References

- 1 Bartley BH, Stella JB, Walsh LD: What a disaster?! Assessing utility of simulated disaster exercise and associated educational process. Prehosp Disast Med 2006;21(4):249–255.
- 2 Carles M, Levraut J, Gonzalez JF, Valli F, Bornard L. Mass casualty events and health organisation: terrorist attack in Nice. The Lancet.388(10058):2349-50.
- 3 Almog G, Kedar A, Bala M. When a vehicle becomes a weapon: intentional vehicular assaults in Israel. Scandinavian journal of trauma, resuscitation and emergency medicine. 2016;24:149.



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