

DO DISASTER DRILLS IMPACT REAL TIME PATIENT CARE IN THE EMERGENCY DEPARTMENT?

Nitay Raisch MD¹, Gal Pachys MD², Baruch Berzon MD³, Dina Cashdan BSN⁴, Mrs. Aya Cohen⁵, Evan Avraham Alpert MD¹, Nadya Kagansky MD⁶, Tzachi Slutsky MD MHA⁷, Ari M. Lipsky MD PhD⁸, Yehoshua Pinchuk EMT-P RN MEM⁹, Ahmad Naama MD¹, Osnat Levztion-Korach MD MHA¹⁰, Joseph Offenbacher MD¹¹, Daniel Trotzky MD MHA¹²

1. Department of Emergency Medicine, Hadassah University Medical Center- Ein Kerem, Jerusalem, Israel, affiliated with the Faculty of Medicine, The Hebrew University, Jerusalem, Israel.
2. Division of Emergency Medicine, Shaare Zedek, Jerusalem, Israel, affiliated with the Faculty of Medicine, The Hebrew University, Jerusalem, Israel.
3. Department of Emergency Medicine and Department of Emergency Preparedness, Shamir Medical Center (formerly Assaf Harofeh), Zerifin, Israel, affiliated with the Faculty of Medical & Health Sciences, Tel Aviv University, Israel.
4. Department of Emergency Medicine, Shaare Zedek Medical Center, Jerusalem, Israel, affiliated with the Hebrew University School of Medicine, Jerusalem, Israel.
5. Division of Emergency Medicine and Emergency Preparedness, Tel Aviv Sourasky Medical Center.
6. Shmuel Harofeh Geriatric Medical Center, Be'er Ya'akov, Israel, and The Faculty of Medical and Health Sciences, Tel Aviv University, Tel-Aviv, Israel.
7. Department of Emergency Medicine, Soroka University Medical Center and the Faculty of Health Sciences, Beer-Sheva, Israel.
8. Department of Emergency Medicine, HaEmek Medical Center, Afula, Israel, affiliated with Ruth and Bruce Rapoport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel.
9. Department of Emergency Preparedness, Shamir Medical Center (formerly Assaf Harofeh), Zerifin, Israel, affiliated with the Faculty of Medical & Health Sciences, Tel Aviv University, Tel Aviv, Israel.
10. Medical Management, Shamir Medical Center (formerly Assaf Harofeh), Zerifin, Israel, an affiliated of the Faculty of Medical & Health Sciences, Tel Aviv University, Tel Aviv, Israel.
11. Department of Emergency Medicine, New York University Grossman School of Medicine, New York, New York.
12. Medical Management, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, and The Department of Epidemiology and Preventive Medicine, School of Public Health, Gray Faculty of Medical & Health Sciences, Tel Aviv University, Tel Aviv, Israel.

BACKGROUND

Disaster drills, such as Mass Casualty Incident (MCI) are complex events which require many resources in the crowded Emergency Departments (ED). Previous studies were done in paediatric ED's and did not demonstrate any effect on patient care. In our novel research, we aim to describe, for the first time, the impact of disaster drills on a large referral Adult ED and the different impact of planned and surprise drills was never studied.

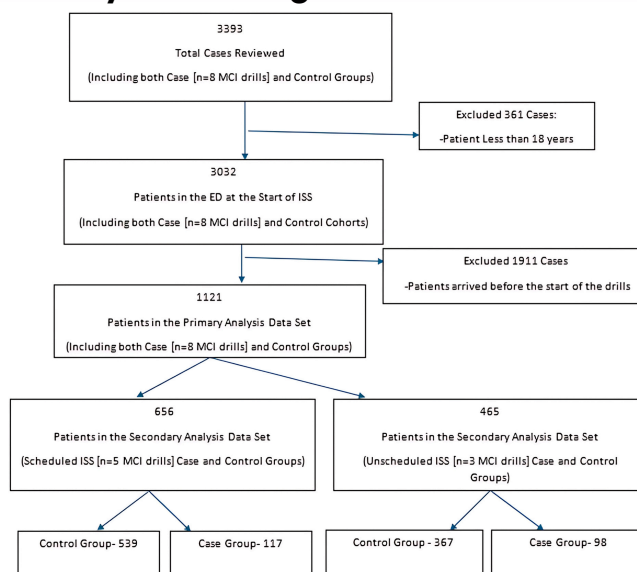
METHODS

We conducted a retrospective study of patients presenting to an adult tertiary, academic emergency department during scheduled and unscheduled mass casualty incident (MCI) drills. Primary outcome measures focused on the impact of MCI drills on select operations and triage metrics. Primary analysis included both scheduled and unscheduled drills. Secondary analysis compared scheduled and unscheduled sub-cohorts.

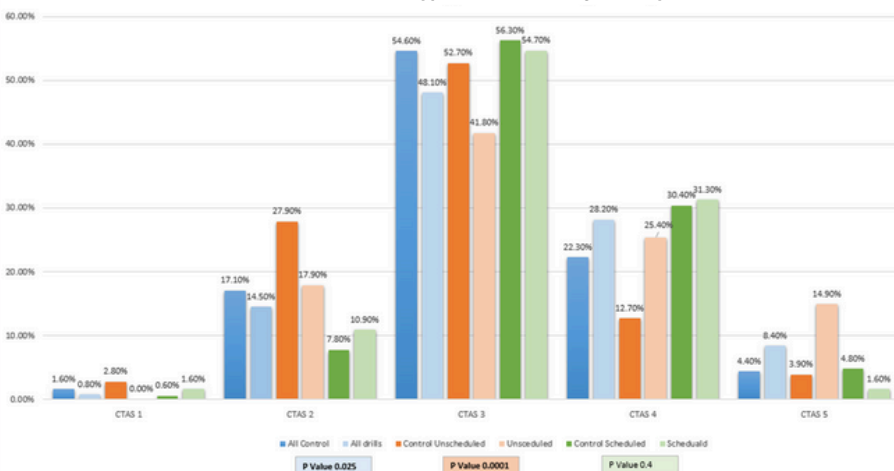
RESULTS

Being treated during an ongoing MCI drill was associated with a higher average door to triage times (20.6 v. 15.8 minutes; $p < 0.005$) and lower CTAS acuity triage scores (CTAS 1 and 2: 0.8% and 14.5% v. 1.6% and 17.1% $p < 0.025$) between patients in the case and control cohorts. Secondary analysis showed that unscheduled, but not scheduled, MCI drills were associated with higher average door to triage times (29.0 v. 21.2 min; $p < 0.001$) and lower CTAS acuity scores (CTAS 1 and 2: 0.0% and 17.9% v. 2.8% and 27.9% v; $p < 0.001$) between patients in the case and control cohorts.

Study Flow Diagram



Association Between MCI drills Type and CTAS Triage Acuity Score



Bars demonstrate our analysis of association between MCI drills type and assigned CTAS triage acuity score. Blue bars compare case and control group CTAS triage acuity score (ranging from 1-5) for entire study population. Orange bars compare case and control group CTAS triage acuity score (ranging from 1-5) for unscheduled MCI drills subgroup. Green bars compare case and control group CTAS triage acuity score (ranging from 1-5) for scheduled MCI drills subgroup.

CONCLUSIONS

We found a significant association between increased door to triage time and lower acuity triage score designation for patients treated during an ongoing MCI drill. Secondary analysis demonstrated that these findings were modifiable, only being observed during unscheduled simulations. These findings are crucial and should be considered to ensure that real time patient care is not jeopardised.

Association MCI drills on Clinical Operations Comparing Unscheduled drills and Control Group

Unscheduled				
	Case group (N=98)	Control group (N=367)		P Value
Time to Triage (minutes)- average	29.0	21.2		0.001
	±19.9	±18.9		
	25	11.0	25	
Time to Triage (minutes)- median	30	28.0	30	0.59
	75	42.0	75	
Time to First Physician (minutes)	112.2	119.7		0.77
	±71.3	±88.4		
Time to Disposition Decision (minutes)	236.8	236.1		0.07
	±170.6	±142.3		
Time from Decision to Discharge or Hospitalization (minutes)- average	36.5	53.0		0.46
	±51.3	±70.0		
ED Length of Stay (minutes)	271.7	285.4		0.47
	±176.9	±160.6		
Left Against Medical Advice	5%	2.7%		
	(3/98)	(10/367)		