

Quick evacuation in an emergency? TRAIN can help!!!



Lucile Packard
Children's
Hospital
AT STANFORD

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Background

Between 1971 and 1999, there were 275 hospital evacuations reviewed and 43 reported evacuation times of 12 hours or more.¹ Currently available pediatric disaster triage tools are designed for assessing severity of illness or predicting mortality and are not applicable to the inpatient population. Cohen et al developed a triage tool specifically for the neonatal population which evaluates resource needs in the event of an evacuation. This tool creates a common code for communication with other hospitals and transferring of patients.² Given the unique patient population served by Lucile Packard Children's Hospital (LPCH), a hospital evacuation will be a regional if not interstate disaster. The ability to quickly assess patients for transport needs and to communicate with distant institutions in a disaster is paramount for the rapid and safe transfer of patient in the case of vertical evacuation.

Method

The original TRAIN tool, created for the neonatal intensive care unit, was used to assess all patients admitted to LPCH. Based on these findings, the tool underwent 2 version changes resulting in the elimination of 2 assessment criteria (Monitoring, Medical), modification of 1 criterion (Respiratory → Life Support) and the addition of 1 criterion (Mobility). This tool was validated against the original NICU data². Data was collected by three methods. A nurse proficient in using the TRAIN tool gathered information from the EHR, another nurse performed visual observation of the patient and the automated EHR tool was generated. The results were then compared between these three assessments, multiple iterations ensued. This was done to evaluate the efficacy of the automated EHR tool between raters. A time study was also performed in conjunction with a county-wide disaster drill which compared the current state of visual observation for vertical evacuation by a nurse familiar with the tool, a manual gathering of information from the EHR and the automated EHR tool.

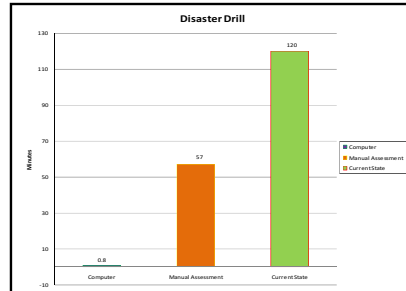
Triage by Resource Allocation for IN-patients [TRAIN][®]

Transport	Car	BLS/ALS	Critical Care	Specialized
Life Support	Stable	Minimal	Moderate-Stable	Max-Unstable
Mobility	Car/Carseat	Wheelchair/stretchers	Transport rig	Immobile
Nutrition	PO Feeds	PO + NG	NG/PO + TPN/IL	NPO & TPN/IL
Pharmacy	PO Meds	PO Meds/IV Meds/IV Fluids	IV Drip x1	IV drip ≥ 2

Unit: 2 North CVICU

	Red			2310 - A
Reason:	1. Alprostadil 500 mcg + Dextrose 5% In Water 24 mL: Route - IV(TITRATE); 2. Dextrose 10%-NACL 0.2% 50 mL + Heparin 25 units: Route - IV(TITRATE)			
	Blue			2310 - B
Reason:	Scheduled carvedilol 6.25 mg oral tablet: Route of Administration - PO			
	Yellow			2323 - A
Reason:	Milrinone (in D5W) 10 mg + Milrinone premixed 50 mL: Route - IV(TITRATE)			
	Green			2323 - B
Reason:	O2 Therapy - Nasal cannula			
	Yellow			2323 - C
Reason:	Bumetanide 5 mg + Dextrose 5% In Water 30 mL: Route - IV(TITRATE)			
	Red			2323 - D
Reason:	1. Midazolam 100 mg + Dextrose 5% 30 mL: Route - IV(TITRATE); 2. Morphine 50 mg + Dextrose 5% 46.67 mL: Route - IV(TITRATE)			

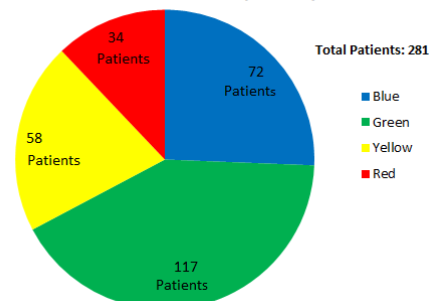
Results



The county-wide disaster drill showed a large improvement in gathering essential information when planning during a disaster.

- Computer assessed 248 patient in 48 seconds
- Manual assessed 148 patient in 57 minutes
- Unit assessed 148 patients not completed after 2 hours of disaster drill

Lucile Packard Children's Hospital: Day at a Glance



Conclusions

TRAIN is an innovative tool for disaster preparedness which allows hospitals to "pre-plan" for vertical evacuation or need for surge capacity. It is applicable to the pediatric population, but may be expanded to include other patient populations.

The advantages of using TRAIN include:

- Transfer of patients at the appropriate level of care
- Improvement of local, state and federal planning of resources through shared terminology and communication needs
- Ability to decrease the amount of time assessing patients' needs for evacuation

In conclusion, TRAIN is a triage tool which focuses on patients' resource needs rather than severity of illness or prediction of mortality. This tool is much more applicable to inpatient use where medical care has been ongoing for days to months. TRAIN, especially when leveraging the electronic medical record, can accurately and efficiently categorize patient transport needs prior to a disaster. We do recognize that certain patients may require transport resources which will not be available during a disaster. These patients would be categorized as "Do Not Transport". As this categorization could not occur prior to a disaster, it is not part of this "pre-planning" tool. TRAIN may decrease morbidity and mortality associated with a vertical evacuation or increased surge capacity.

Future Directions:

- Development of the TRAIN model in obstetrics unit and Stanford Hospital and Clinics
- Preparation with the county to upgrade ambulances with hospital personnel and equipment to meet the specifications for pediatric transport
- Regionalization of disaster planning and preparedness using the TRAIN tool

References:

- ¹Sternberg E, Lee GC, Huard D. Counting Crises: US Hospital Evacuation, 1971-1999. *Prehosp Disast Med*, 2004; 19(2):150-157.
- ²Cohen R, Murphy B, Ahern T, Hackel A. Regional Disaster Planning for Neonatology. *Journal of Perinatology*, 2010; 30: 709-711.

Together Prepared, Together Ready