

# Preplanning Disaster Triage for Pediatric Hospitals

## TRAIN TOOLKIT

Lucile Packard Children's Hospital



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# INTRODUCTION

The Triage by Resource Allocation for IN-patient (TRAIN) matrix is a tool for pediatric hospital disaster “pre-planning”. It categorizes pediatric inpatients according to their resource transportation needs during an evacuation or mass casualty event requiring increased surge capacity. This tool can be implemented manually or within an electronic medical record. It *accurately* assesses patients *quickly* and *easily* to determine transport needs, which allows institutions to request and receive resources required for vertical movement in disaster.

This innovative tool applies to hospitalized patients with regards to their current resource transportation needs. Previous triage tools are primarily used in the pre-hospital setting and are based on severity of illness or predictors of mortality<sup>1-3</sup>, which are not applicable to the inpatient population. *This tool is most effective when incorporated into daily practices prior to a disaster.*

This tool was originally created for the neonatal population<sup>4</sup> and then modified for hospitalized pediatric and obstetrics patients. There are also future plans to incorporate the adult inpatient population.

# LPCH TRAIN MATRIX

<b>Triage by Resource Allocation for IN-patients [TRAIN]®</b>				
<b>Transport</b>	<b>Car</b>	<b>BLS</b>	<b>Critical Care</b>	<b>Specialized</b>
<b>Life Support</b>	Stable	Minimal	Moderate-Stable	Max-Unstable
<b>Mobility</b>	Car/Carseat	Wheelchair/stretcher	Transport rig	Immobile
<b>Nutrition</b>	PO Feeds	PO/NG	NG/PO + TPN/IL	NPO & TPN/IL
<b>Pharmacy</b>	PO Meds	PO Meds/IV Meds/IV Fluids	IV Drip x1	IV drip ≥ 2
<b>Life Support</b>				
	Minimal = Hood or Low Flow Cannula O2, Peritoneal Dialysis, etc.			
	Moderate-Stable = Conventional Ventilator, CPAP/BiPAP/Hi-Flow, Externally paced, chest tube, wt < 1500 grams, etc.			
	Max-Unstable = Highly specialized equipt., e.g., HFOV, ECMO, iNO, CVVH, Berlin Heart, etc.			
<b>Mobility</b>				
	Car/Carseat = able to ride in automobile with age-appropriate restraints			
	Transport rig = age-appropriate rig with equipment for connecting to ambulance			
	Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric			

## BLUE

Transport: Car or Bus

Life Support: Stable

- No need for monitoring\*
- Room air
- Uncomplicated drains (ie: bili or JP drains)

Mobility: Car/Carseat

- No specialized equipment needed to transport patient

Nutrition: PO Feeds

- Oral feeds only
- No tube feeds

Pharmacy: PO Meds

- Oral meds only
- No intravenous medications

\*These patients may be considered for transport by car/bus or for discharge home in the setting of a disaster in which altered standards of care are present.

## GREEN

Transport: Ambulance (BLS/ALS)

Life Support: Minimal

- Low flow cannula or hood oxygen
- Peritoneal dialysis (intermittent)
- May require cardiorespiratory monitoring

Mobility: Wheelchair/stretchers

- Baseline requirement (cerebral palsy)
- Restricted mobility due to devices (ie: spica casts, traction, halos, etc)

Nutrition: PO/NG

- Oral feeds in combination with tube feeds (ie: G-tube, nasogastric, nasoduodenal, nasojejunal, orogastric)

Pharmacy: PO Meds/IV Meds/IV fluids

- Intermittent intravenous medications
- Standard IV fluids (ie: dextrose with electrolytes, etc)

## YELLOW

Transport: Critical Care

- Ambulance with RN +/- RT +/- MD

Life Support: Moderate-stable

- Conventional Ventilator
- CPAP/BiPAP/Hi-Flow/Continuous Nebulizer
- External pacemaker
- Chest tube
- Weight < 1500 grams
- Etc.

Mobility: Transport rig

- As based on equipment required to safely transport patient
  - Examples: external ventricular drains, etc

Nutrition: NG/PO + TPN/IL

- Combination of enteral feeds (by mouth or tube feed) and parenteral nutrition (total parenteral nutrition/intralipid)

Pharmacy: IV drips X1

- Can have intermittent intravenous medications
- Single intravenous medication drip (ie. Insulin, basal narcotic drip, pressors, etc)

## **RED**

Transport: Specialized

- Ambulance or Military –supported transport with combination of multiple RNs, likely with MD and RT

Life Support: Max-Unstable

- Highly specialized equipment
  - High Frequency Oscillatory Ventilation
  - ExtraCorporeal Membrane Oxygenation
  - Inhaled Nitric Oxide
  - Continuous Veno-Venous Hemofiltration
  - Ventricular Assist Devices
  - Etc.

Mobility: Immobile

Nutrition: NPO & TPN/IL

- No enteral feeds
- Parenteral nutrition only

Pharmacy: IV drips  $\geq 2$

- Can have intermittent intravenous medications
- Multiple intravenous medication drips (ie. Insulin, basal narcotic drip, pressors, etc)



**PHYSICAL ASSESSMENTS USING THE TRAIN**  
**MATRIX**

## Daily Process

1. Assign one person **daily** to complete the TRAIN assessment form (see addendum A).
  - a. This individual may be whoever you decide is capable of completing the process accurately (i.e., Staff Nurse, Charge RN, Nurse Manager, Physician).
  - b. The accuracy of this tool is best when administered by someone familiar with the patients.
2. Enter each of the Unit's bed numbers on the TRAIN assessment form.
3. Enter the name of the patient occupying each associated bed space.
4. Complete the information, including: 1) Date, 2) Time, and 3) Unit
5. Assign the appropriate color to each patient, according to the TRAIN matrix.
6. At the bottom of the table, total the number of patients in each TRAIN category
7. Have the TRAIN matrix and completed assessment forms readily available with disaster plans on your unit.

## **Instructions on Using the TRAIN Matrix**

1. Look at each patient and assess by the following methods
  - a. Attached to Patient
    - i. Airway/Breathing- what equipment is being used, BiPAP, oxygen, etc.
    - ii. Circulation – IV medications running (type and #), feeding tube, ECMO, etc.
    - iii. Physical assessment – CT, casts, drains
  - b. In the room
    - i. Machines not in use – PD, Bipap
    - ii. Mobility – specialized wheelchair in room
2. Each patient will be categorized by maximum needs of each resource type (farthest category to the right).
  - a. For example, a patient who is on room air on a regular diet but is on a basal rate narcotic medication would be categorized as Yellow.

**COMPUTER ASSESSMENTS USING THE TRAIN**  
**MATRIX**

## HELPFUL HINTS FOR COMPUTER CODING

We have found that computerization of this matrix decreases impact to nursing workflow and is more accurate and timely than when used manually. There may be institutions which do not yet have this capability, but which may grow to have them. We also recognize that multiple electronic medical record products are available. Each product will require different algorithms and coding elements. The following are helpful hints which we have used to successfully code the TRAIN matrix into our electronic medical record:

- The most accurate data for Life Support, Mobility and Nutrition resource types were pulled from nursing documentation
- The most accurate data for Pharmacy was pulled from the electronic medical administration record
- When programming the algorithm using the TRAIN matrix, categorization occurs with the highest resource need
- If data is documented in multiple places within the electronic chart, the coding should include both places and use the most recently charted data
- For Life Support and Nutrition, data is pulled over time (8 hours) to include patients who need intermittent ventilatory or nutritional support
- All categorization should be compiled into a report which is easily accessible
  - We recommend that the reports are printed once a shift for hospitals with high acuity where patient status can fluctuate more frequently
  - We recommend that these reports are made available to both unit and administrative leadership

## **REFERENCES**

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2. Romig, L. (2002). Pediatric triage. A system to JumpSTART your triage of young patients. *Journal of Emergency Management*. 27(7), 52-58
3. Cohen R, Murphy B, Ahern T, Hackel A. (2010). Regional Disaster Planning for Neonatology. *Journal of Perinatology*, 30: 709-711.
4. Marcin JP, Pollack, MM, (2002). Triage scoring systems, severity of illness measures, and mortality predictions models in pediatric trauma. *Crit. Care Med* 30: 11 (Suppl) S457-S467.

# Appendix A

**TRAIN ASSESSMENT FORM**

**Date:**            **Time:**            **Unit:**

<b>BED NUMBER</b>	<b>PATIENT NAME</b>	<b>BLUE</b>	<b>GREEN</b>	<b>YELLOW</b>	<b>RED</b>
<b>TOTALS</b>					



# Appendix B.1



Lucile Packard  
Children's Hospital  
at Stanford

**OEM** EMERGENCY  
MANAGEMENT  
Stanford University Medical Center

# Using the TRAIN Matrix Self-Assessment Tool: Cases



Cases written by Anna Lin, MD

Edited by Kristine Taylor, RN

Lucile S. Packard Children's Hospital  
Stanford University Medical Center

May 2012



## Case #1

Johnny is a 5 year old boy who was admitted for asthma. He has a peripheral IV and is receiving maintenance fluids. He is requiring 2 lpm nasal cannula oxygen for support of his hypoxia. He is on oral steroids and inhaled albuterol.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #2

Joy is a 3 day old term newborn baby who is feeding well and gaining weight appropriately. She has not needed phototherapy and discharge is pending her mother's release after the C-section.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #3

Tommy is a 9 year old who sustained a dislocated femur fracture and requires traction in a cast. He has been using patient controlled analgesia with a basal rate. He has an epidural for additional pain control. His antibiotics were discontinued this morning, and he is tolerating a regular diet.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #4

Neveah is a 3 day old ex-29-week premature baby girl who has persistent pulmonary hypertension. She is requiring high frequency oscillatory ventilation with inhaled nitric oxide. She has been NPO and is on total parenteral nutrition.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #5

Katie is a 5 week old baby girl who was admitted for fever without source. She was found to have an E. coli urosepsis with bacteremia and is on daily intravenous ceftriaxone . She is otherwise breastfeeding without difficulty.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #6

Janice is a 12 year old with quadriplegic spastic cerebral palsy, developmental delay and seizure disorder admitted for pneumonia. She is on intravenous antibiotics. She is wheelchair-bound. She recently had a G-tube placed and receives a combination of bolus feeds during the day and continuous feeds at night. At baseline, she receives BiPAP at night, but has been on BiPAP throughout the day since she has been ill.

- Using the TRAIN Matrix, how would this patient be categorized?





## Case #7

Polly is a 6 month old ex-32-week premature infant girl who has short bowel syndrome due to necrotizing enterocolitis. She was admitted 3 days ago with fever and was found to have a central line infection. She is currently on intermittent IV antibiotics for the infection. Because of her short gut, she is not able to tolerate enteral feeds and has been on a 12 hour cycle of total parenteral nutrition.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #8

Kevin is a 3 year old previously healthy boy who was admitted a half hour ago with scorpion envenomation. Because the antivenin is not readily available, he was electively intubated and placed on a midazolam drip at 6 mg/kg/hr.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #9

Camila is a 3 year old who was admitted for Kawasaki disease. She received IVIG last night and is now on high dose aspirin. She has been off IV fluids, is feeding well and is currently being monitored for fever after her IVIG treatment.

- Using the TRAIN Matrix, how would this patient be categorized?



## Case #10

James is a 6 year old who was admitted for asthma exacerbation, respiratory distress and hypoxia. He is requiring IV steroids, IV fluids and continuous albuterol treatments.

- Using the TRAIN Matrix, how would this patient be categorized?

# Appendix B.2



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**OEM** EMERGENCY  
MANAGEMENT  
Stanford University Medical Center

# Using the TRAIN Matrix Self-Assessment Tool: Cases



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Edited by Kristine Taylor, RN

Lucile S. Packard Children's Hospital  
Stanford University Medical Center  
May 2012



## Case #1

Johnny is a 5 year old boy who was admitted for asthma. He has a peripheral IV and is receiving maintenance fluids. He is requiring 2 lpm nasal cannula oxygen for support of his hypoxia. He is on oral steroids and inhaled albuterol.

- Using the TRAIN Matrix, how would this patient be categorized?



Johnny is a 5 year old boy who was admitted for asthma. He has a peripheral IV and is receiving maintenance fluids. He is requiring 2 lpm nasal cannula oxygen for support of his hypoxia. He is on oral steroids and inhaled albuterol.

**Johnny would fall into the GREEN category.**

**Triage by Resource Allocation for IN-patients**  
**[TRAIN]<sup>©</sup>**

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

<b>Life Support</b>	<p>Minimal = Hood or Low Flow Cannula O2, Peritoneal Dialysis, etc.</p> <p>Moderate-Stable = Conventional Ventilator, CPAP/BiPAP/Hi-Flow, Externally paced, chest tube, wt &lt; 1500 grams, etc.</p> <p>Max-Unstable = Highly specialized equipt., e.g., HFOV, ECMO, iNO, CVVH, Berlin Heart, etc.</p>
<b>Mobility</b>	<p>Car/Carseat = able to ride in automobile with age-appropriate restraints</p> <p>Transport rig = age-appropriate rig with equipment for connecting to ambulance</p> <p>Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric</p>





## Case #2

Joy is a 3 day old term newborn baby who is feeding well and gaining weight appropriately. She has not needed phototherapy and discharge is pending her mother's release after the C-section.

- Using the TRAIN Matrix, how would this patient be categorized?



Joy is a 3 day old term newborn baby who is feeding well and gaining weight appropriately. She has not needed phototherapy and discharge is pending her mother's release after the C-section.

Joy would fall into the **BLUE** category.

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

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<b>Mobility</b>	Car/Carseat = able to ride in automobile with age-appropriate restraints Transport rig = age-appropriate rig with equipment for connecting to ambulance Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric



## Case #3

Tommy is a 9 year old who sustained a dislocated femur fracture and requires traction in a cast. He has been using patient controlled analgesia with a basal rate. He has an epidural for additional pain control. His antibiotics were discontinued this morning, and he is tolerating a regular diet.

- Using the TRAIN Matrix, how would this patient be categorized?



Tommy is a 9 year old who sustained a dislocated femur fracture and requires traction in a cast. He has been using patient controlled analgesia with a basal rate. His antibiotics were discontinued this morning, and he is tolerating a regular diet.

Tommy would fall into the **YELLOW** category

***Triage by Resource Allocation for IN-patients [TRAIN]<sup>©</sup>***

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<b>Mobility</b>	Car/Carseat = able to ride in automobile with age-appropriate restraints Transport rig = age-appropriate rig with equipment for connecting to ambulance Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric



## Case #4

Neveah is a 3 day old ex-29-week premature baby girl who has persistent pulmonary hypertension. She is requiring high frequency oscillatory ventilation with inhaled nitric oxide. She has been NPO and is on total parenteral nutrition.

- Using the TRAIN Matrix, how would this patient be categorized?



Neveah is a 3 day old ex-29-week premature baby girl who has persistent pulmonary hypertension. She is intubated, on high frequency oscillatory ventilation and requiring inhaled nitric oxide. She has been NPO and is on total parenteral nutrition.

***Triage by Resource Allocation for IN-patients [TRAIN]<sup>®</sup>***

<b>Transport</b>	<b>Car</b>	<b>BLS</b>	<b>Critical Care</b>	<b>Specialized</b>
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Neveah would fall into the **RED** category



## Case #5

Katie is a 5 week old baby girl who was admitted for fever without source. She was found to have an E. coli urosepsis with bacteremia and is on daily intravenous ceftriaxone . She is otherwise breastfeeding without difficulty.

- Using the TRAIN Matrix, how would this patient be categorized?



Katie is a 5 week old baby girl who was admitted for fever without source. She was found to have an E. coli urosepsis with bacteremia and is on daily intravenous ceftriaxone . She is otherwise breastfeeding without difficulty.

Katie would fall into the **GREEN** category.

***Triage by Resource Allocation for IN-patients [TRAIN]<sup>©</sup>***

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<b>Mobility</b>	Car/Carseat = able to ride in automobile with age-appropriate restraints Transport rig = age-appropriate rig with equipment for connecting to ambulance Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric





## Case #6

Janice is a 12 year old with quadriplegic spastic cerebral palsy, developmental delay and seizure disorder admitted for pneumonia. She is on intravenous antibiotics. She is wheelchair-bound. She recently had a G-tube placed and receives a combination of bolus feeds during the day and continuous feeds at night. At baseline, she receives BiPAP at night, but has been on BiPAP throughout the day since she has been ill.

- Using the TRAIN Matrix, how would this patient be categorized?



Janice is a 12 year old with quadriplegic spastic cerebral palsy, developmental delay and seizure disorder admitted for pneumonia. She is on intravenous antibiotics. She is wheelchair-bound. She recently had a G-tube placed and receives a combination of oral feeds during the day and continuous feeds at night. At baseline, she receives BiPAP at night, but has been on BiPAP throughout the day since she has been ill.

Janice would fall into the **YELLOW** category

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## Case #7

Polly is a 6 month old ex-32-week premature infant girl who has short bowel syndrome due to necrotizing enterocolitis. She was admitted 3 days ago with fever and was found to have a central line infection. She is currently on intermittent IV antibiotics for the infection. Because of her short gut, she is not able to tolerate enteral feeds and has been on a 12 hour cycle of total parenteral nutrition.

- Using the TRAIN Matrix, how would this patient be categorized?



Polly is a 6 month old ex-32-week premature infant girl who has short bowel syndrome due to necrotizing enterocolitis. She was admitted 3 days ago with fever and was found to have a central line infection. She is currently on intermittent IV antibiotics for the infection. Because of her short gut, she is not able to tolerate enteral feeds and has been on a 12 hour cycle of total parenteral nutrition.

Polly would fall into the **RED** category.

***Triage by Resource Allocation for IN-patients [TRAIN]<sup>®</sup>***

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<b>Mobility</b>	Car/Carseat = able to ride in automobile with age-appropriate restraints Transport rig = age-appropriate rig with equipment for connecting to ambulance Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric



## Case #8

Kevin is a 3 year old previously healthy boy who was admitted a half hour ago with scorpion envenomation. Because the antivenin is not readily available, he was electively intubated and placed on a midazolam drip at 6 mg/kg/hr.

- Using the TRAIN Matrix, how would this patient be categorized?



Kevin is a 3 year old previously healthy boy who was admitted a half hour ago with scorpion envenomation.

Because the antivenin is not readily available, he was electively intubated and placed on a midazolam drip at 6 mg/kg/hr.

Kevin would fall into the **YELLOW** category.

***Triage by Resource Allocation for IN-patients [TRAIN]<sup>©</sup>***

<b>Transport</b>	<b>Car</b>	<b>BLS</b>	<b>Critical Care</b>	<b>Specialized</b>
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<b>Mobility</b>	Car/Carseat = able to ride in automobile with age-appropriate restraints Transport rig = age-appropriate rig with equipment for connecting to ambulance Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric



## Case #9

Camila is a 3 year old who was admitted for Kawasaki disease. She received IVIG last night and is now on high dose aspirin. She has been off IV fluids, is feeding well and is currently being monitored for fever after her IVIG treatment.

- Using the TRAIN Matrix, how would this patient be categorized?



Camila is a 3 year old who was admitted for Kawasaki disease. She received IVIG last night and is now on high dose aspirin. She has been off IV fluids, is feeding well and is currently being monitored for fever after her IVIG treatment.

Camila would fall into the **BLUE** category.

***Triage by Resource Allocation for IN-patients [TRAIN]<sup>®</sup>***

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

<b><i>Life Support</i></b>	Minimal = Hood or Low Flow Cannula O2, Peritoneal Dialysis, etc. Moderate-Stable = Conventional Ventilator, CPAP/BiPAP/Hi-Flow, Externally paced, chest tube, wt < 1500 grams, etc. Max-Unstable = Highly specialized equipt., e.g., HFOV, ECMO, iNO, CVVH, Berlin Heart, etc.
<b><i>Mobility</i></b>	Car/Carseat = able to ride in automobile with age-appropriate restraints Transport rig = age-appropriate rig with equipment for connecting to ambulance Immobile = Unsafe to move without special equipment e.g., neurosurgical/bariatric





## Case #10

James is a 6 year old who was admitted for asthma exacerbation, respiratory distress and hypoxia. He is requiring IV steroids, IV fluids and continuous albuterol treatments.

- Using the TRAIN Matrix, how would this patient be categorized?



James is a 6 year old who was admitted for asthma exacerbation, respiratory distress and hypoxia. He is requiring IV steroids, IV fluids and continuous albuterol treatments.

James would fall into the **YELLOW** category.

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

<b>Transport</b>	<b>Car</b>	<b>BLS</b>	<b>Critical Care</b>	<b>Specialized</b>
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<b>Mobility</b>	Car/Carseat	Wheelchair/stretchers	Transport rig	Immobile
<b>Nutrition</b>	PO Feeds	PO/NG	NG/PO + TPN/IL	NPO & TPN/IL
<b>Pharmacy</b>	PO Meds	PO Meds/IV Meds/IV Fluids	IV Drip x1	IV drip ≥ 2

<b>Life Support</b>	<p>Minimal = Hood or Low Flow Cannula O2, Peritoneal Dialysis, etc.</p> <p>Moderate-Stable = Conventional Ventilator, CPAP/BiPAP/Hi-Flow, Externally paced, chest tube, wt &lt; 1500 grams, etc.</p> <p>Max-Unstable = Highly specialized equipt., e.g., HFOV, ECMO, iNO, CVVH, Berlin Heart, etc.</p>
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# Appendix C



Lucile Packard  
Children's Hospital  
at Stanford

**OEM** EMERGENCY  
MANAGEMENT  
Stanford University Medical Center

# Preplanning Disaster Triage for Pediatric Hospitals



TRAIN

Triaging by Resource Allocation for Inpatients

# Objectives

- Be able to ***quickly assess*** and ***accurately request*** the ***right resources*** from the emergency operations center.
- Streamline communication with a common code.
- Implement a standardized and automated inpatient hospital evacuation triage system with ***minimal impact to workflow.***
- Increase awareness and disaster preparedness across the institution.

# Emergency vs Disaster

“A ***disaster*** is a type of emergency that, due to its complexity, scope, or duration, threatens the organization’s capabilities and requires ***outside assistance*** to sustain [patient] care, safety, or security functions.”

# Status of Medical Triage

- Designed for Mass Casualty Events [MCE].
- Adapted from military for battlefield use.
- Currently the only types of trauma scoring systems involve pre-hospitalization assessment and predictors of mortality <sup>2-4</sup>.
- Difficult to apply during hospital disaster.

# Background

- Institute of Medicine (2006) recommends pediatric preparedness in developing disasters plan that address pediatric surge capacity.
  - Understanding resource availability
  - Knowing resource needs in advance



# Present - Challenges

- Limited transportation resources
- No standardized system currently exist for rapidly triaging patients in alignment with the available transportation resources.
- An evacuation of a free standing children's hospital would immediately be a regional incident due to the nature and complexity of the patients.

# TRAIN - Solution

## Triaging by Resource Allocation for Inpatients

1. TRAIN will facilitate **rapid triage** of patients' transport needs before a disaster requiring evacuation occurs.
2. It will provide the ability to quickly and accurately request the right resources from the County in the event of an evacuation.
3. It will increase awareness and readiness for Emergency Operations across the institution.

# TRAIN

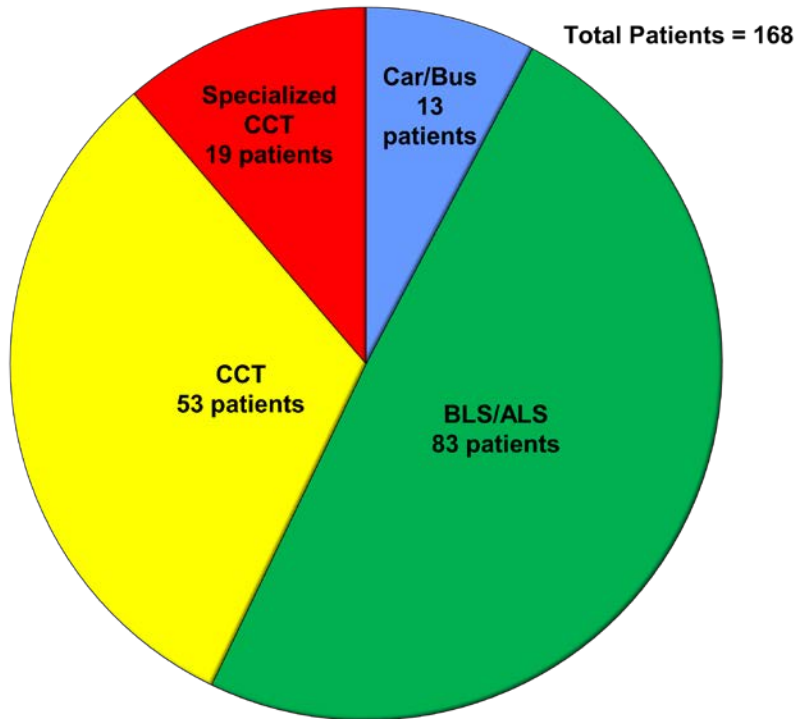
## Triage by Resource Allocation for IN-patients [TRAIN]®

<b>Transport</b>	<b>Car</b>	<b>BLS</b>	<b>Critical Care</b>	<b>Specialized</b>
<b>Life Support</b>	Stable	Minimal	Moderate-Stable	Max-Unstable
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# An example of TRAIN at work

Lucile Packard Children's Hospital: A Day at a Glance



- County resource 50-64 BLS/ALS
- Patients assessed as blue maybe rapidly discharged in the event of evacuation or to increase surge capacity.
- This hospital would need over 70 critical care transports.

# Conclusion

- **TRAIN:**

- transfers patients at the appropriate level of care.
- decreases the amount of time in assessing patients' needs for evacuation.
  - When used manually adds about 3 minutes to daily rounds.

# Integration of TRAIN into electronic medical record

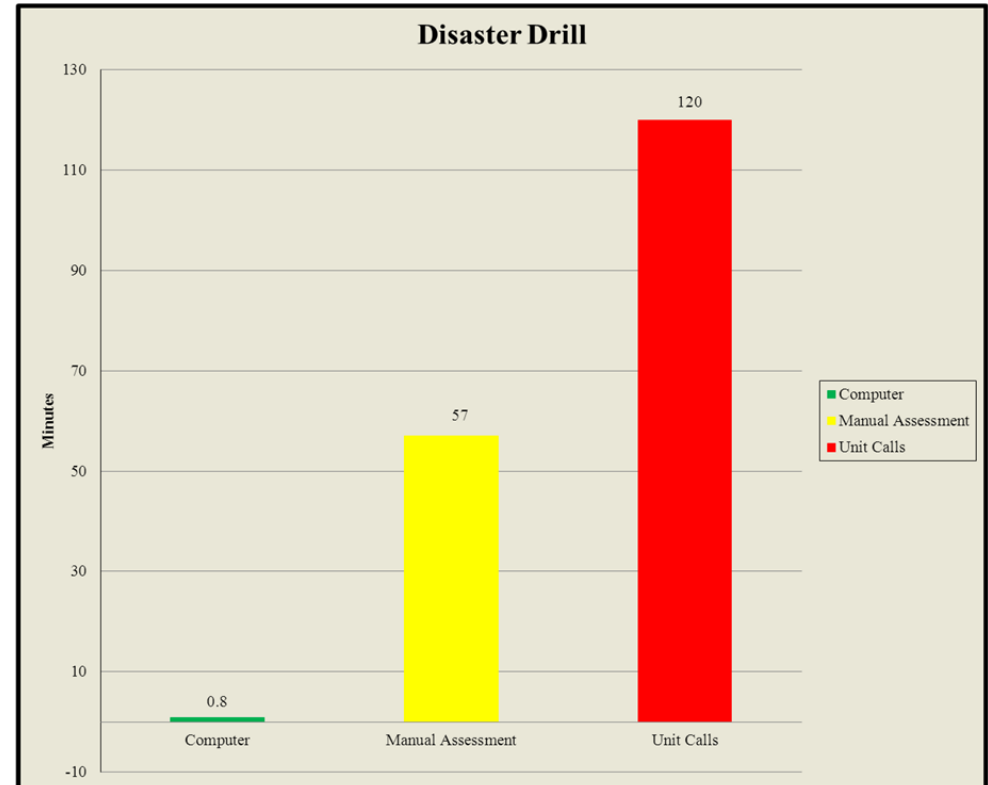
- Data from charting in EMR will be pulled into an automated algorithm
  - Categorization updates with doctor orders and nursing charting.
  - Integration minimizes impact to nursing workflow
- Reports from EMR will auto-print for the unit nurse leaders and administrative nursing supervisors twice a day

# Disaster Drill: Patient transport needs assessment times

Computer generated  
TRAIN report – 48  
second

Manual use of the TRAIN  
Matrix – 57 minutes

Command center  
request without TRAIN -  
*over 2 hours*



# Acknowledgements Project Team

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- Patricia Wilder, Admin Dir., Patient Care Services
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