# Accuracy of Initial & Secondary Triage & Triage Tag Use During A Simulated Mass Casualty Incident

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## Introduction

- Triage tags are a system of communication developed for the transmission of patient information during Mass Casualty Incidents (MCI), when resources are stretched thin and the continuity of person-to-person communication may be disrupted.


- Research and anecdotal evidence demonstrates inconsistent use of triage tags and no investigation on accuracy has been conducted despite many commercially available options.
- START method of triage has been one of dominant triage methods used across agencies since the 1980s for initial triage, but the standard for secondary triage, e.g., medical protocol, is typically a different standard.
- Paramedics were less likely to use triage tags in actual MCIs versus MCI drills, and even less likely to complete the triage card[5]
- During the Virginia Tech shooting in 2007, the Orlando Pulse Nightclub, and Las Vegas Route 91 shootings of 2017, first responders utilized the START protocol but did not utilize triage tags for all patients according to government reports and interviews[6,7,8]
- While triage protocols have been extensively studied both in the United States and globally, the accuracy of secondary triage & use of triage tags have not.

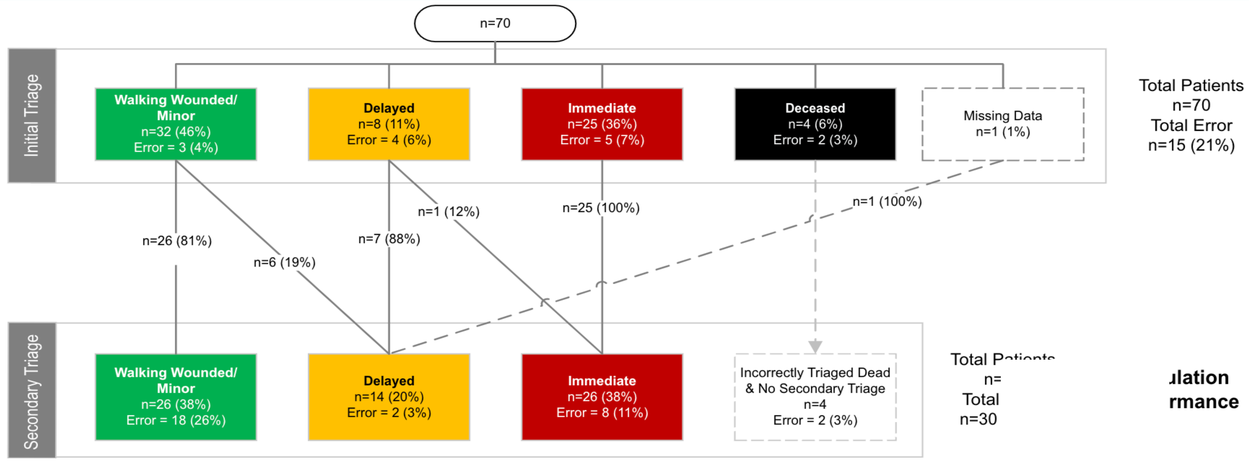
Mass Casualty Event → Initial Triage with Tape → Secondary Triage with Tags → Transport to Hospital

| | Initial Triage | Secondary Triage |
|---|---|---|
| **Triage Criteria** | START triage | Medical protocol |
| **Tagging Method** | Triage tape | Triage tags |
| **Performed By** | First responder | EMS |

## Methods

- Data collection was performed at the Dwight D. Eisenhower Airport full-scale disaster simulation.
- Patient placards, triage tape, and tags were collected from simulated patients after simulated transport for qualitative and quantitative review.
- Results were compared to a standard for each patient's triage provided by the local, participating EMS agency.

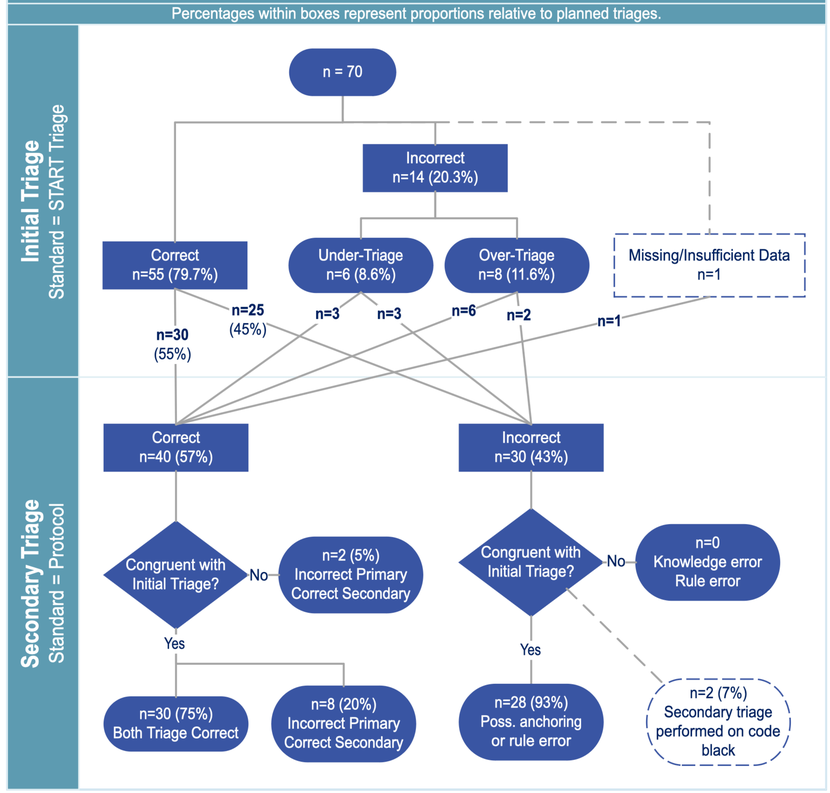
## Results




- 70 simulated patients were present, 69 triage tapes and 70 triage tags were collected.
- Over- and under-triage of the initial triage was consistent with expectations in the literature.
- Five different tag styles were used throughout the simulation, two of which are no longer commercially available.
- Two patients were assigned to the deceased/expectant category incorrectly, and therefore were not presented for secondary triage.
- No patients were downgraded from their initial triage; 15 (21%) should have been: 11 red, 4 yellow.
- Only 23% of tags had any information transcribed: name (14.3%), age (10%), chief complaint (8.6%).
- 57% of tags were marked (or left as) contaminated, despite no patient/scenario information provided.

### Individual Patient Triage Accuracy & Error Analysis

Percentages within boxes represent proportions relative to planned triages.




## Conclusions

- Triage tags have been sold to disaster response agencies across the U.S. for decades but have never been subjected to any form of usability testing.
- Triage tag variations demonstrate creeping featurism, increasing both knowledge and time burden for use, possibly contributing to use errors. E.g., the number of tags indicating patient status as contaminated (stub left on) vs not-contaminated (stub torn off) was not statistically different than chance (Chi squared = 1.43, $p$ = .23), suggesting paramedics did not know how to use the tags properly.
- The majority of triage tags (77%) do not contain any transcribed information, impairing their use as a communication tool.
- Results suggest a reluctance to downgrade.
- Secondary triage errors consistent with initial triage suggest either a mistake (i.e., correct use of the incorrect standard) or anchoring bias given the initial triage.
- Current literature, policies, protocol, and results indicate there is no practice or expectation of re-evaluating patients initially triaged as dead/expectant and left in the field. Over-triage of this category is a catastrophic outcome for both the patient and response organizations.
- The use of multiple varieties of tags create additional knowledge burden and compound potential for confusion during a high-stress situation.

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