

**Introduction:** There is a consensus that there lacks a standard for primary triage during mass casualty incidents. This is further compounded by a dearth of high quality research on the topic. Some studies suggest the superiority of SALT triage versus other triage systems, however, findings have not widely transitioned to clinical practice. We believe that despite specialized training including that in emergency medicine or emergency medical services (EMS), there will be significant variability amongst triage determination and use of triage methods. This study intends to analyze various provider skill levels and their accuracy of triage determination.

**Method:** In a disaster exercise, a group of providers trained to use START triage were expected to triage, treat and determine transport order of the patients from a scenario of a simulated intentional radiological dispersal device (RDD) detonation with multiple casualties. Another group of providers trained to use SALT triage were expected to triage, treat, and determine transport order of patients from a scenario of a building collapse after a hurricane to assess SALT triage with the participating officers. Additional cohorts of EMS clinicians will be given the same case scenarios and asked to triage, treat when necessary, and determine transport order of the patients.

**Results:** The initial data from the RDD exercise includes 102 patient case scenarios with 27 minimal (green), 40 delayed (yellow), and 35 immediate (red) patients. The providers involved in the exercise are trained at minimum to NREMT EMT level. Results showed an under-triage rate of 7.8%, an over-triage rate of 20.6% and overall accuracy of 71.6% when using START triage.

**Conclusion:** The undertriage rate with START is 7.8% is higher than the generally acceptable rate of less than 5%. Our research is ongoing and we anticipate completion in 2023. We hope that our research provides future direction to improve triage in disaster scenarios.

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### The Advancement of the Scientific Study of Prehospital MCI Response from TIIDE to NIGHTINGALE: A Scoping Review

*Eric Weinstein MD MScDM<sup>1</sup>, Joseph Cuthbertson MS<sup>1</sup>, Teri Lynn Herbert MS MLIS<sup>2</sup>, Michelangelo Bortolin MD<sup>1</sup>, Sabina Magalini MD<sup>3</sup>, Daniele Gui MD<sup>3</sup>, Mariana Helou MD MScDM<sup>4</sup>, Roberto Faccincani MD<sup>5</sup>, Luca Ragazzoni MD PhD<sup>1</sup>, Marta Caviglia MD<sup>1</sup>*

1. UPO, Novara, Italy
2. MUSC, Charleston, USA
3. Catholic University of the Sacred Heart, Rome, Italy
4. Lebanese American University, Beirut, Lebanon
5. ESTES, St. Pölten, Austria

**Introduction:** The European Union Horizon 2020 research and innovation funding program awarded the NIGHTINGALE grant to develop a toolkit to support first responders engaged in prehospital (PH) mass casualty incident (MCI) response. To reach the projects' objectives, the

NIGHTINGALE consortium adapted the Translational Science (TS) process. The aim of this study is to perform the first TS (T1) phase PRISMA scoping review to extract data that will be used to guide the creation of the initial evidence-based second TS phase (T2) modified Delphi statements for a subsequent study.

**Method:** The consortium was divided into three work groups (WGs) MCI triage, Prehospital Life Support and Damage Control (PHLSDC) and Prehospital Processes (PHP). Each WG conducted simultaneous literature searches following the PRISMA extension for scoping review with a common research strategy sharing MCI related search terms and then terms specific for each WG. Final included articles went through data extraction based on identified themes and sub-themes from PH MCI response literature to be used to create the future statements.

**Results:** The initial search yielded 925 total references to be considered for a title and abstract review (PH Triage 311, PHLSDC 329, PHP 285), then 483 articles for a full reference review (MCI Triage 111, PHLSDC 216, PHP 156) and 155 articles for the database extraction process (MCI Triage 27, PHLSDC 38, PHP 90).

**Conclusion:** The progression of the study of prehospital MCI response enabled NIGHTINGALE partners to methodically obtain information that will contribute to each WG's creation of initial T2 modified Delphi statements.

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### A Qualitative Study on the Use of the Hospital Safety Index and the Formulation of Recommendations for Future Adaptations.

*Hamdi Lamine PhD<sup>1,2</sup>, Alessandro Lamberti-Castronuovo MD<sup>2</sup>, Prinka Singh<sup>2</sup>, Naoufel Chebili MD<sup>3</sup>, Chekib Zedini MD<sup>1</sup>, Nebil Achour<sup>4</sup>, Luca Ragazzoni MD, PhD<sup>2</sup>, Martina Valente PhD<sup>2</sup>*

1. Faculty of Medicine of Sousse, Sousse, Tunisia
2. CRIMEDIM - Center for Research and Training in Disaster Medicine, Humanitarian Aid and Global Health, Università Del Piemonte Orientale, Novara, Italy
3. Sahoul University Hospital, Sousse, Tunisia
4. School of Allied Health, Faculty of Health, Education, Medicine and Social Care, Anglia Ruskin University, East Road, Cambridge, United Kingdom

**Introduction:** Hospitals around the world need to be safe and prepared to face disasters, being these man-made or caused by natural hazards. The Hospital Safety Index (HSI) is a tool developed by the World Health Organization (WHO) that allows access to the level of preparedness of hospitals; it is the most widely used instrument of its kind. Although the HSI is frequently used by hospitals and healthcare facilities around the world, scientific literature on its application in real life is scarce and qualitative studies are absent. By adopting a qualitative methodology, this study aims to investigate the use of the HSI to assess disaster preparedness in hospitals and healthcare facilities, identify challenges and facilitators of

the HSI use, and devise recommendations for future adaptations of the tool.

**Method:** A retrospective qualitative study employing semi-structured online interviews was conducted to gather opinions and perspectives of professionals using the HSI to assess disaster preparedness. Participants were recruited by contacting via email the authors of scientific publications on the use of the HSI.

**Results:** In total, nine people from three different countries (Serbia, Sri Lanka, and Indonesia) and having different professional backgrounds agreed to participate in this study. They shared the reasons for their choice of using the HSI, against other tools, as well as the steps taken before and during data collection. Strengths and weaknesses of the HSI were identified and authors reported the challenges they encountered in the preparatory phase and during data collection. Modifications of the tool and recommendations for the future were proposed targeting both researchers and hospital managers.

**Conclusion:** As far as the authors know, this is the first qualitative study examining the methodological implications of using the HSI and providing practical recommendations that can advance the HSI tool and foster its use for disaster preparedness assessments worldwide.

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### Gallstone Ileus, A Rare Yet Deadly Cause of Small Bowel Obstruction

Paul Yugendra MD<sup>1</sup>, Chinmaya Joshi MBBS<sup>2</sup>

1. Singhealth, Singapore, Singapore
2. Sengkang Hospital, Singapore, Singapore

**Introduction:** Gallstone ileus is a rare cause of intestinal obstruction. It commonly affects older patients with significant medical conditions. This disease has a high mortality rate (12–17%), hence should be an important diagnosis to consider, especially as the geriatric population grows worldwide.

#### Method: Case Report:

84-year old gentleman, with diabetes and ischemic heart disease, presented with diarrhea, vomiting and fever for one day. He was febrile, tachycardic and hypotensive. There was lower abdominal tenderness with guarding. Labs done revealed metabolic acidosis with a raised lactate along with raised inflammatory markers. Impression was intra-abdominal sepsis, with a need to rule out mesenteric ischemia. He underwent CTAP which revealed gallstone ileus. The gallbladder was collapsed and pneumobilia was present in keeping with fistulation. Dilated small bowel loops were present with a transition point at the distal jejunum or proximal ileum, where there are two gallstones. Patient underwent exploratory laparotomy. There was an obstructing large gallstone 100cm from the DJ flexure. After removal of gallstone and decompression, the bowel was pink with areas of bruising. Patient was hypotensive intra-operatively likely contributed by septic shower, requiring dual vasopressors. He was transferred to the ICU post-operatively and

developed cardiogenic shock with type 2 respiratory failure precipitated by sepsis. He demised on Day 2 post-operatively.

**Results:** Gallstone ileus is caused by intestinal impaction of a gallstone that has migrated through a cholecystoenteric fistula. The classic radiologic sign of gallstone ileus is Rigler's triad. This is only picked up 15% of the time on plain abdominal x-rays. Early CT scans can reveal Rigler triad up to 80% of the time. Surgical management remains the cornerstone of treatment.

**Conclusion:** Gallstone ileus remains a diagnostic challenge as patients present with non-specific signs and symptoms. It is prudent for emergency physicians to consider this disease in elderly patients who present with small bowel obstruction.

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### EMS Calls for Service at Adult Detention Centers—A Descriptive Study

Jeffrey Wood PA-C, Aaron Klassen MD, MA, M Rogerson MAS, Matthew Sztajnkrzyer MD, PhD  
Mayo Clinic, Rochester, USA

**Introduction:** Incarcerated individuals represent a particularly vulnerable sector of society, with a disproportionate burden of drug use, mental health problems, and chronic illness. The purpose of this study was to perform a descriptive analysis of EMS response to detention facilities.

**Method:** Retrospective review of EMS calls to detention facilities between 1/1/2002 and 12/31/2021 within our EMS system. Data were analyzed using descriptive statistics and Student's t-test. This study was deemed exempt by the Institutional Review Board.

**Results:** 3,126 requests for service occurred during the study period. Average patient age was 40.2 ± 13.3 years, compared with 54.0 ± 25.9 years for non-detention center calls (p < 0.001). The majority (80.8%) of patients were male. Mean scene time was 14:13 ± 7:49 minutes, compared with 12:04 ± 12:27 minutes (p < 0.01) for non-detention center calls. The most common complaints were chest pain (15.6%), trauma (13.6%), seizure (11.7%), behavioral (9.2%), and overdose (4.7%); OB requests accounted for 5.8% of calls for female patients. Most calls (86.0%) to detention centers involved incarcerated individuals. Four percent of patients refused treatment; 27.8% of these patients were still transported. One hundred and eight patients were identified by EMS as not needing transport. Consent for treatment/transport by the patient was documented in 5.2% of charts.

**Conclusion:** Within our 911 service area, calls to detention facilities are not uncommon, predominantly involve incarcerated individuals, and are primarily due to chest pain, trauma, or seizures. Consent for treatment/transport was not documented in most EMS encounters. Further study is needed to better understand the health care needs of these patients, including ability to consent and access to chronic medications.

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