

Chapter

5

Triage

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Preface

Triage is the emergent medical practice of sorting injuries and casualties into an order of care that will provide the maximum benefit for the largest number of patients. In mass casualty events or sudden surge situations, the standard triage performed by most emergency departments (EDs) is neither sufficient nor designed to meet the needs of so many at once. Thus, in disasters, the triage methods of the ED need to be modified. This chapter will review the background to triage and mass casualty events and triage models that are available for both the field environment as well as the receiving facility.

Contents

Preface	175
Mass Casualty Triage Systems	175
MASS Triage	176
RPM (START) Triage	177
References	179

Mass Casualty Triage Systems

In ordinary situations, physicians are trained to do as much good as possible for each individual sequential patient, but this paradigm must change in Mass Casualty Incident (MCI) situations.

Mass casualty triage is a dynamic and inherently complex operation. A man-made or natural disaster such as a hurricane, toxic chemical release, or act of terrorism may require that a large number of patients be evaluated and prioritized in an extremely short period of time. Triage is that prioritization and involves ranking injuries and casualties according to the level of care they should receive in a given set of circumstances. It has been described as “the most important initial medical function during a mass casualty event” and the “system that occurs when available resources are insufficient to provide for the needs of all patients.”¹

The sheer number of casualties associated with MCIs dictates that caregivers must now do as much good for as many as possible. Put another way, MCIs cause physicians to shift from individual health to population health. For

example, in 1999, 3 nuclear plant workers in Tokaimura, Japan, were accidentally exposed to a significant dose of ionizing radiation. The radiation made them extremely ill and they received state-of-the-art care for Acute Radiation Syndrome (ARS). Now, suppose a 10-kiloton improvised nuclear device was detonated by terrorists in a major city. Perhaps half a million or more victims within a mile of ground zero would die instantly. What about the hundreds of thousands farther away from the blast zone who will likely suffer significant thermal burns as well as radiation exposure? How can that many casualties with life-threatening injuries be cared for? This is where the concept of *triage* becomes extremely critical. In the case of the 3 nuclear workers mentioned earlier, the victims were triaged as “immediate care” and transported to an appropriate tertiary acute care center, which was already awaiting transport and ready to begin life-saving treatment. In the latter case, however, the >100 000 casualties with thermal burns and ARS would be triaged as “expectant” (palliative only) because no healthcare system could provide state-of-the-art care for all these patients simultaneously. Instead, the system must concentrate on providing resources to the less severely injured who have a much better chance of survival.

The ideal triage method should be simple, reliable, reproducible, and subject to minimal interoperator variability.² Because a disaster may strike anywhere, there are many different players who could be involved in conducting triage such as emergency medical services, fire departments, volunteer first responders, or the military. Disasters also often overwhelm local resources and require multiple agencies such as those listed earlier to work together. Effective interoperability is essential, however, may be difficult if each agency uses discrete terminology and techniques. As Lerner stated “Large scale disaster require cross-jurisdictional cooperation and highlight the need for a national, standardized approach to mass casualty triage.”³

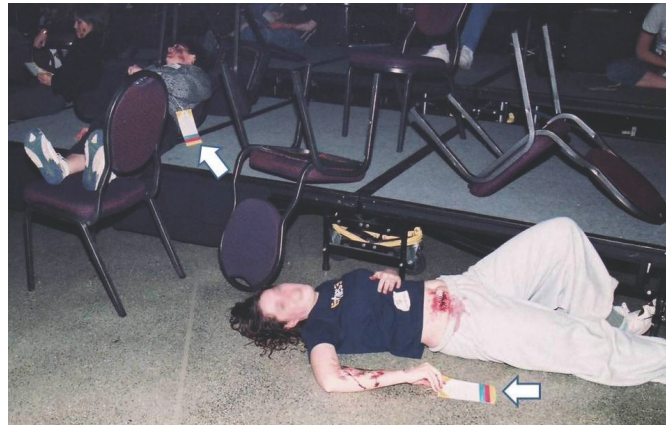
There are various triage systems in operation. Some of the more common triage schemes are Simple Triage and Rapid Treatment/Transport (START), Move, Assess, Sort, Send (MASS), Sacco triage method (STM), CareFlite, Sort, Assess, life-saving interventions, transport (SALT), and military triage. Although investigators anecdotally state that the START triage method is the most widely used in the United States, there are no firm data to support this nor the same could be said for Canada.⁴⁻⁶

Both the MASS (taught in the American Medical Association’s [AMA] BDLS Course) and the START (or Respirations-Pulse-Mental Status [RPM]) systems are outlined below. Both are based on strict physiologic criteria instead of anatomic criteria that had been used traditionally, but have been definitively shown to be poor triage predictors.²

MASS Triage

MASS stands for MOVE, ASSESS, SORT and SEND.⁷ First, consider the *MOVE*. One instructs the casualties in the area (perhaps with a bullhorn): “Everyone who can hear my voice and can move, please go to the area indicated and you will receive help” (e.g., the right corner of the field, etc). Those who can hear, understand, and follow the directions given are most likely not severely injured. They are now triaged as *MINIMAL* and are the lowest priority (tagged as GREEN). Next, the remaining casualties are told: “If you can hear me but cannot walk, move

an arm or a leg to indicate where you are and you will receive help.” Because they can hear and understand directions but cannot walk, they are triaged as *DELAYED* (tagged as *YELLOW*); they have sustained injury and need care but are not an emergent priority. The remaining casualties are now the *IMMEDIATE* (tagged as *RED*) priority. They are unresponsive



(or deaf as a result of a blast) and must be *assessed* individually. Each of these patients is examined using the A-B-C approach common in standard Emergency Medicine protocols. If a patient is not breathing, the airway is opened. If the patient breathes, he or she is tagged as *IMMEDIATE*. If opening the airway does not result in spontaneous breathing, the triage classification becomes *EXPECTANT* (BLUE or BLACK-tagged depending on which reference one reads) and one moves to the next patient. If the patient has uncontrolled bleeding, direct pressure is applied. Does the patient appear to have a fatal injury? If so, move on.

The next step is to *SORT* the patients using the *ID-ME* mnemonic (Immediate—Delayed—Minimal—Expectant). Here, one must remember that triage is a dynamic process. As one deals with the immediate patients (and evacuates them), the Delayed patients now become the new Immediate and so it continues until all the patients are cared for.

Finally, one must arrange to *SEND* the patients to appropriate facilities for further care. The Immediate patients may require air transportation, whereas the majority will require land-based ambulance transport. The Minimal patients likely will not need ambulance transport, but can usually be evacuated by bus. These patients should not be sent to already-overwhelmed hospitals. Instead, whatever first aid they need should be done at alternate sites.

RPM (START) Triage

Another popular triage system is the RPM or START Triage. RPM stands for Respirations-Pulse-Mental Status while START is Simple Triage and Rapid Treatment (see Figure 5-1).⁸ They both refer to the same system based on physiologic signs. RPM is the mnemonic for the order in which the signs are assessed to determine the triage category.

Once again, the triage process begins by calling out “If you can hear my voice and can walk, come over here and you will receive help.” Those who do as you say are considered “walking wounded” and are initially triaged *GREEN* (Minimal). They will need to be properly assessed as soon as practical in the “*GREEN* area” because a subgroup of the ambulatory actually will have significant, perhaps unappreciated injuries such as intra-abdominal bleeding.

Next, those who did not follow the command are assessed for Respirations. If the patient is apneic, the responder twice attempts to reposition the airway

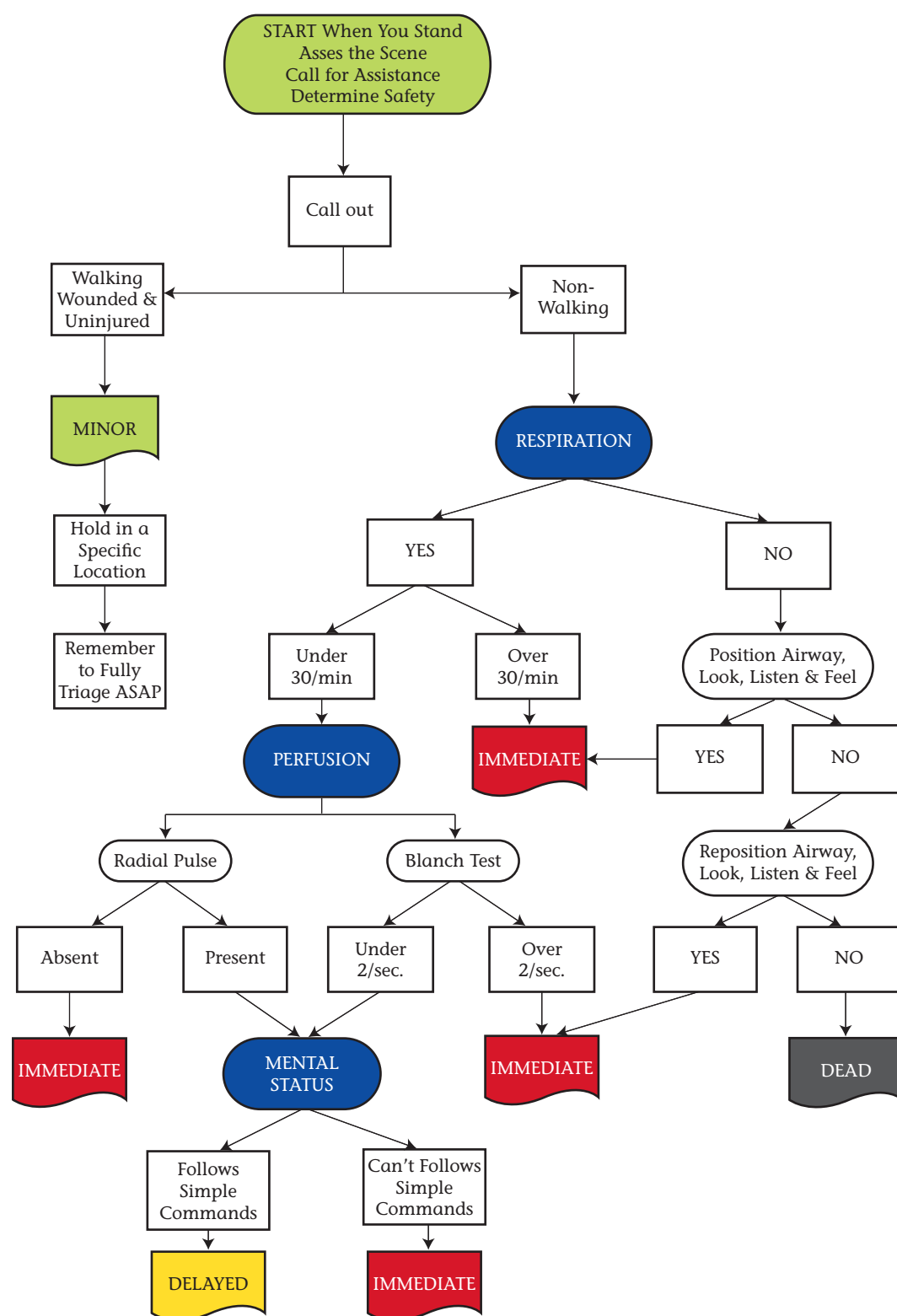


Figure 5-1: The RPM/START triage system.

(courtesy of Sonoma County, CA)⁸

to check for return of spontaneous respirations. If no respiration occurs, the triage category is BLACK (Expectant/Dead). On the other hand, if the patient has respirations, one assesses the rate. If the respiratory rate is >30 , the patient is triaged as RED (Immediate). For those patients with respiratory rate <30 , one next assesses Perfusion—either the radial pulse or capillary blanching. If a radial pulse is absent, or if capillary refill is >2 seconds, the patient is triaged as RED (Immediate). When the patient has a radial pulse or cap refill <2 seconds, one moves on to Mental status. Those patients who can follow simple commands are triaged as DELAYED (YELLOW tag), whereas those who are obtunded or confused are triaged IMMEDIATE (RED tagged).

In the discussion about color coding of triage groups in an MCI, BLACK (or BLUE) tagging (EXPECTANT) has been mentioned a number of times. Except for those with battlefield triage experience, most physicians have never been faced with leaving a living, injured person untreated. However, the ability to do so is critical in an MCI situation. This is a difficult experience even for those who have responded to prior disasters. This is why training and exercising in disaster triage is so important. Unfortunately, far too few physicians ever have the chance to train in disaster triage until an event occurs. This deficiency requires urgent remedy for the healthcare sector to be adequately prepared for future disasters.

In summary, the 2 triage methods described earlier exemplify the following characteristics of good triage systems:

- Simple
- Reliable
- Reproducible with minimal interoperator reliability

Bear in mind that there are other triage systems in use, particularly in the European Union. One should familiarize themselves with the system(s) in use locally and regionally. Also, please note that paediatric triage differs from adult triage and this is covered in Chapter 13.

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Appendix A

Example of a START Tag

AU:
Low res
Poor
quality
pixelated
Need
HI_RES.

Copyright: MEC 2003

Circle START Criteria Used To Select Patient Triage Category

START TRIAGE

All Walking Wounded **MINOR**

Respirations 30
Perfusion 2
Mental Status Can Do

RESPIRATIONS

YES NO
Over 30Min. Under 30Min. Position Airway YES NO
IMMEDIATE **IMMEDIATE** **DECEASED**

PERFUSION

Radial Pulse Present
Radial Pulse Absent
Capillary Refill
Over 2 Seconds Under 2 Seconds
Control Bleeding
IMMEDIATE **DECEASED**

MENTAL STATUS

Can't Follow Simple Commands Can Follow Simple Commands
IMMEDIATE **DECEASED**

Reprinted Permission Of Newport Beach Fire Department

Name M Age F
Address
Medical History
Meds Allergies
Medical Crew

FTT - FernoMIR TRIAGE TAG

Salivation
Lacrimation
Urination
Defecation
Gastrointestinal Distress
Emesis
= NERVE AGENT

Check Here Only if Decon Was Needed & Performed

Barcode: A 221198B

Personal Belongings Tag, Tracking Tag, Etc.

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NOTE AREAS INJURED ON FIGURES BELOW

CIRCLE TYPES OF INJURIES

SPINAL
BLUNT TRAUMA
BURN
FRACTURE
LACERATION
PENETRATING INJURY
HEAD INJURY

MEDICAL PROBLEM:

TIME	PULSE	RESP	B/P	AVPU

LUNG SOUNDS: ECG / SpO2 / OTHER:

TIME	TREATMENT/DOSE/BY	TIME	TREATMENT/DOSE/BY

MARK 1 KITS ADMINISTERED: 1 2 3 DIAZEPAM ADMINISTERED: ☐

PRIORITY 0	DECEASED / EXPECTANT	PRIORITY 0
PRIORITY 1	IMMEDIATE	PRIORITY 1
PRIORITY 2	DELAYED	PRIORITY 2
PRIORITY 3	MINOR	PRIORITY 3

Barcode: A 221198B

PRIORITY 0	DECEASED / EXPECTANT	PRIORITY 0
PRIORITY 1	IMMEDIATE	PRIORITY 1
PRIORITY 2	DELAYED	PRIORITY 2
PRIORITY 3	MINOR	PRIORITY 3

Barcode: A 221198B

TRANSPORTATION INFORMATION ON OTHER SIDE

ADDL TRANSPORT INFO / COMMENTS: