



Casualty Survival ❖ Prioritised

The practical guide to multiple casualty triage



Contents

Introduction.....	4
What is triage?.....	4
Why is triage important in an MCI?.....	5
Practical application of primary triage.....	5
Understanding the human element of response.....	6
Primary triage sub-tasks.....	7
1 Dealing with the uninjured survivor.....	7
2 Only applying rapid life-saving treatments.....	7
3 Making an accurate priority assessment.....	8
4 Communicating the triage assessment.....	8
5 Counting the number and severity of casualties accurately.....	9
6 Moving around the scene safely.....	10
7 Directing resources arriving on scene.....	10
Summary of tasks.....	11
Outcome of using a two person team to enhance primary triage effectiveness.....	14
How do we make the primary triage decision?.....	18
START and triage Sieve.....	19
SALT triage.....	19
Paediatric triage considerations.....	20
Jumpstart.....	21
Smart triage paediatric triage tape.....	21
SALT Triage.....	22
The importance of MCI response & triage training.....	23
Conclusion.....	

Our mission

Smart solutions since 1993

We embrace providing solutions that improve casualty survival and minimise suffering. Our unique ability to be inventive in designing modular, scalable, life-saving solutions has set us apart from others in our industry.

We strive to ensure our solutions are ahead of the curve and positively impact the quest for prioritising survival and minimising suffering.



Introduction

When Multiple Casualty Incidents (MCIs) occur, such as road traffic collisions, fires or terrorist attacks, medical services must be able to identify which casualties require the most immediate management to preserve life and minimise suffering.

An effective response to an MCI depends on thorough planning and preparedness with triage of casualties a cornerstone in our aim of maximising survival and minimising suffering.

The aim of this guide is to look at the role of the first triage decision and explore the complexity of the task. We will look beyond triage being an application of a flow chart, instead, we will investigate many of the issues responders will be faced with and the various sub-tasks that applying triage will require. Importantly we will provide solutions that are designed to enhance the chances of success and are empathetic towards the responders who have to carry out this vital task.

What is triage?

Originating from the French trier, meaning 'to sort', triage refers to the categorisation of patients according to their medical priority.



Why is triage important in an MCI?

In MCIs, medical resources are likely to be outweighed by demand from casualties. Without an effective initial triage system, those who need the most urgent care could be overlooked, meaning vital time is lost and the likelihood of mortality increases. While the provision of medical care to all who require it is ideal, MCI decisions must be made about how care should be allocated to ensure the greatest number of survivors.

In effective primary triage systems, the following principles are observed:

- Decisions are made in a time effective way.
- Decisions are reproducible between other providers.
- Triage decisions are safe and use a recognised method.
- They group casualties into priority categories.

An effective primary triage system will ensure that:

- Casualties who have life-threatening time critical injuries are recognised, prioritised and resources are directed appropriately.
- Only immediately life-threatening conditions are treated during primary triage.
- Number and severity of casualties involved are counted accurately, and this critical information is communicated through the command chain at the earliest possible time.
- The basis of a scene management system is initiated.

Practical application of primary triage

Primary multiple casualty triage is highly likely to be undertaken in sub-optimal conditions, with first responders arriving at a scene with multiple injured casualties and the initial medical resource inadequate.

Understanding the human element of response

In many MCIs the responders will have limited experience of such events and will be subjected to numerous pressures faced with a casualty load heavier than their resources. An excellent example of an individual's response to an MCI is noted in the quote below where a student had been involved in responding to both military and civilian incidents, as well as being a casualty in an MCI himself. He described his thoughts and feelings about the initial response as below;

"We have to remember that when dealing with an MCI, we are sending the least experienced people to perform the duties of triage and treatment in the first few minutes. With the adrenaline that is released as the rescuers go into the scene, triage has to be something that can overcome the tunnel vision and loss of fine motor skills that are common with an adrenaline release".

We need to keep this human element firmly at the forefront of our minds when planning and training for MCIs and triage skills.

A deeper look at the task of triage will reveal there are multiple sub-tasks required within the role if it is to be effective. As will be noted later, all sub-tasks are critical and if missed will have adverse effects on our response.

To ensure we deploy triage effectively it is important to consider each sub-task, understand it's scope and often complexity. Once we have a good understanding of all the components required we can then work on how best to deploy responders ensuring the role we set them is achievable and performance is optimal.

Let's now look at these sub-tasks to provide us a complete picture of what is required.



Primary triage sub-tasks

1

Dealing with the uninjured survivor

It is likely by the time responders arrive, that a period of time will have passed where uninjured survivors will have been on scene caring for the injured. It is most likely to be an expectation that when the first responders do arrive the responsibility of this care will be relieved. Primary triage will dictate that we only spend minimal time carrying out an assessment and possible rapid life-saving intervention and then have to move to the next casualty and subsequent assessment.

If not handled correctly, trying to move to a further assessment can result in conflict because the initial relief of a responder arriving on the scene is removed as they have to move on. Imagine a parent with an injured child, how could a responder manage telling the parent they are moving on and not continuing to care for their child?

2

Only applying rapid life-saving treatments

Primary triage will dictate the need to carry out a rapid assessment of the injured to dictate priority for treatment, especially recognising those who have time critical life-threatening conditions. To be effective, personnel doing this role must avoid the temptation of stopping to apply treatment unless it is required to address immediate life-threatening conditions such as life-threatening haemorrhage or a closed airway. This can prove problematic as many of the responders' daily role is providing care and comfort to their patients, and it may be emotional for them to move from the casualty to progress with triage.

The successful application of the interventions noted must be considered and factored in when we consider how we maintain fluid triage. Consider the equipment preparation and time required to correctly address a life-threatening haemorrhage, or how would we maintain an airway once cleared if we need to continue triage and move to a further assessment?



3

Making an accurate priority assessment

It is important if we are to assess the priority of an injured person we do it within a system that has validity. There are various methods used throughout the world that are noted later in this guide. The difficulty during the primary triage phase is that we have a significantly compressed time to make an accurate assessment as to the person's priority, ideally we want to be making the assessment within a minute. Again, this is against much of the training and instincts responders would normally apply in daily work where detailed primary and secondary assessments take significant time to determine the condition of the patient.

4

Communicating the triage assessment

Once an assessment is completed it must be communicated so further responders arriving on scene have an indication as to who to attend to first. Generally this is achieved by placing a tag on the casualty and colour coding their priority. The initial aim of the tag will be to communicate the primary triage assessment. It is important that any tagging communicates in the dark, so the use of light sticks etc should be considered.



Counting the number and severity of casualties accurately

Arguably, the most important piece of information to assist wider scene management is not just the number of injured people, but also the severity. A twenty person incident where nineteen are walking (priority three patients) and only one is severely injured (priority one) is hugely different to an incident where there are nineteen severely injured casualties (priority one) and only one minor injury (priority three). Although both incidents are twenty casualties the correct resourcing of them is vastly different.

For any medical system to scale up to respond effectively to an incident it must know as soon as possible both numbers and severity. Primary triage is ideally suited to provide these figures as the nature of the task has first responders moving throughout the scene applying triage priorities. The challenge comes in trying to keep track of not just how many people you have triaged, but also how many of each priority there are. Put this into the context of a highly charged scene and it becomes a formidable task to confidently report this critical information accurately.

Example of a 20 person incident where the severity of the casualties dictate different resources

19 seriously injured (P1)
1 minor injured (P3)



Resources required: Multiple advanced life support units both air and land.
Trauma system on standby.

19 minor injured (P3)
1 seriously injured (P1)



Resources required: Multiple patient transport units. 1 advanced life support unit. Trauma system not notified.

6

Moving around the scene safely

We have to remember the context of where we are operating. MCI scenes, by their nature, are dangerous. Something has caused multiple people to get injured and that hazard is often still present or has left new dangers. The uninjured and injured people will create a pressured environment that is often alien to the first responder. Working in such scenes can often create tunnel vision that can leave the responder open to injury, as hazards may be missed due to scene pressures.

7

Directing resources arriving on scene

Whether it's answering the question from the next responders on scene "what do you want me to do?" or providing a handover up the chain of command "tell me what is going on?". The first responder on scene who has carried out primary triage will have a detailed view of the scene. The information they have will be critical for command structures to make appropriate decisions and the next responders to be correctly and safely directed to where they will be of most use. After undertaking the multiple tasks of primary triage within a pressured scene, it is important to communicate key information in a structured and effective manner.



Summary of tasks

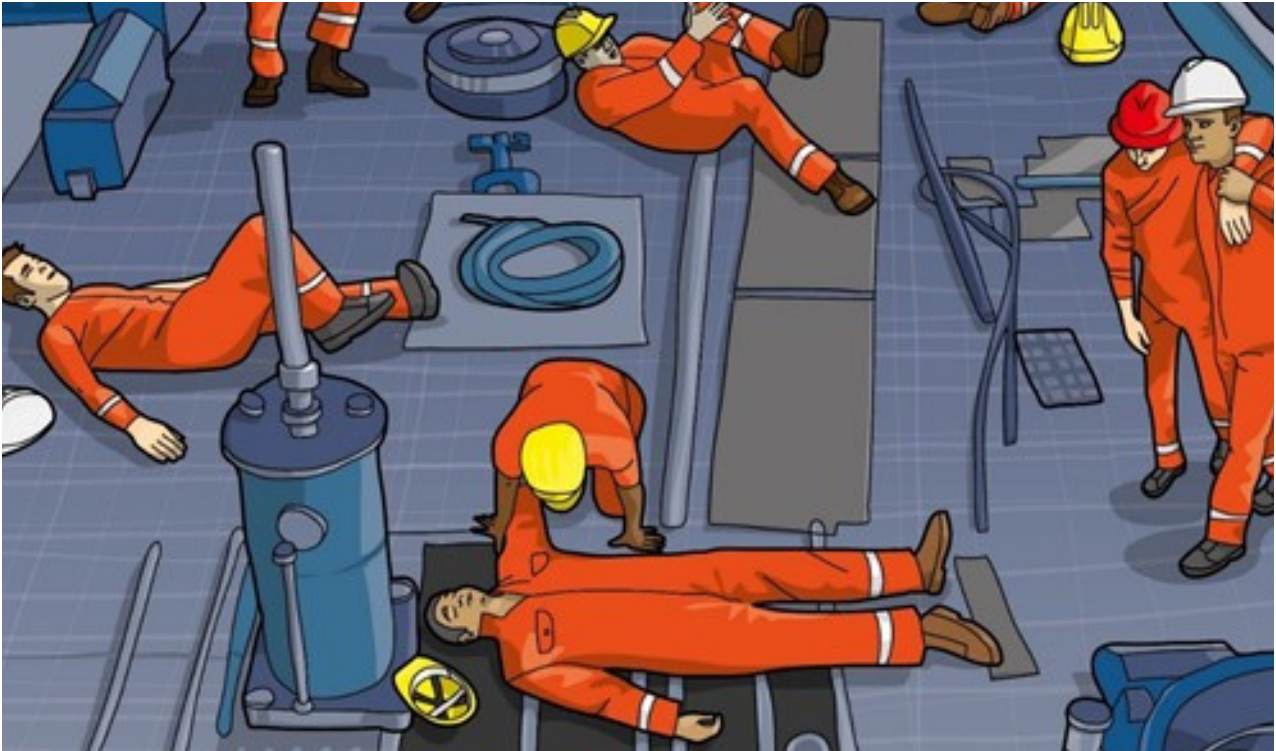
As can be seen, there are multiple subtasks required to complete primary triage successfully, unfortunately none are a “nice to do”, as omitting any of the tasks will have a detrimental effect on our aim of maximising survival.

The below table outlines the consequences if the sub-tasks of primary triage are not completed correctly.

Task	If not completed correctly
1. Dealing with the uninjured survivor.	Triage will stop with conflict as a survivor stops you moving on.
2. Rapid life-saving interventions.	Casualty will die of a treatable condition such as life-threatening haemorrhage or closed airway.
3. Making an accurate priority assessment.	Time-critical casualties will be overlooked and not resourced correctly.
4. Communicating the triage assessment by a triage tag.	The triage priority assessment is not indicated on the casualty which may lead to a further triage assessment being carried out, using unnecessary additional time and resources.
5. Counting number and severity of casualties.	Incomplete, inaccurate or absent figures make correct resourcing of the incident difficult and time ineffective.
6. Moving around the scene safely.	Injury to the responder will decrease medical resources and stop triage.
7. Directing the next resources arriving on scene and handover to chain of command.	Limited medical resources could be sent to the wrong casualties. Inaccurate briefing to management teams affects command decisions.



As you can see from the above table, in order to maximise our success in primary triage we need to complete all the above seven sub-tasks, whilst remembering that responders will be working in a resource-depleted and often alien environment. The good news is if we know what it is we need to achieve then we can plan and train to meet the requirements.



Solutions to being more effective

As noted there are seven subtasks required for primary triage. This is very complex for one person to consistently carry out. Triage should be considered a two-person role, tasks can then be broken down and achieved as noted below.

Using two people to triage allows us to divide the sub-tasks into manageable applications. The actions of the two responders can be broken down into two general categories:

- Heads up tasks.
- Heads down tasks.



“Heads up” tasks are tasks such as talking to the uninjured survivor, recording numbers, picking safe routes, assembling a handover and generally shielding the responder who is undertaking “heads down” tasks.

“Heads down” tasks are more casualty focused, involve the application of rapid life-saving interventions and triage assessment, these tasks should be undertaken by the responder who has a higher level of clinical skill.

Heads up task

- Provides support and shields team members.
- Talks with uninjured survivors
- Records numbers.
- Picks a safe route.
- Folds the triage tag.

Heads down task

- Makes a triage assessment.
- Applies rapid life-saving interventions.
- Directly communicates with casualties.



The below table indicates how this approach will assist successful application of primary triage.

Outcome of using a two-person team to enhance primary triage effectiveness

Task	Head up	Head down	Outcomes
The uninjured survivor.	Talks to them and explains what is happening. Provides a job for the survivor to complete, such as holding a patient's hand, applying pressure, comforting a child.		Allows responders to move unopposed to next triage assessment. Survivor has better understanding and empathy of what we are trying to achieve.
Rapid life-saving interventions.	Protects and shields responder two. Prepares equipment.	Applies rapid life-saving interventions.	Treatment applied correctly. Treatment maintained by survivor and maximises them as a resource.
Triage priority assessment.	Protects and shields responder two. Prepares equipment.	Focuses on application of triage method accurately.	Correct application of priority assists resources being directed to casualties most in need of them.



Task	Head up	Head down	Outcomes
Communicating the triage assessment.	Prepares, folds and places tag onto casualty.	Communication to responder one what colour is required.	Casualty correctly labelled so arriving resources can be directed to who is most in need of their help.
Counting number and severity casualties.	Maintains a log/tally chart of the number and severity of casualties that have been triaged.		Allow accurate logging and communication of this hugely important piece of information.
Moving around the scene safely.	Picks the safest and most appropriate route to the next casualty to be triaged.	Follows responder one.	Responders remain safe and move to the most appropriate casualty for assessment.
Directing the next resources arriving on scene and providing handover to the chain of command.		Assembles brief of incidents as the triage team has seen it. Ideally uses written information.	Next responders are sent to the casualties most in need of their care. Command are supplied with accurate, well-communicated key information which will enhance decision making.



Priorities in primary triage

The various categories and systems used in MCI triage are crucial to enable medical resources to be directed quickly to those casualties most in need of assistance.

Colours are used to visually communicate priorities:

Colour	Priority	Description
Red	1	Requires life-saving treatment immediately and has time critical life-threatening conditions.
Yellow	2	Injured or unwell and are unable to walk but are physiologically normal.
Green	3	Can walk to treatment area and are considered clinically safe at the time of assessment.
Blue / Grey	P1 Hold.	Those whose injuries are so severe that they are unlikely to survive (not normally used in the primary triage phase).
Black	Dead.	Deceased.

How do we make the primary triage decision?

It is important to note that the primary (your first assessment) triage assessment is literally only this, your first assessment. The assessment process will be refined as the incident progresses and additional resources arrive. Generally, triage is taught as primary and secondary, primary being before entry to a casualty collecting area and secondary being triage carried out in this area. It is unlikely that the demarcation of these lines will be as clean as we would like them. Before a casualty reaches the structure of a casualty collecting point, the triage process may well have been incrementally enhanced as resources arrive, not actually switching to the methods of secondary triage but applying additional skills and decisions dependant on who is attending to the individual.

This being the case, it is important to understand that your first assessment will be one of many which will incrementally adjust and progress the triage decisions. Primary triage is there to achieve specific outcomes;

- Casualties who have life-threatening time critical injuries are recognised, prioritised and resources are directed appropriately.
- Only immediately life-threatening conditions are treated during primary triage.
- Number and severity of casualties involved are counted accurately, and this critical information is communicated through the command chain at the earliest possible time.
- The basis of a scene management system is initiated.

These five outcomes aim to get care to those who need it effectively and provide command with the critical information to initiate the early appropriate resourcing of the scene.

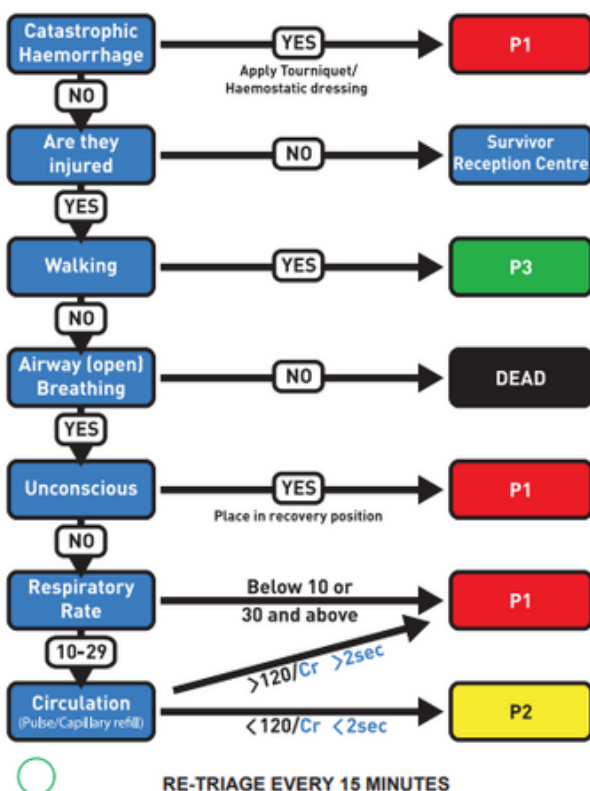
If we understand that the outputs of primary triage are critical to the early and successful management of the scene and the maximisation of survival, then our ability to carry out the role will be enhanced even when it feels contrary to our daily role.

The methods used throughout the world to make this decision are varied. Below are noted some of the more common methods.

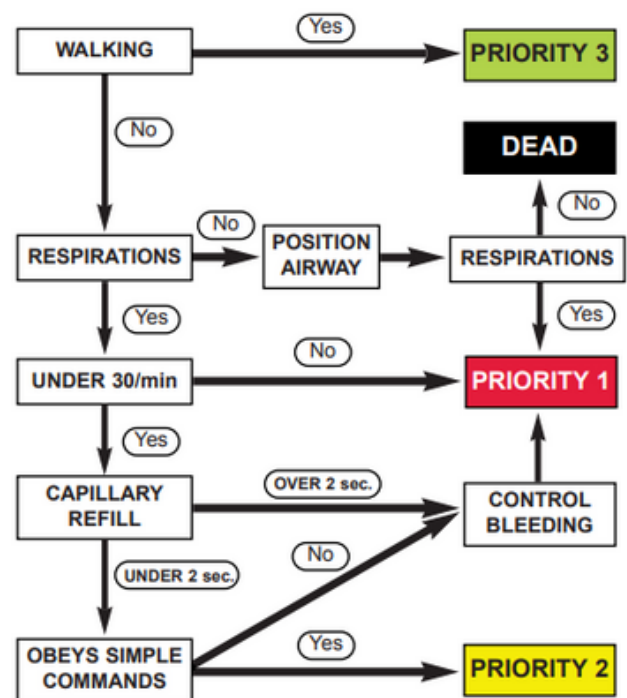
1) START and triage sieve

The Simple Triage and Rapid Treatment (START) method was developed in California in the 1980s and is adopted across the USA to classify casualties in MCIs. The triage sieve is a similar method and is popular in the UK, Scandinavia, Australia and Europe. Both systems use objective methods of assessment to determine a priority. The assessments include the opening of an airway, rates of respiration, level of consciousness and pulse/capillary refill rate. Control of life-threatening bleeding is also included in both systems. Although each system has different values to determine priority, their application in providing objective, reproducible results between providers are similar. The following priorities are achieved; Priority one, two, three and dead.

ADULT TRIAGE SIEVE



START TRIAGE



If you are unable to obtain a capillary refill, check the radial pulse. If absent then control any bleeding and prioritize the patient **PRIORITY 1**.

2) SALT triage

The Sort, Assess, Life-saving interventions, Treatment (SALT) triage is a four-step process that first responders use in MCIs. SALT is a method used in the USA. At the core of the method is the movement of casualties away from the incident to improve safety for patients and emergency personnel.

SALT applies in MCIs with five or more casualties who are assessed quickly to determine the treatment they require. Hospitals are alerted promptly to prepare to receive critically ill patients.

Like START and Triage sieve, the four classifications (black, red, yellow and green) are applied to sort patients according to their medical needs. However, a fifth category – grey – identifies patients who are expected to die, to eliminate confusion where casualties who will not survive are observed still to be alive. The grey classification enables resources to be directed to patients who will survive with appropriate specialist care.

SALT also allows for an expanded assessment after initial patient classification and considers the severity of injuries rather than simply evaluating circulation and breathing. This evaluation creates a more subjective system as opposed to the purely subjective natures of START and Triage Sieve.

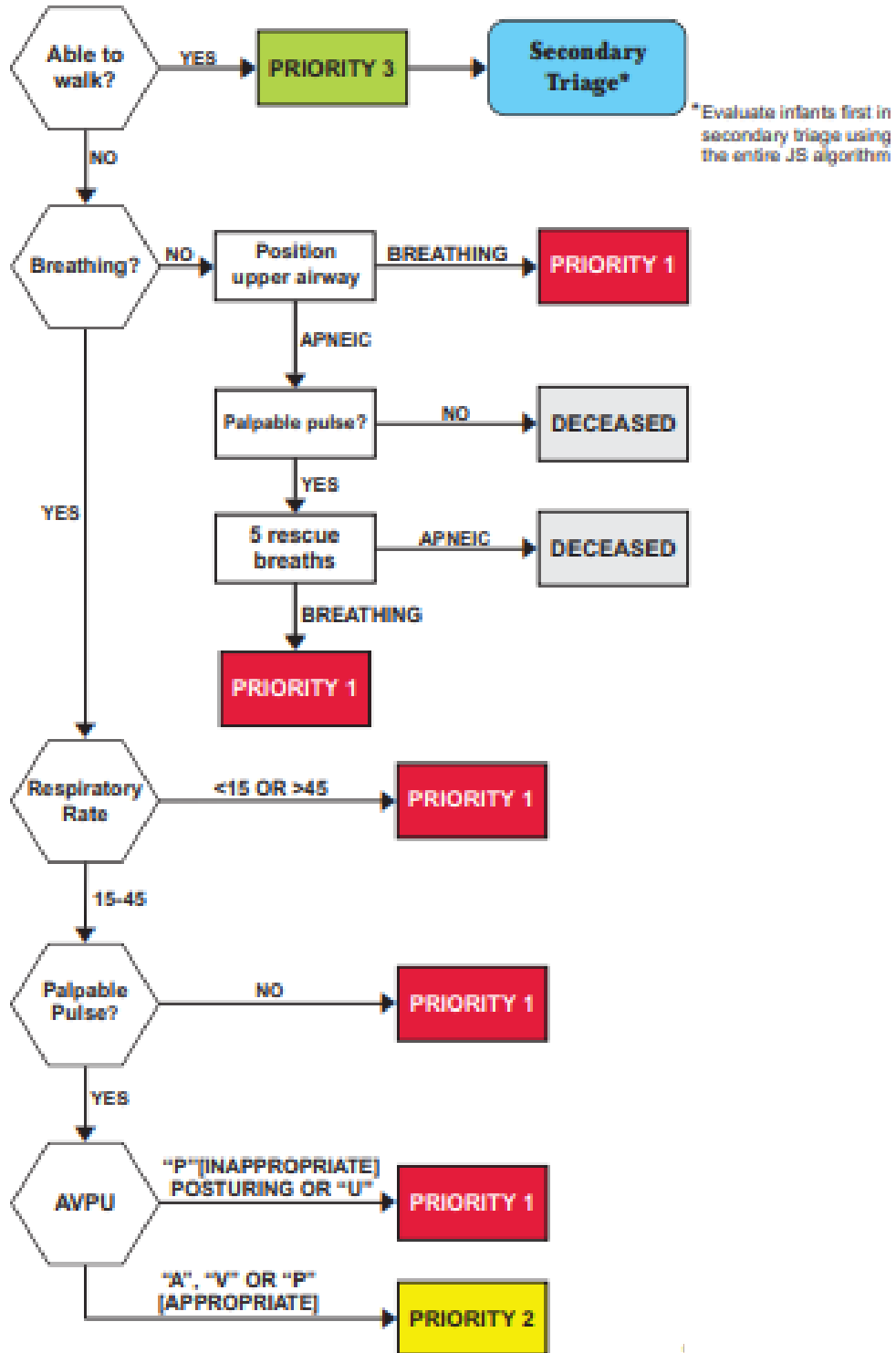
Paediatric triage considerations

It is important to note that children are often casualties in MCIs, either in a mix of adults and children such as in the Manchester Arena bombing or in a predominantly paediatric scene like the Dunblane shooting. MCIs are challenging for emergency personnel, but the involvement of children adds an emotional dynamic that makes rapid, accurate assessment more difficult. Children have different physiological and developmental characteristics that make the application of the previously mentioned adult methods inaccurate if applied to children. To counter this there are specific methods for paediatric triage used throughout the world;



Jumpstart

This method is a modification of START triage adapted to reflect the physiology of a child. The method is used predominantly in the USA.



Smart triage paediatric triage tape

The Smart paediatric triage tape is a modification of the triage sieve and is divided into three flow charts corresponding to the length of the child. Adult systems are used when the casualty is longer than the tape (120cm). It is used throughout the UK, EU, Scandinavia, Australia and USA.



SALT triage

SALT triage is designed to be applied equally to children and adults as the more subjective nature of its assessments allows for this method to be applied to both. One drawback to this may be the level of knowledge responders have in understanding the normal and abnormal paediatric physiological values if caring for injured children is not a major part of their daily workload.

The importance of MCI response & triage training

It has been noted in studies that emergency personnel consistently perform better during triage, both in completing assessments faster and with more accuracy, if they are effectively trained. When talking to many civilian responders it is often stated that a concern is the lack of time they have to train for an event that only happens infrequently but will require them to apply unique skills that are not used daily to achieve a successful outcome. To counter this issue various solutions should be looked at.

It is accepted that responders work better in stressful events with equipment and methods that they are familiar with. Conversely, they struggle to maximise effectiveness if they are required to implement unfamiliar equipment and methods. Organisations should consider how the skills required at MCIs can be used on a more regular basis. For example;

- Can the MCI scene reports be the same format as the one used on normal duties?
- Can triage equipment be used at smaller incidents such as vehicle crashes with smaller numbers of casualties present but happen on a more regular basis?
- Do we use the same terminology at an MCI as we do on normal duties?
- Are we using the same equipment at an MCI for rapid life-saving interventions as we would normally?

Each of the above will increase the frequency and familiarity of both equipment and methods so when the catastrophic event does happen we are replicating methods used multiple times under lower stress conditions.



If training time is limited then it needs to be effective and targeted at the key areas that are essential to the successful MCI response. Each organisation should consider what are the critical tasks responders should be competent in to achieve success. Technology is changing the way we learn with online and virtual reality now providing viable options for high quality training.



Conclusion

This guide covers how to be effective at primary triage within a multiple casualty incident. It is important to note that this will only be your first triage assessment and there are specific outcomes we need to achieve to ensure the task has been successful. These are:

- Time effectively recognising critical casualties.
- Assembling numbers and severity of those involved.
- Directing the next resource to where it needs go.
- Concise handover to command.

Primary triage decisions need to be fast, clinically accurate and reproducible between providers. Only immediate life-saving treatment must be administered.

To be successful at this role we have noted seven subtasks that are critical if we are to succeed, if any of these are missed then the effectiveness of the role is compromised. To give us the best chance of success, primary triage should be carried out in pairs with a concept of one responder carrying our “heads up” tasks and the other “heads down”.

There are various methods of triage used throughout the world including triage sieve, START and SALT. What system you use will be dependant on your local authority. Any triage method must consider a paediatric component.

Training and ensuring responders are competent in skills and equipment is critical to success. Systems that integrate MCI skills into daily work have the advantage of colleagues not having to adapt to new equipment or skills under high levels of stress. Technology has the ability to provide high quality training and should be considered in creating a blended learning programme.

How can TSG Associates help you to be successful?

For OVER twenty years we have seen our Smart Triage system deployed throughout the world with civilian, military, NGO and industry colleagues. It has been to some of the most significant MCIs in recent years.

We can provide the right equipment that is proven to assist you to do the job and be scaled to your specific requirements. Training support is always available tailored to your requirements.



Next steps: book a free consultation with TSG Associates

At TSG Associates, we offer a range of effective solutions for triage and MCI management that enable first responders, medical staff, and scene commanders to prioritise survival and minimise suffering.

For a free consultation, please call us on 01422 557784 or [send us an enquiry](#).



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25