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THE MORAL CONUNDRUM IN TRIAGE DURING EMERGENCY AND DISASTER MANAGEMENT: A REVIEW

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ABSTRACT

For some time now the practice of sorting patients or victims of disaster and emergency events according to the urgency of their need for care has been a subject of heated philosophical debate. At the core of the argument has been the question of whether or not this practice upholds the moral ideals of justice and fairness to all. This article attempts to examine triage as a common practice during Emergency and Disaster Management in the response efforts of concerned agencies and professional bodies. Are there justifications for rendering life-saving assistance to one group considered most at risk while withholding same from another group deemed less at risk? Under the usual prevailing circumstances of limited resources during mass casualty events, is it not rather medically ethical not to insist on treating individuals who are not salvageable, as it would simply amount to wasting scarce resources that are needed elsewhere? Does triage ensure "the greatest good for the greatest number"? How do all of these situate in the principles of equal chances, utilitarianism, and egalitarianism? These Philosophical questions were examined and responded to using review of literature. This paper critically looked at some common triaging systems with a view to addressing the attendant moral conundrum.

KEYWORDS: Moral, disaster, emergency, management, resources, justice, egalitarianism.

INTRODUCTION

The continuous disruption of the environment by natural and anthropogenic factors has subjected man to the exigencies of emergency and disaster vulnerability.[1,2] And no doubt, the world is facing an unabated frequency and intensity of natural and man-made disasters with devastating impacts. In the last ten years, the International Strategy for Disaster Reduction (ISDR) has reported 478,100 deaths, more than 2.5 billion people affected and about US$ 690 billion in terms of economic losses. Hydro-meteorological hazards related disasters accounted for 97 percent of people affected by disasters, as well as 60 percent of the total economic losses.[3]

It is apparent that natural and manmade disasters do often result in the collapse of the social system and essential services with devastating effects on human development and the economy. Such events also cause sicknesses and deaths directly or by disrupting the health systems, thereby depriving the affected human settlements of access to emergency and basic healthcare. Available evidence has shown that these ill effects disproportionally domicile in developing countries who account for 68.2% of reported disaster mortalities in 2012.[4]

The current response efforts to disasters must be based on the principle that disasters impact the environment having direct or indirect effects on the ecology and communities lasting far beyond the capacity of extant humanitarian response. Emergencies can be provoked by changing ecological conditions thereby placing undue stress on the environment. A key component in global efforts at ensuring environmental security is mitigation of the effects of disasters. However, there is an overarching need for reinforcing the significance of environmental issues in the disaster management cycle of assessment, preparedness, prevention, mitigation and response as well as the need to integrate environmental concerns into plans for rehabilitation, relief, reconstruction and development of affected areas.[3]

An integrated and well-coordinated response to emergencies and disasters requires a blend of multi-sectoral expertise and critical resources. And given the fact that such situations are unexpected occurrences,

even in the best of economies, resources are often strained beyond whatever available contingency plan could handle. Hence, the need for prioritization of such limited resources and intervention efforts. This brings to the fore the concept of triage, where victims are selected and categorized with aim of providing "appropriate treatment according to the degree of severity of illness or injury, and the availability of medical and transport facilities". [5] It has been argued that as much as possible triage is a situation to be avoided by all means. However, with impending wars across the globe, natural disasters and other forms of crises that inflict massive havoc on health and well-being of human populations, the ever dwindling resources in many parts of the globe, compels a scenario whereby the allocation of health resources appear to favor some while other patients are neglected.[5]

This selective practice in triage has raised a lot of contentious issues in moral philosophy. Is the practice a "right conduct"? What "ought to" be the right line of action given the prevailing circumstances during emergency and disaster management? What do people think is the right thing to be done? What is the ethical basis for embarking on triage during emergencies? These are some of the questions we shall be attempting to respond to in this discourse. To address these questions we shall attempt to describe the concept of triage and their various types, and examine some philosophical theories underlying triage in emergency and disaster management.

Triage

The word triage derives from the French word "trier", meaning "to sort". It has been thought to have evolved as early as Napoleon's time. It was known to be a technique for assigning priorities of treatment for the injured particularly in resources limited situations. The underlying principle of triage is making the most efficient use of available resources.[6]

Triage is an integral part of any disaster response, but the limitations are at times prejudicial based on the preconceived methodology of a battlefield mentality of doing the greatest good for the greatest number of people that was seen during World War I from a United States military manual. Up until this time, the greatest good philosophy was not the status quo; but rather focused on the most seriously injured. The first battlefield triage protocol is rooted in the strategies first employed by a French military surgeon during the Napoleonic wars in 1812 by the name of Baron Dominique-Jean Larrey. Larrey developed a system of sorting and attending to the most critically wounded on the battlefield immediately instead of waiting for the end of the conflict, as was an antiquated way of thinking in all previous battles. Larrey saw a need to treat those most in need of medical attention first and clearly expressed that there was no distinction between ranks, but rather on the severity of the injury.[7]

There are three major reasons why triage is beneficial in the disaster response.[8]

1. Triage involves separating those who are in direst need for care, to save life or limb.
2. Triage minimizes the urgent burden on medical facilities and organizations when minor injuries are separated out. Averagely, only 10–15% of disaster victims present serious conditions that warrant hospitalization overnight.
3. Triage provides for equitable and rational distribution of casualties across available health facilities thereby reducing the burden on each of them to a manageable or "non-disaster" level.

Types of Triage

Although from the literatures reviewed there are at least seven types of triaging systems, in this write-up only three considered most popular will be examined. [4, 7] The seven types include;

1. Simple Triage and Rapid Treatment (START)
2. Sacco-Triage Method (STM)
3. Triage Sieve
4. Move-Assess-Sort-Send (MASS)
5. Careflight
6. Reverse Triage and
7. Secondary Assessment of Victim (SAVE)

Some of these are examined hereunder.[7]

Simple Triage and Rapid Treatment (START)

START originated in the early part of the 1980s in an effort to assist some hospital personnel in addressing the need for rapid mobilization and deployment of resources to victims of mass casualty. The intention was to be able to assess a patient in less than one minute so as to be able to determine the severity of an injury with the aim of securing additional medical treatment. It allows first responders to rapidly assess a victim of a mass casualty incidence. Personnel are usually first responders from the local community or local emergency health personnel. On the other hand, START's weakness is in allowing for under-triaging of especially geriatric patients, such that it does not allow first responders to have a second assessment for any improvement or decline in a victim initially categorized as unsalvageable before transporting the less injured.

The primary goal of START is doing the greatest good for the greatest number. Basically START begins with the triage protocol of sorting the victims into one of four designated categories. These categories include minor (green), delayed (yellow), immediate (red), and deceased or non-salvageable (black). The process of START begins with first clearing the scene of those considered to the walking wounded by a responder verbally demanding to know anyone who is able to walk. Such are then asked move towards the sound of the responder's voice and are asked to stay in a separate area so they don't mix up with the injured that are in need of immediate attention. The walking wounded are usually not considered for an

immediate medical attention, however eventually they are attended to if available resources allow. Where the response team uses a tagging system, such victims are designated to the green category. Once the walking wounded has been separated from the remaining victims, the sorting, assessing, and medical attention begins using an algorithm. The categories are as follows;

a) *Immediate or critical* denoted by *red tag*: Ventilations notable after positioning the airway or over 30 ventilations per minute or greater than 2 seconds capillary refill or absence of radial pulse or failure to follow simple commands.
b) *Delayed or urgent* denoted by *yellow tag*: Patients generally non-ambulatory and any patient not in the immediate or minor categories.
c) *Minor or ambulatory* denoted by *green tag*: Any patient not in the immediate or delayed category and who is able to walk but requiring medical attention.
d) *Deceased or expired* denoted by *black tag*: No ventilations after the airway is opened.

Sacco-Triage Method (STM)

This type of triage was introduced so as to give equal chances to all victims of a mass casualty incident based on scientific analysis of injuries sustained which does not rely on color coding. It rather relies on mathematical calculations assessed in the areas of respiration, pulse, and motor responses. Each victim is assigned a number from zero to four with data input into a computer software package. The data is computed and the scores obtained are used to determine the severity and probable survival rates. Those assessed with the lowest scores are transported to trauma centers or hospitals immediately.[8]

This triage system has the advantage of having patients easily upgraded or downgraded as the case may be since it relies on empirical data. The major limitation of this system lies in the cost implication as its implementation requires purchasing the software as well as a good number of ICT equipment for field work. STM focuses more on the condition of the patient and also factors in the quantity of available resources based on extant evidence and scientifically-based model. Advocates of this triage system allows for consistent triaging regardless of the number of casualties and the decisions are not subjective but based on the amount of training a responder has had.[9]

Move-Assess-Sort-Send (MASS)

Move, Assess, Sort, Send (MASS) was originally a military triage system adapted for civilian use. And there are basically four steps involved in this process. Move implies a responder asking any victims that can move, to move to a designated area and as well demand to know if they able to move their limbs. Those that cannot move a limb are subjected to the next step known as assessment. Assessment involves checking of breathing, circulation, and the status of the airway and does not emphasize on the ability to follow some instructions or mental state of victims. After assessment the victims are then sorted out into one of four categories immediate, delayed, minimal, or expectant.[10]

One of the strengths of this system is that it allows for synergy with military personnel where needed during a mass casualty incidence. In addition, responders reassess the immediate category and victims are sorted out into treatment priorities. Any victim not expected to survive are transported after the immediate category but before the delayed category instead of the expectant group and being left unattended to. However others contend that since there is no tagging in this system, there is every possibility that a responder forgets what treatment has been administered and what was the initial priority and steps that needs to be repeated, thereby significantly delaying transportation to the nearest health facility.[7]

Sort- Assess- Lifesaving Interventions- Treatment/ and or Transport (SALT)

The Sort-Assess-Lifesaving Interventions-Treatment (SALT) was developed by the SALT working group. It is a combination of some triage systems with a number of differences in integration, especially in identification of a disaster victim placed in the expectant group by a new tagging category. The system is hinged on four activities, namely; global sorting, lifesaving interventions amenable to quick applications, individual assessment and priority categorization, and the provision of treatment and transportation by responders. [11]

Just as is the case with other triage systems, SALT begins with global sorting, that is sorting the living from the dead. SALT adopts global sorting to minimize the number of walking wounded presenting themselves to healthcare facilities on their own. In global sorting the voice and wave commands are similar to what obtains in MASS triage system. Those that can walk are given instructions on where to go to receive further treatment - whether to an area already set up on site or to a designated medical center that is prepared to receive the less injured for further assessment. [7]

The SALT working group agreed that other systems in which the victim was categorized as green (minimally injured) were hardly assessed by health personnel. Usually in global sorting those that can follow simple commands are sorted out from the other injured and will once again be sorted into two groups based on the severity of injuries – those that are unable to follow simple commands or move are attended to first. This first group equally includes those that can follow commands as well as make movements but may who show signs of internal injuries. Immediately after this the next step is called lifesaving intervention treatments.[7]

As a rule lifesaving intervention treatments are given before victims are assigned any triage category and this is based on the belief that a few first aid treatments should be given before a victim is assigned to the "black" (dead) category as it obtains in other systems of

triage. Acceptable treatments include controlling major hemorrhages, opening the airway, decompression of tension pneumothorax (collapsed lung), and the use of auto-injector antidotes also known as nerve agent treatment. While other triage systems would regard these types of injuries as non-salvageable, owing to limited resources, in the SALT triage system it is believed that rapid or timely application of lifesaving treatments can improve the chances of survival of victims, rather than declaring them non-salvageable. After this, the next step is the assessment of patients individually and their assignment to triage categories. This will determine prioritization of transport to the closest health facility. [7]

The SALT working group considered existing triage categorization and tagging process and proposed that under SALT triage system assignment of victims or patients would essentially remain similar except for the designation of a new category known as the expectant group designated by a color code of grey. This group (expectant category) was developed to ensure that the "black" category victims have a fair chance of being evaluated per chance resources become available. In other triage systems once categorized as non-salvageable, there is hardly any chance of reevaluation and reclassification. The expectant category are therefore intended to be a flexible, dynamic, and a resource based category to be implemented only when resources are available. Hence, once there are additional resources persons in this category are reassessed using the SALT protocols.

Philosophical Principles Of Triage

The emergence of the above triage systems in practice by first responders and first receivers who have to deal with civilian populations, gave rise to several ethical issues and became subject of rigorous debate among the academia and concerned professional bodies. For instance in the healthcare field, two major principles that all philosophical theories subscribe to are consequentialism and deontology. Consequentialism theorizes that all actions are considered moral or ethical where the ends justify the means, while deontology considers the morality of actions without regard to the consequences thereof.[7]

In light of the foregoing it may appear reasonable to conclude that the core principle in Consequentialism is at cross purposes with deontology. However, even where two equally moral lines of action present themselves in a situation like salvaging victims of mass casualty and emergency, the deontologists has been known to judge the right line of action based on the possible expected outcomes of the two options. Conversely, where two expected outcomes of two actions are deemed moral the consequentialist has been known to select an option based on the "rightness" of the line of action. [12] Hence, no matter what triage system is being considered the liberal consequentialists and the liberal deontologists positions seem to have some common ground that navigate through the moral conundrum in triage during emergency and disaster management. However, the ethics in sorting during triage may not be considered in isolation when evaluating the morality of the responder's actions. It is normal to allow the first responder with inadequate medical background to make critical decisions in sorting victims of mass casualty events.

Consequentialism and deontology

In the extreme view of the consequentialist, the morality of the responder using a triage system depends on the consequences of his or her action only. Hence, a morally right action is judged to be one that gives the best outcome regardless of all other factors. In line with this, the START triage system can be considered to be a consequentialist approach in which a disaster victim is assigned to the expectant category in a bid "to do the greatest good for the greatest number of people". In this light the responders are seen to be acting in a moral and ethical manner. And in the strictest sense, consequentialism doesn't define what is considered to be good consequences, but whether the action taken yields the best or most reasonable outcome.[7]

A deontological theoretical view is when some defined triage protocols are adhered to without necessarily taking into consideration the results or outcome of the actions but the intentions behind them. This philosophical view is duty-based and is also based on whether there were malicious intentions when the responder was assigning a disaster victim to the expectant category. Looking at the existing triage protocols, responders have some preset criteria that must be followed in assessing mass casualty victims with the sole intent of doing the greatest good for the greatest number of people irrespective of how many may die in the light of available resources. Going by this the responder's action can be judged to be morally sound given the prevailing circumstances.

The philosophy and theory of distributive justice is considered to be the core of all principles that upholds the best interest of the society. But the theory of distributive justice contains three principles; principle of utility, principle of equal chances, and the principle of egalitarianism.[13,14]

Principle of Utility

The principle of utility assumes that the greatest overall good or benefit is secured through the actions and consequence they produce. As a form of consequentialism, utilitarianism judges triage systems based on their fairness in regards to human life by evaluating the consequences based on the resulting overall benefit. Another dimension to the argument is that even though the utilitarian approach is doing the greatest good for the greatest number of people, the outcomes are not expected to be similar for all. And that is to say, that the appearance of a bad outcome for some may be justified if the consequent action results in the greatest overall benefit to many [7, 13]

It has been argued that a triage system that is based on utilitarian philosophies is sound only insomuch as the immediate and available medical resources are efficient but its weakness is in the capacity of disaster management personnel to be able to judge which group or individual will benefit the most from critical assistance necessary in mass casualty incidents. However, a common utilitarian principle in rescue efforts informs that care may be denied during triage where compensating factors require more resources and in the long run cause more lives that would have been saved to be lost due to the fact that they were healthier prior to the incident.[7,14]

Principle of equal chances

The Principle of equal chances is at the core of distributive justice and the premise encompasses the philosophy that every victim has the potential to be saved regardless of the severity of his or her injury. This concept upholds that everyone is equally valuable to themselves and therefore deserves an equal chance for survival. Thus triage is conducted on a first-come first-serve basis. In this regard, the primary aim in triage would then be to ensure that every victim is given an equal opportunity for survival no matter the severity of injuries. Hence, more resources are allocated to the expectant category. This principle was however refuted by the World Medical Association (WMA). It is for instance medically ethical not to insist on treating individuals who are not salvageable, as it would simply amount to wasting scarce resources that are needed elsewhere. This prioritization dictated by the disaster situation cannot be considered a failure in coming to the assistance of a person that is in danger of dying so long as it is intended to save the maximum number of individuals.[7,13]

Principle of egalitarianism

Egalitarianism also known as the difference principle constitutes another principle of distributive justice that is based on a concept that the most in need should be the first to be treated regardless of the resources available.[13] The principle aligns more with routine triage protocols in hospitals in which patients are assessed using the severity of their condition and therefore are given priority. The snag of this type of triage is that available critical resources are prioritized to victims in the black or non-salvageable category. And this unequivocally prioritizes the expectant group which would potentially increase the overall number of patients that do not survive.[7]

John Rawls explains the theory of equal opportunities with a metaphorical expression of how a rational being behind an objective veil of ignorance would choose principles of justice.[15] This approach was later used to emphasize the need for fair procedures to be used in addressing problems of rationing and conflicts between individual and social interests in healthcare provision.

CONCLUSION

The art of sorting out victims of a disaster event using some set criteria such that the victims are assigned to different categories based on the severity of their conditions, constitute the main essence of triage. Over time different triaging systems have evolved - Simple Triage and Rapid Treatment (START) which begins with the triage protocol of sorting victims into any of four categories, namely; minor (green), delayed (yellow), immediate (red), and deceased or non-salvageable (black). Other triage systems developed include; Sacco-Triage Method (STM), Triage Sieve, Move-Assess-Sort-Send (MASS), Careflight, Reverse Triage and Secondary Assessment of Victim (SAVE). All of these were developed with the ultimate goal of making the most efficient use of scarce resources and ensuring a form of distributive justice to all victims of emergency and disaster. However in trying to do so the moral dilemma of what criteria and protocol to be used raises critical philosophical questions. Should responders be guided by the consequentialists' posture which theorizes that all actions are considered moral or ethical where the ends justify the means, or by the deontologists' stand which considers the morality of actions without regard to the consequences thereof? Does the action of the responder ensure distributive justice? The theory of distributive justice which addresses itself to the three principles of utility, principle of equal chances, and the principle of egalitarianism; which are considered and seen to ensures societal good. The cardinal objective in triage is that of doing the greatest good for the greatest number of people irrespective of how many may die in the light of available resources.

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