

## Ethical Analysis of Medical Futility in Cardiopulmonary Resuscitation

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### Abstract

Cardiopulmonary Resuscitation (CPR) is a life-saving intervention in emergency medical care practiced globally for the last more than seven decades. It cannot be a solution to prevent every death and there are risks associated with this intervention. This article focuses on the ethical dilemmas related to the decisions of medical futility in cardiopulmonary resuscitation particularly in emergency settings. There are guidelines for the decisions to start and stop CPR but are mostly based on technical grounds only. Technically possible interventions are not always medically reasonable and all four principles of biomedical ethics - viz. respect for autonomy, beneficence, non-maleficence and justice are associated with the issues of medical futility in this process. Autonomy deals with the issues of the individual right for CPR as well as the other side of the coin do-not-resuscitate (DNR) including death with dignity. The 'advance directive' and the need for surrogate consent are further dimensions of autonomy. As a life saving measure, beneficence comes into play while non-maleficence argues against performing CPR when the outcomes are harmful or futile. Futile interventions have to be avoided for the justice so that the precious intensive care units are not occupied waiting for the end-of-life. Literatures were reviewed and analyzed in the context of medical futility in CPR and the ethical dimensions of the issues have been explored. Ethical approach assists in deciding the futility of cardiopulmonary resuscitation in a given situation where the shared decision is taken by the medical professionals and the surrogates of the patients.

**Keywords** Futility; Cardiopulmonary resuscitation; Do-not-resuscitate; Terminal illness, Principles, Biomedical ethics

### Introduction

Medical doctors face ethical dilemmas in their day to day service of medical care to their patients. Since the inception, this profession has been regarded noble and still strives hard to keep it up. In the past four decades, there has been exponential growth of both professional and societal attention to moral issues in medical care and biomedical ethics has emerged as a specialty. Privatization of medical services has rendered it as a business and the technological advancement has fueled the ethical dilemmas between the gravitational force of medically reasonable and technically possible care. An individual physician may not be in a position to address all the problems brought in by the system; or in several cases because of no system, particularly in resource poor settings. However, each individual is expected to resolve the ethical dilemmas in the given context which need to be understood, interpreted and competing moral values has to be weighed against each other. Professional codes of ethics, guidelines are useful sources of guidance and have to be developed incorporating the contextual general cultural values, social norms, religious and philosophical moral traditions and legal provisions.

Role of a medical care system has been anticipated and recognized by the society globally to relieve sufferings by healing disease or injury and ultimately, preserving life. Cardiopulmonary Resuscitation (CPR) is a common final medical attempt to preserve life which may be a beginning of endless efforts. If the heart is restarted, admission in Intensive Care Unit (ICU) will be needed and in most of the cases, the patient will be on ventilator machine.

Obviously, CPR is done in emergency situations, mostly in hospital emergency rooms in resource poor countries where the pre-hospital emergency care is not developed. Though it is a lifesaving procedure, it severely reduces the possibility of a peaceful death. Attempting CPR carries high chances of failure and high risk of significant adverse effects and is often 'traumatic' end-of-life that occurs in a manner the patient and people close to the patient would not have wished. CPR is not an appropriate response to death that occurs as a result of advanced age or illness [1]. Resuscitation particularly in these circumstances violates a person's right to die with dignity. In developed countries, dignified end-of-life is part of human freedom [2] and in ethical terms the autonomy to decide according to one's own desires and beliefs which has been evolving through the advance directives.

At times, the emergency medical professionals are confronted with a situation where there is no advance directive from the patient and the hospital also does not have the guidelines. The legal provision of an implied consent to emergency treatment endorses CPR as the default response to cardiac arrest. When there is no documentation like do-not-resuscitate (DNR) order, the decision will always be in favour of providing CPR as an attempt to save life.

### Medical futility

According to Oxford English dictionary the term 'futility' means - inadequacy to produce a result or bring about a required end; ineffectiveness, uselessness [3]. 'Medical Futility' is defined as a clinical action serving no useful purpose in attaining a specified goal for a given patient [4]. An intervention is futile if it prolongs dying and brings discomfort but no improvement [5]. Futile medical treatment is incapable of attaining the desired goal of treatment. It may not be a harmful and ineffective interventions but an action, intervention, or

procedure that might be physiologically effective may not necessarily benefit the patient. The concept of 'futile treatment' is also connected to an evaluation of quality of life and life expectancy and is of a more discretionary nature [6]. Thus, medical futility is a subjective judgment and is integrally linked with the ethical dilemma as it is value laden and has potential of subjective variation even among the medical professionals. In addition, there is often a gap between the physician's understanding of the likelihood of success and the risks of CPR compared to patient and family expectations.

'Terminal illness' is frequently used phrase to determine the medical futility. Bayer *et al.* defined terminal illness as 'an illness in which, on the basis of the best available diagnostic criteria and in the light of available therapies, a reasonable estimation can be made prospectively and with a high probability that a person will die within a relatively short time' [7].

There is a blurred distinction between technically possible and medically reasonable. Dying process prolonged by medical technology at the expense of increasing incapacitation, intractable pain, and indignity. Life sustaining treatments are used to prolong life without reversing underlying medical condition and thus, futility has become a side effect of technology. There is a need to improve end-of-life decisions in order to reduce the frequency of a mechanically supported, painful, and prolonged process of dying [8]. In hospital settings, there is a tendency for aggressive intervention even in patients with terminal illness without recognizing futility. However, death is a reality of life and in several situations of life-limiting medical illnesses particularly chronic diseases, it is anticipated or expected. Cancer patients on palliative care have extensive complications and high comorbidity and in those cases, cardiopulmonary resuscitation is regarded as futile [6]. Identification of futility and timely transition to palliative care avoids excessive and potentially harmful treatment and unnecessary burden on hospital resources [9].

## Cardiopulmonary Resuscitation

Cardiopulmonary Resuscitation (CPR) is an intervention to save life in condition of cardiac arrest which might have several underlying causes. From an emergency medical perspective, there is an implied consent for CPR as the default response to cardiac arrest unless there is a documented do-not-resuscitate order [10]. Since the decision not to perform CPR is irreversible, it is appropriate to initiate CPR [1].

Historically, CPR was developed through an intervention for drowning, accidents and war inflicted trauma. Later on, it was used and found to be effective in cardiac arrest occurring from cardiac causes. [11] In early decades of CPR program, a meta-analysis of 21 studies from 1965-1989 revealed that the most significant negative predictors of survival from CPR were renal failure, cancer, and age more than 60 years, while acute myocardial infarction had a significant positive predictor [12]. Meta-analysis of 41 studies across the globe from 1978-1998 revealed that the overall likelihood of surviving discharge as 1 in 8 for patients who undergo in-hospital cardiopulmonary resuscitation and 1 in 3 for patients who survive cardiopulmonary resuscitation [13]. In the last more than two decades, particularly in resource poor countries it is practiced in all cases of cardiac arrest and is seen as a medical response at the time of death. In a recent multicenter study in Korea, mortality of post-CPR ICU admitted patients was associated with various physiologic and laboratory parameters and hospital Rapid Response System (RRS) had no impact on such mortality [14].

In emergency room scenario, with limited amounts of available information, identifying patients who would certainly benefit from the act of restoring life that is CPR is not always easy [15]. The ability to extend and prolong life increases the ethical dilemmas in the complexity of clinical decision-making. Ethical dilemmas are likely to arise regarding the use of life-prolonging measures including cardiopulmonary resuscitation [16]. It has to be determined in case per case basis whether CPR is a futile medical treatment meaning thereby it cannot be expected to either restore the physiological cardiopulmonary functions or to achieve the expressed goals of the patient which may be an individual perspective. In the context of resuscitation, the goal is return of spontaneous circulation with pre-arrest neurologic function [17]. Good ethical decision-making requires reliable facts like information about the natural history of neurological recovery from circulatory arrest [18]. The understanding of benefit and futility varies even in the guidelines; some favor physiological analyses of futility while others recognize an ineradicable role for patient values [19].

## Discussions

Ethical dilemmas are common in day do day medical practice and decision making becomes difficult in terms of ethics. Since seventies, biomedical ethics has been dominant in the field of medical care particularly when the decision-making is at the cross-road. Dilemmas are discussed and ethics consultations have been becoming a regular part of clinical care. However, it is always very sensitive when the issues revolve around end-of-life decisions. In general, the emergency medical service is unique globally and carries special ethical dilemmas. The recent version of code of ethics for emergency physicians issued by American College of Emergency Physicians published in 2012 describes seven different special circumstances with the moral dimensions of emergency medical practice [20]. This is the most extensive ethical guideline and most of the points are generic and can be guiding in all emergency medical care setting. E.g. when patients lack decision-making capacity, emergency physicians cannot secure their informed consent to treatment and is very compatible situation in case of cardio-pulmonary resuscitation. However, some of the points in this code of ethics are contextual to American health system and are not applicable in other countries.

The issue of medical futility in cardiopulmonary resuscitation encompasses all four principles of biomedical ethics – autonomy, beneficence, non-maleficence and justice. Strong emotions are common when discussing end-of-life decisions with patients or their surrogates. The technical assessments of futility are decided by the medical professionals but futility decisions require communication between the care providers and substitute decision makers and from legal perspectives, this need to be procedurally fair [21-23]. Ethical approach using the principles of biomedical ethics simplifies the complexities of the CPR decision [24].

## Autonomy

A patient requiring cardiopulmonary resuscitation is not capable of autonomous decisions neither to give nor to withhold consent. Unilateral judgment of physician to withhold cardiopulmonary resuscitation, without patient consent, even when it would be futile would undermine respect for patient autonomy [25] and is ethically objectionable. The care providers must respect for the autonomy of the individual patient who has the right to self-determination. Each person's values, viewpoints and choices have to be honored. However,

in patients with terminal illnesses like cancer, the issue of end-of-life care and CPR has to be discussed with the patients and accurate information on the expected outcomes of cardiopulmonary resuscitation [26] are provided so that respect for autonomy not merely a respectful attitude but involves action [27], which in this case is enabling them to take autonomous decision [28]. In western countries, CPR guidelines and do-not-resuscitate policies [29] have been developed so that these facilitate decision making but not generally available in many resource poor countries. The emergency physician is confronted with patients in unconscious state whose treatment preferences are not known. Surrogate decision makers are asked to make judgments about the patient's values relevant to medical decisions near the end of life [30].

Autonomy of the patient includes two aspects – firstly, right to demand treatment and secondly, right to refuse treatment like do-not-resuscitate order. Regarding the right to demand treatment even when futile, patient dissent to a DNR order should trigger a fair procedural mechanism to resolve the dispute [31]. A joint statement from the British Medical Association, the Resuscitation Council (UK) and the Royal College of Nursing Decisions relating to cardiopulmonary resuscitation published in 2007 mentions that doctors cannot be required to give treatment contrary to their clinical judgment, but should be willing to consider and discuss patients' wishes to receive treatment, even if it offers only a very small chance of success or benefit [29]. Here the autonomy of the patient overrides the autonomy of the physician. Unilateral DNR decision was debated during nineties [32-34] but with increasing impact of biomedical ethics, there has hardly been any publications in favor of such decision in 21st century [35]. An informed decision about DNR status is only possible if the patient has a clear understanding of their illness and prognosis [29]. In any context, doctors should enhance patient autonomy by ensuring a fully inclusive decision-making environment [19] which may include assisting surrogates for overcoming the emotional, cognitive, and moral barriers to high-quality surrogate decision making for incapacitated patients [30]. Surrogates who need to make end-of-life treatment decisions experience negative emotional effects and end-of-life communications have to be compassionate with sensitivity and the shared decisions have to be implemented [36].

## **Beneficence**

Beneficence is a moral obligation of contributing to the benefit or well-being of people and thus is a positive action done for the benefit of others instead of not merely refraining from harmful acts [27]. Cardiopulmonary resuscitation as a medical intervention is for the life-saving benefit of the patient but these benefits have to be weighed against harms based on the patient's values [37] and their understanding of a good quality of life. To quote an example, CPR in in-hospital cardiac arrests in cancer patients with metastatic disease may not be considered beneficial as the overall survival to discharge after a successful CPR is as low as 5.6% [38].

Assessments of treatment futility at the end of life have strong parallels with assessments of best interests [31] and prolongation of life is not always in the best interests of the patient. In principle, the professional responsibility to provide CPR not different from providing any other treatment and the duty is to offer treatments which are likely to yield more benefit than harm or risk in the given context.

## **Non-maleficence**

In brief, the principle of non-maleficence can be described as “do no harm”. While undertaking any emergency medical care interventions like cardiopulmonary resuscitation due attention should be given not to harm the person involved. In a chronically ill or terminally ill patient, CPR could potentially extend life for an indefinite period, but at a severe cost to the patient in terms of suffering. This suffering could be either the direct result of CPR or the result of the ongoing disease process. These include chest wall or intra thoracic trauma, neurological impairment, vegetative state. Cardiopulmonary resuscitation becomes maleficent when the risk of brain injury is high [1]. From patient's value perspectives, death may be better or even preferable than severe disabilities following significant brain injury. Futility has to be decided in time in order to prevent potential harm due to additional sufferings and indignity.

Prolongation of life with life-saving technologies may be futile medical treatment and may cause more burden/harm than benefit. Decisions of medical futility are largely taken with due considerations to non-maleficence. For example - the criteria for refraining from cardiopulmonary resuscitation in palliative care cancer patients are based on the duty of the treating personnel not to exacerbate their suffering and not to administer futile treatment [6].

## **Justice**

Justice, more specifically understood as distributive justice, requires that given limited resources, allocation decisions must be made fairly, and that benefits and burdens are distributed in a just and fair way [27]. The principle of justice which creates a right to receive something and involves the resolution of competing individual demands and the balancing of social goals [1] and the needs of the greater society. Through fairness, justice mitigates the inequalities prevalent in the society and ensures equal opportunities for care to all concerned. In cardiopulmonary resuscitation, the decisions from justice perspectives depend primarily on the definition of 'medical futility'.

For the practical purpose, answer to the question 'what next after the cardiopulmonary resuscitation?' may provide the basis for justice. Successful CPR is generally followed by admission of the patient in intensive care unit usually on ventilator. These facilities are scarce throughout the globe and the distributive justice comes into play. In this course, several parameters like terminal illness, multi-organ failure, co-morbidities and age [39] of the patient etc. are considered for triaging the patients and/or deciding the medical futility. Code of Ethics for Emergency Physicians published by the American College of Emergency Physicians incorporates emergency physician's duty in justice to act as responsible stewards of the health care resources entrusted to them and must make careful judgments about the appropriate allocation of resources to maximize benefits and minimize burdens [20].

## **Conclusions**

End-of-life decisions either not to resuscitate or withhold CPR are difficult emergency decisions which are justified when the medical futility is decided with due considerations to the principles of biomedical ethics. CPR is not indicated in situations such as terminal irreversible illness when death is not unexpected. Ethical approach simplifies the complexities and facilitates shared decision making

process and in due course maintains the consistency of consecutive decisions. CPR guidelines should not just be based on technical and legal issues but also need to encompass the ethical components so that due considerations are incorporated to respect the autonomy of the patient, in their best interest, without harm and additional sufferings and justifiable equal opportunities in the given context of the society.

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