Closed chest cardiopulmonary resuscitation (CPR), having been so successful after its introduction in the operating room for saving lives of anesthetized patients, was adopted for use in the intensive care units, then hospital-wide, and finally to out of hospital patients. This has lead to ethical dilemmas involving patients who must themselves request discontinuation of artificial organ function devices and treatments, or placing family members in the difficult positions of having to make those decisions for their unconscious and suffering relatives. In this review, the Ethical principles on which physicians, hospitals, patients, and surrogate decision makers rely in order to apply their perceived moral obligations to provide patient safety, comfort, and treatment are examined with particular emphasis on do not resuscitate orders (DNR). It is clear that DNR does not equate with do not treat.

**Key Words:** CPR, DNR, Ethical Principles, Advanced Directives

Closed-chest Cardiopulmonary Resuscitation (CPR) was first employed for patients who suffered cardiac arrest during surgery under anesthesia and initially reported to have high success. In 1961 [1] Jude et al reported on the use of CPR in 118 patients with cardiac arrest at The Johns Hopkins Hospital. They reported that although seventy-eight percent had cardiac action restored, only 60% were returned to pre-arrest central nervous system (CNS) and cardiac status [2]. By 1963, the routine use of CPR on all patients throughout the hospital lead to new problems for those who survived the arrest [3]. Prolonged suffering and a prolonged dying process was often the result of successful cardiac resuscitation, particularly in terminally ill patients [3, 4]. But it was not until 1976 that the concept of a hospital policy permitting a physician to write an order to not resuscitate a patient appeared in the medical literature [3].

By 1963, the routine use of CPR on all patients throughout the hospital lead to new problems for those who survived the arrest [3]. Prolonged suffering and a prolonged dying process was often the result of successful cardiac resuscitation, particularly in terminally ill patients [3, 4]. But it was not until 1976 that the concept of a hospital policy permitting a physician to write an order to not resuscitate a patient appeared in the medical literature [3].

It is clear that in those early days of CPR and DNR orders, many physicians and health care workers found it difficult to reconcile what they believed to be their “Moral Obligations” to do everything possible to save and extend the lives of their patients with the “Ethical Principles” that form the basis for the legal implementation of those moral obligations.

These Four Basic Ethical principles are: Nonmaleficence [5], Beneficence [6], Patient Autonomy [7], and Justice [8].

As discussed by this author in a previous manuscript [9], implementing the above principles the physician has to balance “Three Dichotomies” [9].

- The potential benefits of treatment must be balanced against its potential burdens; will CPR cause more harm than benefit?
- Striving to preserve life; will CPR preserve life? Or must we recognize that it would be biologically futile, and we must only provide comfort in dying.
- Individual needs are balanced against those of society; it is not possible or medically acceptable to offer everything to everyone who requests it including CPR.

Eric J. Casssel, in his article the “Nature of suffering and the goals of medicine,” stated “...The
relief of suffering and the cure of disease must be seen as twin obligations of a medical profession that is truly dedicated to care of the sick. Physicians’ failure to understand the nature of suffering can result in medical intervention that (though technically adequate) not only fails to relieve suffering but becomes a source of suffering itself” [10].

As stated by Truog, Brett, and Frader, the techniques of CPR were originally intended to attempt to save the lives of patients with reversible cardiac arrhythmias [11]. But in 1992 when their paper was written, the current practice was to use CPR in all situations unless there is a direct physician order not to resuscitate [11]. “Since cardiac arrest is the final event in all terminal illness, everyone is eventually a candidate for this medical procedure…and therefore...DNR orders were developed to spare patients from aggressive attempts at revival when imminent death is anticipated and inevitable” [11]

It is often the case that patients or their surrogate decision makers request that everything should be done including CPR even when the physician believes that CPR would be futile and only cause more harm [9, 11]. In such cases it can be argued that the physician should be able to enact a DNR order in the absence of consent from the patient, surrogate, or family [11, 12].

Some patients and/or family members will not consent to having a DNR order written because of fear that all measures of care will also be withdrawn. Others simply believe for religious reasons that they must have everything done to continue to live. Others still are swayed by what they have seen on television and movies.

In June 1996, the New England Journal of Medicine published a study about the success rates of CPR as shown on the television medical shows “ER,” “Chicago Hope” and “Rescue 911.” On television the actors successfully resuscitated 75% of the pretend patients. But according to the study, the real-life estimates were less than half [13].

A 2009 study suggested that the success rate of CPR on television may be more realistic; however, on television the long term survival of these resuscitated patients is rarely a part of the script [14]. In addition, we are rarely shown CPR being performed on older, sick, terminally ill patients in the intensive care unit on television, but rather young trauma patients with a better chance of surviving CPR. “In dealing with real patients, physicians must take into account the media myth of CPR success rates in obtaining informed consent to write a DNR order [14].

To counter this medical myth, researchers have studied the success rates of CPR (without the use of automatic defibrillators) in various settings [15]:

They found that CPR was successful in 2% to 30% of victims when administered outside of the hospital, in 6% to 15% for patients in the hospital, and a discouraging 5% or less for elderly victims with multiple medical problems [15].

With these statistics in mind, one must look back to the 4 basic principles of medical ethics for guidance in determining whether an individual patient should be a candidate for attempted CPR should a cardiac arrest occur while in the hospital; or whether a complete informed discussion should take place with the patient and/or surrogate decision maker as to placing a DNR order on the chart in order to avoid a catastrophic outcome and increased suffering for the patient.

First. “Do No Harm” implies that assessment of patients should be conducted in advance, when possible, to avoid causing more harm and suffering to patients who have little to no chance of surviving the brutality of the CPR process.

Second. “Do Good If You Can” (a concept originating from Saint Thomas Aquinas of the 13th century) requires the same forethought. In fact the courts in the United States have already ruled that “physicians are not obligated” to offer or provide treatments to patients that they feel would not be beneficial, even if the treatment is demanded by the patient or family. Thus the issue of futility of care was entered into court proceedings [16].

Decision making in medical futility has always been a problem for physicians. In one of the ancient Hippocratic treatises, The Art, physicians and patients are admonished: “Whenever a man [sic] suffers from an illness, which is too strong for the means at the disposal of medicine, he surely must not expect that it can be overcome by medicine” [17]. Similarly the ancient Greek healers suggested that “among the 3 goals of medicine were cure, relief of suffering, and the refusal to treat those overmastered by their illness” [18] Hippocrates discouraged the sick from asking their physicians to attempt cures that had no possibility of success. And likewise, he (Hippocrates) reminded physicians “to attempt a futile treatment was to display an ignorance that is allied to madness” [17].

In the 21st century both ethicists and intensive care specialists have come to opine that physicians must accept the responsibility for recognizing the futility of certain interventions (like CPR), and to
be granted the legal privilege to decide to limit care, even against the objections of the patient or the patient’s legal representative [19, 20].

In his review article on medical futility, Fine gives examples of the development of the concept of futility of care, including CPR, which culminated in legislation such as THE TEXAS ADVANCE DIRECTIVES ACT OF 1999 [17].

Fine explains that this legislation integrated multiple previous laws dealing with terminal care decision making into a one statute, and made several important changes to the living will, the definition of terminal and irreversible illness, and new requirements for how consents should be witnessed [17].

The new Texas advance directives of 1999 recognized that patients may use this document to specify which treatments they want to reject or requesting the face of terminal or irreversible illness [17]. Designated surrogates could also make such decisions if the patient lacked capacity (to be defined later) to make the decisions himself or herself [17].

However the Texas Act also included a provision for the treatment team to challenge the patient’s directive, if the physicians feel the treatment requested is “medically futile” [17]. There is also a provision for requesting an ethics consultation. Under the Texas law, physicians could find “a legal safe harbor” by following the process as outlined in the Act [17].

The provisions of the Texas Law are reproduced below as taken from Fine’s review article because they are similar to those of most States Statutes, and serve as guidelines for the resolution of Ethical conflicts [17]. These provisions as reproduced below provide the “legal safe harbor” for physicians, institutions, and ethics committees, the first of its kind in the country [17].

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**Case Law Example (Court Ruling Limits Rights of Patients, New York Times, By GINA KOLATA, Published: April 22, 1995)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Case</th>
<th>Court</th>
<th>Facts</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Gilgun v. Mass. General Hospital</td>
<td>Suffolk County Superior Court, Boston</td>
<td>Physician and hospital discontinued life-sustaining therapy and issued a do not attempt resuscitation order despite objections of the patient and surrogate when they deemed that further care was futile.</td>
<td>Court ruled there was no negligence on the part of the physician or hospital.</td>
</tr>
</tbody>
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1. The family must be given written information concerning hospital policy on the ethics consultation process.
2. The family must be given 48 hours’ notice and be invited to participate in the ethics consultation process.
3. The ethics consultation process must provide a written report to the family of the findings of the ethics review process.
4. If the ethics consultation process fails to resolve the dispute, the hospital, working with the family, must try to arrange transfer to another provider physician and institution who are willing to give the treatment requested by the family and refused by the current treatment team.
5. If after 10 days, no such provider can be found, the hospital and physician may unilaterally withhold or withdraw the therapy that has been determined to be futile.
6. The party who disagrees may appeal to the relevant state court and ask the judge to grant an extension of time before treatment is withdrawn. This extension is to be granted only if the judge determines that there is a reasonable likelihood of finding a willing provider of the disputed treatment if more time is granted.
7. If either the family does not seek an extension or the judge fails to grant one, futile treatment may be unilaterally withdrawn by the treatment team with immunity from civil or criminal prosecution.

However, this “physician autonomy” given to physicians seems to be in conflict with the Third Ethical Principle, “Patient Autonomy.” Since the late 1940’s the rights of patients or their designated surrogates to participate in medical decisions has grown and matured into the concept of “true informed consent” [7, 21, 22].

In Canterbury v Spence, 1972, the D.C. Court ruled that disclosure must include information that a “reasonable man” would consider important to make an informed decision [22]. Thus the Concept of “reasonable person” was established in obtaining informed consent [22].

Case Law Example (Canterbury v. Spence (464 F.2d 772) 1972)

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**United States Court of Appeals for the District of Columbia Circuit**

<table>
<thead>
<tr>
<th>Canterbury v Spence</th>
<th>D.C. Circuit Court</th>
<th>Canterbury became quadriplegic following a laminectomy surgery. The Surgeons had disclosed information in accord with the standard in the community at the time.</th>
<th>The court ruled that disclosure must include information that a “reasonable man” would consider important to make an informed decision.</th>
<th>Concept of “reasonable person” established.</th>
</tr>
</thead>
</table>

It is clear however, that physicians are poor in communicating the true implications of CPR and the risks versus the benefits to individual patients or surrogate decision makers; and therefore situations of ethical dilemmas still occur.

DNR is a physician order. It is written into the patient’s chart only after full disclosure to the patient or surrogate decision maker has been completed, including a discussion of the risks and benefits of CPR as well as the alternatives to CPR, and the risks and benefits of the alternatives have been disclosed [23]. The DNR order prevents the patient’s right to refuse treatment, specifically CPR, from being violated; but does not prevent the patient from receiving other medically appropriate interventions, such as intravenous medications or antibiotics, unless they also are specifically declined by the patient [23].

**Based on the report** [“Universal Out-of-Hospital DNR Systems,” Opinion 2.225 Optimal Use of Orders-Not-to-Intervene and Advance Directives, adopted June 2005, (www.virtualmentor.org Virtual Mentor, July 2010 – Vol 12 555) the AMA Code of Medical Ethics Opinions on Seriously Ill Newborns and Do-Not-Resuscitate Orders], the AMA guidelines propose that paying closer attention to patients’ wishes and desires during end stage disease can lead to better end-of-life care [24]. The AMA opinion statement goes into multiple aspects of end-of-life care planning but specifically addresses the DNR orders [24]. The AMA recommendations include a series of orders and abbreviations for those orders that could be employed to designate patients’ preferences for treat mentor non treatment and to help avoid such treatments being given during emergencies by personnel not aware of the patients’ status [24].

The AMA “Treatment avoidance orders might include, along with a Do Not Resuscitate (DNR) order, some of the following: Full Comfort Care Only (FCCO); Do Not Intubate (DNI); Do Not Defibrillate (DND); Do Not Leave Home (DNLH); Do Not Transfer (DNT); No Intravenous Lines (NIL); No Blood Draws (NBD); No Feeding Tube (NFT); No Vital Signs (NVS); and so forth” [24] In order to avoid confusion the designation Do Not Treat (DNT), is discouraged, since it implies that no care should be given including unintentionally the comfort care that the dying patient requires; Full comfort care only (FCCO) serves the same purpose without the likely misinterpretation [24].

Since the condition of patients tend to change, particularly with patients in the intensive care unit, all treatment avoidance orders including DNR, should be reviewed frequently to ensure that they still conform to the patients’ wishes [21].
Mr. Bartling’s case confirmed that an adult who has “capacity” (which is different from “competency” in the context of medical decision making) may refuse medical treatment even if, in so doing, refusal of treatment may lead to death [25].

Capacity means that at the time of the discussion about DNR, the patient is able to understand the risks and benefits and alternatives of treatment offered adequately to make a decision about refusing treatment [9]. It does not require memory of that conversation later, and it is determined by the judgment of the physician [9]. Competency usually requires evaluation by a psychiatrist or Judge to determine if a patient can make decisions about his/her financial affairs or estate [9]. One can have Capacity without having competency [9].

The right to refuse medical treatments is different from the right to demand all treatments [25]! The forth principle of medical ethics deals with this issue. That is, the principle of “Justice” deals with the fair distribution of resources between the individual patient and society at large [8]. In their study entitled “Do Not Resuscitate Orders and the Cost of Death,” Maksoud and his associates examined whether implementation of advance directives lead to reductions in health care costs near the end of life, depending on when the orders were written and applied [26]. They reviewed the hospital charts of 852 of the 953 deaths that occurred in the hospital. The data they reviewed included resuscitation status, timing of DNR orders, participants in decision making, and physician and hospital charges [26].

Of the 852 patient records they reviewed, 73% had a DNR order at the time of death [26]. Interestingly, they found a wide range of use of DNR orders according to hospital service, 97% of those who died on the oncology service, while only 43% of the deaths on the cardiology services [26]. Seventeen percent of the patients who died in the hospital had DNR orders in place prior to admission [26]. Patients who died with a DNR order had longer hospital stays (median, 11.0 days) compared with those who died without a DNR order (6.0 days), indicating that implementing a DNR order does not lead to earlier deaths [26].

Overall average hospital charges for all patients who died were $61,215. But the average hospital charges for those who were admitted to the hospital with a prior DNR order were $10,631 and $73,055 for those who had a DNR order instituted in hospital [26]. This study provides support for having discussions about DNR and advance directives for patients with end stage diseases who might likely be admitted to the hospital. It clearly also demonstrated that patients with DNR orders prior to admission had lower overall hospital charges, it was not due to shorter length of stay or earlier deaths [26].

It is clear that obtaining consent from patients for DNR orders has not been used nor should it be used to decrease hospital costs but rather to decrease utilization of interventions such as CPR for cases in which cardiac arrest can be anticipated. In this light, as a final consideration in any discussion of DNR orders one must examine the maintenance or suspension of the DNR order when a severely ill or terminally ill patient must undergo
a surgical procedure with general anesthesia with or without regional anesthesia.

In his review article Robert M. Walker examined the question of whether DNR orders should be routinely suspended when terminally ill patients undergo palliative surgery, as the situation existed in 1991 [27]. If the orders were to automatically be discontinued, he opines that patients (in 1991) would be forced to balance the benefits of having palliative surgery against the risks of unwanted resuscitation [27]. On the other hand, if physicians were constrained to honor DNR orders intra-operatively, they may also feel unacceptably restrained from correcting adverse effects for which they felt responsible for creating [27].

Truog, Weisel, and Burns, in their article in the journal Anesthesiology in 1999, discussed the new guidelines of the American Society of Anesthesiology (ASA) dealing with the suspension or continuance of DNR orders when patients came for surgery and anesthesia [28]. The ASA guidelines were put forward because of “concerns that automatic suspension of DNR orders in the operating room did not sufficiently address a patient’s rights to self determination in a responsible and ethical manner” [28]. The American College of Surgeons also addressed this same issue [28].

According to Truog, Weisel, and Burns the DNR status of patients requiring surgery needs to be better categorized to different scenarios which may occur in the operating room [28].

In a 2009 study, Waisel et al found that only half of the anesthesiologists they surveyed were familiar with the ASA’s current guidelines requiring reconsideration of DNR orders for patients coming to surgery [29]. Furthermore, unless it was possible to honor the DNR order intra-operatively at the request of the patient or surrogate, rescinding the order would eliminate its expressed intentions — to support patient autonomy and to prevent non-beneficial interventions [29].

These failures lead to serious consequences. Patients are deprived of the opportunity to make informed decisions regarding resuscitation, and CPR is performed causing harm to patients who would not have wanted it [29]. Waisel et al, highlight the persistent problems with today’s use of inpatient DNR orders. For example DNR discussions do not occur frequently enough, or occur too late in the course of patients’ illnesses to allow their participation in resuscitation decisions [29]. Furthermore, they maintain that many physicians fail to provide adequate information to allow patients or surrogates to make informed decisions and inappropriately apply the DNR orders to limit other treatments [29].

Jung et al proposed “strategies to target these factors including changing the hospital culture, reforming hospital policies on DNR discussions, mandating provider communication skills training, and using financial incentives” [30]. These suggestions are designed to promote the application of the Patient self-determination Act of 1990.

Now it is obvious that the induction of general anesthesia including endotracheal intubation may be necessary in order for surgeons to perform palliative surgical procedures, and chemical resuscitation may be necessary to combat the effects of anesthesia and the surgical trespass. Anesthesiologists and surgeons feel uncomfortable about not treating something they feel they may have caused. But anesthesiologists and surgeons accept the wishes of Jehovah’s Witnesses who refuse transfusions and are willing to die rather than accept blood [27]. They also

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**Case Law Example (The Patient Self-Determination Act (PSDA), United States Congress 1990)**

<table>
<thead>
<tr>
<th>1990 effective as of Dec. 1991</th>
<th>The Patient self-determination Act</th>
<th>U.S. Congress</th>
<th>All institutionalized adults receiving medical care supported by federal funding such as Medicare or Medicaid, must be given information explaining their legal rights under State law to accept or refuse medical/surgical treatments and the right to formulate advance directives.</th>
<th>Confirms every adult’s right to privacy, not to be invaded or treated against his/her will. This includes feeding tubes.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOT ABSOLUTE</strong> The State may limit the right of personal liberty on the basis of several concepts:</td>
<td><strong>a)</strong> Preservation of life</td>
<td><strong>b)</strong> Prevention of suicide</td>
<td><strong>c)</strong> Protection of innocent third parties (minor children)</td>
<td><strong>d)</strong> Protection of ethical integrity and professional discretion of the medical profession</td>
</tr>
</tbody>
</table>
are aware that not resuscitating a patient in the operating room in accordance with the patient’s wishes, is not tantamount to physician assisted suicide [27].

It is also possible that the patient may not be able to be extubated at the end of the surgery. The patient, family, and or surrogate must be informed that these measures alone do not constitute cardiopulmonary resuscitation. It therefore requires full discussion with the patient, family or surrogate decision makers and the surgeon, anesthesiologist, and primary care physician about informed consent, and whether CPR would be used intraoperative if a cardiac arrest were to occur. How long a patient would remain intubated post-operatively if the condition of the patient were to deteriorate to a persistent vegetative state must also be clarified before proceeding to surgery.

Neville Goodman stated that “Words are all we have to describe what we do, the way we do it, and what we infer from clinical research. [31] We must use them carefully and properly” [31]. Ethical conduct in medicine is all about communicating with our patients, their families, and our colleagues.

REFERENCES
16. Gilguy v Massachusetts General Hospital, the Suffolk County Superior Court(42) in Boston (1995).
21. Salgo v Trustees of Leland Stanford Hospital, California Appeals Court 1957. (Court ruled that physicians must inform patients of the risks, benefits and alternatives of treatment).