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The Physician and His Approach to Sudden Death

JAMES R. JUDE, M.D.

Encountering sudden and unexpected loss of both ventilation and functional circulation (sudden death, cardiac arrest) in his patients is not an infrequent occurrence of physicians in their daily practice of medicine. It is a problem of antiquity and has been generally a terminal life event. Up to the current decade sudden death left the physician with little that he might apply in treatment. Probably more to palliate his knowledge of his inadequacies, and to indicate to the surrounding loved ones that everything was being done, he would administer intracardiac adrenalin; but without cardiac output to disperse it, to no avail. Occasionally a form of artificial respiration was administered (pre 1958: prone pressure Schaeffer, Sylvester arm-lift or Holgier-Hielson back-pressure arm lift; post 1958 mouth-to-mouth) but again without any means of circulating the oxygenated blood. So all effort, therapy and obligation was discharged, proper final religious rites conditionally administered and the death certificate signed.

Sudden and unexpected death has been probably more common than we generally realize but because of the inadequacy of therapy and the brevity and rapidity of conclusion of doctor-patient relationship, rapidly forgotten. Thus, we recall the too frequent sudden terminal collapse at home, office, street or hospital of the

patient with coronary artery disease. More than 500,000 die yearly from coronary artery disease and while the exact figure is unknown many tens of thousands die quite abruptly in cardiopulmonary arrest. Similarly electrocution, drowning, asphyxiation from multiple causes, anaphylactoid shock, and anesthesia account for significant sudden loss of life. We are prone to remember longer the slower and more agonizing death experienced by the patient with malignant disease, chronic lung disease or prolonged cardiac failure. Ultimately we must all pass from this physical world and here is where, as physicians, we must evaluate what our actions in therapy are to accomplish for the patient in his final minutes (or seconds).

As previously stated, sudden death gave little problem to the conscience of the majority of physicians up to 1960. Sudden death has then been termed *cardiac arrest* and referred to that abrupt death secondary to idiosyncrasies of anesthesia during surgical procedures. Due to the circumstances of etiology, location and likely reversibility, attempted resuscitation was usually made by the effective open chest cardiac massage method. Properly carried out by trained surgeons as many as 50% to 60% could be totally salvaged. Higher success rates failed because of slowness of most efforts. The risk of a permanently cerebrally

damaged patient resulting was always present and occasionally occurred. In a few instances where a victim of sudden death from acute coronary occlusion sustained the "terminal" event in a hospital in the near presence of a surgeon the open chest cardiac massage was successfully managed.

In 1954 the value of expired air ventilation (mouth-to-mouth or mouth-to-nose) was scientifically validated and provided a truly effective measure of treating acute respiratory arrest. In 1960 a non-surgical method of providing artificial circulation was similarly substantiated (closed chest cardiac compression or massage, external cardiac massage). Together was provided as external cardiopulmonary resuscitation a very simple and proven effective means of sustaining the viability of the vital organs of the body in cases of sudden death. Since it is empirically known that in most instances only four to six minutes may pass without circulation of oxygenated blood before the central nervous system sustains irreversible anoxic changes, it is necessary to apply effective resuscitation within these limits. Thereupon with additional therapy of vasomotor-cardiotonic drugs, electrocardiographic evaluation and electrical defibrillation, if indicated, the victim may be returned to total normal organ function. In a large collected series since 1960 as many as 50% to 60% of patients sustaining "cardiac arrest" in the operating theater and post-anesthesia area could be salvaged while under various circumstances 15% to 20% of victims

of sudden death from coronary occlusion were reported saved with the salvage value of the latter being as high as 50% in coronary care hospital units.

No longer does the physician have a void in his therapeutic armamentarium for the treatment of sudden death. Effective means are available but with these the physician must now search his knowledge, experience and conscience as to when, on whom, under what circumstances, this possibly extraordinary therapy is to be applied. For with its application he commits himself to a very real professional, emotional, and physical involvement, not only with the patient but with the relatives. In true cases of sudden death resuscitation indeed is without equal in miraculous type of therapy, for in no other of the far reaches of medicine do we snatch the patient back from so close to the exit from this world. The important clue is that the victim remains alive (cerebrally viable) for a brief time of minutes after respirations and circulation are zero. Treatment must begin within this time of clinical but not yet biological death. The physician shares in truth the life of the patient by his artificial ventilation and circulation until they are spontaneously resumed. If treatment is delayed and biological death of the central nervous system occurs, even if successful re-institution of cardiac function results we do not have a complete human. Many really salvageable victims of sudden death are not saved because individuals with proper knowledge for evaluation and

application of this emergency therapy are not available within four to six minutes.

The physician will be frequently faced with the problem of sudden death during house calls or in his office or hospital. He is thrust into the spot of making the decision to proceed or not with resuscitation and to possibly extend the life of the victim for minutes, hours, days, or years. Since all must ultimately go the road of cessation of breathing and circulation, he must very rapidly decide as to the likelihood of returning the patient to a useful life. All victims of sudden death, even under the most optimal of circumstances, are not candidates. Physicians have frequently been criticized for keeping patients with irreversible illnesses alive with fluids and drugs, tubes and catheters, oxygen and respirators, only to allow them to suffer agonies for days or weeks, and their relatives to suffer financial crises. Indeed, because of the ease of application of external cardiopulmonary resuscitation and sometimes because of the inexperience of young house officers, the final comforting passage has been traumatized by resuscitation efforts. On the other hand, the potentially salvageable may be allowed to pass on without receiving full value of what scientific advancement has provided.

Consideration must be given as to what patients are candidates for attempted cardiopulmonary resuscitation. While every situation must be considered independently the decision must be made rapidly. Time since onset of total cardiopulmonary

arrest is of paramount importance. If a period of total absence of ventilation and circulation of four to six minutes has been exceeded attempted therapy is generally contraindicated. However, the exact period for irreversible central nervous system damage is not the same for all individuals and varies with age, body temperature and status of the cerebral vasculature. Also, the exact time since onset of total circulatory and respiratory activity is not always a certainty. Therefore in many situations the patient must be given the benefit of resuscitation measures without this time sequence knowledge. Subsequent evaluation of the central nervous system will aid in decision to continue with resuscitation.

Of prime importance is initiation, and continuance of cardiopulmonary resuscitation is the etiology of the cardiopulmonary arrest and the outlook for the victim, if resuscitative efforts are successful, for a relatively normally functioning and painless life. Patients with terminal illnesses would not be candidates even though death is sudden and unexpected for that moment in time. Patients with a myocardial infarction and in severe cardiogenic shock in spite of intensive medical support, who are progressively deteriorating, but suddenly suffer total cardiopulmonary arrest are likewise not candidates for resuscitation, as even if resuscitation efforts are successful, experience shows that they are returned to the same failing course. On the other hand, the apparently healthy individual who suffers drowning and may be under water

ten minutes or even more is a prime candidate for attempted resuscitation.

It is frequently difficult to make the decision to begin resuscitation and the time element can be the most important factor in one's decision. We must be careful not to extend our efforts too far as to disturb the dignity that is itself inherent in death.

Beyond decision as to institution of resuscitation a second major moral hurdle is deciding when to cease these efforts. Fortunately some objective, although not unfaithfully consistent, signs are available. Signs of irreversible central nervous system or cardiac damage are evident by evaluation and observation of patient respiration, body movement, pupil dilation and the electrocardiogram. Although no time limit can definitely be set, the lack of any signs of improvement in the central nervous or cardiac systems over a sixty minute period of effective use of cardiac and ventilatory support, plus drugs, electrocardiographic evaluation and defibrillation if indicated, is generally an adequate trial.

Father Thomas J. O'Donnell has given a moral evaluation of artificial resuscitation. Although written

in the light of open chest cardiac massage alone, it holds substantially also for the much wider application of the external method. The main change is that most physicians rather than just a few surgeons and anesthesiologists are now daily facing the problem of making this moral decision. Father O'Donnell's evaluation should be widely reviewed.

Physicians and also trained lay people have available simple methods to provide sustenance of the vital immediate needs for viability: oxygenation and circulation of blood. With this therapeutic ability go moral obligations for proper selection and application.

REFERENCES:

- O'Donnell, Thomas J., S.J., *Artificial Resuscitation: A Moral Evaluation*. *Georgetown Medical Bulletin* 14:242, 1961.
- Jude, James R. and Elam, James O., *Fundamentals of Cardiopulmonary Resuscitation*, F. A. Davis Co., Philadelphia, 1965.

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