Does medical futility matter in ‘do not attempt CPR’ decision-making?

The current demographical trend towards an increasingly elderly population combined with advances in end of life care calls for a deeper understanding and common terminology about the concept of futility and additional influences on the resuscitation decision-making process. Such improved understanding of medical futility and other contributing factors when making DNACPR orders would help to ensure that clinicians make appropriate and thoughtful decisions on whether to recommend resuscitation in a patient. When estimating medical futility a physician should consider the chance of survival over different time periods and balance this against the chance of adverse outcomes. This information can then be offered to the patient (or the relatives) so that the patient’s views about what is acceptable for the survival chance, length and type of survival can be factored into the eventual decision. Given the lack of evidence in this area and the poor level of patient knowledge and the emotive nature of the topic, it is not surprising that clinicians find such discussions hard.

Defining medical futility

At its simplest level medical futility may be defined by ‘an unacceptable survival rate after CPR’. However there is no agreed minimum survival rate. It is rarely possible to ascribe a zero chance of any kind of recovery after a cardiac arrest. The very best candidate for CPR (e.g. arrhythmia in context of ischaemic heart disease) may enjoy a 50% survival chance but the current average inpatient survival in UK hospital is nearer 20%. This figure is of course of survival from a highly selected group of patients who are deemed appropriate for CPR. Some might consider a 5% chance of success to be pretty poor, balanced against the disadvantages of the procedure, but this is only a quarter of the average survival for this procedure. One per cent survival has been considered as ‘futile’ by some authors but this is an equally arbitrary level and there are many clinicians and patients who would be willing to accept this low chance when balanced against a 100% chance of death without CPR.

To complicate definitions further survival rates are rarely qualified by a time interval. The commonest end-point in studies is survival to discharge from hospital, but in some studies initial survival (recovery of pulse and breathing) is twice the survival to discharge rate. Little is known about whether patients value a few extra hours, days or weeks. Long term survival is rarely examined but there may be a bimodal distribution with only about half the survivors to discharge being discharged alive.

Another important consideration is the quality of survival. Successful CPR is associated with harmful discussion on whether some levels of quality of life are in themselves not worth living or futile (this is point 3 and not the subject of this review). In clinical practice the commonest reason to withhold CPR is the first point i.e. ‘medical futility’. Although this phrase is in very common use in clinical practice it means different things to different people and is very poorly defined in the literature.
outcomes ranging from bruising and rib fractures through to significant brain damage. Long-term survivors of CPR have been found to have higher rates of depression, disability and poorer quality of life than patients discharged without having had CPR (5,6), although it is difficult to separate the underlying pathology causing the arrest from the CPR process itself.

**Pre-arrest estimation of survival after CPR**

Attempts to measure the futility of resuscitation based on scoring of physiological variables such as blood pressure or other prognostic features such as renal function have been largely unsuccessful (7,8). Pre-arrest scoring systems, such as the ‘pre-arrest morbidity index’ (PAM) (9) and the ‘prognosis after resuscitation score’ (PAR) (10) have also been developed in an attempt to improve prediction of outcomes following cardiopulmonary resuscitation by combining multiple variables to produce a simple numerical score with better predictive accuracy. However, these have not performed well in independent studies and are of little value in deciding individual patient outcomes (11).

**How do clinicians use futility in CPR decisions?**

Resuscitation decision-making by the medical profession has been the subject of very little research. There are some studies that report experiences and views of doctors with regard to ‘do not attempt resuscitation’ decisions. Tyrer et al. found a wide variety of ‘do not attempt resuscitation’ decision-making approaches and practices in a focus group study which included trainee doctors and seniors clinicians (12). Of those surveyed, there were a number of factors considered to be important when making resuscitation decisions, including the patient’s diagnosis, prognosis, age, quality of life, the opinions of doctors and other medical staff and the wishes of patients and relevant others. A recent comprehensive review examined cardiopulmonary resuscitation in older people and highlighted several studies with conflicting reports on whether or not advanced age, independent of severity of acute and chronic illness, is a determinant of outcome (13). We have previously reported findings of a survey conducted to examine the experience, practice and opinions of specialist registrars in geriatric medicine in ‘do not attempt cardiopulmonary resuscitation’ (DNACPR) decisions. We found inconsistencies in opinion and practice in the DNACPR decision-making process among UK Geriatrics specialty trainees, with conflicting opinions between trainees and senior clinicians on resuscitation decisions in more than half of the participants surveyed (14). The respondents described making life or death decisions as a ‘burden’ (15). Interestingly we found that they ‘tended to perform cardiopulmonary resuscitation in younger patients that would be deemed futile in older patents’. Both Tyrer and Myint showed that there were no beliefs or behaviours that were universal with regard to ‘DNACPR’ decision-making. A common theme that emerged from both studies surveying specialist registrars in geriatric medicine was the perceived difficulty in discussing resuscitation decisions with patients and relatives. This was examined further by Sulmasy et al. who found that confidence in discussing DNACPR decisions was lower for junior doctors than senior doctors, for female doctors and for those who were younger (16).

**Involving patients**

A number of studies have explored resuscitation decision-making discussions between the medical profession and patients which demonstrate and patients’ wishes for increased communication with their doctor about resuscitation decisions. Morgan et al. interviewed 100 patients (mean age of 80 years) and their legal next of kin. The majority of patients thought that doctors should discuss plans for cardiopulmonary resuscitation with them, including a third of patients stating that resuscitation status should be limited to themselves (17). Miller et al. surveyed two hundred and forty-eight elderly outpatients to assess their knowledge about the procedural aspects and efficacy of in-hospital cardiopulmonary resuscitation. In this study, older people were found to overestimate the percentage survival to actual hospital discharge following in-hospital cardiopulmonary resuscitation (18). The authors concluded that improved education for elderly people may lead to more informed decision-making.

**Conclusion**

The current demographical trend towards an increasingly elderly population combined with advances in end of life care calls for a deeper understanding and common terminology about the concept of futility and additional influences on the resuscitation decision-making process. Such improved understanding of medical futility and other contributing factors when making DNACPR orders would help to ensure
that clinicians make appropriate and thoughtful decisions on whether to recommend resuscitation in a patient. When estimating medical futility a physician should consider the chance of survival over different time periods and balance this against the chance of adverse outcomes. This information can then be offered to the patient (or the relatives) so that the patient’s views about what is acceptable for the survival chance, length and type of survival can be factored into the eventual decision. Given the lack of evidence in this area and the poor level of patient knowledge and the emotive nature of the topic, it is not surprising that clinicians find such discussions hard.

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