Clinical decision making in cardiopulmonary resuscitation

de Vos, R.

Citation for published version (APA):
de Vos, R. (1999). Clinical decision making in cardiopulmonary resuscitation

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
Chapter 5

Quality of Survival: Assessment

R. de Vos.
Quality of life after cardiopulmonary resuscitation.
Adapted from: Resuscitation 1997;35:231-236.
ABSTRACT

Survival after resuscitation is associated with various degrees of neurologic sequelae. The most favorable outcome is regarded as a life without neurologic impairment, the worst outcome is a vegetative state. Although neurologic impairments may affect the patients' quality of life, the two parameters are not synonymous; quality of life plays an essential role in the decision making about resuscitation. We elaborated on the concept of quality of life, the International Classification of Impairments, Disabilities and Handicaps (ICIDH), and the current state of measuring health outcomes after resuscitation. In particular, we discussed the use of the generally advised Glasgow-Pittsburgh Outcome Categories and Overall Performance Categories to evaluate the outcome after resuscitation. The conclusions are that given the multidimensional aspects of quality of life, quality of life after resuscitation is generally not well evaluated and that clear statements about the quality of life after resuscitation cannot, for the time being, be given.
Evaluation of outcome after cardiopulmonary resuscitation traditionally focusses on survival. However, survival can be associated with various degrees of neurologic sequelae. The most favorable outcome is regarded as a life without neurologic impairment and the worst is a vegetative state. Between these extremes we find a broad spectrum of health outcomes. Although neurologic impairment may considerably affect the patients’ quality of life, neurologic outcome and quality of life are not synonymous and quality of life thus plays an important role in the evaluation of the success of resuscitation.

**Defining quality of life**

There is no generally accepted definition of quality of life. Quality of life is much broader than health alone and includes economic and environmental issues. Medical research has focussed on what is called “health-related quality of life”. This includes functioning and wellbeing. The lack of a clear definition of quality of life reflects the complexity of the concept. Rigid limitation by definitions will restrict refinement of the concept, and further development is to be expected. However, quality of life cannot be considered a nebulous concept. It is rooted in the WHO definition which specifies that health is a state of total physical, emotional and social wellbeing, and not merely the absence of disease or infirmity.

**Quality of life domains**

The identified attributes of quality of life are clustered in domains. There is consensus that the evaluation of quality of life should comprise at least the domains of physical, psychological and social functioning. The physical domain contains physical complaints, and the capability to perform activities. Complaints can be symptoms (pain, nausea), whereas activities concern a wide range of aspects like mobility and eating. Cognitive functioning (memory, orientation), and emotions (anxiety, depression) are elements of the psychological domain. The extent and the quality of social contacts and activities (work, hobbies) are aspects of social function.

Although quality of life can only be measured by its attributes, and not directly; asking the patient the global question “how would you rate your present quality of life” is still considered of value. The patients’ answer is assumed to reflect an implicit overall weighing of all perceived factors which influence wellbeing, some of these factors in an individual patient may not be known to the researcher. The general idea behind this question is that ‘the whole is more than the sum of parts’, but the assumed process of weighting may be questionable.
Impairments, disabilities and handicaps

In addition to the quality of life model, the WHO has used the international classification of impairments, disabilities and handicaps (ICIDH). Impairments are defects at organ level and abnormalities in body structure, for example impaired myocardial perfusion leading to angina pectoris. Disabilities are the consequences of impairment at person level, in terms of limitation of function, such as a patient who is unable to climb stairs due to angina pectoris. Handicaps refer to the consequences of impairment and/or disability on social function. For example, a patient may lose his or her job due to angina pectoris and lose the inability to climb stairs. The overlap between the ICIDH model and the Quality of Life-model can be explained by the fact that both are derived from the WHO definition of health. The ICIDH-model originates from the biomedical sciences and the Quality of Life-model stems from the social sciences. Both models have the ability to assess health-related aspects which determine the quality of life.

Judgement and measurement instruments

It is tempting to evaluate the patients’ quality of life by clinical judgement. Although, extreme outcomes (vegetative state) are relatively easy to observe, other outcomes such as depression, require a response by the patient. Patients are thus the primary source of information regarding their quality of life. To generate quantifiable and reproducible information, quality of life should be assessed by questionnaires. These questionnaires consist of one or more items, arranged in one or more subscales. These subscales represent the evaluated (sub)dimensions of quality of life. The questionnaires are regarded as measurement instruments and are evaluated for their specific clinimetric properties. In the evaluation an assessment is made as to whether the questions truly reflect the intended health aspects (validity) and generate reproducible answers (reliability). Instruments have to be sensitive to measure clinically relevant changes over time (responsiveness) and be able to distinguish between different populations (discriminative power). Responsiveness and discriminating power determine the clinical validity of the instrument.

Interpretation of results

Although instruments generate quantitative information, isolated results are meaningless without a reference value or context. For example, a patients’ score of 23 on a scale for mental impairment will tell the researcher little, even when he knows that the scale ranges from zero to 30. The reason is that although data are gathered at an interval level, some instruments may have little discriminative power for assessing severity of illness. The interpretation of those instruments is at best ordinal or rather dichotomous. For this scale for mental impairment, patients with a score of 24 could be considered mentally
intact, while patients with a score of 23 or lower could be considered as having mental impairments. A change of the cut-off value depends on the desired sensitivity and specificity of the instrument. For a useful interpretation of quality of life data in general, scores should be compared between or within patient populations to place outcomes in their context. Scores will in general differ for gender and age, well evaluated instruments have established norm scores for these characteristics.

Selection of instruments
When designing a study addressing the quality of life, it should be realized that one single instrument does often not cover all objectives. If the aim is to compare quality of life across different patients populations, a generic type of instrument has to be selected. This instrument assesses aspects of quality of life which are not related to a specific disease or intervention. An overview of generic instruments is presented in Table 5.1. The number of items per instrument ranges from 5 to 136, while the number of subdimensions ranges from 5 to 12.

When focussing on the consequences of a specific disorder, disease-specific instruments are chosen. Examples of these instruments are given in Table 5.2. Disease-specific instruments produce in-depth information on quality of life related to specific populations of patients, but comparing results across different populations of patients is not possible. To assess specific consequences of one particular aspect of quality of life, like depression or neurologic impairment, domain-specific instruments are used. Examples of these instruments are given in Table 5.3. Domain-specific instruments only allow comparison for the domain under study. Nevertheless, to investigate one single aspect in depth (e.g. neurologic impairment), other domains should not be omitted. The reason for a broader evaluation is that unexpected, or interrelated effects across domains, remain unknown. Domain-specific instruments are thus supplementary to generic and disease-specific instruments.

The choice of instruments for generic instruments may seem exhaustive, but the choice in domain and disease specific instruments is limited. The selection of an instrument for a particular study primarily depends on the specific goal of that study and the clinimetric properties of the instrument. Secondary aspects of feasibility, like the acceptability by patients (number and type of questions to answer) and acceptability by researchers, the estimated workload and financial costs also need to be considered.

Current state of quality of life assessments after resuscitation
The literature over the last decade has clearly shown that survivors end up in different states of health, and that survival alone is not a sensitive measure for successful resuscitation. However, most authors do not incorporate quality of
life in their outcome measures. When comparing studies in which some quality of life aspects are reported, there is little uniformity in terminology, evaluated domains, and outcome.

Table 5.1. Generic instruments for quality of life, assessment and subscales or domains

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Items</th>
<th>Administration/assessment</th>
<th>Subscales/domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sickness Impact Profile(^{24})</td>
<td>136</td>
<td>patient, caregiver or interviewer</td>
<td>sleep, emotional behavior, body care &amp; movement, home management, mobility, social interaction, ambulation, alertness behavior, communication, work, recreation &amp; pastimes, eating</td>
</tr>
<tr>
<td>McMaster Health Index Questionnaire(^{25})</td>
<td>59</td>
<td>patient</td>
<td>mobility, self-care, communication, global physical functioning, general well being, work/social role functioning, social support, global social functioning, self esteem, critical life events, global emotional functioning</td>
</tr>
<tr>
<td>Quality of Well-Being Scale(^{26})</td>
<td>50</td>
<td>interviewer</td>
<td>self-care, mobility, institutionalization, social activities, various symptoms or problems</td>
</tr>
<tr>
<td>Nottingham Health Profile(^{27})</td>
<td>45</td>
<td>patient</td>
<td>physical mobility, emotional reactions, social isolation, pain, energy, sleep</td>
</tr>
<tr>
<td>SF 36 Health survey(^{28})</td>
<td>36</td>
<td>patient/interviewer</td>
<td>physical functioning, mental health, pain, general health, vitality, social activities (physical or emotional problems), role functioning (emotional problems)</td>
</tr>
<tr>
<td>MOS 20/24(^{29})</td>
<td>24</td>
<td>patient</td>
<td>physical functioning, mental health, pain, social functioning, role functioning, perceived health (MOS 24: vitality)</td>
</tr>
<tr>
<td>SF 12 Health survey(^{30})</td>
<td>12</td>
<td>patient</td>
<td>physical functioning, mental health, pain, general health, vitality, social activities (physical or emotional problems), role functioning (emotional problems)</td>
</tr>
<tr>
<td>COOP(^{31})</td>
<td>9</td>
<td>patient</td>
<td>physical fitness, mood, social activities, general health, change in health, pain, overall quality of life</td>
</tr>
<tr>
<td>Euroqol(^{32})</td>
<td>6</td>
<td>patient</td>
<td>mobility, self-care, daily activities, family and leisure, pain/other complaints, mood</td>
</tr>
<tr>
<td>Quality of Life Index(^{33})</td>
<td>5</td>
<td>interviewer</td>
<td>activity, daily living, health, support, outlook</td>
</tr>
</tbody>
</table>
**Table 5.2.** Disease-specific instruments for quality of life, assessment and disorder\(^{34-39}\)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Items</th>
<th>Administration/Assessment</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seattle angina questionnaire(^{34})</td>
<td>19</td>
<td>patient</td>
<td>angina pectoris</td>
</tr>
<tr>
<td>Frenchay Activity Index(^{35})</td>
<td>15</td>
<td>patient</td>
<td>stroke</td>
</tr>
<tr>
<td>Rose chest pain questionnaire(^{36})</td>
<td>7</td>
<td>interviewer</td>
<td>angina pectoris</td>
</tr>
<tr>
<td>London Handicap Scale(^{37})</td>
<td>7</td>
<td>patient</td>
<td>chronic morbidities</td>
</tr>
<tr>
<td>Glasgow - Pittsburg Cerebral and Overall Performance categories(^{38})</td>
<td>2</td>
<td>interviewer</td>
<td>cardiac arrest</td>
</tr>
<tr>
<td>New York Heart Association (NYHA) classification(^{39})</td>
<td>1</td>
<td>interviewer</td>
<td>coronary artery</td>
</tr>
</tbody>
</table>

**Table 5.3.** Instruments for specific domains of quality of life, assessment and domains\(^{40-46}\)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Items</th>
<th>Administration/Assessment</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini mental State Examination(^{40})</td>
<td>30</td>
<td>interviewer</td>
<td>mental functioning</td>
</tr>
<tr>
<td>Center for Epidemiologic Studies - Depression Scale(^{41})</td>
<td>20</td>
<td>patient</td>
<td>depression</td>
</tr>
<tr>
<td>Wechsler Adult Intelligence/memory Scale(^{42})</td>
<td>150</td>
<td>interviewer</td>
<td>mental functioning</td>
</tr>
<tr>
<td>State Anxiety Inventory (FORM Y1)(^{43})</td>
<td>20</td>
<td>patient</td>
<td>anxiety ('this moment')</td>
</tr>
<tr>
<td>Trait Anxiety Inventory (FORM Y2)(^{43})</td>
<td>20</td>
<td>patient</td>
<td>anxiety ('in general')</td>
</tr>
<tr>
<td>Barthel index(^{44})</td>
<td>10</td>
<td>interviewer</td>
<td>ADL disability</td>
</tr>
<tr>
<td>McGill pain questionnaire(^{45})</td>
<td>102</td>
<td>interviewer</td>
<td>pain</td>
</tr>
<tr>
<td>Rankin(^{46})</td>
<td>1</td>
<td>interviewer</td>
<td>handicap</td>
</tr>
</tbody>
</table>
The reason is that the authors relied predominantly on clinical judgement, and self developed outcomes scales. When formal instruments are used, these were usually not generic instruments with the exception of the Sickness Impact Profile. More often authors use the domain-specific scales such as the Wechsler Adult Intelligence/memory Scale, the Mini Mental State Examination and the Center for Epidemiologic Studies - Depression scale.

The currently advised Glasgow-Pittsburg Outcome Categories to evaluate outcomes after resuscitation, classify outcomes by level of handicap or death resulting from neurologic impairments (Cerebral Performance Categories, CPC) and/or impairments of other organs systems (Overall Performance Categories, OPC). Although these measures seem attractive by their simplicity and practicality, it should be realized that the CPC and the OPC scores are only crude handicap scales, which rely on clinical judgement and give superficial but not in-depth information.

There are arguments to use other instruments than the CPC or OPC. As discussed above, handicap is only one aspect of quality of life. When assessing handicap alone interrelated effects with other relevant quality of life domains remain unknown. Furthermore, given the complex causal pathway of impairment to handicap, it can be difficult to distinguish handicap resulting from neurologic impairments alone (CPC) from handicap resulting from other organs systems (OPC). Finally, in depth information on quality of life will always require a response by the patient.

Given the multidimensional aspects of quality of life, we have to conclude that quality of life after resuscitation is generally not well evaluated and that clear statements about the quality of life after resuscitation can not, for the time being, be given.

REFERENCES


