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CLINICAL ETHICS

Conditions and consequences of medical futility—from a literature review to a clinical model

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Objectives: To present an analysis of "futility" that is useful in the clinical setting.
Design: Literature review.
Material and methods: According to Medline more than 750 articles have been published about medical futility. Three criteria (language, time period, and the authors expressed their own opinions) singled out 43 of them. The authors' opinions about futility were analysed using the scheme: "If certain conditions are satisfied, then a particular measure is futile" and "If a particular measure is futile, then certain moral consequences are implied".
Results: Regarding conditions, most authors stated that judgments about futility should be made by physicians. The measure was usually some kind of medical treatment, and the goals related to quality of life, physiological improvement, or prolongation of life. The probability of success in reaching the goal was in most cases described in semiquantitative terms. Regarding consequences, the authors stated that health care professionals may (sometimes ought or should) withhold or withdraw a futile measure, most often after a dialogue with the patient (29 articles), but sometimes without informing the patient (nine articles), or with one-way information (four articles). Over time more and more articles recommend that the patient should be involved in joint decision making. Based on this literature review a clinical model was developed.
Conclusions: The model, requiring that conditions and consequences should be made explicit, may, in "futility situations", facilitate both the collection of the necessary information and make the moral implications visible. It also makes communication about measures considered to be futile possible without using such ambiguous terms as "futile".

During the 1990s there was an intensive debate about the meaning and usefulness of the expression "medical futility". Several books and, according to Medline (using "medical AND futility"), 752 articles on the subject have been published. Different perspectives and conclusions, theoretical as well as empirical, have been put forward. It has been maintained that terms such as "futile" and "futility" are clinically useful,[1–4] unavoidable,[5] elusive,[6] or too ambiguous and pejorative.[7] Some are of the opinion that the use of "medical futility" may jeopardise the patients' autonomy[8–10] or that physicians are not obliged to inform patients about medical actions not offered to them.[1 11–15]

Helft, Siegler, and Lantos[16] have called these discussions "the rise and fall of the futility movement" and grouped them into four main categories: definitions of medical futility; empirical data about futility; patients' autonomy versus physicians' autonomy, and attempts to resolve disputes over futility. In their opinion the term "futile" is extremely useful to describe how the physician feels about the patient's care. They conclude that talking to patients and their families "should remain the focus" of the process for discussing futility. We agree with their idea that "medical futility" cannot be defined in purely descriptive terms because decisions about medical futility involve "moral judgments about right or good care". Still we believe that the concept is useful in the clinical setting.

The literature has generally focused on theoretical considerations. This may have hampered the practical use of the concept. Our main purpose is therefore to present an approach that is clinically more useful. We assume that the concept of "medical futility" is, in a certain sense, merely auxiliary. To argue that a particular measure is futile seems to be of interest only as a step toward concluding that doing or not doing something is justified. In other words, from a set of *conditions* that does not involve "medical futility" it is possible to derive certain moral *consequences* that likewise do not involve the concept. Thus, our analysis is carried out in two steps. First, we identify and analyse the proposed conditions of medical futility as indicated in the literature. (Which conditions must be fulfilled for a particular measure to be futile?) Second, we identify and analyse the moral implications of futility judgments as indicated in the literature. (If a particular measure is futile, what may, ought or should health care professionals do?) Our hypothesis is that the following two questions should always be separated in the clinical setting: "What may be regarded as a futile measure?" and "What is justified in futility situations?"

MATERIAL

An article (of the 752) or a chapter (in two books) had to satisfy three different criteria to be included in our review. First, the text should be written in English, French, German, or some Scandinavian language. Second, it should be published between August 1980 and August 2000. Third, the main theses put forward regarding conditions and/or consequences of medical futility should express the opinion of the authors. In

Box 1: Scheme for identification and analysis of what makes a measure futile.

If a *person or a group of persons* (physician, nurse, patient, and/or relative) is of the opinion that a (diagnostic, therapeutic, and/or nursing) *measure* aiming at a particular (physiological, life-prolonging, and/or quality of life) *goal* will *probably* not be achieved, **then** the measure is futile.

Box 2: Scheme for identification and analysis of consequences of a futile measure.

If the measure is futile, **then**, the *health care professionals* (physician or nurse) may, ought or should withhold or withdraw the measure, with or without *communicating* (to the patient, the family or others) the different options, and the physician, the patient, the family and/or others will be *responsible* for the decision to forgo the measure.

this way we identified 43 articles of which 37 related (explicitly or implicitly) to the situation in North America,[1–6 9–15 17–40] four in Europe,[41–44] and two worldwide.[45 46]

METHOD

We will use a method for conceptual analysis that was first presented by the Swedish philosopher Anders Wedberg.[47] In his analysis Wedberg used the concept of "property" as an intermediate between the conditions of property (called A) and the consequences of property (called B). He described the different conditions and consequences of property using the following scheme: "If condition A, then property" and "If property, then consequence B".

In a similar way the word "futility", as used in the clinical setting, involves two steps: the conditions of futility and the consequences of futility. If the focus is on the consequences, the use of the word "futility" implies that there are specifiable conditions that are not mentioned in the specific context. And if the focus is on the conditions, the use of the word "futility" implies that there are specifiable consequences not mentioned.

We will analyse the concept of "medical futility" by using empirical data on possible conditions and possible consequences based on the different opinions about futility expressed in the 43 articles.

Table 1 Summary of opinions about conditions for futile measures (n=43)

Year	Ref	(A1) Who decides:	(A2) What measure:	(A3) What goal:	(A4) What probability:
1987	18	Physician	Therapeutic	QoL (benefit to the patient)	Semiquantitative
1988	11	Team	Therapeutic	QoL (recovering)	Semiquantitative
1988	13a	Physician	Therapeutic	QoL (medical benefit)	Semiquantitative
1988	b	Physician+patient	Therapeutic	QoL	–
1989	6	Physician	Therapeutic	Patient's goal	–
1990	1	Physician	Therapeutic	QoL	Quantitative
1990	14	Physician+family	Therapeutic	QoL (medical benefit)	Semiquantitative
1991	19a	Physician	Therapeutic	Patient's goal	–
1991	b	Physician	Diagnostic+Therapeutic	–	–
1992	12	Guidelines (JAMA)	Therapeutic	Physiological+life-prolonging	Already attempted
1992	19*	–	Therapeutic	–	Semiquantitative
1992	46	Physician	Therapeutic	QoL	Semiquantitative
1992	47	Physician	Therapeutic	Physiological	Semiquantitative
1993	23	Physician	Therapeutic	Physiological+QoL	Semiquantitative
1993	30	Team	Therapeutic	QoL	Quantitative
1993	32	Physician	Therapeutic	Lifeprolonging	Semiquantitative
1993	22a	Physician	Therapeutic	Physiological	Semiquantitative
1993	b	Physician	Therapeutic	Patient's/family's goal	Semiquantitative
1994	24	Physician	Therapeutic	QoL (benefit)	Semiquantitative
1994	25	Physician	Therapeutic	QoL (benefit)	Semiquantitative
1994	34	Physician	Therapeutic	QoL	Semiquantitative
1994	9	Publ conducted eval	Therapeutic	–	–
1995	17	–	Therapeutic	QoL (recovery, benefit)	Semiquantitative
1995	21	Team	Therapeutic	QoL (benefit)	–
1995	2	Physician	Therapeutic	Physiological+QoL (beneficial)	Semiquantitative+not validated
1995	3	Physician+patient	Therapeutic	QoL (relative benefit and burden)	Possible to balance
1995	15	Physician	Therapeutic	Life-prolonging	Semiquantitative
1995	26	Physician	Therapeutic	QoL (benefit)	Semiquantitative
1995	37a	–	Therapeutic	QoL (benefit)	Semiquantitative
1995	b	–	Therapeutic	QoL (benefit or independence)	–
1995	c	Team	Therapeutic	–	Semiquantitative
1995	d	–	Therapeutic	QoL (consciousness or independence)	Quantitative
1995	28	Physician	Therapeutic	Life-prolonging+QoL	Semiquantitative
1996	4	Physician+patient	Therapeutic	QoL (benefit)	Semiquantitative
1996	27	Physician	Therapeutic	QoL (clinical benefit)	Quantitative
1996	31	Physician	Therapeutic	QoL (benefit)	Semiquantitative
1996	33	Physician	Therapeutic	Life-prolonging	Semiquantitative
1997	39	–	–	–	–
1997	5	Physician	Therapeutic	Life-prolonging+QoL	Semiquantitative
1997	35	Physician	Therapeutic	Life-prolonging+QoL	Semiquantitative
1997	36	Physician	Therapeutic	Cost+life-prolonging+QoL	Semiquantitative
1997	38	Physician	Therapeutic	Life-prolonging+patient's goal+QoL	Semiquantitative
1997	10	Physician	Therapeutic	Life-prolonging+QoL	–
1997	40	Physician	Therapeutic	Patient's/family's goal	–
1998	43	–	Therapeutic	Physiological+QoL (medical benefit)	–
1998	29	Physician	Therapeutic	QoL	Semiquantitative
1998	45	Physician	Therapeutic	Life-prolonging+QoL	Semiquantitative
1999	44	Physician	Therapeutic	Life-prolonging+QoL	Semiquantitative
1999	42	Family	All measures	QoL	–
2000	41	Physician	Therapeutic	QoL (medical benefits)	Scientific evidence

a–f = slightly different statements about conditions in the same article.
(A1) The person or persons to decide (family includes proxy).
(A2) Diagnostic, therapeutic and/or nursing measure.
(A3) The relevant goal (QoL = quality of life).
(A4) Type of probability or miscellaneous.

Table 2 Summary of opinions about moral consequences of futile measures (n=43)

Year	Ref	(B1) Professionals:	(B2) Communication:	(B3) Responsibility:
1987	18	should	No information	Health care professionals
1988	11a	may	No information	Health care professionals
1988	b	should	No information	Health care professionals
1988	13a	may	No information	Health care professionals
1988	b	–	Dialogue	Patient
1989	6	may	No information	Health care professionals
1990	1	may	No information	Health care professionals
1990	14	may	Dialogue	Health care professionals
1991	19	may	Dialogue	Patient, if not HCP
1992	12	may	No information	Health care professionals
1992	19*	may	Dialogue	Health care professionals
1992	46	ought	Dialogue	Joint decision making/patient
1992	47	may	Dialogue	Appeal (ethics comm.)
1993	23	may	No information	Appeal (joint bodies)
1993	30	should	–	Health care professionals
1993	32	–	Dialogue	Health care professionals
1993	22a	should	Information	Health care professionals
1993	b	may	Dialogue	Patient/family
1994	24	–	–	–
1994	25	may	Dialogue	Patient/family
1994	34	–	Dialogue	Patient/family
1994	9	–	–	Appeal
1995	17	may	–	Health care professionals
1995	21	may	Dialogue	Patient/family
1995	2	should	Information	Health care professionals
1995	3	–	Dialogue	Advance directive
1995	15	–	No information	Health care professionals
1995	26	should not	Dialogue	Patient/family
1995	37a	should	Dialogue	Patient/family
1995	b	ought	Dialogue	–
1995	c	should	Dialogue	–
1995	d	may	Dialogue	–
1995	e	ought	Dialogue	–
1995	f	should	Dialogue	–
1995	28	may	Information	Appeal
1996	4	may	Dialogue	Patient/family
1996	27	–	Dialogue	Health care professionals
1996	31	should	Dialogue	Patient/family
1996	33	ought	–	Advance directive
1997	39	–	Dialogue	Joint
1997	5	may	Dialogue	Joint, if not appeal (ethics comm.)
1997	35	–	Dialogue	–
1997	36	–	Dialogue	Health care professionals
1997	38	–	Dialogue	Joint
1997	10	may	Dialogue	Joint, if not HCP
1997	40	may	–	Joint
1998	43a	should not	No information	Health care professionals (UK)
1998	b	should not	Dialogue	Patient (US)
1998	29	should	–	–
1998	45	–	Dialogue	Health care professionals
1999	44	may	–	Patient/advance directive, if not HCP
1999	42	–	Dialogue	–
2000	41	may or should	Dialogue	Joint

a–f = slightly different statements in the same article.
(B1) Health care professionals may, ought or should withhold or withdraw the measure.
(B2) With or without communication (with the patient, the family or others) about the different options.
(B3) Responsible for the decision to withhold or withdraw the measure (HCP = health care professionals).

RESULTS

First, we needed a relevant version of the two schemes: "If conditions A, then a particular measure is futile" and "If a particular measure is futile, then the consequences B". Thus, our task was to identify categories useful to capture the conditions and the consequences described or indicated in the literature.

Different conditions were mentioned or implied in attempts to define or clarify the meaning of "medical futility". Such conditions are: A1) who decides, A2) about what type of measure, A3) with what goal, and A4) what probability to succeed (box 1). Similarly, different moral consequences of a futile measure were also mentioned or implied. Such moral consequences are: B1) the health care professionals' possible actions, B2) communication about options, and B3) who is responsible for the decision to forgo the measure (box 2).

The second task was to identify the different opinions about conditions and consequences stated or indicated in the 43 articles (summarised in table 1 and table 2, respectively). Four articles included different statements regarding the conditions of futility within the same article (called 13a-b, 19a-b, 22a-b, 37a-d), and four gave more than one statement about moral consequences (called 11a-b, 13a-b, 22a-b, 37a-f).

Of the 43 articles, one focused on the conditions only[23] and one described only consequences of futility.[38] For 20 articles it was possible to identity all four conditions of futility and all three consequences of futility. In the remaining 21 articles at least one of the four conditions or the three consequences was not mentioned.

ANALYSIS OF CONDITIONS OF FUTILITY

Who decides about futility? Regarding this condition only four articles gave no suggestion at all, but in 35 articles the authors

stated that they thought of physicians as decision makers, in three cases together with patients and in one case together with relatives. The health care team was mentioned in four of the articles. Two of the authors referred to guidelines and "publicly conducted evaluation", respectively. In two single cases only the patient's or family's opinion was taken into account. In one article[13] the authors stated more precisely that if no medical benefit was to be expected, the physician should decide, while the patient was to determine whether he or she would accept "a poor quality of life". Another article[19] mentioned "patient preferences" when the patient was to decide, but did not specify when the physician's opinion decided the issue. There were no systematic differences over the years.

What type of measure may be futile? All but one of the articles stated or at least implied that some kind of treatment was futile, not infrequently cardiopulmonary resuscitation. Two articles mentioned diagnostic measures and one article included nursing measures.

What is the goal of the measure? In 40 articles a goal was mentioned, in six of them physiological goals, and in 11 life-prolonging goals. Four of the articles mentioned patients' or surrogates' goals or preferences and in one the aim was to avoid expensive treatments. In 35 articles "quality of life" was emphasised.

What is the probability of success? Regarding these conditions, four articles stated a numerical probability of success (less than one per cent), and 29 articles described different semiquantitative probabilities. In ten articles there were no such suggestions at all. Four gave more or less qualitative descriptions ("already attempted", "not validated", "possible to balance", and "scientific evidence").

ANALYSIS OF CONSEQUENCES OF FUTILITY

What may, ought or should health care professionals do, assuming futility? Though the health care professionals have to make up their mind in such situations, 13 articles did not mention any options. One article stated it was not permissible at all to withhold or withdraw treatment, while three articles discussed the difference between "permissible, desired or required". Again, there was no change over the years.

Involvement in the communication? In nine articles, seven of them published before 1994, the authors stated that no information to the patient or surrogate was needed when a specific futile measure was to be withheld or withdrawn. In four articles one-way information from the health care professionals was said to be enough, but in 27 articles the authors recommended a dialogue with the patient and family before decision making. One article discussed both a "dialogue" and "no information"[13] and one article[21] tried to make a distinction between "full information" and "dialogue" in relation to the goals (physiological versus patient goals).

Who is responsible for the decision to withhold or withdraw the measure? Regarding the final decision making, the authors of 19 articles recommended that the physician should decide unilaterally. Four proposed the possibility of second opinion or appeal if the patient or the surrogate disagreed. Advance directives were recommended by three, of which one also wrote that they were not always followed.[32] Over time, more and more articles recommended joint, "group process" or compassionate decision making, by physicians and patients together. Differences of attitudes between American and British physicians were also noticed.[42] In America they are more patient-oriented, implying that the patient should decide. British physicians seem to be more paternalistic. Some articles proposed joint decision making with possibilities of an appeal to an ethics committee.

DISCUSSION

The purpose of this article is to provide a practical approach to handling questions about medical futility. Instead of proposing another formal definition we have tried to make explicit the different conditions and consequences of futility. Our own opinion about this issue is summarised in box 3.

Box 3: A clinical model indicating the questions that may be used by physicians to make explicit the conditions and consequences of medical futility

Identify the conditions of futility
- Who has the final authority to decide about the conditions?
- What measure is at stake?
- What goal is to be reached?
- What is the probability of reaching the goal?

Identify the moral consequences of futility
- May, ought or should health care professionals forgo the measure?
- With or without communication with the involved or affected?
- Who will be responsible for the decision to forgo the measure?

Our model makes it clear that there are two critical questions in the clinical setting, "Who has the final authority . . ." and "Who will be responsible . . .", and that different persons may be designated for these tasks. That health care professionals are best suited to describe and assess the measure and probability of reaching a certain goal is hardly controversial, but this doesn't justify them making all decisions. Thus, we would especially like to emphasise the need to improve communication with the persons involved and affected. The key issue is how to help health care professionals talk with the patient and the family to resolve as many disagreements as possible and arrive at a consensus.

With this goal in mind we combined a philosophical method of conceptual analysis with empirical data from the literature on medical futility. Usually there was no difficulty in understanding the positions put forward by the authors. In some cases, however, our interpretations are more uncertain. To be more precise, we found it difficult to understand, for instance, the meaning of "clinical judgment",[6] "medical enterprise",[23] "patient's goals",[39] "scientific evidence",[40] "obligation to support dignity",[24] "5-step counselling",[26] "joint bodies",[22] and "benefit", especially this last, which was used by many of the authors).

A possible limitation of this study is therefore that the statements of some authors are rather vague and difficult to understand. The positions specified in the different columns of table 1 and table 2 may therefore not always be correct. The study is also a "retrospective" survey of opinions.

Some authors focused on the conditions, for example,[23] others on the consequences, for example,[38] but in the clinical situation the two are always related. If a certain measure is considered futile, this has practical consequences. Conversely, if a treatment is withheld or withdrawn, justification is required.

Sometimes different positions regarding the conditions or consequences were maintained in the same article.[13 19 21 31 36 40 45] This may reflect the complexity of the situation arising when trying to decide who should decide: the physician or the patient. Most authors maintain that the physician's opinion ought to rule when a measure and its probability of success are to be assessed, however imprecise the prognosis may be. The same does not apply to the goals, since most goals are related to quality of life. In the past physicians usually made such judgments, but now there seems to be general agreement that the decision should also take into account the patient's opinion. We agree with Tomlinson and Brody[48] that the autonomy of all involved—that is, patient, physician, relative etc, must always be considered when the moral consequences of futility are discussed.

CONCLUSION

Based on this literature review we have tried to construct a model (box 3) which we hope will facilitate decision making for health care professionals, patients and relatives. Of course, the conceptual scheme needs confirmation by forthcoming prospective studies about futility assessment, communication and decision making in the clinical setting. Further, it may not help in all futility situations, but used systematically it may make it easier to gather the necessary information and to make the relevant values visible. What is most important of all perhaps is to separate the two questions: "What may be regarded as a futile measure?" and "What is justified in futility situations?" Thus, our model makes communication about futile measures possible without using words such as "futile", "meaningless", "useless" and the like. In our opinion there is no need to define the term "futility" in order to make an acceptable decision in an individual situation; yet this has been a major problem for many authors.

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