How to Measure “Futility”

Joseph L. Nates, MD MBA FCCM
Vice Chair Critical care Department
Anesthesiology and Critical Care Division

The University of MD Anderson Cancer Center
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Definition of Futility

Qualitative:
- Involves the patient/next-of-kin and the physician

Quantitative: Numerical value attached. However, what would be acceptable?
- Is it 0 out of 100 patients not benefiting of a particular intervention?
- Is it 1 out of 100 patients?
- Mathematical models? Decision analysis approach
- Severity of illness scores driven decisions?
Qualitative

Definition;

A futile action is one that cannot achieve the goals of the action, no matter how often repeated.

Alternative:

A futile action is any effort to achieve a result that is possible but reasoning or experience suggests is highly improbable and cannot systematically be reproduced.

Definition?

Council on Ethical and Judicial Affairs (CEJA) in Medical Futility in End-of-Life Care. JAMA 1999;281:937-941:

At the End-of-Life: In the course of caring for a critically ill patient it may become apparent that further intervention will only prolong the final stages of the dying process. At this point, further intervention is often described as futile.

Futility is an essentially subjective but realistically indispensable judgment. A fully objective and concrete definition of futility is unattainable.

Final Word About Futility?

“The term ‘potentially inappropriate’ should be used, rather than futile, to describe treatments that have at least some chance of accomplishing the effect sought by the patient, but clinicians believe that competing ethical considerations justify not providing them.”

“Use of the term ‘futile’ should be restricted to the rare situations in which surrogates request interventions that simply cannot accomplish their intended physiologic goal.”

Definition;

A futile action is when a medical treatment has fewer than 1 success in 100 trials or when it only helps to preserve permanent coma


However, Sprung C et al. have shown disagreement even at the level of 1/1000

Mathematical Models

Murphy DJ and Matchar DB. JAMA 1990
Hariharan et al* reported the provision of aggressive treatment to patients with prognoses considered futile by some of the healthcare providers in Barbados.

A third of the patients who died in their ICU, 4.5% of the 662 admissions, met their futility criteria and included patients diagnosed as brain dead.

They found that age, legal considerations, family wishes, and disagreement among treating physicians were the main reasons for the futile treatment of patients in Barbados.

Palda et al * reported that 95% of the nurses and 87% of the physicians responding to the survey had provided “futile” care during the past year:

They identified eight main reasons for the provision of futile care:

The most common reasons were:

- the perception of death as a treatment failure by the physicians, and
- the second was poor communication between the providers and families.

Among the other reasons recognized were prognostic uncertainty, legal pressures, and fragmented care owing to the involvement of multiple subspecialists.

There were significant differences between nurses and doctors opinions.

Relationship between intensive care unit mortality rates for all patients and frequency of sepsis in the various European countries. Vincent JL et al. Critical Care Medicine 2006.
# Futility in Practice

<table>
<thead>
<tr>
<th>%TBSA</th>
<th>Lived Cases</th>
<th>Died Cases</th>
<th>Mortality Rate</th>
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<tbody>
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<td>0.1 - 9.9</td>
<td>103,266</td>
<td>648</td>
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<tr>
<td>10 - 19.9</td>
<td>23,565</td>
<td>696</td>
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<td>20 - 29.9</td>
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<td>30 - 39.9</td>
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<td>40 - 49.9</td>
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<td>491</td>
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<td>50 - 59.9</td>
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<td>60 - 69.9</td>
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<td>382</td>
<td>42.8</td>
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<td>70 - 79.9</td>
<td>254</td>
<td>334</td>
<td>56.8</td>
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<td>80 - 89.9</td>
<td>150</td>
<td>393</td>
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<td>&gt; 90</td>
<td>96</td>
<td>538</td>
<td>84.9</td>
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<td><strong>Subtotal</strong></td>
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<td><strong>5,174</strong></td>
<td><strong>3.6</strong></td>
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<td><strong>1,648</strong></td>
<td><strong>4.4</strong></td>
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<td><strong>TOTAL</strong></td>
<td><strong>176,214</strong></td>
<td><strong>6,822</strong></td>
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Total N = 183,036 (Excluding 0 Unknown/Missing)

# Reaching Futility

<table>
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<tr>
<th>TBSA Category</th>
<th>Age</th>
<th>Inhalation Injury</th>
<th>Lived</th>
<th>Died</th>
<th>Mortality Rate</th>
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<td>665</td>
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<tr>
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<td>60 and Over</td>
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<tr>
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<td>60 and Over</td>
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<td>210</td>
<td>95.0</td>
</tr>
</tbody>
</table>

**TOTAL** | 127,445 | 4,686 | 3.5

*Total N=132,104 (Excluding 50,932 Unknown/Missing)*
Futile?
Time and Futility


*The difference in rates between 1975-1977 and 2004-2010 is statistically significant ($P<.05$).

¹Survival rate among whites (only data available).
Out-Of-Hospital Cardiac Arrest Survival Rates

Chan PS et al. Recent trends in survival from out-of-hospital cardiac arrest. Circulation 2014;130:00-00
In-Hospital Cardiac Arrest Survival Rates: Dialysis Patients

No definition of futility?

ETHICUS - I Study: 37 ICUs in Europe.
- Treatment withheld in 38% of the dying patients
- Life Supportive Therapy Withdrawn (LSTW) in 33%
- No (significant number) patients with cancer
  - Sprung CL. Et al. JAMA 2003;290:790-797.

In the US, LSTW is 38%.

ICU is recognized as the biggest contributor to increased healthcare cost in the last days of life.
Cost Reduction?

Interventions to reduce the costs of care or improving the quality of care at EOL have failed:


What To Do?

- So how do we reconcile the discrepancies between what we preach and what we actually do?
- How can we measure futility if we don’t agree with any definition?
- We cannot reach an agreement without specific populations to be discussed
- We need objective data and no subjective clinicians’ opinions
Solutions

First, to measure futility we need to agree on a definition!

- Proposed definition: A futile treatment is an intervention that has 0 possibilities of success in 1000 trials.

Second:

- We need to put in place informatics systems that would allow us to capture the variables and outcomes necessary to identify the “futile” interventions and in what populations.
ICU Framework in Texas

CCC

Laws in Texas:
- Texas Advance Directives Act (TADA)

Hospital Processes:
- Medical Appropriateness Review Committee (MARC)

In cases where the physicians are trying to impose life support, patients have the Patient Self-Determination Act (Omnibus 1990)
MDACC ICU Framework
MDACC ICU Framework

Does Patient Need Life Support?
(Vasopressors, Mechanical ventilation, Continuous dialysis,
Other interventions ONLY provided in ICU)

- YES
  - Prognosis

- NO
  - Needs intervention that can be provided outside ICU (e.g., IMVI)?
MDACC ICU Framework

1. Needs intervention that can be provided outside ICU (e.g. IMU)?
   - YES
   - NO

   - III - IMU

2. Only monitoring?
   - YES
   - NO

   - Telemetry
   - IV

   - Ward
   - V
MDACC ICU Framework
Challenges, “futility” depends on many variables we could account for such as:

- **Age** has a clear impact in certain pathologies
- **Geographic impact** (the place/country play a role in survival)
- **Time** dependent (what once was, it is not longer considered futile)
- **Level of care/expertise** (what is futile in one center, it is not futile in a more specialized institution but at an increased cost!)
- **Speed/quality** of care delivery (adequacy of trauma systems)
- **Resources..**
Conclusions

In this presentation, I have proposed:

- A **definition of futile care** that could be acceptable to 100% of practitioners
- A **plan of action** to identify and track futile care
- A **practical framework** to address inappropriate/non-beneficial ICU admissions or stays of critically ill patients
  - The model we used in our Texas Comprehensive Cancer Center

Once a definition is accepted and the infrastructure to identify and track futile care is established:

- We would need to decide what resources, if any or available, are allocated to care for these patients
- We would also need to revisit whether a lower threshold (1/100 instead of 1/1000) is more appropriate (could be stratified by outcome according to the data collected prospectively)
Questions / Discussion

http://library.sasaustin.org/questioning.php