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## Health Outcome Prioritization as a Tool for Decision Making among Older Persons with Multiple Chronic Conditions

Terri R. Fried, M.D.<sup>1,2</sup>, Mary E. Tinetti, M.D.<sup>3</sup>, Lynne Iannone, M.A.<sup>4</sup>, John R. O’Leary, M.A.<sup>4</sup>, Virginia Towle, M.Phil.<sup>4</sup>, and Peter H. Van Ness, Ph.D.<sup>4</sup>

<sup>1</sup>Department of Medicine, Yale University School of Medicine

<sup>2</sup>CERC, VA Connecticut Healthcare System

<sup>3</sup>School of Epidemiology and Public Health, Yale University School of Medicine

<sup>4</sup>Program on Aging, Yale University School of Medicine

### INTRODUCTION

Older persons with multiple chronic conditions are at substantial risk for unintended adverse outcomes, such as medication adverse events. Less severe adverse events are commonly referred to as “side effects,” implying that they are secondary to disease-specific benefits. However, patients consider these adverse events to be important outcomes in their own right.<sup>1</sup> Such findings suggest that all possible benefits and harms resulting from different treatment options be considered as competing outcomes, among which older persons with multiple chronic conditions face trade-offs.

When treatments involve trade-offs, the best option depends upon patients’ preferences. The challenge for older persons with multiple conditions is that these trade-offs encompass both many different specific diseases and non disease-specific health domains.<sup>2</sup> One approach to this challenge is to consider treatment in terms of its effects on a set of universal, cross-disease outcomes and to use older persons’ prioritization of these outcomes as an assessment of preferences. These outcomes, examples of which include length of life, physical and cognitive function, and symptoms, include basic domains recognized to be the key components of health.<sup>3</sup> The goal of this study was to explore the use of a simple tool to elicit older persons’ health outcome priorities.

### METHODS

Participants were recruited from three senior centers and one independent/assisted living facility in the New Haven area. All volunteers were included in the study without exclusion

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Corresponding author and reprint requests: Terri R. Fried, MD, CERC 151B, VA Connecticut Healthcare System, 950 Campbell Avenue, West Haven, CT 06516 Tel: (203) 932-5711 x5412, Fax: (203) 937-4932, terri.fried@yale.edu.

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Dr. Fried had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

except for residents in the assisted living facility with a diagnosis of dementia. The protocol was approved by the Yale University School of Medicine Human Investigations Committee.

All data were collected by self report in face-to-face interviews. The main outcome variable was participants' prioritization of four universal health outcomes: keeping you alive, maintaining independence, reducing or eliminating pain, and reducing or eliminating other symptoms (dizziness, fatigue, shortness of breath). These priorities were elicited using a computerized tool, in which each of these outcomes was presented in a moveable box on a screen. Participants were asked to provide a rank order of priorities. Participants were also asked to provide a priority score by placing the boxes on a visual analogue scale from 0 to 100, with higher scores indicating that the outcome was more important. The tool was accompanied by a script explaining the concept of competing outcomes (Appendix A). Initial development and testing of the tool has been previously described.<sup>4</sup> In response to poor test-retest reliability, the script was modified prior to the start of the current study, in order to emphasize the notion of trade-offs.

The methods and results for examining the test-retest reliability of the tool are available in Appendix B.

We examined distributions of health outcome priorities in two ways. We first examined the proportion of participants choosing different priority rankings. We next used the spread in scores assigned to each outcome to evaluate the strength of importance ascribed to each outcome. We divided the participants into four groups according to which of the outcomes they selected as most important. Within each of these groups, we calculated the mean score for each outcome.

## RESULTS

Of the 357 participants, 75% were women and were white, 69% had four or more chronic conditions and 49% were prescribed four or more medications. Maintaining independence was the health outcome ranked as most important by the largest proportion of participants (76%), with varying proportions of participants ranking each of the other outcomes as most important (Table). Within each outcome ranked as most important, there was variability in the rankings of the other outcomes, although patterns did emerge. Among those ranking maintaining independence as most important, the largest proportion of participants (67%) ranked pain and/or symptom relief as second and/or third, and staying alive as least important. Among those ranking staying alive as most important, the largest proportions (66%) ranked maintaining independence as second and pain and/or symptom relief as third and/or fourth. Among those ranking pain or symptom relief as most important, there was more variability in the rankings of the other outcomes.

The mean scores for the outcome ranked as most important were 97–98, with narrow standard deviations. The standard deviations around the mean scores for other health outcomes were large. For participants who ranked staying alive as most important, the other outcomes also received high average scores (maintaining independence = 80, pain relief = 70, symptom relief = 65). For all participants who ranked an outcome other than maintaining

independence as most important, maintaining independence received average scores close to the most highly scored outcome (80–84). In contrast, for participants who ranked an outcome other than staying alive as most important, staying alive received average scores substantially lower than the most highly scored outcome (52–59).

## DISCUSSION

The variability in universal health outcome rankings is similar to the variability seen in patients' valuations of disease-specific health outcomes.<sup>5, 6</sup> Nonetheless, the importance of maintaining independence for many participants has also been demonstrated in studies evaluating older persons' preferences in end-of-life decision making.<sup>7–9</sup> The similarities in findings across studies examining different clinical situations and utilizing different methods support the key role that function should play in treatment decision making for older persons.

These findings illustrate a potential role for health outcome prioritization at both the individual and population level. At the population level, the effects of treatment interventions are currently generally assessed in terms of disease-specific outcomes or reduction in mortality. Moreover, non-mortality outcomes are frequently measured by a composite quality of life index, which averages the effects of the intervention across the different domains of functioning and symptoms. The variable importance of each of these individual domains to older persons argues for efforts to examine the effect of treatment on each domain. At the individual level, the study results suggest that the prioritization of outcomes can be used to begin a discussion about what is most important to older persons with multiple conditions. The variability in individual priorities will require the development of a range of treatment options, designed to increase the likelihood of wanted and decrease the likelihood of unwanted outcomes.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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**Table**

Proportion of participants with different health outcome rankings, organized by health outcome ranked as most important (1<sup>st</sup>)

Health Outcome Ranking				N (%)
1st	2nd	3rd	4th	
<b>Independence</b>				<b>270 (76)*</b>
	Pain relief	Symptom relief	Staying alive	104 (39)
	Symptom relief	Pain relief	Staying alive	76 (28)
	Staying alive	Pain relief	Symptom relief	38 (14)
	Staying alive	Symptom relief	Pain relief	22 (8)
	Pain relief	Staying alive	Symptom relief	19 (7)
	Symptom relief	Staying alive	Pain relief	11 (4)
<b>Staying alive</b>				<b>40 (11)*</b>
	Independence	Pain relief	Symptom relief	13 (33)
	Independence	Symptom relief	Pain relief	13 (33)
	Pain relief	Independence	Symptom relief	7 (18)
	Pain relief	Symptom relief	Independence	5 (13)
	Symptom relief	Independence	Pain relief	2 (5)
<b>Pain relief</b>				<b>26 (7)*</b>
	Independence	Symptom relief	Staying alive	11 (42)
	Symptom relief	Independence	Staying alive	7 (27)
	Independence	Staying alive	Symptom relief	4 (15)
	Symptom relief	Staying alive	Independence	3 (12)
	Staying alive	Symptom relief	Independence	1 (4)
<b>Symptom relief</b>				<b>21 (6)*</b>
	Independence	Pain relief	Staying alive	11 (52)
	Staying alive	Independence	Pain relief	4 (19)
	Independence	Staying alive	Pain relief	3 (14)
	Pain relief	Independence	Staying alive	2 (10)
	Pain relief	Staying alive	Independence	1 (5)

\* (%) = % of total participants (357). All other % = % of health outcome ranked 1<sup>st</sup>. Percentages do not add up to 100% due to rounding.