SPECIAL ARTICLE

Use of Functional Assessment to Define Therapeutic Goals and Treatment

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This article summarizes the presentations and discussions from a workshop, "Using Functional Assessment to Define Therapeutic Goals and Treatment," which took place on November 30 to December 1, 2017. This workshop brought together transdisciplinary leaders in the fields of function and disability and clinical investigators engaged in research on geriatric populations to outline opportunities and challenges for incorporating measures of function in clinical research. Topics addressed included reliable and clinically feasible measures of function and key domains of health (eg, musculoskeletal, cognitive, and sensory) that are most strongly associated with patients' perceptions of well-being, independence, and quality of life across a wide array of diseases and interventions. The workshop also focused on the importance of function in medical decision making to inform communications between specialty physicians and patients about prognosis and goals of care. Workshop participants called for more research on the role of function as a predictor of an intervention's effectiveness and an important treatment outcome. Such research would be facilitated by development of a core set of simple, short, functional measures that can be used by all specialties in the clinical setting to allow "big data" analytics and a pragmatic research. **J Am Geriatr Soc 00:1-9, 2019.**

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PURPOSE OF THIS REPORT

Adults aged 65 years and older constitute the most rapidly growing population in the United States, and this group consumes the majority of healthcare dollars. Much of the care for these patients is provided by medical and surgical specialists who typically approach illness with disease-specific treatment. However, disease cure may not be the highest priority for older adults with multiple chronic conditions. Instead, their primary goals are often to preserve function, independence, and quality of life.

The National Institute on Aging and the John A. Hartford Foundation sponsored a three-part series of workshops to identify research gaps and opportunities to characterize: (1) the mechanisms and pathways of function that are distinct from illness (workshop held in August 2016)[1]; (2) the integration of function into clinical research; and (3) ways to embed function-focused care into clinical practice through implementation science. This article summarizes discussions and findings of the second workshop, held on November 30 to December 1, 2017. This workshop brought together transdisciplinary leaders in research on function and disability and investigators from surgical and medical subspecialties who conduct health-related research relevant to geriatric populations. The workshop goals were to identify opportunities and challenges to incorporating measures relevant to function as both predictors and health outcomes in research protocols to build an evidence base that can better inform patient-centered care plans in specialty medicine.

CLARIFYING TERMINOLOGY: FUNCTIONAL CAPACITY, FUNCTIONAL STATUS, FRAILTY, AND RESILIENCE

The presentations and discussions at this workshop, summarized below, highlighted a tendency to use key terms inconsistently within the literature and across disciplines, and especially to conflate the concepts of function and frailty. Table 1, created after the workshop, summarizes definitions of key terms as they are used in this report. Table 1 includes notes on measuring each of these related constructs.

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Table 1. Terms Related to Function, Frailty, and Resilience

Term	Definition	Notes on measurement
Function	Performance of activities that are routine in a person's daily life. Geriatricians often refer to specific domains of health that affect function (eg, musculoskeletal, cognitive, sensory, psychological), recognizing that age-related changes that affect one's ability to perform activities often differ across domains.	Investigators tend to measure functional status or functional capacity (see below).
Functional status	Level of activities that a person actually does in his or her environment—including activities of daily living and instrumental activities of daily living—to fulfill his or her basic needs and expected roles in routine life	Example: Older American Resource and Services Multidimensional Functional Assessment Questionnaire[45]
Functional capacity	Maximal level of activities that a person could do in a standardized environment to accomplish tasks; a reflection of his or her best-case capability	Examples: maximal exercise test[46]; modified 30-second sit to stand[47]
Functional reserve	Difference between a person's functional status and his or her functional capacity; indicates amount of increased demand a person could tolerate, which constrains how well the person responds to health stressors	Example: comparison of resting oxygen consumption to maximal oxygen consumption to estimate cardiorespiratory functional reserve[48]
Functional impairment	Limitation in a person's ability to perform an activity independently (ie, without the help of a person or assistive device)	
Functional decline	Decrease in functional status or capacity	Requires measurements from at least two time points
Frailty	Syndrome of physiological decline that confers a higher risk of mortality or other adverse outcomes	Cardiovascular Health Study Frailty Index (Phenotypic Frailty)[49]; Deficit Accumulation Index[50]
Disability	Umbrella term that includes impairments in body structure or function, activity limitations or difficulty with tasks, and participation restriction or problems engaging in life situations	Disability is a complex phenomenon, reflecting the interaction between features of a person's body and of the society in which he or she lives. See the World Health Organization's Disability Assessment Schedule 2.0[51]
Resilience	Ability to retain or recover previous levels of function after exposure to a health stressor	Measurements of "physical resilience" (eg, a stimulus-response paradigm with repeated measures of function after stimulus) are in development[52]

The workshop organizers acknowledged that function, defined herein as one's ability to perform activities, relies on multiple domains of health (eg, sensory [vision, hearing], cognitive, musculoskeletal [strength, balance], and psychological). In addition to documenting a research participant's inability to perform a task, it is often important to consider which health domain(s) limit the ability. In geriatrics research, this may require incorporating validated tools to assess key health domains, especially those that are often affected by age or by the disease of interest. Validated measures can often be found in the National Institutes of Health Toolbox and the Patient-Reported Outcomes Measurement System (PROMIS),[2,3] although a need remains for brief tools and performance-based measures that can be feasibly incorporated in clinical settings.

One session of this workshop was organized to specifically consider how function is impacted by sensory and cognitive health, domains that decline with age and have a substantial impact on function. Several presenters emphasized the distinction between measures that assess functional status, or which activities one actually does, and measures that assess functional capacity, or the maximal activities that one is capable of doing. The construct of "intrinsic capacity," defined as the composite of all mental and physical capabilities of an individual, was elaborated by the World Health Organization after this workshop.[4] Intrinsic capacity was, therefore, not directly addressed at this workshop, although the synergy of this emerging and useful concept with our conclusions about functional assessment is noted.

The workshop's opening session highlighted the dynamic nature of function, noting that older adults' functional status and functional capacity often fluctuate. The dynamic nature of function means that we should exercise caution before basing major treatment decisions (eg, transplantation, type of chemotherapy) on a single measurement of function and has implications for how function should be measured and analyzed as an outcome. The focus of this workshop was on function, which is primarily determined by health factors rather than the more complex phenomenon of disability, which is influenced by one's health and one's environmental and social context.[5]

The term "frailty" was often invoked at the workshop, as was the emerging concept of physical "resilience." Both

concepts are related to the likelihood of future health outcomes. Frailty implies a risk of future demise or loss of function, whereas resilience refers to one's ability to retain or recover function after a health stressor. Although these concepts were outside the intended scope of the workshop, participants perceived them as highly relevant to efforts to promote greater attention to function in outcomes research. In some fields, when measures of function are used to predict outcomes after surgery or other interventions, the measures of function are labeled (perhaps inappropriately) as frailty indices.

The following sections summarize information presented and discussed in the workshop's five topical sessions and a panel discussion with relevant stakeholders.

TOPIC 1: USING FUNCTION AS A DRIVER OF THERAPEUTIC PLANNING

Functional Assessment

Functional capacity in physical (nonpsychological) domains of health declines with age because of decreases in functional reserve and certain events (eg, trauma, surgery, or chemotherapy treatment).[6] Impaired functional capacity is associated with an increased risk of all-cause mortality and postoperative complications, longer hospital stays, and higher hospital and healthcare costs.[7-10] Function changes over time, and health interventions can accelerate functional decline. Function is one of the most difficult variables to collect from the medical record, and many hospitals do not routinely document patients' functional status.

Presenters in this session used cancer care and organ transplant as two examples of treatment decision scenarios where function has been investigated as a driver of therapeutic planning. In older adults with cancer, conditions other than cancer affect function, which affects treatment response. Approximately one quarter of newly diagnosed patients with colorectal or breast cancer have comorbidities, and 12% to 16% have comorbidities, disabilities, and geriatric syndromes (eg, falls or incontinence).[11] Too often, physicians focus only on the cancer, but other health issues can increase a patient's risk of poor outcomes.

Predictive models can estimate the risk of chemotherapy toxicity in older patients with cancer.[12,13] The geriatric oncology field has adopted a comprehensive geriatric assessment based on baseline function and other characteristics to guide treatment decisions.[14]

Function is also important in the organ transplant setting. Prioritization of patients on the wait list for a liver transplant is based on their 90-day risk of death, according to their Model for End-Stage Liver Disease (MELDNa) score, which is calculated using laboratory tests alone. Adding basic physical functional assessments significantly improves the ability to predict mortality compared with MELDNa score alone among patients with cirrhosis.[15]

Organ transplantation reverses organ failure but might not reverse downstream extraorgan consequences (eg, muscle wasting) that can influence global health status and quality of life after transplantation or increase risk of new medical comorbidities. Preoperative functional assessment might identify functional limitations that transplantation cannot reverse and support the selection and prioritization process for wait-list candidates.

Interventions to Enhance Function

Prehabilitation provides interventions to enhance functional status and capacity between diagnosis and acute treatment. Prehabilitation programs may promote physiological and psychological health and improve postprocedure outcomes.[16] However, this requires systematic screening for mobility impairment that is rarely undertaken. Furthermore, although a plethora of pilot studies exist, clinical trials of sufficient power proving the efficacy in physical function are much less common.[17-19]

Acute care settings are increasingly providing rehabilitation to stable critically ill patients because interventions to improve functional status in the intensive care unit improve overall outcomes (eg, by reducing delirium, lower-extremity weakness, and pressure wounds).[20] Physical and occupational therapists and nurses are limited resources. Therefore, determining which patients require these services or could benefit from increased activity and mobility from nonrehabilitation specialists based on their functional status is an important area of future study. Institutions also need to assess function regularly so that interventions can target higher-risk patients with low or declining function.[21]

TOPIC 2: COGNITIVE AND SENSORY HEALTH AS DETERMINANTS OF FUNCTION

Cognition

The interaction between preexisting cognitive impairments and a high-risk episode of care (eg, surgery or chemotherapy) increases the risk of delirium (acute impairment in consciousness and attention).[22,23] The risk of mortality within 30 days of discharge is twice as high in those who experience delirium.[24] In addition, those with preexisting cognitive impairment risk a more precipitous cognitive decline after surgery or acute illness, and the rate of decline is higher in patients with postoperative delirium.

However, a simple screening tool to identify cognitive impairment in older adults, followed by a computerized clinical decision support system, had no significant effect on orders for geriatric consultations, discontinuation of Foley catheterization, physical restraints, or anticholinergic drugs.[22] Although this study's findings suggest that screening for preexisting cognitive impairment is not sufficient for preventing delirium and the associated comorbidity and mortality,[22] the speaker noted that proactive interventions can reduce the rate and severity of delirium in high-risk individuals.[25,26] Assessment of cognition may be important for predicting or understanding changes in function after inpatient and outpatient health interventions, and more work is needed to understand how to optimize therapeutic plans when cognitive impairment is detected.

Sensory Health

The prevalence of visual impairment increases dramatically with age, and older adults experience many types of visual deficits. Visual impairment is an independent risk factor for compromised health and well-being. Older adults with

visual problems risk loss of their driver's licenses and their independence, social isolation, depression, and reduced quality of life.[27] The negative consequences of vision impairment on function can be minimized with annual eye examinations to detect and treat remediable causes of vision loss, referrals to low-vision rehabilitation services, and discussions of transportation and rehabilitation options for patients who have stopped driving.

Approximately one-quarter of adults in their 60s have disabling hearing loss, and this rate rises to 80% in those aged 80 years and older.[28,29] Underrecognized and undertreated hearing loss affects the validity and reliability of functional assessments. For example, simulated hearing loss in people without cognitive impairment reduces Mini-Mental State Examination scores and moves many into the range associated with cognitive impairment or even dementia.[30] Untreated hearing loss is also associated with increased rates of hospitalization, readmission, and medical adverse events, including cognitive decline.[31-34]

Multiple Impairments

Approximately 5% of older adults have multiple sensory and cognitive impairments, and the prevalence of multiple impairments increases with age.[35] Multisensory impairment is a risk factor for cognitive impairment and dementia, and cognitive impairment can increase the risk of subsequent hearing and/or vision impairment.[36] Assessments of cognitive or sensory impairment are difficult in individuals who have other impairments because cognitive tests rely on cues that are vision and/or hearing based and sensory test responses require some degree of cognition. An important gap identified at this workshop was the need for reliable assessment tools and strategies to optimize function for people with multiple sensory and cognitive impairments.

TOPIC 3: WHAT IS A MEANINGFUL CHANGE IN FUNCTION AS AN OUTCOME OF INTEREST?

To achieve patient-centered care, clinical significance (or patient benefit) should be incorporated into measures of important clinical end points that result from interventions. Estimates of meaningful change should be based on multiple populations and approaches and include separate assessments of subgroup effects.

Functional status does not always change in a linear fashion. Measures of time to event or time in state can be used instead of event rates or change scores at fixed time points, and they can help account for fluctuations in disability.

Clinical trials typically compare differences in means or use survival curves (eg, Kaplan-Meier), but the clinical relevance of these differences in functional outcomes is difficult to interpret and rarely the primary end point. If a treatment prolongs survival but patients spend much of their time in bed, they might prefer one that increases independence even if it does not increase survival. Clinical trials typically compare differences in means, but the clinical relevance of these differences (even in functional outcomes) is difficult to interpret. The proportion who had a meaningful change can be easier to interpret, but the definition of meaningful change may not be consistent across stakeholders, including patients, caregivers, clinicians, and policy makers.

TOPIC 4: THERAPEUTIC PLANS WITH FUNCTIONAL OUTCOME AS THE PRIMARY END POINT

This session explored dialysis and cardiovascular surgery as two examples of common interventions in geriatric patients for including function as a primary end point that might be useful in future trials. Half of all new patients on dialysis are aged 65 years or older, and most have the frailty phenotype by the time they develop end-stage renal disease (ESRD).[37] When to use dialysis in older adults and whether it has more favorable outcomes than supportive care are uncertain. The clinical course of advanced chronic kidney disease is unpredictable, making it difficult for clinicians to provide guidance and leaving patients uncertain about what to expect. Determining the appropriate timing of dialysis initiation in frail patients is difficult because frail patients with ESRD have more than twice the risk of death of nonfrail patients.[38] A better understanding of how dialysis initiation is likely to affect functional outcomes in this population could help patients and providers make this difficult decision.

Functional assessments predict adverse effects on outcomes after cardiac surgery. In a study of 15 171 adults (median age = 71 years), gait speed was an independent predictor of poor outcomes of cardiac surgery.[39] A four-item scale that measures lower-extremity weakness, cognitive impairment, anemia, and hypoalbuminemia results in more accurate predictions of death and disability than six other scales evaluated in the study.[40]

Severe peripheral vascular disease is the major driver for open or endovascular lower-extremity bypass surgery. The Society for Vascular Surgery has established several performance-based goals for the procedure that include risks of adverse cardiovascular and limb events, survival, and limb salvage, but not function. A prevailing assumption has been that keeping the limb is the most positive outcome for the patient; whether this assumption is correct needs to be confirmed.

An evaluation of 10 784 long-term residents of nursing homes who underwent lower-extremity revascularization found that 75% were not walking before surgery.[41] One year later, almost 60% had died, and almost none of those who survived had substantially improved function. These results suggest that many patients may be subjected to surgery for little meaningful benefit.

TOPIC 5: THE ROLE OF CULTURE, ENVIRONMENT, AND COMMUNITY IN INCORPORATING FUNCTION INTO THERAPEUTIC GOAL SETTING AND DECISIONS

Patient perceptions of health, well-being, independence, and quality of life can vary by race, ethnicity, and sex, partly because rates of functional limitations differ across groups. For example, the value and priority placed on function vs survival or limb salvage may be sensitive to culture. Health literacy and language concordance influence communications between patients from underserved populations and their clinicians, affecting patient roles in decision making.[42] One way to overcome these barriers is through medical visits with providers of the same race, ethnicity, or sex or who have language concordance with patients whose English proficiency is limited. When incorporating functional status or functional

capacity into medical decisions, providers must be sensitive to possible cultural differences that could permeate these discussions.

A PANEL DISCUSSION: VIEWS OF DIFFERENT STAKEHOLDERS

The Patient's Perspective

The priorities of patients with physical disabilities often involve activities of daily living, such as getting out of bed, taking a shower, and feeding themselves. On any given day, these patients might assess their pain and fatigue, review their functional needs to complete their tasks for that day, and decide what they can or cannot accomplish based on past experience and various assumptions. For many individuals with chronic threats to function, the ability to perform necessary tasks with minimal help from others is valued more than extension of life. Our patient representative relayed a quote from a patient with chronic functional impairments: "dying is the easy part."

The Payer's Perspective

Function is the next vital sign, and the Centers for Medicare and Medicaid Services (CMS) is creating and testing standardized metrics for assessing core motor activities in home-based, community-based, and post–acute-care systems. The plan is to focus on the correlations between function and many outcomes that are important to patients. The CMS plans to use these functional metrics for quality reporting and payment.

Medicare payments for post–acute care are based more on the setting than what the patient needs, leading to perverse incentives. The CMS hopes to change the system to focus more on patient needs and goals.

The Health System Perspective

Function is critical to health systems because of its relationships with safety and quality metrics in patients with multiple chronic diseases and frailty. However, incentives for patients and health systems might not be aligned. For example, to prevent falls, hospitals often keep patients in bed, reducing their mobility and independence.[43]

Healthcare systems are struggling with the many transitions that patients with complex healthcare needs must undergo between, for example, the emergency department, hospital, nursing home, assisted living facility, and home. As patients make these transitions, they receive fragmented and expensive care that might not be important to them. Ideally, a reimbursement system would provide incentives for team-based, high-quality care that addresses function.

The Regulatory Perspective

The patient perspective is an important part of the medical product development process at the US Food and Drug Administration (FDA). One way to capture the patient voice is with meaningful clinical outcome assessments, which the FDA uses to decide whether a drug provides clinical benefit, including enhanced function, to patients. Trial end points need to include at least some meaningful measures of function.

Overarching Themes From the Workshop

This section summarizes the research gaps and recommendations identified by workshop attendees. Figure 1 summarizes the aspects of any therapeutic process that could be informed by function. Complex relationships exist between patients' risk profiles, their goals and preferences, treatment choices, the interventions they actually receive, and, ultimately, their health outcomes. A major conclusion of this workshop was that valid assessments of function, and its determinants, should be integrated into each element in outcomes research.

The role of function in treatment decisions as both a predictor of an intervention's effectiveness and an important outcome merits additional research. Some decisions could be made automatically by taking advantage of machine learning in the clinic setting (assuming relevant functional data are

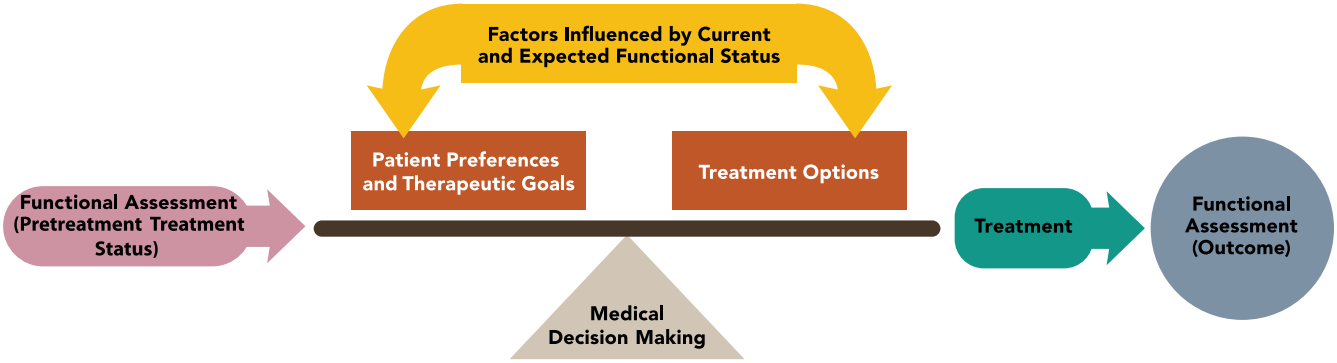

Figure 1. Elements of outcomes research that should be informed by functional assessment. In geriatric care, health outcomes are determined by patients' risk profiles and the interventions they receive. The interventions are determined by a dynamic medical decision-making process that accounts for patients' goals and preferences and viable treatment options. Goals and preferences often relate to function, and treatment options depend in part on knowledge of how well the patient responded to prior treatments (ie, prior outcomes) and current functional status. We assert that functional assessment should be integrated into each of these elements of outcomes research in older adults.

Table 2. Gaps that Limit Full Integration of Functional Assessment in Clinical Research

Gap	Desirable characteristics of tools or research to fill the gap	What filling the gap would enable
Set of feasible measures for use in clinical settings	• Brief • Administration requires minimal training or equipment • Can be integrated into electronic health record and/or Medicare Minimum Data Set • Reliable and reproducible • Accurately assesses health domains relevant to function, even in people with multiple impairments (eg, cognitive assessment in people with hearing or visual impairment)	Incorporation of functional measures in clinical care in a manner that is standardized and benchmarked across clinical settings
Data sets that characterize clinically relevant aspects of function	• Account for changes in function over time (dynamic or repeated measures) • Allow comparison of measured and reported function (from patient, caregivers, providers) • Assess individual preferences and values related to function • Assess acute stressors or precipitants of change in function	Research to validate and more fully explore the role of function in health and clinical decision making
Population norms of function and its determinants, including for populations who are underrepresented in clinical research	• Can be used to explore racial, ethnic, and sex trends • Characterize expected functional trajectories associated with various chronic conditions, comorbidities, and procedures • Describe how changes in health domains over time relate to functional changes	Early detection of decline in function and targeting for intervention

available), although others are more complex and require human interactions. Methods are needed for communicating risk of various outcomes in ways that enable patients to make decisions that align with their personal goals.

Some useful measures of function are already collected in a variety of medical settings. For example, all physical therapy students are trained to use the Functional Independence Measure, a quantitative, seven-point scale, and data could be collected using this scale across multiple settings.[44] However, its use is required only in subacute settings, and a system shift would be required to broaden its implementation. Furthermore, functional assessment can be affected by comorbidities, other impairments, and care settings (eg, intensive care unit). ***A core set of simple, short (less than 30 seconds to complete) functional measures (eg, of gait speed and chair rise) that can be used by all specialties should be developed.***

One incentive for hospitals to collect functional data is to compare their performance with that of other hospitals in such areas as postoperative delirium or time to return to independence for patients with the highest risk of adverse functional outcomes. Professional societies can influence community functional measurement practice through their clinical guidelines and quality metrics for specialists. To maximize scalability, the assessments should consist of a few questions or assessments that trainees or nurses can administer, or that could be completed by patients or caregivers independently, as is possible with computer adaptive tests available through PROMIS.

For hospitalized patients, clinical documentation specialists often request details to assign the correct Diagnosis-Related Group codes. This approach could be used for function, which greatly influences complexity of care and resource needs but would require identifying meaningful changes in functional status and capacity. For example, a set of brief functional measures could be obtained at baseline and at prescribed intervals throughout hospitalization.

Well-intended decision aids that incorporate patients' function into major choices (eg, about dialysis, transplantation, or an aggressive chemotherapy regimen) might magnify disparities in care because these health services might be preferentially offered to white males of higher socioeconomic status, who tend to have better function than other demographic groups. Furthermore, many people avoid interventions that can improve their function because the interventions are costly or not enjoyable, or because individuals may deny having a problem due to stigma. Investigators should emphasize user-friendly interventions and strategies designed to foster positive associations with the intervention.

When determining whether an intervention improves function or prevents functional decline, it is important to consider whether function was assessed by self-reporting or based on performance measures as well as noting sex and racial/ethnic differences. Investigators should optimize their understanding of differences in baseline function, cultural expectations, and access to resources of their study population. Research to develop medical decision-making tools that guide treatment decisions based on function needs to consider the potential effect of this approach on health disparities.

Table 2 provides a summary of research gaps related to functional assessment in clinical settings. Table 3 summarizes opportunities to integrate functional assessment into outcomes research.

CONCLUSIONS

Workshop participants called for more research on the role of function as both a predictor of an intervention's effectiveness and an important treatment outcome. Such research would be facilitated by a core set of simple, short, functional measures that can be used by all specialties across care settings. Expanding the use of functional

Table 3. Opportunities to Integrate Functional Assessment into Outcomes Research

Assessment of function as a *predictor* of care goals or outcomes	Assessment of function as a treatment *outcome*	Use of functional assessment to inform development of interventions that improve function	Incorporation of functional assessment into patient goals of care and decision making
• Assess impact of function on patient goals related to illness, injury, or intervention • Identify functional measures that predict outcomes • Use big data, machine learning, and other new tools to develop prediction algorithms • Determine whether functional assessments identify individuals who can be treated at home or in other nonhospital settings • Determine the value of functional assessment in decision aids to guide choices between supportive and aggressive care strategies	• Include a functional outcome in all clinical trials • Estimate meaningful changes in function in response to treatment • Determine whether interventions improve function or prevent functional decline • Consider whether effect size differs by demographic characteristic	• Determine impact of incorporating cognitive and sensory rehabilitation into prehabilitation on outcomes • Determine how to use functional assessment to guide use of novel treatment models (eg, telemedicine, home-based therapy) • Identify characteristics (type, frequency, intensity, dose) of optimal personalized treatment algorithms • Develop scalable model of optimal prehabilitation or rehabilitation strategies to improve functional recovery after interventions	• Develop methods to integrate functional measures into patient goal assessment for decision making • Determine impact of cultural, racial, and sex differences on assessments of patient goals related to function • Identify tradeoffs in decisions about specific clinical dilemmas • Develop communication strategies for patients with impaired function • Explore roles of concordance between patients and providers in race, ethnicity, and (for patients with limited English proficiency) language in shared understanding of functional goals • Evaluate strategies to communicate realistic functional outcomes

assessments in healthcare will require aligning incentives, developing scalable instruments and interventions that can be implemented by generalists, and creating a market demand for these resources. Consistent assessment of functional status and capacity, as well as health domains that may contribute to impaired function, can help patients and providers make treatment decisions that align with the patient's values, enhance preprocedure or posthospitalization planning, and prevent use of interventions whose risks could well outweigh their benefits.

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- Musculoskeletal function as a driver of therapeutic planning: Francesco Carli, MD, MPhil, McGill University Health Centre; Erik Hoyer, MD, Johns Hopkins University; Jennifer Lai, MD, MBA; Supriya Mohile, MD, MS, University of Rochester; Tom Robinson, MD.
- Cognitive and sensory function as drivers of therapeutic planning: Malaz Boustani, MD, MPH, Indiana University; Deborah Culley, MD, Brigham and Women's Hospital; Sharon Inouye, MD, MPH, Harvard University; Cynthia Owsley, PhD, University of Alabama at Birmingham; Catherine Palmer, PhD, University of Pittsburgh.
- What is a meaningful change in cognitive, sensory, and/or musculoskeletal function as an outcome of interest? Stephanie Studenski, MD, MPH, National Institute on Aging.
- Therapeutic plans with functional outcome as the primary end point: Joseph Cleveland, MD, University of Colorado School of Medicine; Emily Finlayson, MD, MS, University of California, San Francisco; Manjula Tamura, MD, MPH, Stanford University and Veterans Affairs (VA) Palo Alto.
- The role of culture, environment, and community in incorporating function into therapeutic goal setting

and decisions: Mark Espeland, PhD, Wake Forest School of Medicine; Eliseo Pérez-Stable, MD, National Institute on Minority Health and Health Disparities.

- Optimizing patient-centered outcomes: the view from different stakeholder perspectives: Janet Austin, PhD, patient advocate and caregiver; Caroline Blaum; Selena Daniels, PhD, PharmD, US Food and Drug Administration; Tara McMullen, PhD, MPH, Centers for Medicare and Medicaid Services.

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