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Improving Functional Assessment in Older Adults Transitioning from Hospital to Home

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Abstract

Purpose/Objectives—The purpose of this article is to highlight how scientists have assessed all components of functional status in older adults transitioning from hospital to home to date, discuss ways of improving assessment of functional status, and discuss implications for case management research and practice.

Primary Practice Setting(s)—This article focuses on case management of older adults transitioning from hospital to home.

Findings/Conclusions—There are many ways to assess functional status, including BADLs, IADLs, and other non-physical domains of function such as leisure, social, and productive activities. However, assessment of function in older adults transitioning from hospital to home is primarily limited to BADLs. Non-physical domains of functional status have been linked to important outcomes in community-dwelling older adults and could give clinicians and researchers a better understanding of how older adults are functioning, as well as allow for earlier recognition of those who are beginning to experience functional decline.

Implications for Case Management Practice—In case management, it is important to ask older adults about goals regarding their functional status and how they think about their functioning in the hospital and at home. Early identification of older adults' functional goals while in the hospital is the first step towards regaining their ideal or premorbid function after discharge to home. In order to best determine baseline functional status, we may need to consider assessments that can measure multiple domains of functioning in older adults, such as the Sickness Impact Profile (SIP). Gaining a more comprehensive understanding and assessment of functional status for hospitalized older adults would help to inform discharge destinations and improve transitions in care.

Keywords

functional status; older adults; transition

Background

Adults over the age of 65 are hospitalized more than any other age group (National Hospital Discharge Survey, 2012). Half of hospitalized older adults experience functional decline, i.e., decline in functional status or *basic activities of daily living (BADL)*, from two weeks prior to admission to hospital discharge (Buurman et al., 2011; Millán-Calenti et al., 2010; Wu, Sahadevan, & Ding, 2006; Zisberg, Shadmi, Gur-Yaish, Tonkikh, & Sinoff, 2015). This functional decline often continues post-discharge, as approximately 50% of older adults experience functional decline during the transition from hospital to home, i.e., the first 30–90 days back home (Buurman et al., 2011; Huang, Chang, Liu, Lin, & Chen, 2013; Wu et al., 2006; Zisberg et al., 2015). Therefore, functional decline remains a problem to be addressed during this transitional period.

Despite the importance of functional decline in older adults transitioning from hospital to home, we have yet to develop effective programs to address this decline. For instance, common transitional care models aimed at improving transitions from hospital to home do not include functional status as a primary outcome variable (Kind et al., 2012; Naylor et al., 1999; Naylor et al., 2004; Naylor et al., 2014). Although these programs have been efficacious in decreasing readmissions, they are not designed to support older adults functioning at home. Preliminary work has demonstrated efficacy of a function-focused care intervention in improving recovery of functional status in hospitalized older adults post-discharge (Boltz, Resnick, Chippendale, & Galvin, 2014). However, evidence supporting the effectiveness of models of care aimed at promoting functional status in older adults transitioning from hospital to home is sparse.

One major barrier in research on older adults functioning during the transition from hospital to home is that the instruments used to measure that functioning have limitations (Liebzeit, King, & Bratzke, 2017). For instance, we do not have sufficient evidence documenting the instruments' validity and reliability for use by self-report in this group (Liebzeit et al., 2017). Despite this limitation, the instruments are largely administered by self-report and often by telephone. Given the limitations of the instruments currently used to measure functional status in research examining older adults transitioning from hospital to home, the purpose of this article is to highlight how we have assessed functional status in this group to date, discuss ways of improving assessment of functional status, and discuss implications for case management research and practice.

How we Assess Functional Status in Older Adults

There are several different ways to assess functional status in older adults. Common instruments used to measure functional status include items related to BADLs and *instrumental activities of daily living (IADLs)*. Functional status can also be measured in other higher-level, non-physical domains, such as social or role domains (Wang, 2004). Currently, clinicians and researchers largely assess older adults' functional status in terms of BADLs or IADLs. In hospitalized older adults, assessment has been mostly limited to BADLs, such as dressing, bathing, eating, continence, transferring, and toileting (Buurman, van Munster, Korevaar, de Haan, & de Rooij, 2011). BADLs provide an adequate assessment

of an older adult's physical ability to care for themselves in the hospital, but IADLs assess more complex activities associated with independent living at home (Lawton & Brody, 1969). IADLs include activities such as using transportation, doing housework, and managing one's finances and medications. IADLs are less commonly assessed in hospitalized older adults, because the items are tailored to activities necessary for independent living in the community (Lawton & Brody, 1969). It is challenging to assess a patient's baseline for both BADLs and IADLs in the hospital, unless a provider asks a patient or caregiver about pre-hospital functioning or the patient undergoes an observation-based assessment with Occupational Therapy, for example. However, baseline and ongoing assessment of both BADLs and IADLs are crucial for a successful transition back home.

Despite the importance of both BADLs and IADLs in older adults transitioning back home, assessment of functional status in this group is also focused primarily on BADLs. In order to highlight how functional status has been assessed, we examined forty publications cited in a recent review that included functional status as a primary study variable for older adults transitioning from hospital to home (Liebzeit et al., 2017). Table 1 summarizes the items included as a part of the functional status assessments. Nearly all of the forty studies included items related to older adults' participation in basic ADLs: bathing, dressing, toileting, transferring, and eating. Fewer studies included IADLs: using the telephone, shopping, food preparation, housekeeping, managing finances, using transportation, and medication management and only two studies included an item related to doing laundry. BADLs were developed as indicators of basic physical function and self-care capabilities (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963; Mahoney & Barthel, 1965), while IADLs are more complex activities considered important for independent living (Lawton & Brody, 1969). Therefore, increased assessment of IADLs would provide a better understanding of patients' ability to live independently at home.

In addition to missing activities important for independent community living, most of the activities included in BADLs and IADLs primarily assess a physical domain of functional status (Ng, Niti, Chiam, & Kua, 2006; Patrick, Johnson, Goins, & Brown, 2004; Stump, Clark, Johnson, & Wolinsky, 1997). The physical domain of functional status refers to activities that are primarily associated with an individual's physical function. The most common activities in the physical domain are related to self-care, such as bathing, dressing, toileting, transferring, eating, and continence (Katz et al., 1963; Mahoney & Barthel, 1965). Other activities in the physical domain are related to mobility, such as walking or ambulation and climbing up/down stairs (Buurman et al., 2011; Mahoney & Barthel, 1965). Even many IADLs, despite being more complex, are considered to be primarily related to physical functioning and, therefore assess a physical domain of functional status, such as shopping, food preparation, housekeeping, and doing laundry (Ng et al., 2006; Patrick et al., 2004). Although some of these activities may require some higher-level function, research has shown that these activities are primarily associated with physical function (Ng et al., 2006; Patrick et al., 2004). Only a few IADLs, using the telephone, managing finances, and medication management, are considered to be primarily related to cognitive function and, therefore, measuring a cognitive domain of functional status (Ng et al., 2006; Patrick et al., 2004).

This primary focus on the physical domain of functional status, i.e., those primarily associated with one's physical function, limits our understanding of how older adults experience change in function in the period that immediately follows a hospitalization. Additionally, it limits our recognition and ability to prevent these declines in function. Wang (2004) argues that functional status conceptually includes many domains, including physical, psychological, social, spiritual, intellectual, and roles. Activities and functions primarily associated with cognitive, psychological, social functioning are examples of non-physical domains of functional status. Graf (2006) argues the importance of assessing function in multiple domains, such as mobility, ADLs, IADLs, cognitive, in hospitalized and community-dwelling older adults. To that end, more recent research has supported that non-physical domains of function, such as leisure, productive (work/volunteer), and social, are also important components of functional status for older adults (Baker, Cahalin, Gerst, & Burr, 2005; Choi, Park, Cho, Chun, & Park, 2016; Katja, Timo, Taina, & Tiina-Mari, 2014; Lennartsson & Silverstein, 2001; Niti, Yap, Kua, Tan, & Ng, 2008; Silverstein & Parker, 2002). However, there is limited, if any, assessment of other non-physical domains of functional status, such as psychological, social, leisure, productive, spiritual, intellectual, and role, in older adults transitioning from hospital to home.

Improving Assessment of Functional Status

The lack of attention to non-physical domains of functional status in older adults transitioning from hospital to home is concerning given their importance in other groups of community-dwelling older adults. Studies have found increasing leisure activity participation, such as recreational and entertainment activities including reading and participating in hobbies, for older adults was associated with a perceived improvement in life satisfaction (Silverstein & Parker, 2002) and reduced risk of mortality (Lennartsson & Silverstein, 2001). Participation in productive (work/volunteer) activities has been associated with higher life satisfaction (Baker et al., 2005), reduced risk of mortality (Lennartsson & Silverstein, 2001), and better cognitive status (Niti et al., 2008). Similarly, increased participation in social activities has been associated with reduced risk for mortality (Katja et al., 2014) and better cognitive status (Choi et al., 2016; Niti et al., 2008). Given the importance of non-physical domains in community-dwelling older adults, it is likely that these domains may also be important to older adults as they transition back to home after a hospitalization. During the transition home from the hospital, older adults must adjust to their illness and the effects of hospitalization, while resuming their activities back in the community. Therefore, it is important to assess their function in multiple domains to include all of the activities that are important to them for their community-living.

In addition to being linked to important outcomes, these non-physical domains of function may be important upstream indicators of functional decline that clinicians could identify and intervene upon. For instance, higher-level activities, i.e., non-physical domains of function, have been related to an individual's cognitive status (Choi et al., 2016; Ng et al., 2006; Niti et al., 2008; Patrick et al., 2004). Older adults typically decline in higher-level activities, requiring better cognition, prior to physical functional status (Njegovan, Man-Son-Hing, Mitchell, & Molnar, 2001). Higher-level activities, such as managing medications, managing finances, and social and productive activities have been associated with cognition (Choi et

al., 2016; Ng et al., 2006; Niti et al., 2008; Patrick et al., 2004). Therefore, declines in high-level activities, such as non-physical domains of functional status, are likely even more common than the physical domains of functional status currently measured in older adults transitioning from hospital to home, e.g., BADLs. Increased assessment of non-physical domains of functional status could give clinicians and researchers a better understanding of how older adults are functioning, as well as allow for earlier recognition of those who are beginning to experience functional decline. By the time functional decline is detected in physical domains, it becomes increasingly difficult to intervene and support older adults in their homes.

Implications for Case Management

This article reveals important ways in which we can improve case management practices regarding older adults transitioning from hospital to home. First, assessment of functional status in hospitalized and post-hospitalized older adults has been largely limited to assessment of BADLs. Although BADLs, such as self-care activities, are important for hospitalized older adults, they do not address all of the functions and activities that are important to older adults as they transition back to home. The current functional status assessments provide an inadequate understanding of how an older adult will function in their home after hospitalization. For instance, basic physical functions may be important in how they are related to resuming their roles, routines, and relationships at home, i.e., non-physical domains (Boltz, Capezuti, Shabbat, & Hall, 2010). However, these potential non-physical domains are not often measured in older adults transitioning from hospital to home. This has important implications for decisions related to discharge destination or need for support services and home. BADLs primarily indicate self-care abilities in the home, while IADLs, and other domains of functional status would provide a more comprehensive perspective of older adults' safety and capacity for functioning independently in their homes (Cooney, Kennedy, Hawkins, & Hurme, 2004). Currently, older adults with decline in higher-level activities, i.e., non-physical domains of functional status, may be going undetected, denying case managers the ability to intervene and put in place services designed to support older adults during this crucial time period.

Increased assessment of IADLs and non-physical domains of functional status, such as social, leisure, and productive activities, in hospitalized and post-hospitalized older adults would improve their care. These non-physical domains of functional status have already been linked to important outcomes, such as cognitive decline, mortality, and life satisfaction in community-dwelling older adults. There is also evidence to suggest that loss of function in non-physical domains of functional status is a risk factor for future declines in physical domains of functional status. However, non-physical domains of functional status are largely not assessed in hospitalized older adults nor older adults transitioning from hospital to home. Given the relationship between functional decline and important outcomes like readmission and mortality in older adults transitioning from hospital to home (Boltz, Resnick, Capezuti, Shuluk, & Secic, 2012; Cornette et al., 2006; Helvik, SelbÅk, & Engedal, 2013; Hoyer et al., 2014; Shearer & Guthrie, 2013; Van Cleave, Egleston, Bourbonniere, Cardone, & McCorkle, 2012; Wakefield & Holman, 2007), the need for upstream indicators that are more sensitive to declines in function is apparent.

Given that there is limited evidence related to non-physical domains of functional status in older adults transitioning from hospital to home, future research should focus on increasing our understanding of these domains. In case management, it is important to ask older adults about their own goals regarding their functional status and how they think about their functioning in the hospital and at home. Those involved in direct patient care, such as nursing staff, are positioned to aid Physical and Occupational Therapy in conducting functional assessments and helping patients set and pursue functional goals. Early assessments of hospitalized older adults' BADLs, IADLs, and their ideal functioning at home would help to better understand how to best prepare them for the transition back home, as well as reveal which domains of functional status are important to the patient. Additionally, involvement of those directly involved in patient care would help ensure that each patient receives care consistent with those functional goals. Early identification of older adults' functional goals while in the hospital is the first step towards regaining their ideal or premorbid function when discharged back home. Further, a baseline assessment of functional status will help patients and clinicians negotiate appropriate goals for regaining functional status by discharge and pursuing those goals.

In order to best determine baseline functional status, we may need to consider assessments that can measure multiple domains of functioning in older adults, such as the Sickness Impact Profile (SIP) (Bergner, Bobbitt, Carter, & Gilson, 1981). The SIP measures a variety of functions, such as eating, home management, mobility, social interaction, and recreation (Bergner et al., 1981). The Short Form-12 (SF-12) Health Survey is another example of a quick assessment that includes multiple domains of function, but it has been developed for and primarily used as a measure of general health status and quality of life (Ware, Kosinski, & Keller, 1996). Table 2 compares the domains of functional status assessed by BADLs, IADLs, the SIP, and the SF-12. Both the SIP and Short Form-12 may require more testing to evaluate their feasibility and utility for measuring function in older adults transitioning from hospital to home. In addition to ascertaining baseline functional status, increased tracking of changes in all domains of functional status from admission to hospital discharge could better inform care that is focused on functioning in a hospital setting. This includes asking patients their individual functional goals and considering instruments that can more comprehensively assess functional status, such as a combination of both BADLs and IADLs or the SIP. Perhaps even a few basic questions related to how patients were functioning at home and how they would like to function when they get back home can address what domains of functional status are most important to the patient for their plan of care, rather than relying on an individual instrument. Gaining a more comprehensive understanding and assessment of functional status for hospitalized older adults would help to inform discharge destinations and improve transitions in care. Information regarding patients' functional status is an important factor in determining capacity for independent living and services needed post-hospitalization (Cooney, Kennedy, Hawkins, & Hurme, 2004), and the findings presented in this article provide an opportunity for better integrating patients' functioning into healthcare decision-making and plans of care centered around the patients' needs.

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Biographies

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Barbara King: This author is a Geriatric Nurse Practitioner and Assistant Professor in the University of Wisconsin-Madison School of Nursing. She is dedicated to creating sustainable and scalable practice change to promote patient safety for hospitalized older adults.

Lisa Bratzke: This author is an Adult Nurse Practitioner and Assistant Professor in the University of Wisconsin-Madison School of Nursing. Her research interests include examining the effects of accelerated cognitive decline on functional status and self-management, two important factors related to an older adult's ability to live independently.

Marie Boltz: This author is a Geriatric Nurse Practitioner and Associate Professor in the Pennsylvania State University College of Nursing. Her research includes examination of complex aging-related care issues and interventions to promote functional health and cognition in older adults.

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Table 1
Items included in Functional Status Assessments of Older Adults Transitioning from Hospital to Home

Study		BADLs										IADLs						
Citation	Type	B	D	T	TF	E	CN	H	W	CS	P	S	FP	HK	F	TS	M	L
Boyd et al., 2008	POS	X	X	X	X	X												
Chodos et al., 2015	SA	X	X	X	X	X												
Corsonello et al., 2012	POS	X	X	X	X	X												
Corsonello et al., 2014	POS	X	X	X	X	X												
Li et al., 2005	POS	X	X	X	X	X												
Arora et al., 2009	POS	X	X	X	X	X	X											
Bootsma et al., 2013	POS	X	X	X	X	X	X											
Buurman et al., 2012	POS	X	X	X	X	X	X											
Deschodt et al., 2011	POS	X	X	X	X	X	X											
Hoogerduijn et al., 2010	POS	X	X	X	X	X	X											
Hoogerduijn et al., 2012	POS	X	X	X	X	X	X											
Parlevliet et al., 2016	SA	X	X	X	X	X	X											
Saint-Hubert et al., 2011	POS	X	X	X	X	X	X											
Volpato et al., 2011	POS	X	X	X	X	X		X										
Hansen et al., 1999	SA	X	X	X	X	X		X										
Sager, Rudberg, et al., 1996	POS	X	X	X	X	X		X										
Wu et al., 2006	POS	X	X	X		X			X									
Cornette et al., 2006	POS	X	X	X		X	X		X									
Huang et al., 2013	POS	X	X	X	X	X	X		X									
Brown et al., 2016	RCT	X	X	X	X	X		X	X									
Jeangsawang et al., 2012	QE	X	X			X	X	X	X									
Avlund et al., 2002	RCT	X	X	X	X	X	X		X	X								
Boltz et al., 2014	NRT	X	X	X	X	X	X		X	X								
Bordne et al., 2015	PPI	X	X	X	X	X	X		X	X								
Chen et al., 2008	POS	X	X	X	X	X	X		X	X								
Gariballa & Alessa, 2017	POS	X	X	X	X	X	X		X	X								

Study		BADLs										IADLs							
Citation	Type	B	D	T	TF	E	CN	H	W	CS	P	S	FP	HK	F	TS	M	L	
McMurdo et al., 2009	RCT	X	X	X	X	X	X		X	X									
Michael et al., 2005	NRT	X	X	X	X	X	X		X	X									
Pasina et al., 2013	CS	X	X	X	X	X	X		X	X									
Zaslavsky et al., 2015	POS	X	X	X	X	X	X		X	X									
Zisberg et al., 2015	POS	X	X	X	X	X	X		X	X									
Courtney et al., 2012	RCT	X	X	X	X	X					X	X	X	X	X	X	X		
Covinsky et al., 1997	POS	X	X	X	X	X					X	X	X	X	X	X	X		
Mahoney et al., 1999	SA	X	X	X	X	X					X	X	X	X	X	X	X		
Pierluissi et al., 2012	SA	X	X	X	X	X					X	X	X	X	X	X	X		
Sands et al., 2003	POS	X	X	X	X	X					X	X	X	X	X	X	X		
Sands et al., 2005	SA	X	X	X	X	X					X	X	X	X	X	X	X		
Sager, Franke, et al., 1996	POS	X	X	X	X	X		X			X	X	X	X	X	X	X		
Martin & Cruz-Jentoft, 2012	POS	X	X	X	X	X	X				X	X	X	X	X	X	X	X	
Zisberg et al., 2011	POS	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	

Note. BADLs = Basic Activities of Daily Living, IADLs = Instrumental Activities of Daily Living, POS= prospective observational or cohort study, SA = secondary analysis of trial or cohort data, RCT = Randomized Controlled Trial, QE = quasi-experimental, NRT = Non-randomized trial, PPI = Pre-post intervention, CS = cross-sectional, B = bathing, D = dressing, T= toileting, TF = transferring, E = eating, CN = continence, H = personal hygiene or grooming, W = walking or ambulation, CS = climbing up/down stairs, P = using the phone, S = shopping, FP = food preparation, HK = housekeeping, F = managing finances, TS = use of transportation, M = medication management, L = doing laundry.

Table 2
Domains of Functional Status Assessment by BADLs, IADLs, Sickness Impact Profile, and Short Form-12

Instruments	Physical			Non-physical			
	Self-care	Mobility	Housework	Home management	Work	Social	Recreation
BADLs	X	X					
IADLs			X	X			
SIP	X	X	X	X	X	X	X
SF-12		X	X		X	X	X

Note. SIP = Sickness Impact Profile, SF-12 = Short Form-12