

## Executive Summary

Acute illness in older adults that results in hospitalisation can trigger deconditioning and functional decline. Several risk factors, in addition to prolonged bed-rest, account for hospital-associated deconditioning (HAD). Evidence indicates that an integrated, multi-component approach to addressing co-existing risk factors may reduce HAD syndromes as well as hospital length of stay. This approach would include reducing sedentary behaviour, educating and supporting patients to be more mobile, and modifying the hospital environment to facilitate activities based around socialising.

## Background and Context

Hospital-Associated Deconditioning (HAD) of older people admitted to acute care is a complex process of physiological change that can affect multiple body systems and often results in functional decline. It is associated with adverse events distinct from the reason for the acute admission in the first place. HAD is an important topic to address; functional decline associated with hospitalisation and prolonged periods of immobility contributes to delayed discharge, increased likelihood of re-admission and admission to community facilities (sub-acute, residential nursing). These create unnecessary costs to the NHS, social services, the patient and their families and carers. HAD also has a very concerning impact on well-being and quality of life of older people after they leave the acute setting.

### *What we did:*

We searched the literature to understand the current evidence on the nature of HAD and what interventions might be appropriate and effective for addressing it. Our search considered English-language publications on HAD and functional decline between 2000 and 2019, from Europe, North America and Australia.

## What the evidence indicates

In the hospital setting, “deconditioning” refers to more than inactivity due to bed rest and sitting. The cumulative impact of extended or complicated hospitalisation among older patients (aged  $\geq 65$  years) typically results in older patients experiencing a decrease in muscle mass and significant functional decline due to a complex process of physiological changes that can affect multiple systems<sup>[2-4]</sup>. This means that hospitalised older patients are recovering from their acute illness but also facing physiological stress<sup>[7,10,12]</sup> and susceptibility to complications not directly related to the cause of their admission. Risk factors for HAD frequently co-exist and reflect non-disease specific complications; these include:

- increased age
- presence of multiple comorbidities
- mobility / use of a gait aid
- deficits in basic or instrumental activities of daily living (ADL) at hospital admission/discharge, or both
- delirium on admission
- cognitive deficits
- depression

These risks can be exacerbated by: patients’ fear of falling, which may cause them to limit their activity; tethering interventions (e.g. indwelling urinary catheters); healthcare staff prioritising patient safety, especially fear of falls, over patient activity<sup>[5,6,9,11,17,18]</sup>.

Evidence suggests that taking an integrated, multi-component approach to addressing common, co-existing risk factors may reduce HAD syndromes as well as hospital length of stay. Components should include encouraging early mobilisation and supporting nutrition and hydration, strategies that could

be more effective if applied consistently across the acute care system<sup>[6,16,18]</sup>. In addition, the rate and types of decline in older hospitalised patients are highly variable and individual, and therefore personalised care is needed to address specific symptoms presenting in patients to limit or redress HAD-related decline<sup>[10]</sup>.

## Summary – Findings and key themes from the literature

### *Physical activity*

- Most older patients continue to be immobilised for a large proportion of their time in hospital, despite increasing awareness within the clinical community of its detrimental effects.
- There is evidence that older people's care can be improved by targeted interventions promoting physical function during hospitalisation. In addition, early physical rehabilitation programmes can be delivered safely.
- Physical activity could go beyond conventional rehabilitation strategies and become part of a focused care strategy that is incorporated into patients' daily routines on the ward.
- Supporting and encouraging older patients not to be sedentary during their hospitalisation might help them to maintain physical activity post-discharge; this is likely to help retain or slow the decline in older people's mobility.

### *Eating, drinking and continence*

- Malnutrition and dysphagia are associated with functional decline.
- Dehydration is often unrecognised or under-diagnosed at admission, which may further complicate patients' disorders or obscure changes in systems and muscle mass.
- New-onset urinary incontinence at admission is associated with less functional gain.
- Urinary catheters used or continued without medical indication is an important healthcare management issue.

### *Promoting older patients' healthy recovery*

- A range of barriers in the ward and hospital environment can shape patient outcomes. Continuously noisy wards, cluttered corridors obstructing opportunities to walk and mobilise, and lack of alternative spaces for eating or socialising away from the bedside can reduce or eliminate opportunities for patients to become or be more active in their recovery. Evidence indicates that, in combination with curtailing excessive bed rest, modifications to the environment of geriatric wards (such as carpeted floors, reduction or removal of functional restraints or mitigating loud noise) help to deliver fully focused care that addresses the range of factors that can promote rehabilitation and recovery<sup>[1,3,6,17]</sup>.
- Evidence from interventions in geriatric units indicate improved patient outcomes when patients and their families/carers are educated and supported to participate in the older patients' recovery, countering the cultural attitude that bed rest is always best<sup>[4,6,18,20]</sup>. Promoting the overall well-being of the older patient, rather than focusing solely on the reason for the acute admission, can help to support patients' sense of self and making decisions in their best interests, including their functional capacities.

### *Predictors and measures*

- There is no universal measure to identify or measure HAD. This makes comparisons across research findings problematic.
- Current evidence is insufficient to recommend optimal doses of physical activity to minimise functional decline, though one research report suggested an overall efficacy of twice-daily exercise.

### **Where to focus attention**

- Disproportionate attention is given to the event which precipitated the admission, rather than the generalised risk of various adverse health events during hospitalisation.
- Greater priority needs to be given to patient activity and movement which is currently limited by concerns about safety (predominantly falls).
- Where medically appropriate, consider minimising the use of tethering restraints, including indwelling urinary catheters, which lead to excessive time in bed or sitting in chairs.
- “One size does not fit all” – research indicates that local needs and drivers in each clinical setting (e.g., staff resourcing levels; staff knowledge; competing organisational priorities) need to be considered to increase the effective implementation of change in addressing the multifactorial HAD syndrome.
- There may be benefit from the healthcare team taking a greater focus on the pre-admission activity levels and quality of life of the older adult in order to help set goals and co-create solutions with the patient in and beyond hospitalisation; this could incorporate a “life-space” approach in which patients identify their own level of movement and the assistance (rather than their “dependency”) they need to achieve fuller physical capabilities.
- In terms of hospital culture, there is a need to dispel the attitude that physiotherapy alone can mobilise the patient. This Evidence Briefing suggests a hospital-wide approach targeting key deficits of sensory input, nutrition, hydration, cognition, sleep hygiene and mobilisation to enhance functional activity.
- Research on Acute Care of Elders (ACE) geriatric inpatient units<sup>[6]</sup> demonstrate the strongest evidence for improving patient outcomes in reducing HAD, including reducing length of stay. ACE units, combined with oversight from a multidisciplinary team, seem to work very effectively for patients.

### **Recommendations for commissioning services and future research**

Sedentary behaviour and functional decline are conditioned by more than physical health. There is a need to go beyond the approach described in the “#endPjparalysis” campaign in order to address a fuller, hospital system-based approach<sup>[4]</sup>. This is likely to be more sustainable and will improve patient outcomes by taking account of barriers, including risk aversion, that may deter staff from supporting patients to be more mobile<sup>[5,6,10,14,20]</sup>.

More research is needed to determine effective ways of modifying or re-designing the hospital environment through interventions that actively facilitate walking in the corridor(s) and activities based around socialising<sup>[6,8]</sup>.

There is an opportunity to recognise the conflicting aims between medical management of the illness which triggered the patient’s admission on the one hand and the patient’s psychological readiness and therapeutic goals to enhance function (which will also continue post-discharge)<sup>[15,17,18]</sup>. Given how long patients spend time, whether lying, reclining or sitting, typically alone and uninterrupted, a significant ingredient in patient’s recovery could be reducing their social isolation.

The most commonly used tools for measuring changes in muscle mass are influenced by changes in a patient’s hydration status. Because older patients are often dehydrated at hospital admission, actual changes in muscle mass may be missed when using these tools. Research needs to account for hydration status before measuring baseline values of muscle mass in order to calculate actual changes<sup>[7,14,19]</sup>.

There is a need to explore in depth the complex interplay between functional health status of older hospitalised patients and the psychological and social factors (personal assets) to determine their associations with older patients' outcomes<sup>[8,13]</sup>.

### Some key publications

1. Boltz M, et al. (2012) Functional Decline in Hospitalized Older Adults: Can Nursing Make a Difference? *Geriatric Nursing*.
2. Brown CJ, Redden DT, Flood KL and Allman RM. (2009) The underrecognized epidemic of low mobility during hospitalization of older adults. *Journal of the American Geriatrics Society*.
3. Brown CJ, Friedkin RJ and Inouye SK. (2004) Prevalence and outcomes of low mobility in hospitalized older patients. *Journal of the American Geriatrics Society*.
4. Chastin S, et al. (2019) Beyond “#endpjaralysis”, tackling sedentary behaviour in health care. *AIMS Medical Science*.
5. Cortes OL, et al. (2019) Systematic review and meta-analysis of experimental studies: In-hospital mobilization for patients admitted for medical treatment. *Journal of Advanced Nursing*.
6. Covinsky KE, et al. (2011) Hospitalization-Associated Disability. “She was probably able to ambulate, but I’m not sure”. *Journal of the American Medical Association*.
7. English K and Paddon-Jones D. (2010) Protecting muscle mass and function in older adults during bed rest. *Current Opinion in Clinical Nutrition and Metabolic Care*.
8. Gregorevic KJ, et al. (2016) Are health assets associated with improved outcomes for hospitalised older adults? A systematic review. *Archives of Gerontology and Geriatrics*.
9. Hartley PJ, et al. (2017) Earlier physical therapy input is associated with a reduced length of hospital stay and reduced care needs on discharge in frail older inpatients: An observational study. *Journal of Geriatric Physical Therapy*.
10. Kortebein P. (2009) Rehabilitation for hospital-associated deconditioning. *American Journal of Physical Medicine & Rehabilitation*.
11. Kosse et al. (2013) Effectiveness and feasibility of early physical rehabilitation programs for geriatric hospitalized patients: a systematic review. *BMC Geriatrics*.
12. Krumholz HM. (2013) Post-Hospital Syndrome – An Acquired, Transient Condition of Generalized Risk. *New England Journal of Medicine*.
13. Meesters et al. (2018) Physical activity during hospitalization: Activities and preferences of adults versus older adults. *Physiotherapy Theory and Practice*.
14. Norheim KL. (2017) Changes in muscle mass during acute short-term hospitalization of elderly patients: A mini-review. *Translational Sports Medicine*.
15. Resnick, B. et al. (2015). Optimizing physical activity among older adults post trauma: overcoming system and patient challenges. *International Journal of Orthopaedic and Trauma Nursing*.
16. Smart DA, Dermody G, Coronado ME and Wilson M. (2018). Mobility Programs for the Hospitalized Older Adults: A Scoping Review. *Gerontology & Geriatric Medicine*.
17. Sourdet S, et al. (2015) Preventable iatrogenic disability in elderly patients during hospitalization. *Journal of the American Medical Directors Association*.
18. Surkan MJ and Gibson W. (2018) Interventions to mobilize elderly patients and reduce length of hospital stay. *Canadian Journal of Cardiology*.
19. Wakabayashi H and Sashika H. (2014) Malnutrition is associated with poor rehabilitation outcome in elderly inpatients with hospital-associated deconditioning A prospective cohort study. *Journal of Rehabilitation Medicine*.
20. Whitehead BR. (2017) Investigating the function spiral in later life: Aging attitudes, physical activity, and gait. *Journal of Health Psychology*.

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