

Avoiding Deconditioning

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LEARNING OBJECTIVES

- Describe the clinical syndrome of deconditioning and explain why it is harmful
- Identify opportunities to help patients to get up, get dressed and get moving

CASE

Arthur is a 78-year-old man who was admitted to hospital with a lower respiratory tract infection. At home, he had been independently mobile with a Zimmer frame. However, he was felt to be a 'high falls risk' as he fell in the emergency department, and as a result was told not to walk without having supervision. Due to staff shortages he found it very difficult to go anywhere, feeling like he was 'constantly told to sit back down'. He was not referred to the physiotherapist during his stay. After a week in hospital his infection had resolved and he was told he could go home, but he was unable to stand up from a chair without assistance.

INTRODUCTION

While known about for many decades, particularly among geriatricians and physiotherapists, in recent years there has been a resurgence of awareness among health professionals and even the public about deconditioning and its consequences. In part, this is because of a coalescence of the work of organisations like the British Geriatrics Society, individual clinicians, campaigns led by the authors, and the public becoming more conscious of the impact of lack of mobility and protracted hospital stays, especially among older people.

WHAT IS DECONDITIONING?

Hanson et al. (2019) define deconditioning as 'a complex process of physiological change that can affect multiple body systems and often results in functional decline'. In a clinical context, deconditioning (which is also called hospital-acquired functional decline) is much more than muscle tone and fitness. As our understanding of human physiology in times of imposed bed rest has developed, it highlights that this is more a syndrome rather than a condition and a different definition can therefore be considered. Deconditioning syndrome comprises physical, psychological and functional decline that occurs as a result of prolonged bed rest and associated loss of muscle strength, commonly experienced through hospitalisation (see Fig. 21.1 for an information leaflet from the hospital where the

deconditioning campaign was introduced). Though it can affect people of any age, the effect on older people can be more rapid, severe, and can often be irreversible (Arora, 2017a).

THE HARMS OF BED REST

As relatively recently as the 1970s, bed rest was commonly prescribed as a medical therapy for a variety of conditions such as tuberculosis and strokes (Allen, Glasziou, & Del Mar, 1999). Bed rest was thought to not only aid the healing process but also expedite the recovery time (Fortney, Schneider, & Greenleaf, 2011). However, there is now robust evidence that inactivity, bed rest and even a sedentary lifestyle can have detrimental effects on body physiology and function (Gordon, Grimmer, & Barras 2019; Hanson et al., 2019; Kortebein, 2009). Prevalence estimates report older hospitalised patients can spend anything up to 95% of their time in bed or chair, during their hospitalisation. Deconditioning can often start within the first day of hospitalisation (see Box 21.1) and possibly whilst patients are still on a trolley in the emergency department and interventions such as intravenous infusion, catheterisation, bedrails, nasogastric tube, etc. may precipitate deconditioning even sooner.

Deconditioning syndrome, a consequence of immobility, is therefore a complex physiological process that results in a multisystem deterioration in function. This phenomenon can result in a significant reduction in bone mass, muscle mass and durability as well as demotivation, swallowing difficulties, confusion and an increased reliance on others.

The physiological effects of bed rest are summarised in Box 21.1.

The effects of inappropriately prolonged hospitalisation are summarised in Box 21.2.

Deconditioning syndrome is not limited to hospitalised patients; it can also occur in care homes and even in an individual's own home.

Although deconditioning as a concept is not novel, the term has become more used and understood since the 2016 launch in the UK of the 'National Deconditioning Prevention and Awareness Campaign: Get Up, Get Dressed, Get Moving' (Arora, 2017a, b) and the International #endpjsparalysis campaign (Dolan, 2017).

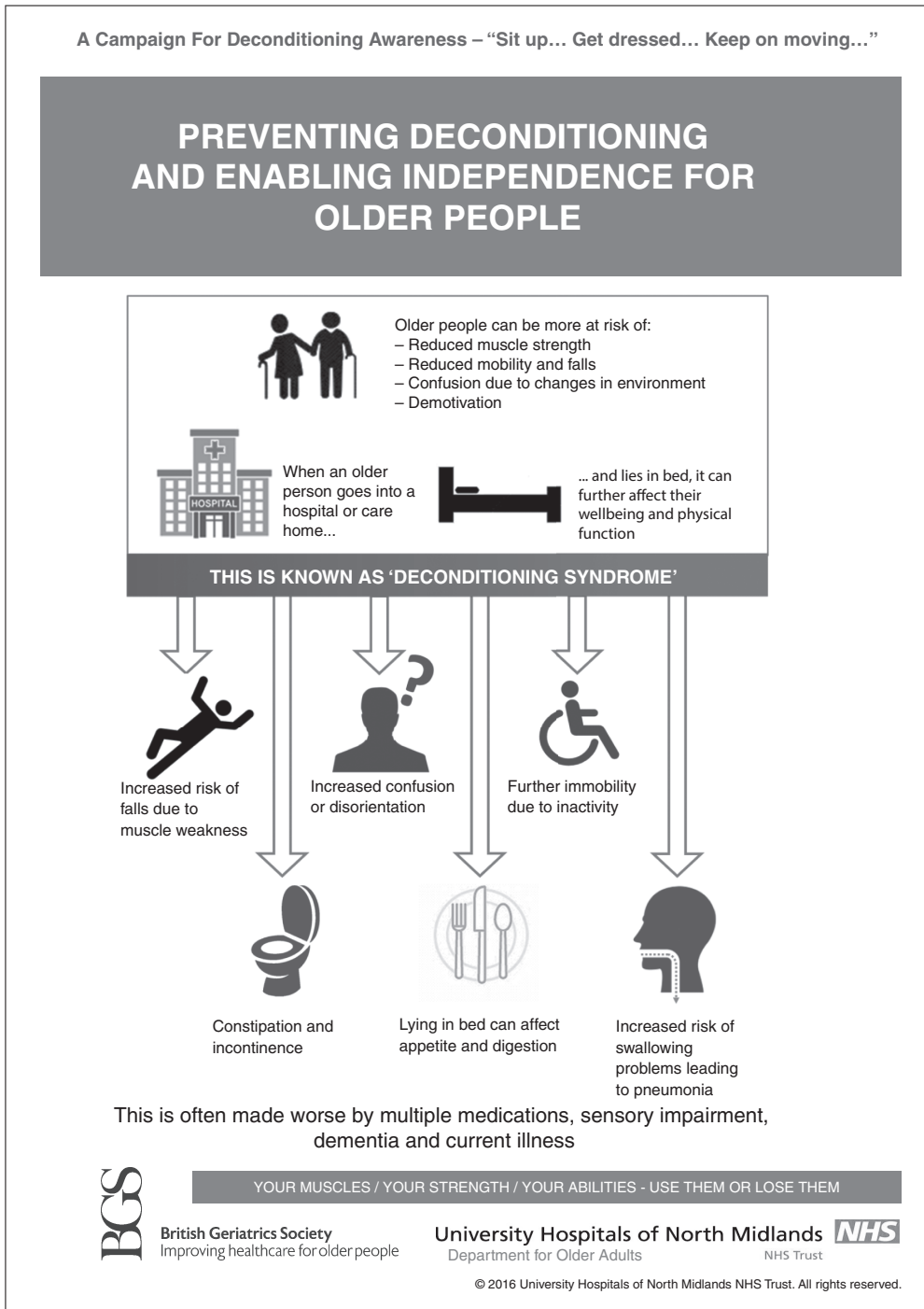


FIG. 21.1 Information leaflet on deconditioning (© University Hospitals of North Midlands NHS Trust 2016).

BOX 21.1 Physiological Effects of Bed Rest

Impact of bed rest in first 24 hours:

Reduced muscle power by 2%–5%
Reduced circulatory volume by up to 5%

Impact in the first 7 days:

Reduced circulatory volume by up to 25%
Reduced VO₂ max by up to 8%–15%
Reduced muscle strength by up to 5%–10%
Reduced functional residual capacity (FRC) by up to 15%–30%
Reduced skin integrity
Reduced dignity, self-confidence, independence, choice and quality

BOX 21.2 Harms Associated with Inappropriately Prolonged Hospitalisation

Conventional safety incidents – iatrogenic infections including diarrhea, methicillin-resistant *Staphylococcal aureus* (MRSA) and pneumonias, thromboembolism, etc.
Deconditioning syndrome
Delirium
Immobility
Incontinence
Loss of self-esteem
Poorly planned discharge
Delayed care transitions/coordination/communication
Premature institutionalisation
Premature decisions about future care needs in wrong setting

IMPACT OF DECONDITIONING

Deconditioning can have a dramatic impact on the hospitalised older population, especially those with frailty. The combination of an acute medical or surgical condition with pre-existing poor functional reserves can result in prolonged immobility. The addition of sleep disturbance, nutritional deficiencies and relative inactivity will intensify the detrimental effects of deconditioning (Falvey, Mangione, & Stevens-Lapsley, 2015; Walthall, Jackson, & Dolan, 2019).

There is evidence that activity and exercise help in recovery, and therefore can contribute to reduced length of stay in hospitals and improve fitness potentially impacting on self-care, independence and care needs (Cortes, Delgado, & Esparza, 2019). The evidence around strategies for mass implementation has been relatively more sparse.

DECONDITIONING: AN OLD CHESTNUT OR A NEW MEDICAL DIAGNOSIS?

Hippocrates (430–370 BCE) originally proposed that ‘in every movement of the body, whenever one begins to endure pain, it will be relieved by rest’ (Hippocrates, 1849). However, shortly after suggesting rest as a medical therapy, he noticed that prolonged inactivity led to a significant decline in both strength and exercise performance (Chadwick & Mann, 1950). Thus, even as early as Hippocrates the potential detrimental effects

of bed rest were partially understood. Long after Hippocrates, there is reference to harms of bed rest. In the 1867 edition of ‘Hymns Ancient and Modern’ (No. 23, Verse 3), it states:

‘Teach me to live that I may dread, The grave as little as my bed’

(Cottage, 2016).

In 1947, Dr Richard Asher drew parallels between graves and beds as a means to increase awareness of ‘The Dangers of Going to Bed’ (Asher, 1947). He famously extolled:

‘Teach us to live that we may dread, Unnecessary time in bed.’

Get people up and we may save, Our patients from an early grave.’

Since then, our scientific understanding and appreciation of deconditioning has substantially improved and it is now recognised that this complex process has the potential to disrupt almost every organ system (Box 21.1). Despite this longstanding appreciation of multisystem effects, the importance of addressing deconditioning has somehow not received the due recognition or priority in recent times. Box 21.3 demonstrates how staff can help patients prevent some of the harmful effects of hospitalisation and prevent deconditioning. Fig. 21.2 shows how to support and encourage movement.

BOX 21.3 What Can Staff Do to Prevent Deconditioning

Encourage/assist patients:

- To sit out in a chair
- To dress in their own clothes
- To walk to the toilet
- Cut patient’s toenails where appropriate
- Encourage and support patients to perform activities of daily living (ADLs) which they will be performing at their home like shaving, dressing, etc. when feasible.
- Walk as much as possible – with or without support
- Transfer from bed to chair and chair to stand and walk
- Transfer from toilet seat
- Walk/wheel patients to toilet rather than bedside commode, etc.
- Cut food and eat independently where possible
- Avoid delirium, constipation
- Appropriate pain relief, mobilisation, promote ADLs, medication review (START/STOPP criteria)
- Avoid unnecessary catheters, cannula, tubes to aid independence and self-reliance/confidence to return home
- Measure hospital associated harms

Provide patients:

- Their reading glasses
- Their hearing aids
- Dentures if they use them
- Large print leaflets
- Clock and calendar in each bay and room
- Chairs and beds of appropriate height
- Appropriate walking equipment
- Signpost toilets
- Encourage families to bring patient’s own clothes, shoes, etc.

A Campaign For Deconditioning Awareness – “Sit up... Get dressed... Keep on moving...”

Prolonged bed rest in older people can lead to substantial loss of muscle strength and physical activity

Assess



A comprehensive assessment should be completed to determine normal capabilities



A risk assessment should be completed



Glasses, hearing aids, clock and calendar should be accessible

Support



Are there appropriate mobility aids available? Is it the right size and reachable?



Walking to the toilet helps to prepare for going home. Is the catheter really needed?



Sitting out of bed helps (when possible). Can you get out of your chair?

Encourage



Feed or take fluids independently



Wash and dress independently in own clothes



Keep moving arms and legs even in a bed or chair

Thinking about how to support and encourage movement helps to:

- Reduce the risk of harm from falls, infection, thrombosis and delirium
- Reduce length of stay in hospital
- Reduce the likelihood of having an increase in their future care needs

Sit up... Get dressed... Keep on moving...



British Geriatrics Society
Improving healthcare for older people

YOUR MUSCLES / YOUR STRENGTH / YOUR ABILITIES - USE THEM OR LOSE THEM

University Hospitals of North Midlands **NHS**
Department for Older Adults
NHS TRUST

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FIG. 21.2 Ways to support and encourage movement (© University Hospitals of North Midlands NHS Trust 2016).

BOX 21.4 Barriers to Preventing Deconditioning in Hospitals

- Focus is generally on resolving the acute problem
- Less attention to underlying risk of functional decline
- Environment is not designed for enhancing function in older people
- Staff may encourage sedentary behaviour to prevent falls
- Patient and relatives expectations and beliefs
- Staff shortages and time pressures
- Some staff may feel it is 'someone else's job'
- Staff may feel this reduces time to complete essential paperwork
- Lack of awareness particularly within medical schools
- Inadequate staffing levels to promote activity in hospitals
- Lack of appropriate infrastructure – day rooms, laundry machines
- Relatives often unable to assist and bring clothes, shoes, etc. to hospitals
- Acute issues take priority
- Lack of awareness amongst staff and patients/families of harms associated with inappropriately prolonged hospitalization and bed rest in hospitals
- Fear of falls
- Lack of reporting mechanisms re: deconditioning

Regular physical exercise is known to reduce the risk associated with developing a wide variety of conditions ranging from cardiovascular disease, colorectal cancer, joint diseases to depression. In addition, various studies have demonstrated that sarcopenia, muscular atrophy and weakness, typical musculoskeletal features of ageing and deconditioning have the potential for partial reversibility through regular aerobic and resistance exercise. Thus, regular exercise has the ability to not only improve quality of life but could also prevent premature deaths from conditions such as cardiovascular disease (de Labra et al., 2015; Hanson et al., 2019; Migeotte et al., 2017).

This can partly be applied to patients in hospital that may remain immobile in hospitals. The reasons why patients sometimes can lie in bed with inappropriate bed rest are mentioned in Box 21.4.

There is also increasing evidence from telomere studies and mitochondrial studies in ageing that exercise in all ages helps. Similar evidence has emerged from space flight studies of human physiology, though these were performed in younger and healthier people, which have substantially aided our understanding of deconditioning. It highlights that regular activity and exercise could reverse the biological

and clinical characteristics of ageing and deconditioning (Maggioni et al., 2018).

PREVENTING DECONDITIONING**Driving Changes**

The 'National Deconditioning Awareness and Prevention Campaign (UK) - Get Up, Get Dressed, Get Moving' and #EndPjParalysis have generated widespread support nationally and internationally as an approach to prevent the detrimental effects caused by deconditioning in hospitals, care homes and those living alone (Arora, 2017c; Chankova, 2018).

Next Steps

Methods to prevent deconditioning could involve multiple approaches. These could include creating individualised care plans for activity and exercise, deconditioning care bundles, measuring deconditioning and reporting harm, incorporating deconditioning in all root cause analysis, prescribing personalised exercises depending upon individuals' abilities, educating staff and the public, busting myths and highlighting facts; and some of these have been tried with varying successes.

To further raise awareness, it is essential that education on deconditioning syndrome is incorporated into all healthcare professionals' curricula and supported by charities and patient groups. A move to include importance of physical activity is currently underway with all UK medical, nursing and pharmacy schools. It remains to be seen how the prevention of deconditioning work may be better integrated nationally and despite staffing shortages, whether adequate training and deconditioning awareness will be enough to tackle this important challenge.

CONCLUSION

With a rapidly shifting population demographic, deconditioning syndrome must be addressed more robustly across the board. It has significant implications not least on quality of life, dignity and mortality but also in the number of occupied hospital beds and in reducing healthcare-associated unintended harms. All groups of staff including receptionists, therapists, porters, healthcare assistants, nurses, doctors and others have an important role in patient care and therefore in preventing deconditioning. The current challenge lies in implementing and creating new and effective strategies to prevent deconditioning in hospitals and care homes.

Older people deserve no less.

SUMMARY POINTS

- Deconditioning is a potentially very harmful syndrome that results from physical inactivity
- It can be precipitated even after a brief period of immobility, particularly in hospital, and in older people with frailty
- Wider awareness of deconditioning among health professionals and the public can help to reduce its occurrence
- Campaigns such as the 'National Deconditioning Awareness and Prevention Campaign - Get Up, Get Dressed, Get Moving' and #EndPjParalysis are effective tools to reduce deconditioning

MCQs

- Q.1** Which of the following is true about mobility?
- Bed rest is an effective treatment for older people recovering from illness
 - Deconditioning is a normal part of ageing and cannot be avoided
 - Sleep disturbances, nutritional deficiencies and relative inactivity will intensify the detrimental effects of deconditioning
 - Deconditioning is a syndrome of physical, psychological and functional decline
 - Deconditioning does not affect other organ systems outside of the musculoskeletal system
- Q.2** Which of these options is an appropriate intervention to help reduce deconditioning?
- National campaigns to promote awareness of deconditioning
 - Empowering non-clinical staff such as receptionists and porters to motivate patients to mobilise
 - Including deconditioning in the undergraduate curriculum for health staff
 - Introducing care bundles for prevention of deconditioning
 - All of the above

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