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Caring for adults with impaired physical mobility

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THE WORD *MOBILITY* is associated with physical movement, including both simple gross motor movements and more complex fine motor movements, along with associated coordination of those movements. Physical mobility requires sufficient muscle strength and energy, along with adequate skeletal stability, joint function, and neuromuscular synchronization.¹ Anything that disrupts this integrated process can lead to impaired mobility or immobility.

This article describes reasons mobility may be impaired, the hazards of limited mobility or immobility, and nursing interventions to mitigate complications.

Who's at risk?

Though anyone can develop impaired mobility, those with acute or chronic diseases, traumatic injury, or chronic pain have a greater risk of experiencing altered mobility and its associated complications.¹ Disease processes directly affecting mobility include disorders of the central and peripheral nervous systems, musculoskeletal disorders, and neuromuscular disorders. Nervous system diseases that can impair mobility include cerebral palsy, multiple sclerosis, and Parkinson disease. Musculoskeletal disorders impairing mobility include muscular dystrophy, osteoarthritis, and rheumatoid arthritis.

Other disorders that can impair mobility include congenital deformities such as osteochondrodysplasia and diseases that contribute to fatigue such as heart failure and chronic obstructive pulmonary disease.^{1,2} Traumatic orthopedic, head, and spinal injuries are especially likely to impair mobility.

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Chronic pain related to various medical disorders, surgical procedures, and traumatic injuries can also have a significant effect on an individual's ability to move. Malnutrition and nutritional deficiencies complicate or delay healing and recovery, prolonging immobility impairments.¹

Injuries related to falls can also affect mobility. Musculoskeletal and other changes associated with aging, such as decreased bone density, decreased muscle mass, loss of peripheral vision, and dementia can combine to make older adults more prone to falls and traumatic injury.¹

Multiple hazards

Impaired mobility has negative consequences for virtually all body systems. If prolonged, immobility leads to deconditioning and loss of function (see *Hazards of immobility*).

The psychosocial effects of immobility are manifested by mood and affect changes. Patients with impaired mobility may experience boredom, anxiety, grieving, anger, and altered verbal/nonverbal communication patterns. The change in mobility status may also alter the patient's body image, leading to decreased self-esteem and a sense of powerlessness. The patient may withdraw from

social interaction, further exacerbating the effects of isolation.^{1,3,4}

Assess the patient's ability to ambulate and the amount of assistance (including use of assistive devices) required. Several assessment tools are available; for some common examples, see *Tools for assessing impaired mobility*. Because impaired mobility increases the risk of falls, use a valid fall assessment tool to determine the patient's fall risk.

Nursing assessments related to mobility

Because mobility issues are directly related to **musculoskeletal** disorders,

Hazards of immobility^{1,3,4}		
Body system	Immobility effects	Potential complications
Cardiovascular	<ul style="list-style-type: none"> decreased systemic vascular resistance causing venous pooling in extremities decreased cardiac output 	<ul style="list-style-type: none"> orthostatic hypotension thrombus formation
Respiratory	<ul style="list-style-type: none"> decreased strength of respiratory muscles diminished lung expansion hypoventilation impaired gas exchange decreased cough reflex pulmonary secretion pooling blood redistribution and fluid shifts within the lung tissue 	<ul style="list-style-type: none"> atelectasis hypoxemia pneumonia pulmonary edema thrombus formation pulmonary embolism
Integumentary	<ul style="list-style-type: none"> decreased delivery of oxygen and nutrients to tissues tissue ischemia due to pressure between bed or chair and bony prominences inflammation over bony prominences friction and shearing of skin during movement 	<ul style="list-style-type: none"> skin breakdown abrasions/excoriation pressure ulcers infection
Musculoskeletal	<ul style="list-style-type: none"> reduced muscle mass decreased muscle strength decreased endurance shortening and tightening of connective tissue impaired joint mobility impaired calcium metabolism 	<ul style="list-style-type: none"> fatigue decreased stability and balance muscle atrophy joint contractures foot drop osteoporosis falls pathologic fractures
Gastrointestinal	<ul style="list-style-type: none"> decreased peristalsis anorexia decreased fluid intake increased intestinal gas altered swallowing ability 	<ul style="list-style-type: none"> constipation fecal impaction ileus flatulence abdominal distension nausea/vomiting heartburn, indigestion aspiration malnutrition.

a thorough assessment of this system and its effect on the patient's mobility status is essential. Assess muscle bulk, tone, and muscle strength and coordination.

Immobility can negatively affect tissue perfusion, so also perform a thorough **cardiovascular** assessment, including heart sounds, BP, apical and peripheral pulses, and capillary refill time. Assess for the presence of lower extremity edema.

Assessment of the **respiratory** system should include lung sounds, chest wall movement and symmetry, and rate, depth and effort of respirations.

Nursing assessment of the **gastrointestinal** system includes auscultating bowel sounds and palpating the abdomen for distension or discomfort.

To evaluate **genitourinary** problems, assess for the presence of urinary tract abnormalities such as suprapubic pain, dysuria, urgency, or frequency, and urinary incontinence.

Nursing interventions

While many interventions depend on the underlying cause of the patient's immobility, the nursing interventions in this article will focus on aspects of care related to mobility itself.

To avoid or minimize complications of immobility, mobilize the patient as soon as possible and to the fullest extent possible. Mobilization efforts such as dangling, sitting, and early ambulation, depend on the patient's unique circumstances during hospitalization, such as the illness/disease process, procedures performed, and surgery type.⁵ For example, early mobilization may occur from 24 to 36 hours for a patient following an acute ischemic stroke. A patient undergoing a cardiac catheterization may be mobilized within a few hours following the procedure, while a patient undergoing total knee arthroplasty may begin mobilizing 24 hours following the surgery.⁵

Monitor vital signs before and after physical activity. Institute

Tools for assessing impaired mobility

Some examples of mobility assessment tools include the following.

- The Timed Up and Go (TUG) Test assesses mobility, balance, walking ability, and fall risk.⁸ An observer assesses postural stability, gait, stride length, and sway as the patient rises from sitting position in a chair, walks three meters, returns to the chair, and sits back down. Scores are based on time required to complete the exercise. Patients requiring 12 or more seconds to complete the task have a higher fall risk.
- The Modified Elderly Mobility Scale (MEMS) tests motor function of older adults with varying functional levels.⁹ It consists of eight categories of function, including position changes (lying, sitting, standing), ambulation, gait, functional reach, and climbing stairs. Scores are based on the time required to complete the tasks and the degree of assistance needed. Higher scores in these areas indicate a higher level of function.
- The Functional Movement Screen (FMS) appraises a patient's movement patterns to identify body asymmetries, weaknesses, and muscle and joint stiffness that could potentially result in pain or injury.¹⁰ The FMS is comprised of seven exercise tests of motor ability along with three tests designed to screen for joint problems. The patient receives a score from 0 to 4 on each exercise test, with total score comparisons of the right and left sides. Higher scores (14 to 16) correlate with less risk of injury.
- The Mobility Scale for Acute Stroke (MSAS) was developed to explicitly distinguish between the lower levels of mobility seen in patients with acute strokes in the first 2 weeks following stroke onset.¹¹ It measures six mobility-related activities related to balance, body positioning changes, and ambulation/gait. Each activity is graded on a 1-to-6 scale. Higher scores indicate a higher level of functioning.
- The Functional Independence Measure (FIM) is used to assess basic activities of daily living, such as self-care needs, to identify overall independence during specific functional tasks.¹² It has two subscales, motor function and socio-cognitive functioning. The motor subscale includes 13 items that the patient would usually perform daily, including eating, grooming, bowel and bladder management, transfers, ambulation/movement, and stair climbing. The socio-cognitive portion looks at areas of comprehension such as expression, social interaction, problem-solving, and memory.

appropriate fall prevention strategies as indicated, such as hourly rounding to address patient needs. Encourage the patient to perform activities of daily living (ADLs) as independently as possible and to participate in physical therapy prescribed to improve mobility. Perform range-of-motion exercises (active or passive depending on the patient's ability and clinical status).^{3,4}

Collaborate with other healthcare professionals for patient education and care planning; for example, physical therapists for safe ambulation plans, occupational therapists for ADLs, and dietitians for healthy meal planning.^{4,6}

Pain can be a major deterrent to mobility. Monitor the patient's level of pain by using a valid pain intensity rating scale and provide nonpharmacologic and pharmacologic pain management interventions as prescribed. Along with medications (ranging from nonsteroidal anti-inflammatory drugs to opioids), consider employing nonpharmacologic measures such as positioning, splinting, and heat/cold application, to reduce musculoskeletal discomfort. Document the patient's response to therapy, including any adverse reactions or drug interactions.^{2,4}

Orthostatic hypotension is defined as a drop in systolic BP of 20 mm Hg or more or in diastolic BP of 10 mm

Hg or more within 3 minutes of standing.⁷ If orthostatic hypotension is suspected, measure the patient's vital signs while he or she is supine, sitting, and standing. Graduated compression stockings can help improve venous return. Anticoagulants may be prescribed to help prevent venous thromboembolism.^{3,4}

Encourage adequate fluid intake to liquefy pulmonary secretions, and teach the patient deep breathing and coughing exercises to prevent atelectasis. Monitor SpO₂ levels and provide supplemental oxygen as prescribed to maintain adequate oxygenation.

Position the patient with the head of the bed elevated 30 to 45 degrees unless medically contraindicated; turn and reposition the patient every 2 hours. Besides supporting respiration, proper positioning and repositioning helps protect the skin and minimize the potential for breakdown. Additional interventions for preventing pressure ulcers include:

- conducting a pressure ulcer admission assessment for all patients.

- reassessing the potential and degree of risk of pressure ulcer development daily.
- inspecting the patient's skin daily.
- treating dry skin with moisturizers.
- optimizing nutrition and hydration.
- using pressure-redistribution surfaces.
- minimizing exposure of the skin to moisture due to incontinence, perspiration, or wound drainage.^{3,4}

Ongoing assessment and nursing care

Nutritional status affects both the patient's potential for developing immobility-related complications and the patient's ability to regain mobility. Monitor the patient's food consumption and portion sizes, daily weights, intake and output (I&O), and activity level. As needed, assist the patient with meals, discuss food preferences with the patient/family, and consult a dietitian. Monitor lab values related to nutrition, such as serum albumin, serum protein, blood glucose, and key electrolytes

such as sodium, potassium, magnesium, and calcium.

Debilitated patients are more susceptible to infection, so monitor for signs such as fever and leukocytosis.^{3,4}

Ask the patient to report any nausea, vomiting, or abdominal pain. Because immobility can increase the risk of constipation, monitor bowel movements for regularity and characteristics. Encourage fluid intake and a high fiber diet, unless contraindicated, to help prevent constipation.

When documenting I&O, note amount and characteristics of urine. Lab test results, including urine osmolality and specific gravity and blood urea nitrogen, can help determine the patient's fluid volume status.²⁻⁴

Monitor the patient's emotional status every shift, and be attuned to any behavioral or mood changes. Offer support and empathy, and allow the patient to express his or her feelings in a nonjudgmental manner. Any identified concerns should be reported and monitored to ensure the patient's continued psychological health.^{3,4}

Research supports early mobility

Clark, Lowman, Griffin, Matthews, and Reiff (2013) studied the effectiveness of an early mobilization program in a trauma and burns ICU.¹³ They identified a decrease in pulmonary and cardiovascular complications, such as pneumonia and deep vein thrombosis, when they implemented the program and concluded that early mobilization was safe and effective. They added that the medical community, including healthcare providers, nurses, physical therapists, and hospital administrators, should promote a culture where early mobilization for hospitalized patients is the standard of care.

Similarly, Havey, Herriman, and O'Brien (2013) identified that bedrest and immobility in patients following abdominal surgery contributed to increased fatigue, decreased body muscle mass, and decreased pulmonary function.¹⁴ They emphasized the importance of early mobilization to decrease these negative physical effects.

Institutions need to look at the financial and organizational implications of implementing some form of mobility program to prevent or minimize the effects of immobility. Clark et al. (2013) and Knoblauch et al. (2013) both report that implementing early mobilization programs doesn't increase costs and may be associated with decreased lengths of stay for patients.^{13,15} Kalisch et al. (2013) identified that mobilizing hospitalized patients not only provides physical benefits for them but psychological and social value as well. In addition, organizational outcomes related to mobility programs offer positive reasons for providing nursing and medical interventions that will promote optimal mobility for patients suffering from immobility issues.⁵

Patient teaching

Adherence to recommended prevention and treatment strategies can make a significant difference in whether the patient will regain mobility or develop immobility-related complications. Educate patients and their families regarding the risks of impaired mobility and the importance of maintaining the highest level of physical activity possible. Discuss the importance of turning and repositioning to maintain skin integrity and explain that passive and active range-of-motion exercises will help the patient maintain joint flexibility, muscle strength, and muscle mass.

Discuss fall prevention techniques. For example, teach patients to change positions slowly to avoid orthostatic hypotension.

Stress the importance of optimal nutrition in the healing process; the

patient and family should understand that meals high in protein and nutrients are beneficial for healing. Also inform patients about the importance of adequate fluid intake to help prevent both urinary tract infections and constipation.

The psychological impact due to impaired mobility and immobility can be devastating. Provide the patient and family with information about support groups and community resources as appropriate for any identified physiological, psychosocial, spiritual, and financial needs.²⁻⁴

Keep patients on the move

Immobility and its complications have been shown to have the potential to cause physical disability and emotional suffering for patients, as well as to increase healthcare costs for facilities and communities. (See *Research supports early mobility.*) A comprehensive understanding of the concept of mobility is critical to providing optimal patient care. By

incorporating appropriate assessment skills, early mobilization efforts, and proper prevention strategies, the nurse can help patients recover their former degree of mobility and flexibility in support of an optimal quality of life. ■

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