Falls and Fall Risk

CLINICAL PRACTICE GUIDELINE

PALTmed
POST-ACUTE AND LONG-TERM CARE
MEDICAL ASSOCIATION

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Preface

This clinical practice guideline (CPG) has been developed under a project conducted by Post-Acute and Long-Term Care Medical Association (PALTmed), the national professional association of medical directors, attending physicians, and others practicing in the long term care continuum. This is one of a number of guidelines undertaken as part of the association's mission to improve the quality of care delivered to patients in these settings.

Original guidelines are developed by interdisciplinary workgroups, using a process that combines evidence and consensus-based approaches. Workgroups include practitioners and others involved in patient care in long-term care facilities. Beginning with pertinent literature searches for articles and information related to the guideline subject, and a draft outline/framework, each group works to make a concise, usable guideline that is tailored to the long-term care setting. Because scientific research in the long-term care population is limited, many recommendations are applied research of older adults and geriatric medicine. Some recommendations are based on the expert con-sensus opinion of practitioners and geriatric experts in the field.

Guideline revisions are recommended under the direction of the Clinical Practice Guideline Steering Committee. The Steering Committee reviews any PALTmed guidelines that are three years old prior to an annual Steering Committee meeting to determine if the CPG is current. (A thorough lit-erature review is done for each CPG as well to ascertain if the data within is still current.) The PALTmed Clinical Practice Committee Chair selects the guidelines to be revised/created based on 1) the Steering Committee recommendations, 2) data collected, and 3) an assessment of the difficulty of development and relevance to the PALTmed membership. The Board of Directors has final approval. The guideline revision process is similar to the original guideline process, except the workgroup starts with the original guideline (or last revision) as a basis to begin with.

Purpose

PALTmed seeks to develop and revise guidelines that focus on specific concerns and common problems in the long-term care setting. Although other agencies, organizations, and associations have devel-oped a number of guidelines for conditions that occur in elderly and chronically ill individuals, many of these guidelines limit or omit considerations that are unique to the long-term care popula-tion.

PALTmed guidelines emphasize key care processes and are created to be used in conjunction with facility-specific policies and procedures to guide staff and practitioner practices and performance. They are meant to be used in a manner appropriate to the population and practice of a particular facility. Guideline implementation may be affected by resources available in the facility, including staffing, and will require the involvement of all those in the facility who have a role in patient care.

Audience

This guideline is intended for the members of the interdisciplinary team in long-term care facilities, including the medical director, director of nursing, practitioners, nursing staff, consultant pharmacist, and other professionals such as therapists, social workers, dietitians, and nursing assistants who care for residents of long-term care facilities.

PALTmed CPGs include many functions and tasks related to recognizing, clarifying, managing, and monitoring various conditions and situations. But the guidelines only sometimes specify who should do these tasks. For example, many disciplines including nursing assistants, licensed nurses, dietitians, and social workers may make and document observations (e.g., that someone does not sleep at night, is more withdrawn, or has a change in usual eating patterns). But only some of them may be qualified to determine the significance of those observations (for example, what is causing the sleeplessness or change in eating patterns). In contrast, practitioners may not be present to make observations, but are trained to analyze the significance and causes of symptoms. Thus, each facili-ty should ensure that tasks are done correctly and by the appropriate interdisciplinary team mem-bers. It is important for observers to make and document findings effectively, but they should get appropriate support for interpreting the findings when this is not within the scope of their training or practice.

Assumptions

Guidelines in the long-term care setting should be consistent with fundamental goals of desirable long-term care practice. Operationally, this requirement means that the nursing facility care team systematically addresses (1) each individual's risk factors for a number of diseases and conditions and (2) the adverse consequences of the diseases and conditions on the patient's functioning and quality of life.

However, when nursing facility patients are at or near the end of life, care goals will shift from functional improvement or physical stability to palliation or comfort care. PALTmed guidelines address this transition and provide suggestions for appropriate modification of the patient's care plan.

Long-term care facilities care for a variety of individuals, including younger patients with chron-ic diseases and disabilities, short-stay patients needing postacute care, and very old and frail indi-viduals suffering from multiple comorbidities. When a workup or treatment is suggested, it is cru-cial to consider if such a step is appropriate for a specific individual. A workup may not be indicat-ed if the patient has a terminal or end-stage condition, if it would not change the management course, if the burden of the workup is greater than the potential benefit, or if the patient or his or her proxy would refuse treatment. It is important to carefully document in the patient's medical record the reasons for decisions not to treat or perform a workup or for choosing one treatment approach over another.

How to Use These Guidelines

Each guideline includes a narrative portion that covers definition, recognition, assessment, treatment, and monitoring of the condition being addressed. "Recognition" means identifying the presence of a risk or condition. "Assessment" means clarifying the nature and causes of a condition or situation and identifying its impact on the individual. "Treatment" means selecting and providing appropriate interventions for that individual. "Monitoring" means reviewing the course of a condition or situation as the basis for deciding to continue, change, or stop interventions.

Each guideline also includes an algorithm that summarizes the steps involved in addressing the condition. In the algorithm, rectangles signify points where action is to be taken; diamonds indicate points where a decision must be made.

Terminology

We recognize that people who reside in long-term care facilities are "residents". However, we have used the term "patient(s)" throughout these guidelines because we are addressing individuals within the context of treating a medical condition. In addition, these guidelines also apply substantially to individuals who come to long-term care facilities for short-term care. When referring to pharmaceutical products, we have avoided the use of brand names and refer to classes of drugs whenever possible.

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Falls and Fall Risk

Definition

Falling is a syndrome characterized by the failure to maintain an appropriate lying, sitting, or standing position, resulting in a person's sudden, unintentional relocation either to the ground or into contact with another object below his or her starting point.

INTRODUCTION

Falling is a significant cause of injury and death in older persons, especially the frail elderly. Patients in long-term care (LTC) facilities fall for a variety of reasons. Often, **intrinsic factors** (e.g., age-related changes, acute or chronic conditions, medication effects) and **extrinsic factors** (e.g., the patient's environment or activities, inability or failure to follow safety measures, physical weakness) are involved simultaneously. Among other things, decreased body weight and osteoporosis may result in serious injuries or fracture as a consequence of a fall.

Preventing falls constitutes a significant challenge and requires interdisciplinary evaluation in any LTC setting. Efforts should focus on minimizing fall risk and risk of fall-related injuries while maximizing individual dignity, freedom, and quality of life.

Expected Outcomes

This CPG is intended to give LTC facility staff an understanding of intrinsic and extrinsic risk factors for falls and provide guidance for a timely and systematic approach to patient assessment and selection of appropriate interventions.

Facilities should establish process and clinical outcomes measures before implementing this CPG. As much as possible, identify measurable (quantitative) indicators. All clinical process and clinical outcome measures should be defined using selected benchmarks (e.g., national norms or the facility's historical norms, if others are not available).

RECOGNITION

STEP 1

Does the patient have a history of falls? A history of falls is a strong predictor of future falls. Review the patient's record for evidence of previous falls. Ask the patient and the patient's caregiver or family if the patient has a history of falling. A history of one or more recent falls, for any reason, within 6 months should be listed as a problem in the patient's record. The potential for further falling should be addressed in the patient's care plan, either separately or in conjunction with care plans related to other risk factors associated with increased fall risk.

STEP 2

Is the patient at risk of falling? Many risk factors are associated with falls (Table 1). Multiple factors are often involved in a given patient. For example, a previous fall may generate a fear of falling again, which results in reduced mobility and leads to **deconditioning**—a loss of strength, balance, and agility that may rapidly follow a period of immobilization. An acute illness such as pneumonia may cause weakness, dizziness, or deconditioning and thus lead to falls. Patients on medications that have central nervous system (CNS) effects are at risk for falls within 3 days of a CNS medication change.[1]

In addition, several comorbid conditions may be associated with falls. Musculoskeletal problems can impair strength and biomechanics, as can central neurological conditions (e.g., stroke, Parkinson's disease). Peripheral and autonomic neuropathies often impair position sense. Other comorbid conditions that can increase risk for falling include cardiac arrhythmias, heart failure, depression (as well as the medications used to treat depression and other psychiatric illness), visual impairments, and vitamin D deficiency. Some classes of medications impair alertness and balance or cause orthostatic hypotension (Table 2). Finally, the patient's cognitive status, lack of awareness of safety measures and extent of recent debility, and poor choices all play a role in fall risk.

An association has been found between chronic pain and falling.[2,3] A possible explanation is that painful joints and surrounding muscles may not be able to make needed postural adjustments to prevent a fall. The effect of pain medications on alertness level and response rate may also play a role.

Document risk factors for falling in the patient's record and discuss the patient's fall risk in care conferences. Regulatory guidelines require a comprehensive patient assessment to be completed within 14 days of admission (Medicare Part A requires a 5-day assessment). Many patients are at higher risk for falls or significant injury from falls within the first several days of admission. It is therefore important to rapidly identify prominent risk factors and minimize immediate risks without resorting to the use of physical restraints.

Fall assessment is both multifactorial and interdisciplinary and requires reviewing each patient's physical abilities in light of his or her activity level.[4] All patients should be assessed for fall risk. Some risk factors are modifiable; for patients who have risks that cannot be mitigated, steps should be taken to reduce the consequences of falls. Table 3 lists items that may need to be reviewed when assessing a patient's fall risk.

TABLE 1

Common Risk Factors for Falls

Intrinsic Factors

- Age >80 years[5,6]
- Anemia[7,8]
- Arthritis
- Balance deficit
- Cardiac arrhythmias
- Cognitive impairment
- Dehydration
- Electrolyte imbalance or hypoglycemia
- Depression
- Diabetes*[9]
- Dizziness or vertigo[10]
- Fall history
- Fear of falling
- Female sex*
- Gait and mobility problems (e.g., caused by foot problems, peripheral neuropathy,* Parkinson's disease*)
- History of fracture
- Impaired sleep quality and quantity, including obstructive sleep apnea[11,12]
- Low body mass index*
- Muscle weakness
- Musculoskeletal pain*
- Orthostatic hypotension[13]
- Sensory impairments, including visual and auditory deficits
- Stroke history
- Transient ischemic attacks
- Urinary incontinence* or urinary or fecal urgency
- Vitamin D deficiency
- White race*

Extrinsic Factors

- Alcohol intoxication
- Any recent hospitalization
- Environmental factors (e.g., slippery surfaces, poor lighting, obstacles)[10]
- Inappropriate footwear
- Medications and polypharmacy*[10]
- Multifocal lens* or inappropriate glasses[14]
- Use of assistive devices

*Risk factors confirmed by studies in community-dwelling patients.[15]

TABLE 2

Some Categories of Medications That May Increase Fall Risk

- Antiarrhythmics
- Anticholinergics
- Antidepressants (tricyclics, selective serotonin reuptake inhibitors, serotonin–norepinephrine reuptake inhibitors)
- Antidiabetic agents
- Antiepileptics
- Antihypertensives
- Antiparkinsonian agents
- Antipsychotic medications (typical and atypical)[16]
- Benzodiazepines (both short acting and long acting)
- Cholinesterase inhibitors[17]
- Diuretics
- Opioid analgesics
- Sedative hypnotics
- Urinary antispasmodic agents
- Vasodilators

TABLE 3

Checklist for Assessing Fall Risk

Risk Category	Assessing Fall Risk
Fall history	◆ Review patient's history of falls.
Medications	◆ Review patient's record for medications or combinations of medications that could predispose the patient to falls.
Underlying conditions	◆ Assess patient for underlying medical conditions that may predispose to falls, including conditions that affect balance or cause dizziness or vertigo. ◆ Assess heart rate and rhythm and blood pressure. ◆ Assess patient for orthostatic hypotension and conditions predisposing to it. ◆ Assess for underlying medical conditions that may increase the risk of injury from falls. ◆ If the patient is not on Vitamin D, supplementation should be considered.
Functional status	◆ Assess level of mobility. ◆ Assess gait as well as standing and sitting balance. ◆ Assess lower extremity joint function. ◆ Assess ability to use ambulatory assistive devices (e.g., cane, walker). ◆ Review appropriateness and safety of any current restraints. ◆ Review activity tolerance. ◆ Review bowel and bladder continence status. ◆ Assess sitting positioning in wheelchairs; make sure cushions are positioned properly. Ensure that wheelchairs are maintained in proper working order. ◆ Assess balance deficit using a standardized assessment, when feasible.
Neurological status	◆ Assess patient for conditions that impair vision (e.g., cataracts, glaucoma, macular degeneration). ◆ Assess for sensory deficits, including peripheral neuropathies. ◆ Assess muscle strength, proprioception, reflexes, and cerebellar function.
Psychological factors	◆ Review for delirium, impaired cognition, judgment, memory, safety awareness, and decision-making capacity.
Environmental factors	◆ Assess presence of environmental factors that could cause or contribute to falls. ◆ Assess whether patient's footwear may be contributing to fall risk.

ASSESSMENT

STEP 3

Has the patient just fallen? Provide staff with a clear, written procedure that describes what to do when a patient falls.[a] When a patient has just fallen or is found on the floor without a witness to the fall, a nurse should record vital signs and evaluate the patient for possible injuries to the head, neck, spine, and extremities. If there is evidence of a significant injury, such as a fracture or bleeding, provide appropriate first aid, notify the practitioner and family, and get emergency assistance if necessary.

Once an assessment rules out significant injury, help the patient up and try to restore his or her dignity. Describe the situation accurately in the medical record and incident report, if applicable, and in as much detail as possible, but distinguish facts from speculation. For example, did the patient slide out of a chair in a controlled manner or pitch forward onto the floor? Did the patient feel dizzy or faint just before falling? Was the patient upright, standing still, or moving? If the patient was found on the floor without a witness to preceding events, describe the fall accordingly.

Notify the patient's practitioner and family in an appropriate time frame. For falls that do not result in injury or a condition change, the practitioner may be notified routinely (e.g., by fax or by phone the next office day) instead of immediately.

It is common practice in many LTC facilities to do frequent vital signs or "neurochecks"; however, no studies demonstrating the utility of performing regular neurochecks in LTC settings are available. Moreover, no evidence supports observing patients for a fixed period of time after a fall, and there is no regulatory requirement to do such frequent documentation. Staff should document relevant post-fall clinical findings, such as vital signs, pain, swelling, bruising, and changes in function or cognitive status, in the patient's record. It is also desirable to note the absence of such significant findings (so-called "pertinent negatives") to demonstrate that the patient is being monitored appropriately. Routine, ongoing clinical assessment should continue with increased awareness that the patient has recently fallen, and any signs and symptoms should be evaluated as associated with a fall.

Caregivers should be alert to signs and symptoms of subdural and epidural hematoma, which include lethargy, reduced level of consciousness, and significant weakness in one or more of the extremities.[18] Epidural bleeding may cause a rapid deterioration in neurologic function soon after the injury, whereas subdural hematoma formation may result in appearance of the symptoms several days after the fall. Heightened awareness of the possibility of head and other injuries resulting from falls in patients with cognitive dysfunction, who may not be capable of providing a coherent fall history, and in patients taking anticoagulants is especially warranted. Transfer of the patient to a hospital emergency room is appropriate if he or she exhibits the following injuries or signs after a fall:

- Uncontrolled bleeding
- Major fracture or fracture likely to require surgical intervention
- Deformity of limbs
- Acute change in neurological status or cognition (Table 4).

a See, for example, *PALTmed's Know-It-All Before You Call—Data Collection System. Essential clinical data collection: A guide for nurses on reporting change of condition.* Columbia, MD: 2010.

TABLE 4

Nursing Neurological Evaluation

- Ask the patient the following:
  - "Show me a smile."
  - "Show me a frown."
  - "Raise your eyebrows."
  - "Show me your teeth."
  - "Close your eyes tightly."
  - "Puff out your cheeks."
  - "Clench your teeth."
  - "Open your jaw."
  - "Stick out your tongue."
  - "Shrug your shoulders."

- Look for functional changes (e.g., changes in transfer ability, sitting balance, standing balance, gait), changes in range of motion in all extremities, and changes in muscle strength.

  If a patient is experiencing new difficulty in performing these tasks, suspect a cranial injury and contact the practitioner.

STEP 4

Evaluate the factors associated with the fall. It is insufficient to say simply that a patient has a "fall risk" or a "problem with falling." After an observed or probable fall, or after a fall risk has been identified, a more detailed analysis of the patient's falling or fall risk should take place.

The **nature of falls** refers to their characteristics and related circumstances, including time and location. Examples include

- Buckling of the right knee or leaning far to one side while trying to ambulate;
- A tendency to slide from a chair while sitting;
- Falling after standing up or while trying to get to the bathroom at night; and
- The location of the fall—a wet floor, a crowded area, etc.

Frequency refers to the number of falls in a certain period or between situations that present a risk of falling.

Identifying the Causes of a Fall

Cause refers to factors that are associated with or that directly result in a fall (e.g., a balance problem caused by an old or new stroke). Often, multiple factors contribute in varying degrees to a falling problem. Sometimes the fall itself is the "tip of the iceberg" and may be the presenting sign of a new or worsening medical condition. It is important not to focus solely on the outcome of the fall; it is critical to identify underlying contributors to the fall to prevent it from happening again.

If possible, begin the identification of possible causes within 24 hours of a fall. Review the chain of events that preceded the fall. For example, a recent increase in blood pressure or in ankle edema may have resulted in the addition of diuretics or vasodilators to the patient's medication regimen, resulting in orthostatic hypotension. A recent pneumonia episode may have caused increased confusion or general instability.

Determine whether the fall is new or recurrent. Recurrent falling may require broader attempts at cause identification than isolated or occasional falling.

Identification of the causes of falling should be based on patient-specific evidence that includes adequate details. For example, a patient may have a gait disturbance or may be receiving medications that affect balance or cause lightheadedness. Also look for patterns and trends in fall incidents in individual patients and among patients sharing common characteristics—for example, those residing in the same unit who fall during the same nursing shift, at a similar time of day, or with the same direct-care staff.

Inability to remember safety tips for avoiding falls may be a contributing factor to a patient's recurrent falling. However, a patient's inability to adhere to the plan of care is not necessarily, in itself, an adequate explanation for continued falling; another underlying cause may exist. Some patients want to continue to engage in activities that can put them at risk for a fall. Those situations need to be documented, and staff should respond by optimizing the situation and making sure the patient or family member is informed of the risk.

Identifying and correcting the causes of falls can often reduce the risk of falling. For patients who have recurrent falls, continue to collect and evaluate information until either (1) the cause of the falling is identified or (2) it is determined that the cause cannot be found or that finding a cause would not change the outcome or the patient's management. If possible, document how it was concluded that certain factors contributed to or caused falling whereas others were not relevant. No further evaluation may be necessary if the fall is clearly the result of an obvious extrinsic factor that can be corrected.

Performing a Post-Fall Evaluation

After a fall, obtain relevant history regarding the circumstances (Table 5). The patient's current medications, especially any recent changes, should also be reviewed. A postural blood pressure and pulse should be obtained along with a gait and balance evaluation. (Box 1 describes the steps for assessing for orthostatic hypotension.) If the patient is ambulatory, assess function by using the Tinetti Balance Assessment Tool[19] or performing the Get Up and Go Test,[20] which involves watching the patient rise from a chair without using his or her arms, walk several paces, and return to sitting. Feet and footwear, as well as the environment (Table 6), should be examined for possible contributing factors. If the cause of a fall is unclear; if the fall may have a significant medical cause, such as a stroke or an adverse drug reaction; or if the patient continues to fall despite attempted interventions, further evaluation by the practitioner or an outside consultant to determine and eliminate or modify underlying causes of the fall may be warranted.

Assessment instruments, such as the Care Area Triggers (CAT) instrument accompanying the Minimum Data Set (MDS 3.0), may provide clinical associations as to possible causes of falls. Such instruments, however, cannot help determine exactly what is causing a fall or a fall risk in a specific patient. It is important not to rely solely on such instruments to draw relevant conclusions and determine proper actions in an individual case.

If the causes of a fall cannot be readily identified and if the fall is accompanied by other signs and symptoms (e.g., confusion or lethargy), consider whether the fall might be a symptom of an underlying acute process or a change in a chronic condition. Do not assume, however, that a new or recurrent fall results from an existing underlying condition (e.g., parkinsonism) without further evaluation for other potential causes.

TABLE 5
Checklist for Performing a Post-Fall Evaluation

Risk Category	Post-Fall Evaluation
Fall history	◆ Review the patient's history of recent or recurrent falls and the circumstances of those falls.
Medications	◆ Review patient's record for medications or combinations of medications that could pre dispose him or her to falls. ◆ Stop or reduce the dosage of as many of those medications as possible. ◆ Review patient's record for recent changes in the medication regimen that may have increased fall risk.
Underlying conditions	◆ Review status of medical conditions that predispose to falls or that could increase the risk of injury from falls. ◆ Assess heart rate and rhythm. ◆ Assess patient for orthostatic hypotension and optimize predisposing conditions. ◆ Assess the patient for acute illness or worsening of chronic conditions.
Functional status	◆ Reassess patient for significant changes in gait, mobility, standing and sitting balance, and lower extremity joint function. ◆ Reassess use of ambulatory assistive devices (e.g., cane, walker) and modify as indicated. ◆ Review appropriateness and safety of any current restraints. ◆ Assess for significant changes in activity tolerance. ◆ Review bowel and bladder continence status. ◆ Assess whether patient's footwear may have contributed to the fall.
Neurological status	◆ Reassess visual and auditory impairments. ◆ Assess new or progressive neurological impairments.
Psychological factors	◆ Reassess as indicated for significant changes in cognition, safety awareness, and decision-making capacity.
Environmental factors*	◆ Review and modify environmental factors that could have caused or contributed to fall.

* See Table 6.

BOX 1

Orthostatic Hypotension

Orthostatic hypotension is a drop in systolic blood pressure (BP) of 20 mm Hg or more, or a drop in the diastolic blood pressure of 10 mm Hg—with or without an increase in the heart rate (HR) of at least 20 beats/min—when readings are taken and compared with the patient supine, sitting, and then standing.[a,b]

Procedure

1. Explain the procedure and reason for assessment to the patient and caregiver. Instruct the patient to report any symptoms of dizziness, lightheadedness, or faintness at any time during the assessment.
2. Obtain supine BP and HR measurement once patient has been in supine position for 5 min.
3. Assist the patient to a safe sitting position with legs dangling over the edge of the bed or couch; wait 1 min; then obtain and document BP, HR, and patient symptoms.
4. If the patient tolerates position change with no orthostatic hypotension and is able to stand, assist him or her to a standing position.
   - Immediately obtain BP and HR.
   - Wait 2 min; obtain BP and HR again; then document BP, HR, and patient symptoms. If orthostatic changes are present, return patient to a safe, comfortable position.

Notify the practitioner when assessment or evaluation indicates orthostatic hypotension.

[a] Gupta V, Lipsitz LA. Orthostatic hypotension in the elderly: Diagnosis and treatment. *Am J Med* 2007; 120: 841-847.

[b] Consensus Committee of the American Autonomic Society and the American Academy of Neurology. Consensus statement on the definition of orthostatic hypotension, pure autonomic failure, and multiple system atrophy. *Neurology* 1996; 46: 1470.

TABLE 6

Environmental Factors Associated With Falling

- Ill-fitting or inappropriately soled footwear (patients should have nonskid slippers or socks)
- Inappropriate bed and chair height
  - Bed height for transfers should be 115% of patient's lower leg length.[21]
  - More than 120% of lower leg length is too high; less than 80% of lower leg length is too low.[21]
- Inadequate, defective, or inappropriate assistive devices
- Inadequate lighting
- Inappropriate seating or positioning while sitting
- Lack of grab bars in bathrooms
- Loose carpets or throw rugs
- Malfunctioning emergency call systems
- Poorly fitting or incorrect eye wear and hearing aids
- Uneven flooring
- Unfamiliar environment
- Use of full-length side rails
- Wet or slippery floor
- Presence of animals
- Clutter inside the room (e.g., furniture, assistive devices, commode)

STEP 5

Identify the patient's actual and potential complications of falls. Some falls may result in significant complications (Table 7). It is important to define complications of falls and significant potential complications of falling for each patient. For example, different types of falls carry different risks of injury. Direction of falling affects risk—there is an increased risk of fracture if the resident falls sideways.[22,23] Energy and speed of the fall also increase the risk of injury. Posterolateral falls carry the highest risk of hip injury.

Patients who have a history of falls without significant injury may sustain a more serious injury in subsequent falls. Those with significant osteoporosis are more likely to sustain fractures of the hip, wrist, and spine from falls. Patients with reduced amounts of muscle, fat, and subcutaneous tissue to absorb the impact of a fall also are more susceptible to fractures. Current use of anticoagulants is a risk factor for significant injury from falls; use of these medications may result in greater blood loss relative to the degree of trauma. In addition, risk of injury increases with age.[24]

TABLE 7

Some Potential Complications of Falling

- Abrasions and lacerations
- Bruising and contusions
- Head injury (e.g., concussion, subdural hematoma)
- Fear of falling, resulting in loss of confidence, decreased independence, and social isolation
- Fracture, sprain, dislocation, or other joint injury
- Hemorrhage (internal or external bleeding)

TREATMENT

STEP 6

Develop a plan for managing falls and fall risks. Care goals should include prevention of falls when possible, a decrease in the number of falls, and a decrease in the risk and severity of injury. It is unrealistic to expect to eliminate all falls, but an appropriate goal for many patients may be to reduce the number of falls and the risk of injury. The management of falls and fall risk may involve one or several measures.

Use a clear, consistent approach to selecting interventions to manage and prevent falling in individual patients. Be aware that risk prediction is imprecise; some low-risk patients may fall, and some high-risk patients may not. Effective risk assessment, however, should enable facility staff to anticipate risks correctly more often. Although no specific efforts or combinations of interventions have been shown to prevent all falls or all injuries associated with falling, it may be possible to reduce the frequency of falls and the severity of injuries associated with falling. Multicomponent intervention by a multidisciplinary team may reduce the number of falls and the number of fallers in the LTC setting.[2] A recent meta-analysis of falls interventions in stroke survivors found that the only intervention effective in reducing falls was vitamin D supplementation.[25]

It is appropriate to prioritize approaches to managing fall risk and falling. That is, if a systematic evaluation of a patient's fall risk identifies several possible interventions, it is reasonable to choose

one of those interventions to try first. For example, if a patient has a somewhat unsteady gait, it may be appropriate to let him or her try using a walker. If a medication is suspected as a possible cause of a patient's falling, the initial intervention might be to taper or stop that medication.

If falling recurs despite the initial intervention, additional or different interventions will be needed. Adjust the patient's care plan as necessary to reflect the implementation of new or modified interventions intended to minimize the risk of falling and fall-related injuries. Briefly document the rationale for specific interventions to show that causes of the problem are being sought. Make appropriate referrals to physical and occupational therapy for seating and positioning or further assessment of balance and musculoskeletal deficits.

To succeed, fall prevention and management programs must not only consider intrinsic and extrinsic factors utilizing an interdisciplinary approach but also be systematic, data driven, ongoing, and supported by the facility's leadership.[26] Every LTC facility should develop an assessment and screening protocol and determine the frequency of screening (annually, quarterly, monthly).

STEP 7

Manage the cause(s) of falling. Managing falls can be complicated because many falls result not from a single cause but from the interaction of several factors. Successful fall management uses a systematic approach that may require repeated reassessment and adjustment.

Cause-specific interventions are only sometimes available and effective. At other times, the best that can be done is to try various interventions until falling is reduced or stops or until an uncorrectable reason is identified for its continuation.

Falls caused by disturbances of gait or balance. Gait and balance disturbances, whether caused by a recent acute illness or by coexisting neurological or musculoskeletal conditions, should be managed by addressing underlying causes where possible and by implementing restorative or rehabilitative care to try to improve strength, balance, gait, and transferring ability. Appropriate referrals to physical and occupational therapy, including modalities focused on seating, positioning, leg strengthening, gait training, and appropriate use of assistive devices, are important. See PALTmed's toolkit *Determination of Medical Necessity of Rehabilitation Therapy Services*.[b]

Falls caused by orthostatic hypotension. Advise patients with orthostatic hypotension to first rise to a sitting position after lying down and then to stand slowly, if possible.[27,28] (See Box 1 for information on evaluating for orthostatic hypotension.) Any blood pressure medications may need to be reduced, especially medications that may specifically cause orthostasis, such as alpha blockers (including tamsulosin [Flomax]); tricyclic antidepressants; vasodilators, such as isosorbide; and antipsychotics. Treatment with fludrocortisone and/or midodrine may be considered. Increase fluid intake when possible, and remove dietary salt restrictions whenever possible.

Falls associated with medications. Evaluate the patient's drug regimen carefully to identify medications that may be precipitating falls. Falls that start after a change in a medication regimen should trigger a review of the patient's entire medication regimen. Long-standing medications that may not have been problematic in the past should be re-evaluated in conjunction with any recent acute illnesses or general condition changes.

A practitioner should be involved with other direct care staff and the consultant pharmacist in reviewing the patient's drug regimen and identifying and adjusting medications that may be associated with an increased risk of falling. For example, titration of medications or revision of administration times may help to manage painful conditions, Parkinson's disease and other neuro-

[b] Post-Acute and Long-Term Care Medical Association. Determination of Medical Necessity of Rehabilitation Therapy Services. Toolkit. Columbia, MD.

degenerative illnesses, incontinence, and other conditions while minimizing undesirable side effects such as falls.

If it is decided not to adjust medications in a patient's regimen that may be associated with falling, document the rationale for not making changes along with the risk–benefit ratio of continuing medication that might be implicated in falls.

Falls associated with specific conditions.

- ***Vitamin D deficiency.*** Randomized controlled studies suggest that vitamin D_3 supplementation can improve muscle strength and function and prevent many falls related to the deficiency. Patients with low vitamin D_3 concentrations (average concentration of less than 20 ng/mL) were found to have a reduced number of falls with vitamin D_3 supplementation.[2] In general, all LTC residents should receive vitamin D_3 supplementation because of inadequate intake and lack of sun exposure.[29-31]
- ***Anemia.*** In a retrospective study of 40 nursing homes, anemia was associated with increased incidence of falls.[7] In addition, a study of ambulatory hospitalized patients from the community and LTC facilities found that anemia was associated with an increased risk of falls.[8]
- ***Urinary incontinence.*** Urinary incontinence was shown to be an independent risk factor for presence of recurrent falls and fall-related injuries in the LTC setting.[32] A meta-analysis of observational studies investigating falls and urinary incontinence found that urge urinary incontinence, but not stress urinary incontinence, was associated with increased risk of falls.[33] Findings from the Study of Osteoporotic Fracture Research Group found that the occurrence of weekly or more frequent episodes of urge incontinence was an independent risk factor for falls and nonspinal fractures in older women.[34]

  Assessment and management of urinary incontinence should be an integral part of the fall prevention care plan. Please refer to PALTmed's CPG on urinary incontinence[c] for detailed discus-sion on how to assess and manage urinary incontinence in the LTC setting.
- ***Diabetes.*** Diabetic complications such as peripheral neuropathy and autonomic neuropathy may lead to falls as a result of impaired sensation, proprioception, and orthostatic hypotension.[35,36] Prolonged hyperglycemia may lead to polyuria and volume depletion, and acute hypoglycemia can cause balance problems or decrease in the level of consciousness.

STEP 8

Implement relevant general measures to address falling and fall risks. Various generic approaches (i.e., those that are not directed at specific causes) can have an impact on the prevention and management of falls (Table 8). Coordinate clinical initiatives to prevent and manage falls with initiatives of the interdisciplinary team (IDT) and facility safety committee, reviews of falls by the quality improvement committee, and efforts to ensure a safe environment for wanderers.

Exercise and balance training. Patients with recurrent falls may benefit from exercise programs and balance training. The optimal type, duration, and intensity of exercise remain unclear at present. Appropriate physical activity, particularly balance exercises, as part of a multifactorial intervention to reduce falls is recommended.[2,31]

Use of physical restraints. The indiscriminate use of physical restraints is no longer an accepted standard of care in LTC facilities. Federal regulations provide clear guidelines for the appropriate

[c] Post-Acute and Long-Term Care Medical Association. Urinary Incontinence. Clinical Practice Guideline. Columbia, MD.

indications and proper use of physical restraints and stress the need to try less restrictive approaches first and to use adaptive equipment only to try to maintain or improve—not reduce a patient's function.[37]

Managing fall risk requires balancing the benefits of greater independence and freedom of movement with the desire to minimize falling and prevent related injuries. It may be necessary to allow a patient greater mobility to determine whether falling will be a problem. Maximizing mobility and independence may mean allowing a patient to be more mobile or less restricted while trying to minimize the risk of injury from falling.

Some families may exert pressure on facility staff to prevent falling at all costs, particularly if the patient is admitted from an acute-care setting where physical and chemical restraints are used; however, there are no foolproof ways to prevent falling. A decision to use physical restraints should not be made solely on the basis of a request from a family member or legal surrogate. Informing patients and families about the patient's fall risks and explaining the likely causes of falls, risks and benefits of limiting mobility, and alternatives to the known complications of restraints may be helpful. Table 9 lists some of the risks associated with restraint use.

Falls associated with getting out of bed. Lowering a standard bed or using a low bed as well as a nonskid mat at bedside may help to address falls that occur while or immediately after getting out of bed or may reduce the risk of serious injury when falls occur. The use of full-length side rails is not recommended because their presence may result in injury to patients who try to climb over them, get caught in them, or try to climb out at the bottom of the bed.

Use of alarms. Bed and chair alarms may facilitate the remote detection of a patient's arising from a bed or chair and may allow caregivers to reach the patient before he or she falls. They also may act as a reminder for the patient to ask for assistance. The use of bed and chair alarms has increased dramatically as many facilities have become restraint free. Limited data support their efficacy in reducing the number of falls in LTC settings.[38,39] The efficacy of alarms is dependent on the diligent and timely response of staff to an appropriately functioning alarm in the real world, which is different from a research setting.

Environmental modifications. Night lights, bedside tables, and quad canes or walkers may help patients with peripheral neuropathies and visual impairments to orient themselves in space and to support themselves while getting out of bed. Signs and other memory-trigger devices can be used to remind stroke victims to get up slowly and carefully. Try to accommodate patient preferences and needs (e.g., by assisting patients who need help with toileting during evening and night shifts).

It is important to be sure that the patient's level of function and assistive need are matched with staff. If two staff are needed for a patient to transfer, the facility should provide that level of assistance. Consistent staffing assignments are a proactive approach to fall prevention and management because staff are familiar with patient habits, behaviors, routines, and patterns.

No scientific evidence supports the "body mechanics" ("bent knee–straight back") approach in lifting human beings; yet, despite this lack of evidence, nursing schools and nursing assistant programs have taught body mechanics manual lifting techniques for more than 100 years. The purpose of body mechanics manual lifting applies to motionless objects without obstacles such as beds and chairs, not moving human beings, who can be resistant or combative or can lose their balance and drop suddenly.[40]

Use of ergonomic mechanical lifting devices should be encouraged, because they reduce the risk of falls and fall-related injuries. Mechanical lifting equipment may reduce the risk of patient injury from falls as well as the risk of skin tears or bruises that may result from manual lifting. Patients must be appropriately matched to assistive and lifting devices, and staff must be properly trained in the appropriate use of this equipment.

Many types of lifting devices are on the market. Choose devices that are most suitable for your facility size and patient population. It is also advisable to choose a device that does not require staff to do a lot of bending to adjust the device. Many fall risk products also are on the market; however, not all are evidence based. Look for published studies before purchasing such products. New types of mats and flooring that absorb the impact of a fall and are evidence based are available at the time of this printing.

Some facilities may encourage patients to wear hip protectors, which are plastic shields or foam pads worn in pockets within underwear that are intended to reduce the impact of a sideways fall on the hip and thereby reduce hip fracture risk. Many patients are reluctant to wear the pads because they may be uncomfortable or may create laundering issues for those who are incontinent. A recent Cochrane review[41] of 16 studies involving more than 16,000 older adults living in nursing care facilities or at home found no benefit from hip protectors for most people living at home; however, making hip protectors available to frail older patients in LTC facilities may somewhat reduce fracture risk.

TABLE 8

Examples of Facility Approaches to Try to Reduce Falls or Consequences of Falls

- Activities program
- Function-focused care philosophies (e.g., restorative care, exercise programs)
- Patient education about safe sitting and standing
- Program to help patients and families cope with and adapt to nonmodifiable risk factors for falling
- Programs for patients who wander
- Reduction in the use of physical restraints
- Rehabilitation program (e.g., balance training, strengthening, gait training, assistive devices)
- Staff education about fall risks and potentially helpful interventions
- Toileting and continence programs or a timed voiding schedule
- Hip protectors

TABLE 9

Risks Associated With Restraint Use[42-45]

- Asphyxiation
- Behavioral issues and distress
- Bone loss and increased risk of fracture
- Contractures
- Decreased cognitive performance
- Dependence in walking
- Depression and social isolation
- Pressure ulcers
- Infection
- Muscle wasting and weakness
- Strangulation
- Urinary and fecal incontinence

MONITORING

STEP 9

Monitor falling in patients with a fall risk or fall history. As previously noted, there are no foolproof ways to prevent all falls. Moreover, it is often not possible to predict with certainty whether a particular intervention to manage falling or fall risk will be effective in a given patient.

Monitor and document the patient's response to interventions intended to reduce falling or the risk of falling. It may be helpful for the pharmacy consultant to conduct a medication review after a fall to evaluate and rule out any medication risk factors. If interventions have been successful in preventing falling, continue with current approaches or reconsider whether those measures are still needed if the problem that required the intervention (e.g., dizziness, joint pain) has resolved or been corrected.

If the patient continues to fall, re-evaluate the situation and reconsider current interventions. Amend the care plan as necessary to reflect the addition of new interventions and the need for continued monitoring.

Document the presence of irreversible risk factors. For example, if increased fall risk is caused by residual weakness from an old stroke or excessive postural instability from Parkinson's disease, document this conclusion and explain why the benefits of freer mobility justify the increased risk of falls. Also, consider relevant interventions to try to minimize fall-related injuries (e.g., using hip protectors, treating osteoporosis).

If falls continue despite initial interventions, the reason could be that different or additional causes exist, the underlying causes are not readily correctable, the cause cannot be identified, or the interventions are insufficient. Consider other possible reasons for the patient's falling besides those that have already been identified, or document why a further search for causes is unlikely to be helpful.

Some consequences of falling, such as fractures and symptomatic intracranial bleeding, may become clinically apparent days to weeks after a fall. Be aware of—and ensure that staff respond to—

delayed consequences of falling. Consider the possibility of late consequences if the patient has a significant change in function, mental status, or level of consciousness within several weeks of a fall.

STEP 10

Establish quality improvement activities related to fall risk and falling. Include analysis of falls in the facility's quality improvement studies. Track accidents and falls by (at a minimum) time, location, and identified categories of causes. The total number of falls will fluctuate from month to month.

Evaluate the process associated with fall prevention or interventions that are implemented; interventions need to be implemented as intended in order for them to be optimally effective. Indicators that fall prevention processes and interventions are being implemented might include evidence that post-fall assessment of patients is completed and identified causes have been addressed (e.g., removal or replacement of unsafe assistive devices, discontinuation of medications that cause orthostatic hypotension) and that patients are participating in a muscle-strengthening exercise class. Relate these data to care processes to ensure that everything reasonable is being done to identify risk factors for falling and take appropriate preventive measures (see "Performance Measures").

Indicators that a facility is successfully preventing and managing falls include a relatively stable or reduced incidence of falls over time and a minimal number of serious fall-related injuries. Patient and family satisfaction, decreased use of physical restraints, and improved quality-of-life measures may also indirectly reflect the success of a program to prevent and manage falls.

Use the information collected about falls to evaluate and adjust the prevention and management program. Assign members of the IDT to clearly defined roles in evaluating and preventing falls; for example,

- Nursing assistants should observe and report gait disturbances,
- Physical therapists should help to clarify the nature and severity of gait disturbances or impaired mobility, and
- All members of the health care team should be involved in identifying the causes of falling and the potential treatability of underlying risk factors.

Facilities should provide ongoing education for all staff regarding fall risk factors, fall risk assessment, and the importance of each staff member's role in fall prevention. Programs should include nursing and physical therapy staff but may also include housekeeping, maintenance, and dietary staff. Care plans should address the status of conditions that predispose the patient to falling, specific fall prevention efforts, and the patient's response to each intervention. Regularly scheduled meetings to discuss care plans, perhaps dedicated to fall prevention, should be attended by staff from most departments. Family education and communication regarding the care plan is also important.

The medical director can play a pivotal role in fall prevention and management, including

- Setting the expectation of all facility staff that fall risk assessment and fall prevention are facility priorities as they relate to both patient safety and facility liability;
- Helping to develop and use appropriate policies and procedures on falls and fall risk;
- Providing education and information about potential medical causes of falling; and
- Ensuring appropriate and timely practitioner assessment and intervention when medications or medical conditions may be causing or contributing to falls when falls occur.

Performance Measures

This guideline recommends processes that, if implemented, should help LTC facilities systematically improve fall prevention and manage falls. Facilities can begin to assess their fall prevention by asking questions such as the following:

- Is a fall risk assessment completed and documented for each newly admitted patient? Are the results of this assessment communicated to the patient and his or her family or advocate?
- Do practitioners address medical or medication risk factors in patients who are identified as having such risk factors?
- Do facility staff and management review the factors (e.g., environment, staff assignments, time of day) associated with falls?
- To identify potentially correctable conditions, does a practitioner review the case of any patient who falls more than once or who has a fall with a significant injury?

Table 10 lists additional sample performance measurement indicators.

TABLE 10

Examples of Process and Outcome Indicators Related to Falls

Indicators are listed in order of suggested priority.

Process Indicators

Percentage of patients with documented fall risk assessment on admission

- Percentage of patients who have fallen and whether the process of identification of possible causes of the fall was begun within 24 hours after the fall
- Percentage of patients with care plan for managing falls and fall risk
- Increase in the percentage of patients having no evidence of any injury noted on physical assessment by the nurse or primary care clinician, no complaints of pain or injury by the patient, and no change in the patient's behavior noted after the fall (Increase in percentage of patients coding 1 and 2 in section J1900 A on the MDS 3.0)

Outcome Indicators

- Decrease in the percentage of patients having a minor injury (e.g., skin tears, abrasions, lacerations, superficial bruises, hematomas and sprains; or any fall-related injury that causes the patient to complain of pain) (Decrease in percentage of patients coding 1 and 2 in section J1900 B on the MDS 3.0)
- Decrease in the percentage of patients having a major injury (e.g., bone fractures, joint dislocations, closed head injuries with altered consciousness, subdural hematoma) (Decrease in percentage of patients coding 1 and 2 in section J1900 C on the MDS 3.0)
- Increase in the percentage of patients not having any falls since admission or the prior MDS assessment (Increase in percentage of patients coding 0 in section J1800 on the MDS 3.0)
- Percentage of patients with documented reduction in falls after interventions
- Percentage of patients who continue to fall despite comprehensive evaluation and interventions

SUMMARY

Falling is a significant cause of injury and death in older persons, especially the frail elderly. Preventing falls and minimizing fall-related injuries constitute a challenge for LTC facilities and require a substantial IDT effort. Managing falls requires recognizing that many falls do not result from a single cause but rather are a result of the interaction of numerous intrinsic and extrinsic factors.

Successful fall management uses a systematic approach that may require repeated reassessment and adjustment. Although no specific efforts or combinations of interventions have been shown to prevent all falls or injuries associated with falling, it is often possible to reduce the frequency of falls and the severity of injuries associated with falling.

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GLOSSARY

Cause: Factors that are associated with or that directly result in a fall.

Deconditioning: Loss of strength, balance, and agility that may rapidly follow a period of immobilization.

Extrinsic factor: An agent or element outside a person that contributes to the production of a result.

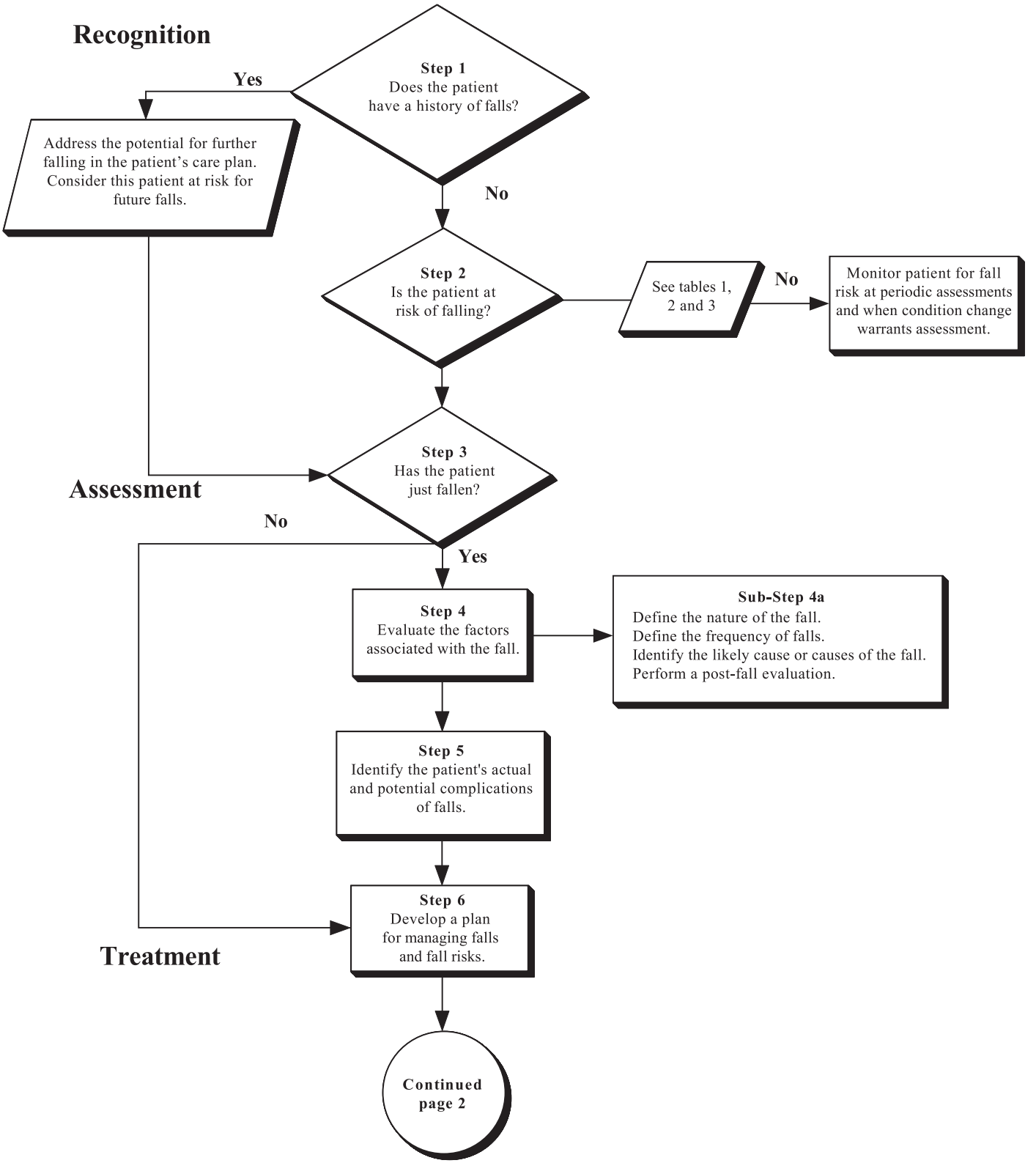
Frequency: The number of falls in a certain period or between situations that present a risk of falling.

Intrinsic factor: An agent or element within a person that contributes to the production of a result.

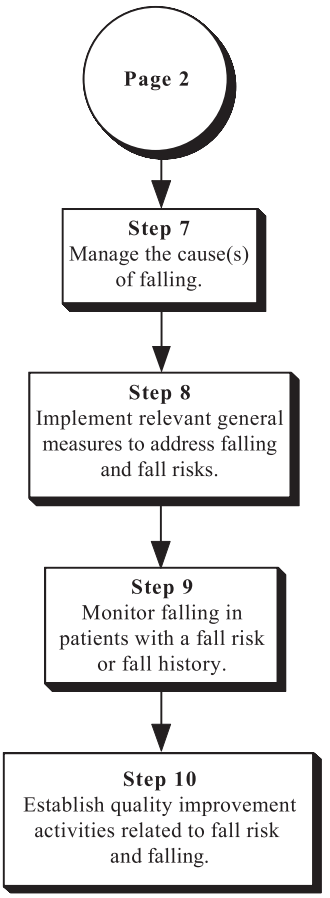
Nature of falls: Characteristics and related circumstances of falls, including time and location.

NOTES

This is the falls and fall risk algorithm to be used in conjunction with the written text of this clinical practice guideline. The numbers next to the different components of the algorithm correspond with the steps in the text.


Recognition
Step 1
Does the patient have a history of falls?
Yes
Address the potential for further falling in the patient's care plan. Consider this patient at risk for future falls.
No
Step 2
Is the patient at risk of falling?
See tables 1, 2 and 3
No
Monitor patient for fall risk at periodic assessments and when condition change warrants assessment.
Assessment
Step 3
Has the patient just fallen?
No
Yes
Step 4
Evaluate the factors associated with the fall.
Sub-Step 4a
Define the nature of the fall.
Define the frequency of falls.
Identify the likely cause or causes of the fall.
Perform a post-fall evaluation.
Step 5
Identify the patient's actual and potential complications of falls.
Step 6
Develop a plan for managing falls and fall risks.
Treatment
Continued page 2

Monitoring


Page 2
Step 7
Manage the cause(s) of falling.
Step 8
Implement relevant general measures to address falling and fall risks.
Step 9
Monitor falling in patients with a fall risk or fall history.
Step 10
Establish quality improvement activities related to fall risk and falling.

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