PATIENT SAFETY:
FALL PREVENTION AND RESTRAINTS

ABSTRACT:

Preventing patient falls should be a primary goal of all healthcare workers. Part of preventing falls involves knowing why falls occur to identify patients who are likely to fall, to identify situations in which a fall is likely to occur, and to identify staff and environmental issues that might contribute to a fall. Falls are the most common adverse event in hospitals and can have serious consequences. The majority of falls happen when the patient is transferring, or being transferred, from bed to chair or back again. Injuries that do occur tend to be serious and are associated with a high fatality rate. Despite greater awareness of patient fall risk and implementation of fall prevention programs, the incidence of patient falls has increased in the past several decades. Patient falls are still a common and serious problem.

Learning Goals:

1. Identify fall risks in the hospital.
2. Describe practical methods that can be used to prevent patient falls.
3. Describe recommendations related to the safe use of restraints.
Introduction

Certified nursing assistants often care for patients who are at high risk of falling. This patient population includes the elderly and patients who are confused or disoriented. Falls are a serious problem and they can cause significant injury. However, falls are not an inevitable consequence of getting older or being hospitalized. Patient safety is an important priority for a certified nursing assistant (CNA), and fall prevention is one of the more important safety precautions required to know how to prevent a patient from falling. Most of the information and techniques that can be used for preventing falls are simple but they require a careful and consistent effort if they are to be used properly and successfully. In addition, the CNA must be sure to document carefully the techniques used to keep patients safe and to prevent falls. This is especially true when patient restraints are used.

Patient Falls: Frequency And Severity

A fall is defined as an unplanned descent to the floor, with or without injury. Falls can happen to almost any patient but older adults are much more susceptible to falling. Falls are a very common occurrence in older adults, both in the community and in healthcare facilities. Approximately one-third of all older adults living in the community will fall at least once a year and one-half of those people will fall more than once.

Falls are the most common adverse event in hospitals and they can have serious consequences. Although falls that happen in healthcare facilities are common, the rate of occurrence is not as high as it is in the general community. Between 3% and 20% of all patients will fall
at least once during hospitalization, and the great majority of these falls are unwitnessed.

The majority of falls happen when the patient is transferring, or being transferred, from bed to chair or back again. Most patient falls do not cause injuries; however, the injuries that do occur tend to be serious, such as bleeding, dislocations, fractures, and lacerations, and these serious injuries are associated with a high fatality rate.

Falls are one of the leading causes of mortality in the elderly and they are the leading cause of mortality from trauma in this age group. Hip fractures suffered after falls are an especially serious fall injury. Approximately 25% of all patients who suffer a hip fracture after a fall die within a year and approximately 50% of these must be discharged to a long-term care facility and never return home.

Patient falls may not cause injuries but they can cause anxiety, depression, a lack of confidence in the ability to walk (ambulate), and a fear of falling. Patient falls increase the length of hospitalization and they increase health care costs. Many patients who fall cannot return home but must spend time in a rehabilitation facility after they are discharged. In addition, insurance companies and government insurance programs consider falls to be preventable events and the costs associated with a fall may not be reimbursed.

Despite greater awareness of the danger of patient falls and implementation of fall prevention programs, there is evidence that suggests that the incidence of patient falls has increased in the past several decades. This increase may be due to better and more
accurate reporting of falls or because the patient population has become older and sicker but, regardless of the cause, patient falls are still a common and serious problem.

Preventing patient falls should be a primary goal of the CNA. Part of preventing falls involves knowing why falls occur to identify patients who are likely to fall, to identify situations in which a fall is likely to occur, and to identify staff and environmental issues that might contribute to a fall.

**Why Do Falls Happen?**

An individual patient fall can be a simple event. For example, an elderly person gets out of bed to use the bathroom and slips on a loose area rug. Someone who is taking a medication that causes drowsiness and who has poor vision may misjudge a flight of stairs and fall. While this does sound simple, falls do not “just happen.” The fall event must be explained to prevent it from occurring again.

Falls are caused by one or more factors. When patient falls are considered as a whole, it is clear that they are complex in nature and there are many reasons why falls occur.

Falls can occur at home, in an acute care hospital, in an assisted-living facility, or in a skilled nursing facility. They can happen to people who are very old and frail and to people who are (relatively) young and healthy. A fall can be a one-time event or the patient may have multiple falls. They can happen at any time of the day and they can and will happen despite the consistent use of fall prevention programs and high staffing levels in healthcare facilities.
There are many factors that contribute to patient falls. These factors are complicated, they interact with each other, and at times one fall risk factor can be the cause of another. This complexity can make it difficult to understand falls but a simple and useful way to think about the issue is to separate the risk factors for falls into three categories: 1) staffing and healthcare personnel factors, 2) patient factors, and 3) environmental factors.

**Staff and Healthcare Personnel Factors**

Staff that provide direct patient care are responsible for patient safety. The experience of the staff, the number of staff, and the level of their professional qualifications and education in fall prevention have all been shown to be important factors in both the incidence of falls and their prevention.

Healthcare staff usually do not directly cause patients to fall and staff, such as CNAs, can help to prevent patient falls. The failure to use techniques that help prevent falls is where the issue of staff action and prevention enter into a quality review of patient care outcomes. In order to responsibly act to prevent patient falls, the CNA must have knowledge and must be proactive. The CNA must know why falls occur, be able to assess how likely it is a patient may fall, know which patients are most likely to fall, and must actively work to prevent falls. Failure of the staff to be proactive is a big reason why falls occur.

Studies have examined how healthcare staff and personnel factors affecting patient falls have not always produced consistent results or clear answers. It seems logical that a lower staff-to-patient ratio would reduce the number of falls but this has not always been the case.
Staffing composition at times seems to help prevent patient falls but the specific numbers of nursing and nursing assistant staff members assigned to a unit may only make a difference in specific patient care situations. For example, patient falls may be reduced if there are more CNAs than RNs but this may only be true in medical-surgical units that have a particular level of acuity. Providing an at-risk person with a constant bedside companion, typically called a sitter, would seem to be the ideal solution but the available research suggests that even this level of care cannot always prevent falls.

One of the staffing factors that can have a consistently positive effect on fall prevention is staff education and staff involvement. If there is a fall prevention program and the staff is well-educated in how to use it and they consistently apply the principles of the program, falls can be reduced.

**Patient Fall Risk Factors**

Patient fall risk factors can be divided into two categories: modifiable risk factors and unmodifiable risk factors.

**Modifiable Patient Risk Factors**

The modifiable risk factors include balance, gait instability and gait disorders, loss of muscle strength, and fear of falling. Deficits in these physical capabilities and the fear of falling are clearly associated with an increased risk of falling. Medications are also a modifiable risk factor for falls, at least to some degree.
**Balance Deficits**

Balance is the ability to maintain a stable posture and keep body weight over the body’s center of gravity. Balance is both static and dynamic. In simpler terms, a person must keep balance when sitting still and when moving. Maintaining balance is a critically important and very complex task that requires coordinated functioning between the muscles, joints, neurological system, vision and the inner ear structures involved in balance.

Aging causes a decrease in muscle strength, decreased reaction time, a decrease in vision and/or visual abnormalities, deterioration and stiffness of the joints, and other physiological changes that affect the ability to maintain balance. Balance deficits, caused by one or more of the changes mentioned above, are relatively common in older adults, and they are a major risk factor for falls. However, specific training can improve balance so a balance deficit can be prevented.

**Gait Instability and Gait Disorders**

Gait instability and gait disorders are considered to be a strong risk factor for falls. Gait instability and gait disorders are very common problems as people age and as many as one-third of all older adults have been found to have a gait disorder. For example, approximately 30% of all adults age 65 and older have difficulty walking three blocks, they cannot climb one flight of stairs, and many need a cane or another assistive device in order to ambulate.

Gait instability and gait disorders are usually caused by a neurological condition such as Parkinson’s disease or cerebrovascular accident.
(more commonly known as a stroke) or by musculo-skeletal and joint problems. In most older adults, there are multiple causes of gait disorders. (See Table 1 for a partial list of these causes). Many of these conditions themselves are not modifiable, but the gait instability and gait disorders that are associated with them can be treated.

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<thead>
<tr>
<th>Table 1: Causes of Gait Instability and Gait Disorders</th>
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<tr>
<td>Dementia</td>
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<td>Depression</td>
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<td>Diabetes</td>
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<td>Inner ear disorders</td>
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<td>Medications, especially those that may cause drowsiness</td>
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<td>Muscle weakness</td>
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Muscle Strength

Losing muscle strength is an inevitable part of growing older. Starting at age 30 everyone begins to lose some percentage of their muscle strength each year. The medical term for this process is *sarcopenia*, and it is especially pronounced for people who are sedentary. Muscle weakness is considered a significant risk factor for falling in older adults. Fortunately, strength training exercise has been proven to decrease this decline in muscle strength in older adults and this can help prevent falls.
Fear of Falling

Fear of falling is a very common problem for older adults. One study showed that 50-60% of community dwelling adults had a fear of falling and 70% had a fear of falling if they had already experienced a fall. Fear of falling increases the risk of falling, and it also has many harmful physical, psychological, and social effects.

Fear of falling prevents people from ambulating. This increases loss of muscle strength which in turn, increases the risk of falling. Fear of falling also inhibits people from ambulation and can lead to social isolation and depression.

Medications

Many commonly used medications can significantly increase the risk of falling. Drugs that are considered to increase the risk of falling include antidepressant, sedative, narcotic, and antipsychotic medications can cause confusion, dizziness, drowsiness, and sedation. Medications such as antihistamines, such as those to treat hay fever, and drugs used to treat urinary frequency have drug properties that can also cause confusion, dizziness, and sedation; and, orthostatic hypotension (which is a sudden drop in blood pressure caused by standing up) is a well-known side effect of some of the antipsychotic and antihypertensive medication.

The use of multiple medications taken by a patient has been identified as a risk factor for falling. However, medications are often essential for maintaining health and cannot be stopped. However, adjustments can be made to a medication regimen and these adjustments by the patient’s medical clinician may decrease the risk of a fall.
Non-modifiable Patient Risk Factors

Non-modifiable patient risk factors that increase the risk of a fall include age, hearing or visual deficits, a prior history of falling, the presence of medical conditions and psychological conditions such as cognitive impairment, diabetes, dementia, depression, hypertension, Parkinson’s disease, orthostatic hypotension, peripheral neuropathy, sleep disorders, and stroke. The incidence of psychological and/or physical conditions such as Alzheimer's disease and dementia that affect a person’s consciousness, perception, and orientation (being able to accurately know and understand what is happening in a person’s environment) is higher in the elderly population.

These psychological and medical conditions are defined here as non-modifiable but that is not completely true. Some of the conditions can be corrected or treated. Hearing aids and corrective lenses can be prescribed and medications are available for diabetes, hypertension, and Parkinson’s disease. However, to some degree these conditions cannot be cured and will always be a part of the patient’s risk profile for falling; and, as mentioned above, gait instability and gait disorders associated with these conditions may be treated but these conditions themselves are not modifiable.

Diabetes is a very common disease, and one of the complications of diabetes is peripheral neuropathy. Peripheral neuropathy is defined as damage to sensory nerves in the extremities. Chronically elevated blood glucose levels will cause peripheral neuropathy and the lack of sensation caused by this disorder contributes to gait instability and falls.
Environmental Issues and Patient Falls

Many of the environmental issues that can cause falls are obvious, such as poor lighting, loose rugs or loose carpet edges, worn/uneven stairs, ill-fitting footwear, exposed electrical cords, absence of supportive devices such as handrails, poorly fitted or broken assistive devices, such as canes and walkers, and slippery floor surfaces.

The hospital or healthcare facility environment is generally safe but for an elderly patient or a patient who is confused or disoriented, even these very safe surroundings can be hazardous.

Assessing Fall Risk

The risk of falls must be assessed by healthcare workers. This is done by making a bedside assessment of the patient and by testing balance, gait, and muscle strength for fall risk.

Bedside Assessment of Patient Fall Risk

Patient assessment for fall risk factors is very important, especially for older patients as they are far more likely to fall than patients < age 65. Assessment can be done at the bedside or by using specific tests that assess balance, gait, and muscle strength. A bedside assessment fall risk should include the following factors.

Mental Status

The healthcare worker should evaluate the patient’s mental health status by asking the following questions:
• Does the patient know his/her limits in terms of ambulation and orientation and accept them, or does he/she forget or refuse to acknowledge these limits?

• Does the patient have a medical or psychiatric diagnosis that might make him/her more likely to be confused, forgetful, or disoriented? Does the patient have a medical condition that would interfere with his/her ability to ambulate or make the patient more likely to fall?

These conditions were discussed in the previous section.

_Medications_

The healthcare worker should determine whether the patient is receiving medications that might make him/her more likely to fall. These were mentioned above, as well.

_History of Falls_

Many patients who fall will do so more than once. A prior fall is considered to be a risk factor for falling again. This is somewhat controversial. Some authorities believe that someone who falls once is not at risk for falling again, while other experts believe that a patient who falls once is much more likely to fall again.

There is no definite answer to the question of whether prior falls are a risk for future falls, and it is not easy to identify which patients who have previously had a fall will have another fall. However, the
evidence indicates one fall may lead to another and it is sensible and considered safe practice to assess each patient’s fall history.

**Ambulatory Status**

It should be determined whether the patient can walk without assistance or whether he/she needs help. The healthcare worker should ask the patient whether he/she uses a cane or a walker, and evaluate the patient’s gait, *i.e.*, is it normal, weak, or unsteady?

This is overlooked but many patients do know their ambulation or mobility limits, and they can provide valuable information about what is and is not safe for them related to walking.

There are assessment tools such as the CATASTROPHE mnemonic, STRATIFY, the Barthel Index and others that assess a number of variables such as alcohol use or alcohol withdrawal (which is the A in CATASTROPHE), ocular problems (which is the O is CATASTROPHE), and the presence of a urinary catheter or intravenous (IV) lines, and these provide a score that will be predictive of the risk for falling.

**Balance, Gait, and Muscle Strength Testing of Fall Risk**

Formal, standardized tests for fall risk can be used by physical therapist or physicians. These tests focus on the patient’s balance, look for and assess the severity of gait disorders and instability, and determine if muscle weakness that can cause a fall is present. Several of the more commonly used tests will be briefly discussed.

*Berg Balance Scale*
The Berg Balance Sale measures how well someone can perform functional tasks that require balance. For example, the patient will be asked to move from sitting to standing, to maintain a balanced position while standing with his/her eyes closed, and turning 360 degrees. The patient is assessed on how easily the tasks are accomplished and how much time it takes to do them.

*Timed Get Up and Go*

The Timed Get Up and Go test (informally called TUG) is a variation of the Get Up and Go test, and it is used to assess a patient’s dynamic and static balance. The patient begins the test by sitting in a chair and must then stand up, walk 10 feet, turn around, walk back to the chair and sit down. This should take between 7-10 seconds. The completion time that is considered to indicate a mobility time is somewhat controversial. However, anything > 7-10 seconds is suggestive of the presence a mobility problem and a completion time of > 20 seconds, is considered to be evidence of a mobility problem.

*Romberg Balance Test*

The Romberg Balance test is a standard neurological test, and it assesses several three physical capabilities that must work together to maintain balance, specifically vision, the integrity of the inner ear balance structures, and sensory input.

If there is a deficit in two or three of these as determined by the Romberg test, the patient will not be able to maintain balance. The patient is asked to stand with feet together, arms at the sides, and eyes closed. Someone with normal balance may sway back forth very
slightly but someone who has a balance problem will be noticeably unsteady and may even fall.

*One-leg Balance Test*

In the one-leg balance test the patient is asked to stand on one leg, unassisted, for at least five seconds. If the patient must hop to maintain balance, if the opposite foot touches the floor or the supporting leg, or the patient touches something for support, the test is finished.

**Fall Prevention**

Preventing falls is a major challenge and there has been a considerable amount of attention and study directed towards finding solutions to avoid falls. Fall prevention programs can work if they are used conscientiously and they include measures to address patient, environmental and staff issues that contribute to falls.

*Modifiable Risk Factors*

Balance problems, gait instability and gait disorders, and muscle weakness can all be improved by using targeted exercise programs. Fear of falling can be alleviated by exercise programs and by psychological interventions.

The patient’s medication regimen should be examined to determine if any prescribed drugs, or combination of drugs, may increase the risk of falling.

*Non-modifiable Risk Factors*
Non-modifiable fall risk factors cannot be significantly changed, but adaptations and accommodations can be made. These adaptation and accommodations would include patient education, environmental manipulations, maintaining good control of medical conditions such as diabetes, dementia, orthostatic hypotension, and Parkinson’s disease, and staff interventions (discussed later).

*Environmental Changes*

Environmental changes that can decrease the risk of falling are usually very simple, whether in a healthcare facility or the home. As mentioned previously, the environmental issues that can cause falls are obvious, such as, poor lighting, loose rugs or loose carpet edges, worn/uneven stairs, ill-fitting footwear, exposed electrical cords, absence of supportive devices such as handrails, poorly fitted or broken assistive devices such as canes and walkers, and slippery floor surfaces.

*Staffing Issues*

The issues of the number of staff and staff composition were previously discussed and despite considerable study it is still not clear how these can best be changed to prevent patient falls. However, instituting a fall prevention program, educating the staff in its use, and consistently and routinely evaluating how well the staff is adhering to the program can help decrease the incidence of falls.

A fall prevention program may be well designed but if it is not used consistently and conscientiously it will not work.
Bedside Assessment And Correction Of Fall Risk Factors

All healthcare workers need to know why falls occur, and must know who is likely to fall, and then apply that knowledge to prevent falls. The process outlined in this section will help guide health workers to identify and correct a fall risk.

Patient Assessment

Patient falls can be caused by anything physical or mental that affects strength, sensory perception, balance, or orientation to the environment. The patient assessment should include age, presence of medical or psychiatric conditions that would predispose to a fall, fall history, cognitive status, presence of urinary frequency, the use of medications that are known to contribute to fall risk, and mobility status. The healthcare worker should establish whether the patient is aware of his/her mobility limitations and risk of falling.

Assess the Environment

The environment should be evaluated for the quality of lighting, and ambulation obstacles, ease of observation of the patient, poorly adjusted footwear or assistive devices.

Necessary Accommodations and Adjustments

Necessary accommodations and adjustments to the patient’s environment include placing the side rails down, and the bed in a low position. Traditionally, side rails were considered to be a safety device. This has been shown to be false. If patients are confused or disoriented they will not recognize side rails as a safety measure, and they will simply see them as obstacles to overcome. When patients
attempt to climb over them, a fall will almost certainly happen; so the side rails should be down.

The bed should always be in the lowest position, as well. If a fall occurs from bed, it is better it happens when the bed is closest to the floor. The wheels of the bed should also be locked.

The room call light should be operating and it should be where the patient can see it and reach it. The use of the call light should be reinforced frequently. The CNA should make sure the patient understands what the call light is used for, and to make sure that the patient understands that using the call light is not a sign of weakness or an inconvenience to the staff.

Healthcare workers should know those patients who have fallen before, who do not seem to have a good sense of his/her physical limits, and who takes medications that may cause drowsiness or dizziness. These issues were discussed earlier and are worthy to emphasize and to remember.

Orientation of the patient to the environment is important. Someone who is elderly or confused may not be able to adjust quickly and easily to new surroundings. When a patient arrives on the unit for the first time, they need to be shown where the bathroom is, where the light switches are, where the call light is, where the nursing station is, etc. This orientation should be repeated if the patient is moved to a new room or if the patient's condition changes and makes him/her less likely to remember the surroundings.
Healthcare workers may also need to repeat the patient’s orientation to their new environment from time to time. This is a very important need that is often neglected.

Patients should be checked on frequently and this should be documented. The CNA must realize that falls happen when patients need to use the bathroom or are trying to reach objects that are not close at hand. A toileting program that provides regular and reliable times for the patients to eliminate can help decrease the incidence of falls.

**Assisting A Patient That Has Fallen**

If a patient falls, the following steps should be followed.

- Look for injuries such as bleeding, obvious breaks, dislocations, or changes in mental status.
- Call for help immediately.
- Notify the supervisor as soon as possible. The physician should be notified as soon as possible, as well.
- Document the particulars of the situation very carefully. Make careful observations about the patient's condition and the surrounding area. Be objective.

**Restraint Use To Prevent Falls**

A restraint is any device that limits a patient's ability to move or manipulate the environment. Restraints can be very simple. A mitten can be applied that limits someone's ability to use his/her hands and fingers, preventing the patient from disturbing intravenous lines, surgical dressings, or other medical equipment. Restraints can also be
complex and very restrictive; cuffs can be applied to hands and feet and a vest can be applied to the chest and the patient will not be able to move at all.

For many years, restraints were used to prevent patients from falling. However, it has clearly been proven that there are safer and more effective ways to prevent falls and that restraints very often cause more harm than good. If they are not used in the proper way and in the right circumstances, restraints increase the chances a patient will be harmed and restraints have caused serious injuries and deaths. There are very few circumstances in which it is appropriate to use restraints to prevent falls.

However, there are instances in which restraints are needed. But restraints must be used very carefully and the decision to do so is an important one. The following guidelines should be followed.

**Proper Use of Restraints**

There should be a policy in place for using restraints. This policy should cover when restraints should be used, how the restraint is put on, and how and where it is secured. Additionally, the policy should address how long restraints can be left on, how to check if restraints have been applied safely, and how often the patient and the restraints should be checked.

Restraints should never be applied unless there is an order to do so by an appropriate person and the restraint policy should always be relied upon. The following two points cannot be emphasized enough.
1. Restraints must be used only as the last resort. Look for less intrusive solutions. Make sure that the situation that is causing the clinician to consider using restraints cannot be solved by simpler methods. If the patient who is weak and confused is always trying to climb out of bed, risking a fall, the patient should be reoriented to the surrounding, and a program instituted of consistent toileting, and making sure the patient does not have some medical issue such as a fever or low blood pressure that may be causing the confusion.

2. The restraints should be used only if the patient is a danger to others or to themselves and there is no other way to keep the patient and other people safe.

3. Restraints are only used if a physician has ordered their use.

4. The specific type of restraints will be ordered by the physician; nothing else should be used.

5. The restraints should be applied with the supervision of a nurse or physician.

For example, in order to use wrist restraints, they should be applied snugly enough so the patient cannot remove them, but not so tight that they cause pain or interrupt circulation. The wrist restraint must be secured to something that cannot be moved. Make sure the knot (wrist restraints have attached straps that are tied to the frame of the bed or stretcher) is secure but can be easily released.

The patient should be checked and the restraint evaluated according to the policy; this may be every 15 minutes, but it should be at least every 60 minutes. The color, pulse, and temperature of the restrained limb should be checked.
The restraints should be carefully removed according to the physician's order or the restraint policy. Removing the restraints allows the patient to exercise the limb and allows the staff to examine the skin that was covered by the restraining device. Everything about the use of restraints should be documented very carefully. The health clinician should document why the restraints were needed, when they were applied, how often the patient and the restraints were checked, and what was noticed during these restraint checks.

**Summary**

Patient falls are a common and serious adverse event. Although almost any patient can fall, the majority of falls occur in older adults. The psychological effects and the financial implications of falls are very serious.

It is not possible to completely prevent falls, but the incidence of falls can be reduced. Prevention begins with assessment of the presence of client, environmental, and staff issues that increase the risk of falling. The risk factors are classified as modifiable or non-modifiable and they are changed or adaptations made.

Prevention is best done in the context of a fall prevention program, and there is no universal agreement and some controversy as to what constitutes the “ideal” fall prevention program. However, regardless of the content of these programs none of them will work unless the staff understands them, use them diligently and the successes and shortcomings of these programs is continually assessed.