We Care.

Tools for Implementation of the Clinical Practice Guidelines for Falls and Osteoporosis

Notes for Slide Presentation

AMDA Clinical Practice Guidelines (CPGs) for Falls and Osteoporosis

For Medical Directors, Attending Physicians and Advanced Practitioners

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No Notes

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- An estimated 60% of long term care (LTC) patients fall annually.[1]
- One study showed that 85% of new LTC admissions have osteoporosis.[2]
- 4% of falls occurring in LTC facilities will result in fracture.[3]
- Osteoporosis causes 1.5 million fractures each year: 700,000 vertebral fractures, over 300,000 hip fractures, 250,000 wrist fractures, and 300,000 fractures at other sites.[4]
- Osteoporosis reduces the structural integrity of bones resulting in increased risk of fractures when a patient falls (fracture can also occur with little or no trauma).
- Estimated cost in U.S. for fractures associated with osteoporosis and related causes was $17 billion in 2001, and the cost is rising.[4]
- In 1994, the total direct cost of all fall injuries for persons 65 and older was $20.2 billion and by 2020, the cost of fall injuries is expected to reach $32.4 billion.[5]
- Hip fractures, a complication of both falls and osteoporosis, result in permanent disability in 30% of patients.[6]
- White women 65 and older have twice the incidence of fractures as African-American women.

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- Injuries from falls account for 40% of nursing home admissions.[7]
- Although falls are not inevitable outcomes in LTC facilities, they occur 2-3 times more frequently than in community residents.[8]
- Approximately 50% of nursing home patients fall at least once annually[8] as they are usually frailer, older, have multiple medical and psychological conditions, and have more limitations in performing ADLs than community dwellers.
- 2/3 of lawsuits filed against nursing homes are associated with falls and related fractures.[9]

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- Osteoporosis is a silent disease, resulting in bone loss, often without symptoms until the occurrence of a fracture or of a collapsed vertebra.
- Fracture or collapse of vertebrae can occur with little or no trauma because of the structural deterioration of bone.
- Fractures may occur when a patient with osteoporosis suffers a strain, bump, or fall.
- Although osteoporosis is regarded primarily as a disease of older women, it also affects up to 2 million American men.[4]
- Classification based on etiology:
    - Postmenopausal, estrogen-deficient osteoporosis
    - Age-related osteoporosis
    - Diet-related bone loss
    - Disuse osteoporosis
    - Endocrine-mediated bone loss
    - Disease-related bone loss
    - Idiopathic osteoporosis

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- Resorption, the breakdown of old bone by osteoclasts, and bone formation by osteoblasts are normally in balance, each process stimulating the other.
- With age, or certain conditions, the two processes become unbalanced with bone resorption exceeding bone formation.
- Osteoporosis results in low bone mass, deterioration of bone tissue, bone fragility, and risk for fracture.
- Compression fractures of the spine and fractures of the hip, wrist, and forearm may occur as the result of minor trauma.

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- AMDA's guidelines for falls and osteoporosis consist of four major areas:
  1. Recognition means identifying the presence of a condition or related risks. For example, the presence of kyphosis, loss of height, and previous bone density studies may help to identify patients with osteoporosis. If a patient has a history of falls, that may indicate risk of future falls.
  2. Assessment means clarifying the nature and causes of the condition and identifying its impact (including potential complications). Consider physical factors (e.g., comorbid conditions), functional factors (e.g., impaired mobility), and psychosocial factors (e.g., patient's ability and willingness to adhere to treatment program). Perform individualized fall assessments for new admissions and post-fall assessments after a fall. Decide whether a work-up is appropriate for patients with suspected osteoporosis.
  3. Treatment means selecting and providing appropriate interventions. Consider goals of treatment (e.g., pharmacologic treatment to prevent further bone loss or exercise training to prevent falls).
  4. Monitoring means reviewing the course of a condition as the basis for deciding to continue, change, or stop interventions. E.g., monitor falls in individuals with a fall risk or a history of falls. Patients with osteoporosis should be monitored for pain, functional ability, and strength and mobility to determine success of interventions.

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- Review patient's records for history of falls. Ask the patient and patient's caregiver or family members if the patient has a history of falls. One or more falls within a 90-day period is considered a risk factor for future falls. Patients with a history of falls are more likely to fall again.
- Risk factors may be intrinsic (internal to specific patient, e.g., disease or cognitive impairment) or extrinsic (external to specific patient, such as environmental hazards).
- Patients in LTC facilities may be more likely to fall as a result of intrinsic factors (age, frailty, and comorbid conditions).

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- Screen all new admissions for intrinsic risk factors.
- Falls are multi-factorial in origin, as many factors may act together to result in a fall.
- The risks of falls increase as the number of risk factors increases.
- Results of one study showed that the strongest risk factor in ambulatory residents was use of psychotropic drugs; in non-ambulatory residents, the strongest risk factors were not being bed-bound and having the capacity for independent transfers.[11]
- Nursing home residents may have several of the intrinsic risk factors: e.g., use of multiple medications; chronic illness, problems with vision; disabilities impairing cognitive; neurological, sensory, or musculoskeletal function; foot disorders; balance deficits; and postural hypotension.
- Anemia is common in residents of LTC facilities, and studies have shown that falls may be related to anemia.[12] In the past, anemia has not received a lot of attention as a risk factor for falls.

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- Dementia increases risk of falling as it may cause impaired judgment, gait, ability to recognize and avoid hazards, and visual-spatial perception. The number of residents with dementia is increasing in LTC facilities, and they are twice as likely to fall as those without dementia.[8]
- Other factors, such as incontinence, impaired balance, decreased muscle strength, and decreased flexibility, are associated with falls in LTC residents.
- It has been shown that fall rates are highest in those who can rise from a chair but cannot stand unaided; fall rates are lowest in those who cannot rise and cannot stand.[11]

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- Falls may result from a combination of intrinsic and extrinsic factors; age, disease, and environmental hazards may all play a part. A single fall may have more than a single cause.
- Screen all new admissions for fall risk.

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- All new admissions (women and men) should be screened for osteoporosis risks.
- Patients who have low bone mass are at risk for osteoporosis, and postmenopausal women are at greater risk because of bone loss due to lack of estrogen.
- At menopause, the risk of osteoporosis may be increased not only because of low bone mass, but also because of other factors such as cigarette smoking, excessive alcohol intake, and inadequate calcium intake.
- The risk of osteoporosis increases with age. Bones become less dense and weaker, regardless of gender, as one ages and calcium absorption becomes less efficient.

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- Approximately 2 million American men have osteoporosis and another 12 million are at risk for the disease.[4]
- Osteoporosis affects fewer men than women, as men have larger, stronger bones than women.
- Undiagnosed low levels of the sex hormone testosterone are associated with osteoporosis.[4]
- Lifestyle habits including smoking, excessive alcohol use, low calcium intake, and inadequate physical exercise are associated with osteoporosis.[4]
- Certain medications are associated with osteoporosis in men (e.g., steroids used to treat asthma or arthritis, anticonvulsants, cancer treatments).
- Men's risk for osteoporosis is less than that of women because of the following: (1) they have greater bone mass than women at any given age; (2) they have a shorter life expectancy; and (3) men do not go through menopause.[13] However, at around the age of 75 the incidence and complications of osteoporosis more closely parallel those of women.[14]
- One study has shown that approximately 1/5 of the annual cost of treating osteoporotic fractures in the U.S. was spent in the care of men.[15]
- The number one cause of fractures in men is steroid use.[16]
- Steroid-induced osteoporosis is significant, as between 1 and 1.5 million patients in the U.S. are long-term steroid users.[16]
- White men are at greatest risk for osteoporosis although men from all ethnic groups develop osteoporosis.

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- Perform an individualized assessment.
- Physicians should ask about fall history at least annually.
- If patients have had a single fall during the last year, a balance and gait screening should be considered. This may involve observing the patient's ability to stand up from a chair without using the arms, followed by walking 10 feet and returning to the chair ("get up and go test").

- Refer those having difficulty with the “get up and go test” to physical and or occupational therapy.
- Hypovitaminosis D may be a preventable cause of falls.[17]
- Assess patient for Vitamin D and calcium deficiency which leads to muscle weakness and bone pain and may increase risk for falls.
- Documentation of the assessment must be complete and clear.

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- 4% of all nursing home falls results in fracture.[3, 18]
- 11% of falls in nursing homes result in injuries other than fracture.[3, 18]
- Patient’s fear of falling may result in decrease in performance of ADLs and other self-imposed functional limitations.
- Care provider’s fear of patient falling may result in caregiver discouraging activity/exercise of a patient who has fallen or prompt the use of restraints.
- Decrease in activities may contribute to further disability due to decreased exercise.

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- Fractures, especially fractures of the hip, are associated with increased morbidity, mortality, and costs of healthcare and hospitalization in older adults.
- Falls are responsible for over 90% of hip fractures.[19]
- 20-30% of patients with hip fracture are expected to die within a year, mainly in the 6 months after the fracture.[20, 21]
- After a hip fracture, more than half of older patients are admitted to LTC facilities.[1]
- 15-20% of patients with hip fracture remain in LTC facility for at least a year after fracture, and 50% may never walk again without assistance. [22]
- Rates of hip fractures in nursing home residents may be up to 11 times higher than community dwellers of the same age.[23]
- The ability to move about independently may be predictive of fracture in LTC residents.[24]
- Assess patients for fall risk and risk of fracture from falls. Patients with low bone mass may be at more risk of fracture.

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- Assessment should be individualized.
- Comprehensive post-fall assessment may help detect problems which, if corrected, may result in fewer falls and decreased hospital days.
- Comprehensive assessment should include open-ended questions (to patient or family or caregiver) such as the following: (1) What happened? (2) Where and when did fall occur? (3) What was patient doing at time of fall? (4) What other symptoms were present at time of fall?
- Falls may suggest underlying health problems and may be a sign of acute illnesses such as pneumonia, UTI, MI, or they may be related to an exacerbation of chronic disease.
- Assess patient for weakness and walking or gait problems that may be associated with falling.
- Review medications, with close attention to polypharmacy (four or more medications) or initiation of new medications in previous two weeks, or use of multiple psychoactive medications.
- Assess patient for injury, especially fracture or head injury.
- Assess all joints for change in normal range of motion, weight bearing, etc.
- Assess for change in cognition or level of consciousness.
- Perform neurological assessment.
- Perform pain assessment.
- Assess vital signs, especially orthostatic blood pressure and pulse.
- Review recent significant labs.

- Determine the cause of the fall as far as possible.
- Document relevant post-fall clinical findings such as vital signs, pain, swelling, bruising, and change in mobility in patient's records.
- An Incident Report must be timely completed, but should not replace the post-fall assessment.
- Assessment must be complete, and documentation must be clear.

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- Patients may or may not have symptoms.
- Some patients may have pain in bone or muscles, associated with vitamin D deficiency, especially the back.
- Some patients may have compression fractures that may cause kyphosis and dowager's hump.

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- Many post-menopausal elderly women are not being screened and treated for osteoporosis and women with osteopenia are not being treated to prevent osteoporosis.
- Sometimes it is easy to see which patients may have osteoporosis, for example, when a patient has kyphotic posture.
- The first clinical manifestation is often a fracture, but even before that, a loss of height or increasing kyphosis may be noticed.
- Typical fractures related to osteoporosis are of the spine, hip, wrist, and ribs.
- Assess and evaluate secondary causes of osteoporosis (e.g., Cushing's syndrome, hyperthyroidism or excess thyroid hormone replacement, primary hyperparathyroidism, liver failure, multiple myeloma, renal failure).
- Current recommendation for persons at risk for osteoporosis to be formally evaluated by dual x-ray absorptiometry (DXA). This was previously known as DEXA, dual energy x-ray absorptiometry.
- DXA bone density studies of the hip and spine are the "gold standard" for diagnosing osteoporosis and monitoring changes in bone density over time.

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- The World Health Organization (WHO) criterion for osteoporosis is bone mineral density (BMD) that is 2.5 standard deviations (SD) below the average for young, healthy white women. This represents a T score of—2.5 or less.
- WHO's criterion for osteopenia (low bone mass) is BMD that is 1= 2.5 SD below the mean for young adult white females (T score of —1 to —2.5).
- Normal bone mineral density (BMD) is within 1 standard deviation of the young-adult mean.
- The relative risk of fracture increases 1.5- to 3-fold for every decrease in bone mass of 1 SD.[24]
- Osteoporotic fragility fractures (e.g., of the spine or the hip) may suggest osteoporosis even when BMD is above WHO threshold.
- The *Z* score reflects the difference between the patient's BMD and the expected BMD for the patient's age and sex (i.e., of their peers).
- National Osteoporosis Foundation says that any woman age 65 or older, independent of risk factors, should have her bone density tested.
- Work-up should include a comprehensive medical examination, an assessment of risk factors, DXA scan, and assessment of patient's willingness for treatment.
- BMD testing may be targeted to healthiest and most independent residents who are at greatest risk for fracture and who may live long enough to get the benefits of the treatment.
- Patients with previous fractures, loss of bone density due to kyphosis, or cervical lordosis may not need DXA testing.
- If patient has terminal or end-stage condition, or if patient refuses treatment, a work-up is not necessary.

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- Recent fractures may result in slightly elevated serum alkaline phosphatase.[26]
- X-rays may show decreased radiodensity from loss of trabecular bone, but osteoporosis cannot be diagnosed on x-ray until >30% of bone has been lost.[26]
- Osteoporosis caused by use of glucocorticosteroids may result in radiolucency of the skull, rib fractures, and exuberant callus formation at sites of healing fractures.[26]
- DXA measures bone density of the lumbar spine and the hip. DXA of the hip and spine are done together unless the patient has hip hardware. Only the hip T score tells us the hip fracture risk.

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- Rate of hip fracture is 2-3 times higher in women than men; however, the one year mortality following hip fracture is nearly twice as high for men as for women.
- Consequences of osteoporosis include functional limitations, decreased performance of ADLs, limited mobility, fear of additional fractures, loss of independence, loss of self-esteem, and fear of falling.
- Assess for pain, as many patients may have chronic pain related to vertebral osteoporosis.
- Assess for decreased quality of life, as patients may suffer from a decline of social interactions and activities.
- Patients may have crowding of internal organs due to vertebral compression fractures.

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- Most important in preventing falls is the identification and reduction of fall risks.
- Multifaceted intervention programs that address multiple risk factors are most successful in preventing falls in LTC patients.
- Falls are hard to predict but may be prevented by an interdisciplinary approach to the problem (education, training, and conditioning).
- Interventions should be based on underlying cause when possible. For example, patients with orthostatic hypotension should be asked to first rise to a sitting position after lying down and then to stand slowly.
- There is no evidence that restraints prevent falls; they may in fact contribute to fall-related injuries and death. Restraints may lead to muscle weakening by limiting a patient's freedom of movement.
- Educating staff about the prevention of falls may cause a temporary decline in the number of falls, but there must be continuously reinforced to have a long-term effect.

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- Studies have shown that upper and lower extremity strength of elderly individuals improved with exercise.[27]
- Studies have shown that gait speed of older adults also improves with exercise.[28]
- Balance has been shown to improve with different types of exercise for elderly individuals.[29]
- Studies have shown that ankle strengthening and walking programs improve balance, ankle strength, walking speed and help to prevent falls.[30]
- In LTC facilities, patients have shown improvement in their ambulatory status and a decrease in falls after participating in a walking program.[31]
- Not many trials of exercise interventions for falls have occurred in nursing homes despite the high number of falls in nursing homes.[3]
- Studies have shown that in short-term exercise prevention programs, patients improved fall risk factors through exercise, but did not actually reduce the frequency of falls.[32]
- The optimal type, duration, and intensity of exercise are not clear.
- Frail nursing home patients who participate in an exercise program may increase the risk for falls by becoming more mobile.[33]
- Exercise interventions should be person-centric, taking into consideration the patient's specific abilities, needs, and interests.

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- Interventions to remove environmental risk factors are simple, practical and easy to implement.
- Determine when most of the falls occur and make staffing changes to ensure that there are adequate certified nursing assistants available during this time.
- Consider scheduling recreational programs/supervised activities during the time that most falls occur.
- Make other modifications to remove environmental hazards.
- Train staff to identify environmental hazards.

Slide # 29

- Medications may be associated with falls in LTC facilities.
- Medications may cause dizziness or postural hypotension which may increase fall risk.
- Reducing medications may be a component of effective fall-reducing interventions.
- Medications often associated with falls include the following: antipsychotics, sedative-hypnotics, antidepressants, antiarrhythmics, anticonvulsants, narcotics, and other medications that have significant anticholinergic side effects.
- The particular dosage administered may be a contribution to fall risk.
- A change in medication may be associated with falls; if falls start after a change, review patient's entire medication regimen.
- The combination of medication with coexisting medical conditions may contribute to fall risk.
- After a patient has fallen, review current medications, assess whether there is an appropriate indication for each medication, and modify appropriately.
- Document reasons for making changes in medication regimen, and if no changes are made, document reason for not making changes.

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- Studies have shown that falls may be to be related to anemia in older persons who have been hospitalized for hip fracture.[12]
- By using the WHO definition of anemia, there is a high prevalence of anemia in persons over the age of 65. According to Artz et al, 48% of the LTC population is anemic.[34]
- Until recently, anemia has not received much attention as a risk factor for falls.
- Both anemia and low hemoglobin levels have been shown to be predictive of fall risk.
- A study showed that the risk of falls increases three-fold in the presence of anemia.[12]
- Fall intervention should probably include assessment of hemoglobin levels.
- If anemia is diagnosed, it may be treated successfully based on its cause.
- Anemia may be corrected with iron supplementation, vitamin B^{12} treatment, nutritional intervention, treatment of any source of blood loss, or erythropoietin.

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- Consider use of assistive devices such as canes, and walkers, as they may be an effective element of the multi-factorial interventions to prevent falls.
- Consider the use of hip protectors; they may not protect against falls, but they may help prevent hip fractures.
- In the U.S., hip protectors are not widely used in nursing homes because of cost (not reimbursed by 3^{rd}-party payers) and difficulty in their use.[35]
- A recent study showed that hip protectors in the nursing home avoid hip fracture, are a cost savings to Medicare, and extend life expectancies.[35]

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- Educating nursing home staff, patients and patients' families, and physicians about fall risks may help to temporarily prevent falls in nursing homes.
- In-services related to fall prevention may cause a heightened awareness of fall prevention but periodic refresher courses may be required.
- All long-term care facility staff should receive training in fall prevention.

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- Few patients at high risk for osteoporosis receive treatment for osteoporosis.[36]
- Osteoporosis treatment is underutilized in the frail nursing facility population.
- Results of studies suggest that appropriate systems to facilitate the process of clinical practice guideline implementation would help prevent fractures. [36]
- Study showed that patients and families are concerned about fracture prevention and open to treatment with medications.[36]
- Barriers to osteoporosis care may be overcome through education and modification of care delivery system.[36]

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- The impact of osteoporosis on quality of life relates to fractures.
- Significant burden of hip fractures is recognized.
- Significant burden of vertebral fractures not recognized until recently.
    - Related to pain
    - Related to kyphosis
    - First vertebral fracture leads to significant risk for subsequent fracture.
    - Vertebral fracture associated with decreased quality of life.[36]
    - Treatment is recommended to increase the quality of life for patients.
    - These goals may be achieved through the joint efforts of the interdisciplinary team, the patient, and the patient's family.

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- Appropriate nonpharmacologic interventions should be considered for all LTC patients.
    - Medications to prevent further bone loss should be considered for patients with risk of osteoporosis or for further bone loss.
    - Nutrition programs should be considered to optimize calcium and vitamin D intake and to promote weight gain which may contribute to healthier bones in very thin patients.
    - Exercise is helpful to increase mobility, muscle mass, and strength and balance; it may be helpful in preventing falls. Exercise regimens (as tolerated) should be individualized for each patient.
    - Document the impact of the interventions.

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- A large study in a LTC facility has shown that supplementation with calcium and vitamin D increases bone density and reduces the incidence of fractures.[37]
- The typical nursing home diet falls short of providing the currently recommended amount of calcium (1200-1500 mg elemental calcium recommended vs. 800 mg per day from diet).[38]
- Patients in LTC facilities do not receive enough vitamin D; diet and decreased exposure to sunlight are contributing factors.
- The utilization of calcium and vitamin D supplementation should be increased among the LTC population, as they are at increased risk of developing osteoporosis-related fractures.
- Calcium supplementation may cause gastrointestinal (GI) upset, e.g., gas and constipation; calcium citrate may result in less GI problems than calcium carbonate.
- Consider breaking the dosage into several doses and administer with meals or at bedtime snack, as all of it may not be absorbed if given in one dose.

- Vitamin D is necessary for the absorption of calcium; 600-800 IU daily is recommended for LTC patients.
- Calcium and vitamin D should be given to all long-term care patients unless there is a clear contraindication, e.g., hypercalciuria (urinary calcium excretion of >300 mg/24h).
- Calcium may interfere with the absorption of certain medications, and some medications may decrease the absorption of calcium. For example, the absorption or activity of thyroid hormones and bisphosphonates are affected by calcium and should be given several hours before or after administration of calcium.

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- Exercise is recommended to increase mobility, muscle mass, strength and balance and to prevent falls.
- Weight-bearing exercises slow bone mineral loss.
- Walking is an excellent weight-bearing exercise for patients with osteoporosis because it is a low impact exercise that minimizes stress on bones.
- Patients with low bone density or who already have osteoporosis should avoid exercises that involve bending forward excessively at the waist, as this may increase the risk of compression fractures of the vertebrae.[39]

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- The following are medically approved by FDA to prevent or treat osteoporosis: bisphosphonates, calcitonin, estrogen receptor modulators, and parathyroid hormone.
- Bisphosphonates (e.g., alendronate, risedronate, ibandronate), calcitonin, and estrogen receptor modulators are inhibitors of bone resorption and have been shown to increase BMD and decrease new fracture risk.
- Parathyroid hormone treatment stimulates new bone formation and increases BMD.
- Hormone replacement therapy is no longer routinely recommended solely for the prevention of postmenopausal osteoporosis because of the adverse events noted with estrogen/progestin combination in the Women's Health Initiative. It may be prescribed for women who have significant risk of osteoporosis that outweighs the risk of the drug, e.g., increased risk of stroke and breast cancer.
- Bisphosphonates may have irritating effects on the esophagus; in rare instances erosion or ulceration of the esophagus may occur. Most of the side effects are mild and affect the upper GI system causing such conditions as heartburn and indigestion.
- Make sure that patients receiving bisphosphonates are capable of following the dosing regimen: sitting or standing upright for at least 30 minutes after taking the drug, with a full glass of water first thing in the morning; and waiting 30 minutes before eating any food or taking any other medicines. If a patient is groggy first thing in the morning, refusing to drink a full glass of water, and lying back down in bed after taking the drug, stop the bisphosphonate treatment and consider alternative treatments. Make sure to communicate with nursing staff to determine if the patient is compliant with dosing regimen.
- If the patient experiences side effects from biphosphonates, discontinue treatment and consider alternative treatment.
- Daily administered nasal calcitonin has been shown to reduce the incidence of new vertebral fractures.
- Consider prescribing estrogen receptor modulators for patients for whom treatment with bisphosphonates is contraindicated; however, an increase in venous thromboembolic disease is associated with these medications. Do not prescribe for patients who are either immobilized or are at risk for blood clots.
- Patients with severe osteoporosis may be prescribed recombinant human parathyroid hormone (PTH) which is given by daily subcutaneous injection. It should not be given to patients with primary or secondary hyperparathyroidism, Paget's disease, bony metastases, or multiple kidney stones. This drug is more expensive than the other osteoporosis therapies.

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- If the patient continues to fall, consider new interventions to prevent falls and consider amendment of care plan.
- In the presence of irreversible risk factors (e.g., Parkinson's disease stiffness), consider interventions to prevent fall-related injuries (such as by using hip protectors).

- Sometimes injuries from falling do not manifest themselves until days after a fall; be alert to delayed consequences of falling such as changes in function, mental status, or level of consciousness.

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- Collect information about falls to evaluate/adjust the program for preventing and managing falls. Data charts may allow for trending of performance over time and help to establish targets.
- Review process and outcome measures for falls to evaluate success in implementation care processes related to falls.
- Be involved in the development of policies and procedures related to falls.
- Provide education about medical causes of falling to staff.
- Encourage an environment for staff to share information.

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- Periodically monitor patient's symptoms to determine progress (for example, assess pain, deformity, mobility).
- If feasible, obtain DXA every 2 years if essential to treatment.
- Post-acute-care patients undergoing short-term rehabilitation following a fracture should be monitored for complications, such as thromboembolism.
- When monitoring progress of patients, review effects on patients of treatments, e.g., calcium and vitamin D supplements, bisphosphonates, analgesic use, exercise training.
- If patients are receiving bisphosphonate treatment, communicate with nursing staff to make sure that patients are able to follow the dosing regimen (e.g., willing to drink a glass of water with the medicine, ability to remain upright for at least ½ hour).
- If patients are receiving calcium supplements, communicate with patient and with nursing staff about any constipation and other gastrointestinal complaints.
- Adjust treatment accordingly when patients have side effects.

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