Skeletal – Amputee Skin Care

Strength of Evidence Level: 1

PURPOSE:
To maintain healthy skin condition and prevent skin breakdown.

CONSIDERATIONS:
1. Cleansing should be done in the evening, since damp skin within a socket is more likely to become irritated.
2. Monitor the condition of the skin to identify problems before they interfere with comfort or function.
3. Do not shave residual limb; pressure from the prosthetic socket on “stubble” can cause the hair to grow inward, become painful, and can even become infected. Never use chemical hair removers on residual limb.
4. Avoid prolonged soaking in warm bathtubs or hot tubs because this may cause increased swelling in residual limb.

EQUIPMENT:
None

PROCEDURE:
1. Adhere to Standard Precautions.
2. Explain procedure to patient.
3. Review and follow nurse’s or therapist’s instructions.
4. Inspect the skin to determine if any irritations or problems are present.
5. Wash the residual limb with a mild antibacterial soap and lukewarm water.
6. Rinse with warm water being careful to remove all soap residues, since soap film can contribute to skin irritation.
7. Dry skin by patting it with a towel. Be sure residual limb is completely dry before putting on prosthesis.
8. Apply a small amount of medicated cream or lotion to the entire area after the skin has been thoroughly dried. This helps maintain the skin’s elasticity and suppleness, better enabling it to withstand the extensive pressure exerted on it by the prosthesis. It also reduces skin breakdown, callous formation and extensive toughening of the skin. Do not apply lotion to any open area.

AFTER CARE:
1. Inspection of Residual Limb
   a. Look for any signs of skin irritation, blisters or red marks that do not fade within 10 minutes of removing the prosthesis.
   b. Report any unusual skin problems to the nurse or therapist.

REFERENCES:
Skeletal – Assessment of Range of Motion

SECTION: 10.02

Strength of Evidence Level: 3

PURPOSE:
To assess range of motion in major joints used in function and self-care management.

CONSIDERATIONS:
1. Patients with cognitive deficits may be unable to follow movement commands in order to participate in joint range of motion testing.
2. Caution should be used with joint range of motion testing in the presence of skin breakdown, suspected or actual fracture location, significant diagnoses (such as osteoporosis, decreased platelets, anti-coagulation therapies and more), postural restrictions, joint restrictions and when reported pain prior to assessment or pain upon range of motion movement indicates patient discomfort.
3. May be performed as component of functional assessment and activities of daily living (ADL) assessment; to avoid fatigue, range of motion testing may be completed with rest and pacing.
4. Special consideration should be used when assessing head, neck and spine joints.
5. Each joint has a maximal range of motion or the amount of movement in any specific direction and the clinician should exercise caution not to move a joint beyond normal or pain free range tolerated by the patient.
6. Range of motion can be assessed using any of the following three approaches:
   a. Active Range of Motion – patient moves joint independently.
   b. Active-Assisted Range of Motion – patient moves joint but requires assistance to complete the joint range (assistance can range from minimal to significant amount).
   c. Passive Range of Motion - patient is unable to move joint at all and requires complete assistance of another person for joint to move.

EQUIPMENT:
Firm surface such as bed or chair with back

PROCEDURE:
1. Adhere to Standard Precautions.
2. Explain range of motion assessment to patient.
3. Provide for privacy, if appropriate.
4. If the patient is in a hospital bed, raise the bed to waist height or comfortable working position for clinician. If the patient is in a hospital bed or wheelchair, ensure that the wheels are locked. If the patient is in a non-hospital bed, clinician should ensure safe personal body mechanics. Range of motion assessment is limited when assessment takes place in a position that restricts full joint motion (i.e. patient seated while limit most hip motion).
5. Clinician asks patient to move joint being assessed actively, describing what movement is desired and if possible, demonstrating movement first. If the patient cannot actively move the joint, the clinician should assess if active assisted range of motion is possible. If not, the clinician can perform passive range of motion.
6. Joint motions that can be assessed bilaterally may aid in efficiency of the assessment (i.e. flex both hands so fingers are in fist and then straighten fingers completely).
7. Clinician should compare joint movement ability and quality side to side.
8. Key joint motions to assess:
   a. Shoulder - flexion/extension, rotation, abduction/adduction.
   b. Elbow - flexion/extension, rotation.
   c. Wrist - flexion/extension, medial/lateral.
   d. Hand/fingers - flexion/extension, abduction/adduction.
   e. Hip - flexion/extension, rotation, abduction/adduction.
   g. Ankle/toes - flexion/extension, rotation.
   h. Trunk - anterior, posterior, lateral rotation.
   i. Head/neck - flexion/extension, rotation, side bending.
   j. Trunk - flexion/extension, rotation, side bending.
9. Clinician should observe quality of movement and:
   a. Speed.
   b. Stiffness.
   c. Joint swelling.
   d. Coordination.
   e. Alignment.
10. Joint motion can be assessed starting proximally and moving distally with extremities such as shoulder to hand and hip to foot. Limitations noted proximally involve the larger muscle groups and distal motions involve smaller muscle groups.

AFTER CARE:
1. Document in patient’s record:
   a. Joint motions assessed.
   b. Assessment method used.
   c. Patient’s response to assessment
   d. Follow-up recommendations based on range of motion assessment findings.

REFERENCES:
Purposes: The purpose of a brace is to control anatomical parts through external devices. Braces immobilize or support a body part, prevent or correct anatomic deformities, aid in controlling involuntary muscle movements, relieve weight bearing, and/or assist with joint motion.

Considerations:
1. There are many different kinds of braces with varying devices to hold them in place.
2. Never remove or apply a brace without specific instructions from the doctor, nurse or therapist.
3. Never make adjustments to the brace - call the nurse, therapist or orthotist if you suspect a brace needs adjustment.
4. An ill-fitting or improperly used brace can cause pressure sores to develop.
5. There are two types of braces: dynamic and static. Dynamic braces use energy-storing materials to provide a dynamic force while providing support. Static braces are rigid braces that immobilize the body part.

Equipment:
- Brace

Procedure:
1. Adhere to Standard Precautions.
2. Review and follow nurse's or therapist's instructions.
3. Explain procedure to patient.
4. Check all screws to make sure they are tightened and without rough edges.
5. Apply or remove brace.
6. Check to ensure brace is not rubbing on patient's skin and causing irritation. Check joint areas where blisters may develop.
7. Notify nurse or therapist if patient complains of pain, soreness or uncomfortable sensations around the area of the brace.
8. Make patient as comfortable as possible.
9. Upon removal of brace, store it on a table or the floor in good alignment. Hanging may distort its position.
10. Do not place brace near or on a heat source or in direct sunlight.

After Care:
1. Document in patient's record:
   a. Procedure.
   b. Patient's response to procedure.
   c. Skin condition.
   d. Compliance to use of brace.
2. Report any changes in patient's condition to supervisor.

References:
PURPOSE:
To ensure that the cast is properly immobilizing the designated body part.

CONSIDERATIONS:
1. Casts should not restrict circulation or cause pain.
2. The skin under the cast frequently itches.
3. Never put anything into the cast as this might lead to skin infection.
4. Do not wet cast as it may crumble.
5. Severe pain in the casted extremity over a bony prominence under the cast may indicate a pressure area.
6. Immediately notify nurse or therapist of signs and symptoms of drainage on the cast or evidence of foul odor.

EQUIPMENT:
Tape

PROCEDURE:
1. Adhere to Standard Precautions.
2. Explain procedure to patient.
3. Assess cast and injured part for:
   a. Neurovascular status of extremity by checking for:
      (1) Numbness.
      (2) Tingling.
      (3) Pain.
      (4) Relative temperature.
      (5) Mobility of digits.
      (6) Skin color and pulses.
   b. Swelling of the limb at the edge of the cast (tight cast causing pressure).
   c. Unusual odor coming from the cast.
   d. Rough or cracked edges.
   e. Loose fitting cast.
   f. Discolorations on the cast that might indicate bleeding or drainage from underneath.
4. If there is edema present, it can be minimized with the use of ice and by elevating the extremity, with the distal joint positioned above the more proximal joint.
5. If the cast has rough edges or is wet around the edges, tape may be applied around the rim (petal).
   a. Cut out circles of tape.
   b. Overlap tape circles on edges of cast pressing down as applied.

AFTER CARE:
1. Document in patient's record:
   a. Condition of cast.
   b. Patient's response to cast.
   c. Any condition noted during assessment of the cast and injured part, as noted above.
2. Report any adverse findings or changes in condition to health care provider.

REFERENCES:
PURPOSE:
To provide comprehensive prevention interventions and management strategies for compression fractures of the spine.

CONSIDERATIONS:
1. Compression fractures are caused by trauma, usually accidents involving collision forces or by osteoporosis. A compression fracture secondary to osteoporosis is caused when the thinner, less dense osteoporotic bone becomes less able to tolerate weight and the normal dimensions of the vertebral body are compressed in width and especially height. The compression fracture collapses the anterior portion of the vertebral body more than the posterior, thus sparing neurovascular involvement in the fracture.
2. Symptoms include pain in mid to low back (pain increases when sitting, standing or walking and decreases with rest and inactivity), loss of height, postural changes including kyphosis and/or flattened lordosis. A definite diagnosis is made by X-ray.
3. Any reported symptoms of sudden onset of intense back pain with incontinence, paralysis or muscle weakness, numbness or inability to urinate should prompt immediate medical attention and emergency care.
4. Patients with osteoporosis are at higher risk for compression fractures and a patient with one compression fracture is at increased risk for additional fractures.

EQUIPMENT:
None

PROCEDURE:
1. Assess patients with or at risk for osteoporosis for new onset of spinal pain, especially in the mid or lower spine.
2. Provide osteoporosis education and bone health management interventions, as appropriate. (See Skeletal: Osteoporosis Education)
3. Prevention strategies include
   a. Adequate calcium and Vitamin D intake.
   b. Exercise and avoiding forward flexion activities where possible.
   c. Activities that may need to be modified to avoid or minimize forward flexion include bending, turning, reaching, lifting, walking and stair climbing.
   d. Patients should have correct assistive devices, properly measured for height, and follow an exercise and postural program that is individually prescribed for a patient with known osteoporosis.
4. Patients with a new compression fracture can expect fracture healing in 8-12 weeks without complications. Compression fractures generally heal on their own without surgical intervention.
5. Patients with multiple compression fractures may have a back support or back brace prescribed to aid in spinal alignment and support when upright.
6. Patients with compression fractures may require interventions and medications to manage pain.
7. Key compression fracture management strategies to consider:
   a. Adequate calcium and Vitamin D intake.
   b. Pain management strategies including pharmacological (over-the-counter and prescribed medications) and non-pharmacological such as deep breathing, relaxation, positioning, etc.
   c. Modify activities that require forward bending; use assistive devices correctly.
   d. Activity and exercises for prevention, and after a positive diagnosis of compression fracture, an individually prescribed home exercise program that includes exercise and posture.
   e. Patient knowledge of compression fracture signs and symptoms, including actions to take and patient self-efficacy regarding compression fracture management.
   f. If worn, the back support or brace should be fitted correctly and used as designed.

AFTER CARE:
1. Document in patient's record:
   a. Compression fracture management interventions provided.
   b. Assessment and follow-up recommendations based on patient response. Consider referral to physical therapist as component of management strategies.

REFERENCES:

Skeletal – Constant Passive Motion Machine (CPM)  
SECTION: 10.06  
Strength of Evidence Level: 1

PURPOSE:  
To prevent joint stiffness and maintain joint motion following surgery or trauma by pumping blood and swelling out of the affected area. Maintain joint nutrition and lubrication.

CONSIDERATIONS:  
1. The Constant Passive Motion (CPM) machine is used to slowly bend and straighten a joint over an extended period of time, usually 1 to 2 hours.  
2. Frequently utilized following:  
   b. Joint manipulation.  
   c. Synovectomy.  
   d. Removal of heterotrophic ossification.  
   e. Open reduction of intra-articular fractures.  
3. Potential complications:  
   a. Increased bleeding.  
   b. Slow wound healing, especially with skin flaps located on an extensor surface.  
   c. Nerve compression palsy.  
4. CPM should not be progressed to full range of motion (ROM) until joint swelling can tolerate the motion.  
5. The CPM is available for the following joints:  
   a. Knee.  
   b. Ankle.  
   c. Elbow.  
   d. Shoulder.  
   e. Hand and wrist.  
   f. Hip.  
   g. Great toe.  
   h. Temporomandibular joint.  
6. CPM is contraindicated for joints that have poor ligamental stability.  
7. The CPM has three components:  
   a. Limb carriage.  
   b. Motor.  
   c. Controls.  
8. The patient’s joint should be lined up with the articular point on the CPM.  
9. Apply stabilizing straps just above and below the affected joint.  
10. Ensure that all areas are properly padded to prevent friction against the patient’s skin.  
11. Turn the unit on and allow the unit to complete 2 to 3 cycles to ensure safe functioning.  
12. The unit should not create severe pain. The patient should experience a gentle stretching sensation at the end of the joint range of motion.  
13. Educate the patient and the caregiver in the proper use of the unit.  
14. Follow the physician’s protocol for use. This is usually 1 to 2 hours for 3 repetitions per day.  
15. The CPM can be used to work end ranges by setting the unit in small arcs at the end of flexion or extension of the joint.

AFTER CARE:  
1. Instruct the patient to inform the nurse or therapist of any adverse reactions or unusual pain.  
2. Monitor the tolerance to the unit.  
3. Document in the patient’s chart the response to the session, the patient and caregiver’s understanding of the procedure and the parameters tolerated during the procedure.

REFERENCES:  
PURPOSE:
To ensure that the skin around skeletal pin sites remains free of signs and symptoms of infection.

CONSIDERATIONS:
1. Some types of braces, skeletal traction, and external fixators use pins. These pins make a direct pathway to the bone. This pathway increases the risk of infection.
2. Pin care should be performed by the patient and/or caregiver as directed by the physician, generally 1 to 3 times per day.

EQUIPMENT:
1 Bottle of hydrogen peroxide
1 Bottle sterile normal saline
Sterile container with lid
Sterile cotton tipped applicators
Gloves
Sterile specimen cup
1 Protective barrier, such as a blue pad

PROCEDURE:
1. Adhere to Standard Precautions.
2. Explain procedure to patient/caregiver.
3. Gather equipment and supplies.
4. Don non-sterile gloves.
5. Mix Hydrogen peroxide ($H_2O_2$) and Normal Saline solution in equal amounts to achieve 1/2 (one-half) strength (or as ordered by physician).
6. Solution may be saved for up to 24 hours. Label container with name of solution and date. *(See Integumentary - Preparing Solutions in the Home.)*
7. Place protective barrier under extremity with pins.
8. Wet cotton tip applicator with solution.
9. Place the applicator where the pin enters the skin and gently clean skin surrounding pin making outward strokes away from pin.
10. Use a new applicator for each stroke until a complete circle has been made.
11. Pull the skin away from the pin using the cotton applicator to keep skin free from pin, using the applicator to remove any crust from pin site.
12. Assess for signs of infection at the pin site, including redness, increased pain, swelling, pus-like drainage or black tissue. Report presence of signs to physician.
13. Clean the pin itself with cotton tip applicator and the solution making strokes along the pin, using a new applicator with each stroke.
14. Continue Step 13 until all pin sites are free of drainage or crusting. Use a new applicator for each full circular motion then discard.
15. Discard soiled materials per agency procedure.
16. Wash hands.
17. Instruct patient and/or caregiver in pin care.
18. Instruct patient and/or caregiver to report any of the following signs of infection immediately:
   a. Redness at the pin site.
   b. Increased pain at the pin site.
   c. Swelling at the pin site.
   d. Pus-like drainage at the pin site.
   e. Black tissue around the pin site.
   f. Fever of 101 degrees Fahrenheit (38.3 C) or above.
   g. Chills.

AFTER CARE:
1. Document in patient’s record:
   a. Procedure and observations.
   b. Instructions given to patient/caregiver.
   c. Response to instruction.
   d. Communication with physician.

REFERENCES:
Skeletal – History Questions

Strength of Evidence Level: 3

PURPOSE:
To determine through interview, the significant related aspects of the patient’s skeletal condition, movements, and abilities.

CONSIDERATIONS:
1. Patients with cognitive deficits may be unable to accurately report or participate in the interview and caregivers may not have sufficient knowledge of the skeletal system history to provide information.
2. Identifying the patient’s skeletal condition prior to the onset of homecare may help inform the clinician of areas for further assessment and identify the prior functional status.

EQUIPMENT:
None

PROCEDURE:
1. Explain assessment process to patient and rationale for obtaining history.
2. Use consistent interview questions.
3. Be prepared to provide examples and explanations to ensure common understanding by any patient.
4. Use guidelines for lowest patient language level to ensure understanding.
5. Be prepared to ask history questions in patient’s primary language.
6. Provide adequate time for patient to consider history questions and respond accordingly.
7. Key skeletal history questions to consider:
   a. Instability in your bones anywhere in your body?
   b. Pain in your bones anywhere in your body?
   c. Inability to move your arms or legs?
   d. Locking or involuntary positions in your bones?
   e. Inability to stretch or stand up completely?
   f. Surgery for a bone problem?
   g. Worn braces, casts or slings for a bone problem?
   h. A family history of bone weakness or disease?
   i. Taken medications for a bone diagnosis or problem?
   j. Limited your daily activities due to bone related issues?
   k. Used a walker, cane, crutch or wheelchair due to bone related issues?
   l. Favored or did not use your leg or arm due to a bone complaint or issue?
   m. Been told you have osteoporosis or osteopenia?

AFTER CARE:
1. Document in patient's record:
   a. Summary of skeletal history.
   b. Assessment to date and follow-up recommendations based on skeletal history information.

REFERENCES:
Skeletal – Joint Precautions

Strength of Evidence Level: 1

PURPOSE:
To protect a diseased or post operative joint from injury.

CONSIDERATIONS:
1. There are several types of joint precautions:
   a. Post operative
   b. Weight bearing
   c. Arthritic joint guarding precautions
2. Post operative joint precautions are dependent upon the approach the surgeon uses to access the joint.

EQUIPMENT:
Assistive ambulatory device
Brace, splint
Elevated seating
Reacher

PROCEDURE:

General Post Operative Precautions:
1. All patients with acute joint replacements should sit on surfaces high enough to allow the knee to be level with the hip. This may require elevated commode seats and cushions in chairs.
2. Patients with acute joint replacements should use a reacher to access objects out of their reach.
3. Keep pets from being under foot.
4. Remove throw rugs.
5. Keep pathways clear and wide enough for use of an assistive device.
6. Use good lighting.
8. Use safety bars in the bathroom.
9. The acute precautions should be followed until the healthcare provider informs the patient that the precaution is no longer required.
10. If riding in a car, make frequent rest stops.
11. The patient may need prophylactic antibiotics before having dental or medical procedures.

Posterior Total Hip Precautions:
1. The patient is not to flex, adduct and internally rotate the hip in a combined motion.
2. The patient is not to flex the hip more than 90 degrees.
3. The patient is not to extend the hip past neutral position.
4. The patient is not to internally rotate the hip beyond neutral.

Anterior Total Hip Precautions:
1. The patient is not to extend the hip past neutral.
2. The patient is not to perform a bridging maneuver.
3. The patient is not to lie on the stomach.
4. The patient is not to cross the legs.
5. The patient is not to rotate the legs inward.
6. The patient is not to flex the hip more than 90 degrees.
7. The patient SHOULD sleep with a pillow between the knees.

Total Knee Precautions
1. Avoidance of kneeling on the knee.
2. Avoidance of deep squats.

Total Shoulder Precautions:
1. Follow the physician’s guidelines for range of motion (ROM). Generally this is less than 120 degrees elevation, 30 degrees external rotation and 45 degrees adduction.
2. The patient should NOT perform active range of motion (AROM), resistive or strengthening exercises until allowed by the physician.
3. The patient should utilize a sling to protect the arm.
4. The patient should not lift with the operative arm.

Weight Bearing Precautions:
1. Follow physician orders for amount of weight allowed on an upper or lower extremity.
2. Use an assistive device, such as a walker or crutches, to remove weight from the hip or knee.
3. Use a walker, crutches or “Roll-A-Bout” to remove weight from the ankle.
4. Use a platform walker or platform crutch to remove weight from the forearm, wrist or hand.
5. Types of weight bearing precautions:
   a. Non weight bearing: No weight is allowed on the affected area.
   b. Touch down weight bearing: Allows resting the limb down for balance only, no weight is applied through the limb.
   c. Partial weight bearing: Physician directs the patient regarding the percent of weight allowed.
   d. Weight bearing as tolerated: The patient is allowed to apply as much weight on the limb as they are able to comfortably tolerate.
   e. Full weight bearing: No restriction is placed on the amount of weight applied to the limb.

Arthritic Joint Guarding Precautions:
1. Avoid movements that push the fingers toward the little finger; such as opening a jar.
2. Avoid making a tight fist.
3. Avoid maintaining a prolonged grasp. Put objects down while working with them instead of holding them in the hands.
4. Use proper body mechanics (See Patient and Staff Safety - Body Mechanic Procedure.)
5. The patient should use larger muscles or mechanical assistance instead of using smaller muscles. For example, use a jar opener or carry objects with the palm up instead of grasping the object.
6. While at rest, avoid stiff joints by making frequent changes in joint positions.
7. Alternate activity and rest.
8. Braces or splints may be recommended by a healthcare provider or physical/occupational therapist.
AFTER CARE:
1. Inform the nurse or therapist of any problems with patient understanding or adherence to precautions.
2. Document in the patient’s chart the patient’s understanding of, compliance with and tolerance to precautions.

REFERENCES:
Skeletal – Osteoporosis Education
SECTION: 10.10
Strength of Evidence Level: 3

PURPOSE:
To provide education and increase patient self-care knowledge and abilities concerning the diagnosis of osteoporosis.

CONSIDERATIONS:
1. Patients with osteoporosis or who are at risk for osteoporosis can benefit from bone health strategies and education that provides information to prevent and/or manage osteoporosis.
2. The diagnosis of osteoporosis is determined by the physician and may involve further testing.
3. Osteoporosis prevention education should be considered as osteoporosis is a significant concern for certain populations, especially older adults, women, patients with chronic diseases and patients with immobility and decreased physical activity.
4. Osteoporosis may present loss of height, back pain, fractures and postural changes, such as protruding abdomen, forward head, rounded (kyphotic) shoulders, flattened lumbar lordosis and knee hyperextension.

EQUIPMENT:
None

PROCEDURE:
1. Explain education and patient self-care management principles and process to learn more about osteoporosis.
2. Use consistent language regarding prevention or actual condition management.
3. Be prepared to provide examples and explanations to ensure common understanding by any patient.
4. Use guidelines for lowest patient language level to ensure understanding.
5. Be prepared to educate in patient’s primary language.
6. Provide adequate time for patient to consider information, ask questions and respond to educational strategies and key points. Allow teaching carry-over and reinforcement of key educational points per patient’s learning style and pace.
7. Key educational areas for osteoporosis education include:
   a. Calcium intake – adequate calcium intake is important for muscle, nerve, cardiac and cellular functions. Adults younger than 50 years should have a calcium daily intake of 1,000 mg, and adults 50 years and older should have a calcium daily intake of 1,200 mg. When the body has inadequate intake of calcium in the diet, it obtains calcium by taking it from the bones; depleting calcium in the bones leads to increased risk of fractures.
   b. If adequate calcium intake cannot be assured through diet or in presence of proven osteoporosis, calcium supplementation may be prescribed. There are many calcium supplements available. FDA approved medications for osteoporosis include bisphosphonates, calcitonin, estrogens, parathyroid hormone and raloxifene.
   c. Vitamin D – this is a critical element needed for the body to absorb calcium. Vitamin D can be obtained through exposure to direct sunlight and through dietary intake. Adults younger than 50 years should have a Vitamin D daily intake of 400 to 800 IU, and adults older than 50 years should have a Vitamin D daily intake of 800 to 1000 IU.
   d. If adequate Vitamin D intake cannot be assured through diet or sunlight exposure, supplementation may be prescribed. The most common forms of Vitamin D supplementation are known as Vitamin D_3 (cholecalciferol) and Vitamin D_2 (ergocalciferol).
   e. Regular weight bearing exercise is important. Most recommended exercises include weight bearing, especially of the long bones of the legs and arms, and include walking, stair climbing, racquet ball type sports (tennis), hiking or dancing.
   f. Exercise programs created by a physical therapist can help a patient with a diagnosis of osteoporosis to have a focused program designed to improve extensor stabilization, postural alignment, weight bearing patterns and more. Patients with known osteoporosis should avoid flexion exercises as this type of exercise can increase compressive forces to the spine, leading to increased risk of spinal vertebral body compression fractures.
   g. Smoking should be avoided and alcohol intake should be limited.
   h. If completed, the results of bone mineral density (BMD) testing should be discussed. If no information is available from the patient about bone density testing, the clinician should discuss BMD testing with the healthcare provider.

AFTER CARE:
1. Document in patient’s record:
   a. Summary of education provided.
   b. Assessment of patient’s learning and evidence of patient mastery of educational information.
REFERENCES:
Goodman, C. & Fuller, K. (2009). Pathology: 
*Implications for the physical therapist. (3rd ed.).* Sanders. 
P.1163.

Skeletal – Pain Assessment

Strength of Evidence Level: 1

PURPOSE:
Home care staff will understand their role in the identification, assessment and management of the patient who has pain.

CONSIDERATIONS:
1. Patients who are non-verbal, experience cognitive deficits, and infants and young children may be unable to participate in a standard pain assessment. All homecare patients will need to be assessed for pain utilizing the most appropriate pain assessment tool. The following pain assessment tools should be used with the homecare patient populations:
   A. PAINAD, non-verbal and cognitively impaired patients (Appendix A)
   B. FLACC, two months of age through seven years of age (Appendix B)
   C. Wong-Baker Faces Pain Rating Scale – three years and older (Appendix C)
   D. 0-10 Numeric Pain Intensity Scale – for older patients with number concepts (Appendix D)
2. No single pain assessment tool is recommended. However, a standardized tool should be selected and used following administration directions. (Appendix A)
3. In response to M1240 pain should be assessed “at its worst during the past 24 hours” (CMS Quarterly Q&As – July 2013).
4. Pain should be considered the fifth vital sign, and best practice standards reflect that pain is assessed on each home visit. **Severe pain** is defined as a score of 7-10.

EQUIPMENT:
If using standardized assessment tool using visual component, such as FACES scale, have visual reference material ready.

PROCEDURE:
1. Explain assessment to patient.
2. Provide privacy, if appropriate.
3. Be prepared to ask about pain in patient’s primary language.
4. Provide adequate time for patient to consider pain questions and respond accordingly.
5. Administer standardized pain assessment based on clinician’s assessment of most appropriate pain assessment tool to use.
6. Key factors regarding pain to assess:
   a. Location – exact site if possible to locate; if multiple sites are they related?
   b. Intensity – maximal and minimal pain levels
   c. Duration – length of time at maximal pain, ramp-up and ramp-down time frames
   d. Frequency – how often pain occurs
   e. Flare-ups – what aggravates the pain?
   f. Cool-downs – what helps decrease the pain?
7. Clinician should observe any key factor information in Step 6 above with quality of movement and ability to participate in activities for self-care or pleasure.

AFTER CARE:
1. Document in patient's record:
   a. Pain assessment findings.
   b. Standardized pain tool used.
   c. Patient's response to assessment.
   d. Any recommended interventions based on findings from pain assessment.

REFERENCES:

Skeletal – Posture Assessment

Strength of Evidence Level: 1

PURPOSE:
To assess overall posture and alignment using the principle of Florence Kendall's Plumb Line Alignment through key skeletal locations.

CONSIDERATIONS:
1. Patients with cognitive deficits may be unable to follow positioning commands necessary to participate in a postural assessment.
2. Caution should be used with postural assessment in the presence of:
   a. Suspected or actual fracture location.
   b. Osteoporosis.
   c. Spondylolisthesis.
   d. Postural restrictions.
   e. Joint restrictions.
   f. Reported pain prior to assessment or pain upon postural assessment movement indicates patient discomfort.
3. Assessment may be performed as component of functional assessment and activities of daily living (ADL) assessment.
4. Special consideration should be used when assessing head, neck and spine alignment.
5. Postural alignment may be affected by restrictions, and the clinician should exercise caution not to attempt to coach or “assist” a patient to align beyond the customary or pain-free range tolerated by the patient.
6. Postural assessment can be assessed while patient is standing, which is the preferred position; a more limited postural assessment can take place while the patient is seated.
7. Plumb line alignment can be shown as the body alignment against a plumb line dropped from head to feet, with alignment noted from the side as the “line” drops from the ear to shoulders through trunk and hip to knee and foot. Refer to Posture Assessment Tool.

EQUIPMENT:
If seated, use firm surface chair with back
A body diagram may be used to show plumb alignment
If clinician is measuring leg length, a tape measure is needed

PROCEDURE:
1. Ensure patient is safe while standing during postural assessment; if the patient uses an assistive device, such as a walker or cane, use the device during the assessment.
2. Explain postural assessment to patient, including need for clinician to palpate key bony landmarks, such as neck or pelvis, if necessary.
3. Provide privacy, if appropriate.
4. Observe the patient while he/she is standing from head to feet, observing from front, back and sides.
5. Ask patient to stand normally to determine postural alignment. Observe patient dorsal, ventral and lateral positions gauge posture alignment.
6. Key postural alignment to observe is:
   a. Head orientation over neck and shoulders –
      1. Head is forward, down, deviated to one side, tilted up and back or held over neck and shoulders.
      2. Is normal curve present in Cervical-spine
      3. Palpating occipital area, cervical spine or jaw may be needed.
   b. Shoulders orientation to head and trunk –
      1. Shoulders are held up or down, forward rotation, pulled back-retracted or held in alignment,
      2. Palpating shoulder blades, shoulder joint and sternoclavicular area may be needed.
   c. Trunk and rib cage –
      1. Rib cage is even side-to-side, is one side higher or rotated? Note posterior trunk if spine is aligned or if scoliosis or kyphosis is present and determine whether normal curve is present in Thoracic-spine?
      2. Palpating rib cage, sternum and thoracic spine may be needed.
   d. Hips and pelvis –
      1. Are they equal or is one hip higher or rotated, is pelvis forward or posterior, is pelvis held flat (lordodic), is normal L-spine curve present?
      2. Palpating anterior and posterior iliac crests, spine and lower abdomen may be needed.
   e. Knees –
      1. Are in flexion, extension or hyperextension?
      2. Patellias are aligned in central or angled in or out?
      3. Knee valgus or varus present?
      4. Palpating knee, anterior and posterior thighs and calves may be needed.
   f. Feet –
      1. Are flat on floor, pronated or supinated, other position deviations?
      2. Palpating ankle, foot or instep may be needed.
7. Clinician should compare body alignment and positions side-to-side and front-to-back.
8. Clinician should observe for any pain or joint swelling if applicable.

AFTER CARE:
1. Document in patient's record:
   a. Postural alignment assessed.
   b. Patient's response to assessment.
   c. Follow-up recommendations based on assessment findings.
PURPOSE:
To apply an artificial replacement for a missing portion of the body.

CONSIDERATIONS:
1. Each prosthesis is individually designed for the patient.
3. Do not apply a prosthesis without specific instruction and demonstration by the nurse or therapist.
4. Careful skin hygiene is essential to prevent skin irritation, infection and breakdown. Any untoward effects should be reported immediately.
5. Check the prosthesis and socks to assure that they are clean and dry before donning. A new fresh sock should be used every day.
6. The prosthesis should be maintained and cleaned according to manufacturer's directions.

EQUIPMENT:
Prosthesis

PROCEDURE:
1. Adhere to Standard Precautions.
2. Explain procedure to patient.
3. Review and follow nurse or therapist's instructions.
4. Check skin of stump for evidence of pressure areas. Place a sock over the residual limb before donning the prosthesis. This protects the skin from injury and sores. Be sure seams are facing outward and away from bony prominences. Do not place adhesive bandages or tape on the leg before wearing the prosthesis.
5. Apply as instructed.

AFTER CARE:
1. Document the procedure in the patient's record.
2. Document the patient's response to the procedure.
3. Report any changes in the patient's condition to supervisor.

REFERENCES:
Skeletal – Spinal Precautions

Strength of Evidence Level: 1

PURPOSE:
To prevent injury to the spine.

CONSIDERATIONS:
1. The spine is the core of the body structure. Protecting this cord is essential to maintaining proper body function.
2. Spinal precautions frequently refer to the immobilization of the cervical spine to prevent injury. Examples of this precaution include:
   a. When a patient is actively sustaining a seizure.
   b. Following trauma when patient communication is limited.
   c. Following trauma that results in cervical pain of unknown cause.
   d. Following a motor vehicle accident.
3. In the home, clinicians will encounter spinal precautions as prescribed by the physician following injury or surgery.
4. Immobilization of the spine is performed through the use of rigid or semi-rigid bracing following injury or surgery.

EQUIPMENT:
Back brace
Neck brace
Reacher
Sock aide
Long handled shoe horn

PROCEDURE:
1. Review the patient’s chart for current spinal precaution orders.
2. Instruct the patient in current precautions.
3. Instruct the patient to abstain from smoking to increase the blood supply to the spine.
4. Instruct the patient to abstain from the use of alcohol.
5. Precautions may include:
   a. Lifting restrictions.
   b. No straining during bowel movements.
   c. Movement limitations such as:
      (1) No twisting.
      (2) No bending.
      (3) No lifting overhead.
6. Instruct the patient to use the log rolling technique when getting out of bed to avoid twisting.
7. Instruct the patient not to sit in a soft chair.
8. Instruct the patient to sit with correct posture without slumping.
9. Follow physician’s instructions for the use of a back brace.
10. Follow proper body mechanics (See Patient and Staff Safety - Body Mechanics)
11. Follow safety instructions to prevent falls.
12. Instruct the patient to bend slightly at the knees instead of leaning over for activities, such as washing hands and brushing teeth.
13. Instruct the patient to use devices such as a reacher, sock aide and long handled shoe horn to prevent twisting and reaching.

AFTER CARE:
1. Instruct the patient to inform the nurse or therapist of any problems with the understanding of or ability to follow precautions.
2. Document in the patient’s chart the patient’s understanding, compliance and tolerance to precautions.

REFERENCES:
Skeletal – Stump Shrinkers

Purpose:
To reduce, prevent or control swelling (edema) in the residual (amputated) limb.

Considerations:
1. Stump shrinkers are designed to fit snugly and apply pressure to the soft tissues of the stump.
2. The shrinker can be applied over dressings, as necessary. Dressings should be thin (i.e. a 4x4 opened) so that they will not affect the pressure of the shrinker.
3. It is important that this pressure be greatest at the end (distally) and gradually lessens toward the thigh (proximally).
4. If the shrinker is loose at the lower end (distally), then the tighter area higher (proximally) can stall circulation and actually increase swelling (edema).
5. Stump shrinkers, such as ace wraps, should apply even pressure that gradually lessens at the top (proximally). They should always extend past the knee to minimize window edema at the knee.

Equipment:
Shrinker specific for the patient

Procedure:
1. Adhere to Standard Precautions.
2. Explain procedure to patient.
3. Review and follow physician orders.
4. Turn the shrinker inside out and stretch it open to contact the end of the stump. This should minimize any tension on the suture line.
5. Ask the patient to hold the leg straight and warn that they will feel a momentary pressure.
6. Stretch the lower half of the shrinker firmly upward. Then, let the material relax. This should ensure maximum compression at the end (distally).
7. The top (proximal) half of the shrinker can now be pulled up into position. This should not be stretched as much as the lower half.
8. The shrinker will tend to slide down and should be checked regularly. The patient should be instructed whenever possible to make certain the shrinker is in proper position.
9. If redness or other signs of excessive pressure are noticed, discontinue use of the shrinker and contact the primary nurse, therapist or physician.

References:
Ohio State University Medical Center. Amputee stump wrapping. Retrieved February 5, 2010, from http://medicalcenter.osu.edu/search/Pages/index.aspx?s=MedicalCenter&k=stump
Skeletal – Stump Wrapping

Strength of Evidence Level: 1

PURPOSE:
To prevent the residual limb from swelling and provide pressure for shaping the limb so that it will fit comfortably in a prosthesis.

CONSIDERATIONS:
1. Wrap residual limb before putting on underclothes.
2. Always wrap in a diagonal direction. Wrapping straight across the limb can cut off the blood supply.
3. Keep the tension greatest at the end of the limb. Gradually reduce the tension as you work up the lower leg.
4. Make sure there are at least 2 layers of bandage and that no layer directly overlaps another. Keep the bandage free of wrinkles and creases.
5. Be sure there is no puckering or bulging of the skin.
6. Rewrap the limb every 4-6 hours, or whenever the bandage starts to slip or feel loose.
7. Tingling or throbbing anywhere in the limb may be a sign that the tension is too tight. Rewrap the bandage, using less tension.
8. Wash the ace wrap every 2-4 days. Dry flat.
9. Make sure all areas are covered.

EQUIPMENT:
One or two clean 4-inch elastic bandages sewn together

PROCEDURE:

Pre-Care
1. Adhere to Standard Precautions.
2. Explain procedure to patient.
3. Review and follow nurse or therapist's instructions.

Above Knee Amputation (AKA)
1. Begin at the bottom and in front of the stump. Cover the bottom of the stump and continue upward toward the top of the stump.
2. Wrap 2-4 diagonal turns around the stump. This keeps the ace wrap over the end of the stump in place.
3. Begin a figure 8 or cross-over pattern to cover the sides of the stump.
4. Pressure should be directed upward and outward from the end of the stump as you wrap.
5. Take the bandage from the front, inside of the thigh, and wrap upward and outward across the front of the hip joint.
6. Carry the wrap around behind the hips at the level of the hip bones.
7. Return the ace wrap to the stump and finish wrapping with more figure 8 turns.
8. Anchor the end of the wrap with the velcro closure.
9. Avoid using safety pins, clips or adhesive tape to reduce injury to the skin.

Below Knee Amputation (BKA)
1. Begin in front, just above the knee and wrap the ace around the leg to anchor it.
2. Then coming around to the front, wrap the ace down and over the front of the stump.
3. Begin a figure 8 design, covering the corners of the stump first. Put more pressure at the bottom of the stump than at the top so you do not cause a tourniquet effect to slow blood flow to the stump.
4. Bring the wrap diagonally across and around the leg with more figure 8 turns.
5. Anchor the end of the wrap with velcro or tape to finish.
6. Avoid using safety pins, clips or adhesive tape to reduce injury to the skin.

AFTER CARE:
1. Make sure the patient is comfortable.
2. Used alcohol-based hand rub for hand hygiene.

REFERENCES:
(Ohio State University Medical Center.) Amputee stump wrapping. Retrieved February 5, 2010, from http://medicalcenter.osu.edu/search/Pages/index.aspx?s=MedicalCenter&k=stump

PURPOSE:
To mechanically stretch and mobilize a joint. Traction can decrease pain, stretch tight soft tissue, straighten spinal curves and gently expand joint spaces.

CONSIDERATIONS:
1. Traction is usually used to relieve nerve compression, herniated disc in the spine, pinching of ligaments, bone spurs, radiculopathy, muscle spasms/muscle guarding and widen narrowed joint spaces.
2. Traction is contraindicated for those with osteoporosis, rheumatoid arthritis, infection, acute strains/spains, hypermobility or tumor.
3. Care should be taken with conditions such as pregnancy, cardiovascular disease, respiratory problems, claustrophobia, hernias and temporomandibular joint problems.
4. There are home traction devices for the leg, cervical spine and lumbar spine.
5. Many insurance companies have found home traction devices to be experimental or have limited evidence to support their use and will not cover this procedure.
6. Traction can be applied continuously or intermittently.
7. Manual traction should only be performed by a qualified clinician.
8. Leg traction, also known as Buck’s Traction, is applied using a pulley system placed at the end of the bed connected to a traction boot applied to the patient’s leg.
9. Home cervical traction is applied in two methods:
   a. Halter and over the door pulley system which incorporates a weighted bag. The bag is filled with the prescribed amount of water to give the appropriate amount of traction, average is 24.3 pounds.
   b. Pneumatic collars which are gradually pumped full of air to apply traction between the base of the cervical spine and the jaw/occipital area.
10. Lumbar traction is applied in two main methods:
    a. 90/90 Positioner is a sling-type device which positions the patient in 90 degrees of hip flexion and 90 degrees of knee flexion. After the patient is positioned in the device the handle is pulled until the desired amount of traction is applied, placing the pelvis in posterior pelvic tilt.
    b. Saunders pneumatic lumbar traction uses a portable traction device with a friction-free track that allows the patient to use the pneumatic pump to provide up to 210 pounds of traction.

EQUIPMENT:
Traction device
Pillows or towel rolls for positioning

PROCEDURE:
1. Set up the traction device according to the manufacturer’s directions.
2. Remove all barriers that would prevent optimal use of the traction device.
3. Explain the procedure to the patient.
4. Comfortably position the patient in the traction device.
5. Ensure that the patient is relaxed.
6. Slowly and steadily apply the traction.
7. Follow the physician or therapist’s directions for the duration of treatment. This is usually 15 to 20 minutes.
8. If pain increases during the session, check the patient’s positioning, encourage relaxation or reduce the weight. If pain continues to increase, terminate the session.
9. Release the traction following the prescribed duration.
10. Have the patient stay in the current position without the traction for a few minutes then slowly move out of the device. Guard the patient while they are getting out of the device in the event of dizziness, nausea or unsteadiness.

AFTER CARE:
1. Instruct the patient to inform the nurse or therapist of any adverse reactions or unusual pain.
2. Monitor the vital signs and report any adverse findings.
3. Document in the patient’s chart the tolerance to the session.
4. Return any moved equipment, such as bed rail and trapeze, to their original positions.

REFERENCES:


Appendix A

Pain Assessment in Advanced Dementia Scale (PAINAD)

Instructions: Observe the patient for five minutes before scoring his or her behaviors. Score the behaviors according to the following chart. Definitions of each item are provided on the following page. The patient can be observed under different conditions (e.g., at rest, during a pleasant activity, during caregiving, after the administration of pain medication).

<table>
<thead>
<tr>
<th>Behavior</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breathing</td>
<td>Normal</td>
<td>Occasional labored breathing</td>
<td>Noisy labored breathing</td>
<td>Score</td>
</tr>
<tr>
<td></td>
<td>• Normal</td>
<td>• Short period of hyperventilation</td>
<td>• Long period of hyperventilation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Occasional moan or groan</td>
<td>• Low-level speech with a negative or disapproving quality</td>
<td>• Repeated troubled calling out</td>
<td></td>
</tr>
<tr>
<td>Negative vocalization</td>
<td>None</td>
<td>Occasional moan or groan</td>
<td>Repeated troubled calling out</td>
<td></td>
</tr>
<tr>
<td>Facial expression</td>
<td>Smiling or inexpressive</td>
<td>Sad</td>
<td>Facial grimacing</td>
<td></td>
</tr>
<tr>
<td>Body language</td>
<td>Relaxed</td>
<td>Tense</td>
<td>Rigid</td>
<td></td>
</tr>
<tr>
<td>Consolability</td>
<td>No need to console</td>
<td>Distracted or reassured by voice or touch</td>
<td>Unable to console, distract, or reassure</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL SCORE

(Warden et al., 2003)

Scoring:
The total score ranges from 0-10 points. A possible interpretation of the scores is: 1-3=mild pain; 4-6=moderate pain; 7-10=severe pain. These ranges are based on a standard 0-10 scale of pain, but have not been substantiated in the literature for this tool.

Source:
Appendix B

How to Use the FLACC

In patients who are awake: observe for 1-5 minutes or longer. Observe legs and body uncovered. Reposition patient or observe activity. Assess body for tenseness and tone. Initiate consoling interventions if needed.

In patients who are asleep: observe for 5 minutes or longer. Observe body and legs uncovered. If possible, reposition the patient. Touch the body and assess the tenseness and tone.

FACE

- **Score 0** if the patient has a relaxed face, makes eye contact, shows interest in surrounding
- **Score 1** if the patient has a worried facial expression, with eyebrows lowered, eyes partially closed, cheeks raised, mouth pursed
- **Score 2** if the patient has deep furrows in the forehead, closed eyes an open mouth, deep lines around nose and lips

LEGs

- **Score 0** if the muscle tone and the motion in the limbs are normal
- **Score 1** if patient has increased tone, rigidity, or tension; if there is intermittent flexion or extension of limbs
- **Score 2** if the patient has hypertonicity, the legs are pulled tight, there is exaggerated flexion or extension of the limbs, tremors

Activity

- **Score 0** if the patient moves easily and freely, normal activity or restrictions
- **Score 1** if the patient shifts positions, appears hesitant to move, demonstrates guarding, a tense torso, pressure on a body part
- **Score 2** if the patient is fixed in a position, rocking; demonstrates side-to-side head movement or rubbing of a body part

Cry

- **Score 0** if the patient has no cry or moan, awake or asleep
- **Score 1** if the patient has occasional moans, cries, whimpers, sighs
- **Score 2** if the patient has frequent or continuous moans, cries, grunts

Consolability

- **Score 0** if the patient is calm and does not require consoling
- **Score 1** if the patient responds to comfort by touching or talking in <30 seconds to 1 minute
- **Score 2** if the patient requires constant comforting or is inconsolable

Each category is scored on the 0-2 scale, which results in a total possible score of 0-10.

**Interpreting the Score:**
0 = Relaxed and Comfortable
1-3 = Mild discomfort
4-6 = Moderate pain
7-10 = Severe pain or discomfort or both
Appendix B

Name ___________________________ Date ______________________

FLACC Scale: Face, Legs, Activity, Cry, Consolability

<table>
<thead>
<tr>
<th>Category</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACE</td>
<td>No particular expression or smile</td>
<td>Occasional grimace or frown, withdrawn, disinterested</td>
<td>Frequent to constant frown, clenched jaw, quivering chin</td>
</tr>
<tr>
<td>LEGS</td>
<td>Normal position Or Relaxed</td>
<td>Uneasy Restless Tense</td>
<td>Kicking Or Legs drawn up</td>
</tr>
<tr>
<td>ACTIVITY</td>
<td>Lying quietly Normal position Moves easily</td>
<td>Squirming Shifting back/forth Tense</td>
<td>Arched Rigid Or Jerking</td>
</tr>
<tr>
<td>CRY</td>
<td>No cry Awake or asleep</td>
<td>Moans or Whimpers Occasional Complaint</td>
<td>Crying steadily Screams or Sobs Frequent complaints</td>
</tr>
<tr>
<td>CONSOLABILITY</td>
<td>Content Relaxed</td>
<td>Reassured by occasional touching, hugging or 'talking to' Distractible</td>
<td>Difficult to console or comfort</td>
</tr>
</tbody>
</table>

INSTRUCTIONS FOR USE

1. Rate patient in each of the five measurement categories
2. Add the scores together
3. Document the total pain score
Appendix C

Patient Name: _________________________________  Date: _______________

**Wong-Baker FACES™ Pain Rating Scale**  
**Instruction For Usage**

Explain to the person that each face is for a person who has no pain (hurt) or some, or a lot of pain.

Face 0 doesn't hurt at all. Face 2 hurts just a little bit. Face 4 hurts a little bit more. Face 6 hurts even more. Face 8 hurts a whole lot. Face 10 hurts as much as you can imagine, although you don’t have to be crying to have this worst pain.

Ask the person to choose the face that best describes how much pain he has.

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www.WongBakerFACES.org
Appendix D

Patient Name: _______________________________ Date: ____________

0-10 Numeric Pain Intensity Scale*

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No pain</td>
<td>Moderate pain</td>
<td>Worst possible pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*If used as a graphic rating scale, a 10-cm baseline is recommended.