Prevention of Cumulative Trauma Injuries

CCP Online Orientation

Objectives

- To gain an understanding of:
  - The prevalence and socioeconomic impact of cumulative trauma injuries in healthcare.
  - The principles of body mechanics including spinal alignment, center of gravity, base of support, leverage, force, and friction.
  - The use of the principles of body mechanics with safe patient handling procedures for bed mobility and transfers.
  - The ways to prevent overuse syndromes, such as wrist tendonitis, when working on a computer.
  - Positioning and mobility techniques that are safe for the patient/resident and caregiver.

Statistics for Musculoskeletal Injury

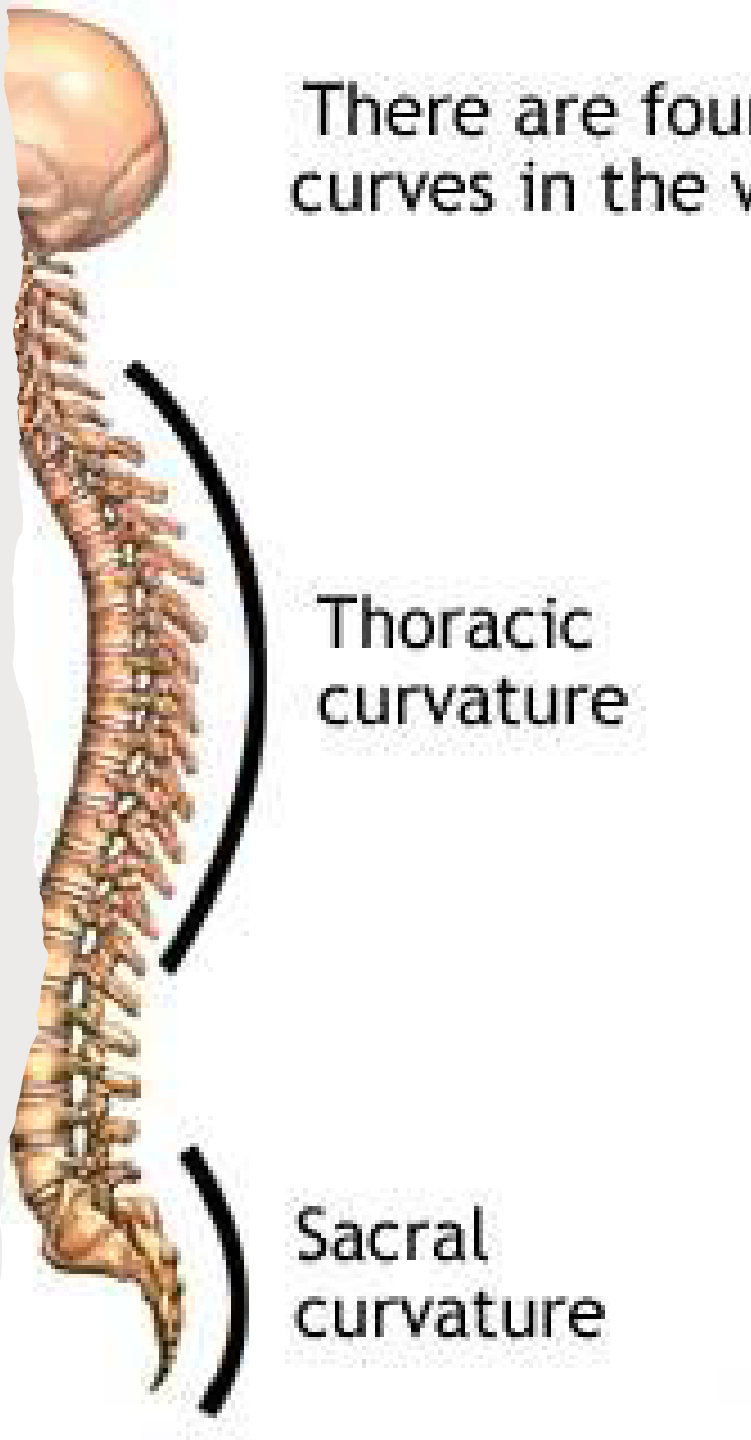
- The most common type of musculoskeletal injury (MSD), also known as ergonomic injuries, in healthcare providers is a back injury related to repeated manual patient/resident handling activities.

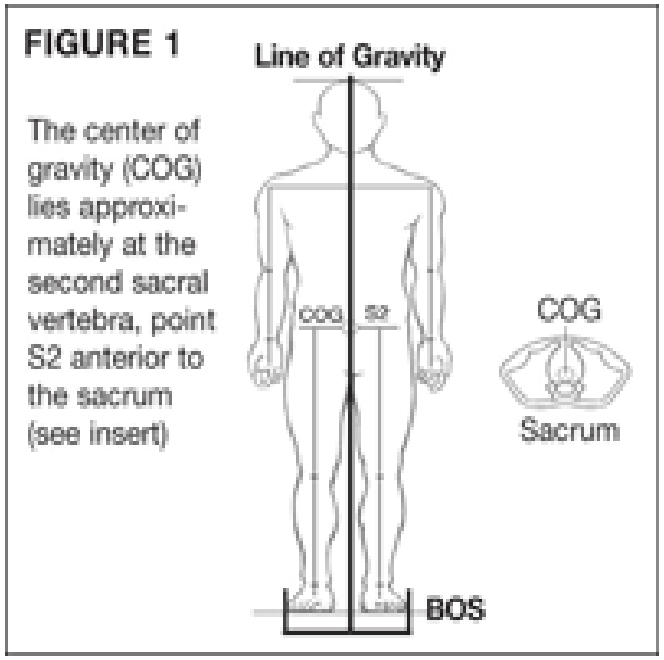
- Low back pain is the most common occupational health problem affecting nurses.

- Working at a computer workstation all day can take a toll on the body – especially the neck, eyes, and wrists – due to poor posture and repetitive motion.

Body Mechanics Principles

- Body Alignment
  - The spine has natural curves which create an S-shape
  - Maintaining the S-shape of the spine gives it better mechanical advantage and protects it
  - Stooping and twisting movements deviate from the S-shape and create the potential for back injuries





Body Mechanics Principles

- Balance is best maintained when the center of gravity falls directly over the Base of support
    - Objects closer to the center of gravity are moved with the least effort.
- Greater stability and balance is enhanced when:
    - The base of support is widened (spreading feet further apart)
    - The center of gravity is lowered (bending the knees)
- Try to keep the work directly in front to avoid rotation of the spine.
- Put the bed at the correct height (waist level when providing care; hip level when moving a patient)

Body Mechanics Principles

- Lift using large muscle groups in the buttocks, legs, and arms instead of smaller, less efficient muscles in the back
- Pull rather than push to create less friction and resistance
- Move an object along a level surface requires less energy than moving an object up an incline or against the force of gravity

Safe Patient Handling

- Safe patient handling (SPH) techniques, where healthcare providers use assistive equipment during transfers, is effective in reducing the incidence of MSDs related to the handling of patients/residents (Water, Nelson, Hughes & Menzel, 2009).
    - NIOSH, has established that, for occasional lifting where the load is held close to the body, with no twisting, and at about waist height and where the load has good hand holds, the typical industrial worker could lift about 51 pounds without a significant increase in risk of injury.
    - As these factors deviate from the ideal, the amount of weight that can safely be lifted by an employee is decreased

Preparing for patient movement and handing

- Assess patient/resident ability to participate.
- Gather appropriate SPH equipment and other staff members as needed.
- Organize the physical environment to ensure safe completion of the task.
- Position self using principles of body mechanics.
- Explain to the patient/resident what activities you plan and what you expect of them.

Moving a Patient/Resident Up in Bed

- May use a lift/pull sheet if patient/resident able to assist or SPH equipment (friction reducing device, lift, etc.) if patient/resident unable to assist.
- Flatten the head of the bed.
- Move pillow away.
- Ask the patient/resident to help if able by bending their legs and pushing.
- Supporting the buttocks and chest, slide the patient/resident up in bed with the lift/pull sheet if patient/resident able to assist or with SPH equipment if the patient unable to assist.
- Shift your weight in that direction the patient/resident is moving.

Turning a Patient/Resident

- Raise the side rail and the bed equal to the center of gravity.
- May use a lift/pull sheet if patient/resident is able to assist or SPH equipment (friction reducing device, lift, patient/resident turning equipment, etc.) if patient/resident is unable to assist.
- Lower the head of the bed.
- Move the patient/resident closer to the side of the bed opposite the turn.
- Ask the patient/resident to help if able by bending and crossing their leg and having them grab the side rail to pull themself over on to their side.
- Pull the patient/resident to a side-lying position with the lift/pull sheet if the patient/resident is able to assist or use SPH equipment if the patient/resident unable to assist.

Moving a Patient/Resident onto a Stretcher

- Have patient/resident transfer from one bed on to stretcher if patient/resident is able to assist and can bear weight.
- Use SPH equipment (friction reducing devices, lifts, etc.) if patient/resident unable to transfer self.
- Adjust the height of the bed to slightly below the stretcher.
- Head of the bed should be flat.
- Maintain normal curves your spine throughout the transfer.

Assisting a Patient/Resident to a Sitting Position

- Raise the side rail and the bed to the height of your center of gravity.
- Turn the patient/resident to their side. Use a lift/pull sheet if patient/resident able to assist or SPH equipment (lift) if patient/resident unable to assist
- Ask the patient/resident to help if able by bending and crossing their legs and grabbing the side rail to pull over on to their side
- Supporting the trunk and thighs, simultaneously swing the legs over the edge while raising the trunk. Don’t forget to bend your knees!
- Be sure to keep supporting the patient/resident until they are well-balanced.

Transferring

- If patient/resident able to assist use a gait /transfer belt. Transfer towards stronger side.
- Have the patient/resident scoot to edge of chair. Feet on floor, shoulder width apart, and have them lean forward.
- Bend your knees and provide assistance by grasping the gait belt.
- Maintain lumbar curve (stick your butt out!).
- Pivot/small turning steps to chair or bed.
- If patient/resident unable to assist, gather SPH equipment and two or more caregivers to assist.

Use of Mechanical Lifts for SPH

- There are many types of lifts
  - Powered, mechanical full body mobile or ceiling lifts
  - Powered Hoyer lifts
  - Powered, mobile Sit-to-stand lifts
- All students and healthcare providers need to be educated in the use of the equipment prior to use.

Transfer Problem-Solving: DECODE

D – Diagnosis	Know the diagnosis, precautions, and transfer status.
E – Environment	De-clutter and organize your surroundings prior to transfer.
C – Communication	Talk with the patient/resident and other healthcare providers about the transfer.
O – Options	What is the safest option for transfer? Has the patient's/resident's status changed?
D – Decision	Make the best decision about the type of transfer to use.
E – Equipment	Do you have the required equipment nearby and setup? Is it safe? Is the wheelchair locked? Is the patient/resident wearing non-skid socks or shoes?

Remember When Handling Patients/ Residents

Do

- Transfer towards the patient's/resident's stronger side
- Squat: bend your knees and use your legs to lift
- Know the patient's status and abilities; encourage participation
- Raise objects and surfaces to your waist and keep objects close to the body
- Use SPH equipment per healthcare organization's policy and get help if patient /resident unable to assist

Don't

- Let a patients/residents hang onto your neck
- Pull patient's/resident's arms to lift
- Bend forward only at the waist
- Rotate or twist your back during lifting activities

References

- American Nursing Association. (n.d.). Handle with care fact sheet. Retrieved from https://www.nursingworld.org/practice-policy/work-environment/health-safety/handle-with-care/.
- Centers for Disease Control. (2022) Acute Back Pai. Retrieved from https://www.cdc.gov/acute-pain/low-back-pain/index.html
- Water, T. R., Nelson, A., Hughes, N., & Menzel, N. (2009). Safe Patient Handling Training for School of Nursing. Center for Disease Control. Retrieved from http://www.cdc.gov/niosh/docs/2009-127/pdfs/2009-127.pdf
- Gilchrist, A., & Pokorna, A. (2021). Prevalence of musculoskeletal low back pain among registered nurses: Results of an online survey. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1111/jocn.15722

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