Preventing Falls with Restorative Nursing & Mobility Enhancement Programs

Presented By:
Jeri Lundgren, RN, BSN, PHN, CWS, CWCN
President
Senior Providers Resource, LLC

Keeping Residents Mobile

- Mobility – the ability to efficiently navigate and function in a variety of environments, requires balance, agility and flexibility.

Clinical Foundation

Why?
• Humans are Meant to be Upright & Mobile

Optimal Body Function – Upright for 16 hours/day

• Immobility, potential root cause of the following:
  • Falls
  • Skin Breakdown
  • Incontinence & UTIs
  • Development of diseases – Diabetes, Cardiac, etc.
  • Weight loss – muscle wasting
  • Depression
  • Delirium/confusion
  • Respiratory Infections
  • Constipation
  • Staff injuries

• Root Cause of Falls
  • Falls
    • Strength, Balance and Endurance issue
• Impact of Falls
  • Fractures
    • 95% from falling, most often by falling sideways
    • 1 out of 5 hip fracture patients dies within a year of their injury

• The Effects of Immobility
  • Loss of Independence & Psychosocial effects
  • Fear of falling – leading to social isolation

• The Causes of Immobility in the Nursing Home
  • Staff
    • Residents moving too slow or taking too long
    • Restricting them from moving on their own
• The Effects of Immobility – Muscles
  • There is a 12% rate of loss of muscle strength and muscle atrophy (wasting away) in one week
  • In as little as 3-5 weeks of immobility, almost half the normal strength of a muscle is lost


• The Effects of Immobility – Muscles
  • First muscles to become weak are in the lower limbs
  • Keeping a muscle in a contracted position will significantly increase atrophy
  • In stroke paralysis or immobility due to splinting, muscles atrophy around 30-40%


• The Effects of Immobility – Muscles
  • It takes 4 weeks to recover from atrophy with exercise
  • Totally degenerated muscles are permanently replaced by fat and connective tissue
  • Disuse of the muscle will also effect the neuromuscular function – essentially the body forgets how to properly coordinate motor function

• The Effects of Immobility – Muscles
  • Complete rest will decrease endurance levels
  • Causing fatigue, affecting motivation
  • Then leading to a cycle of greater inactivity

• The Effects of Immobility – Connective Tissue
  • Connective tissue consists of:
    • Tendons
    • Ligaments
    • Articular cartilage (covers joints)
  • In 4-6 days after immobility changes in the structure and function of connective tissue become apparent
  • These changes remain even after normal activity has been resumed!!

• The Effects of Immobility – Contractures
  • Contracture:
    A decrease from the normal range in parts of the body responsible for motion (joints, ligaments, tendons and related muscles)
  • In 2-3 weeks of immobilization a firm contracture can develop
  • After 2-3 months of immobility, surgical correction may be needed.
• The Effects of Immobility – Bone
  • Disuse osteoporosis
  • Bones most susceptible:
    • Vertebra
    • Long bones of the legs
    • Heels
    • Wrists

• The Effects of Immobility – Bone
  • Within 3 weeks of immobilization calcium clearance is 4-6 times higher then normal and hypocalcaemia can occur. This can lead to:
    • Formation of calcium-containing kidney stones
    • Anorexia
    • Nausea
    • vomiting

• The Effects of Immobility – Skin
  • Normally we continually shift our weight, even during sleep
  • Immobility or decreased sensation prevents shifting in weight leading to prolonged pressure on skin capillaries, ultimately resulting in death of skin tissue
  • Formation of pressure ulcers
• The Effects of Immobility – Cardiac System
  • When an individual is confined to bed, there is a shift of fluids away from the legs towards the abdomen, thorax and head.
  • In as little as 24 hours, a shift of 1 liter of fluid from the legs to the chest
  • Increases venous return to the heart and elevated intracardial pressure

• The Effects of Immobility – Cardiac System
  • Increases in blood volume and venous return stretch the right atrium in the heart
  • Stimulates the release of atrial natriuretic peptide (ANP) a powerful diuretic
    • Increase in urine output
    • Decreases in blood volume
  • Leads to dehydration

• The Effects of Immobility – Cardiac System
  • Immobility leads to atrophy and loss of muscle mass in the legs
  • This impairs the muscle pump action which reduces venous return
  • Lower extremity edema
    • Ulceration
    • Venous dermatitis
    • Cellulitis
• The Effects of Immobility – Cardiac System
  • The heart is a muscle and too needs activity to stay healthy
  • Immobility can lead to atrophy of the heart muscle

• The Effects of Immobility – Cardiac System
  • Postural hypotension (drop in blood pressure upon standing) can be noted in little as 20 hours of immobility
  • This can lead to dizziness, anxiety and falls
  • Postural hypotension, even in fit, healthy adults can take several weeks to fully recover once they start moving

• The Effects of Immobility – Respiratory System
  • Development of fixed contractures of the costovertebral joints, leading to inability to expand the lungs
  • Risk of lung collapsing
  • Pooling of mucus in the lower airways
  • Increased risk of respiratory infections
    • Stroke patients confined to bed for 13 days or more are 2-3 times more likely to develop a respiratory infection than mobile people
• The Effects of Immobility – Hematological
  • Decrease in oxygen saturation
  • Increase in carbon dioxide concentrations
  • Leads to Hypoxia
    • Acute confusion
    • Can develop quickly over a number of hours
    • Symptoms can fluctuate during the day and worsen at night

• The Effects of Immobility – Hematological
  • 13% of patients in bed for long periods may develop deep vein thrombosis (DVT)
  • Increases risk for emboli
    • In the lungs – pulmonary embolism
    • Cerebral circulation within the brain – Stroke
    • Coronary circulation of the heart – myocardial infarction

• The Effects of Immobility – Gastrointestinal
  • Reduced sense of taste, smell and loss of appetite
  • Difficulty swallowing
  • Constipation
  • Fecal impaction

• The Effects of Immobility – Endocrine System
  • Decrease in metabolic rate
  • In as little as 10 hours
  • Insulin resistance, impaired glucose tolerance and the subsequent development of type 2 diabetes

• The Effects of Immobility – Renal System
  • Functional Incontinence
  • Kidney stones
  • Urinary retention (overflow)
  • Urinary tract infection
  • Urosepsis

• The Effects of Immobility – Nervous System
  • Sensory deprivation
  • Depression
  • Disorientation
  • Confusion
  • Restlessness
  • Agitation/aggression
  • Anxiety
  • Reduced pain threshold
  • Difficulty problem solving
  • Loss of motivation
• The Effects of Immobility – Nervous System
  • Insomnia
  • For normal function we need:
    • 16 hours of activity
    • 7-8 hours of sleep
  • Consistently sleeping for more than 9 hours or fewer than eight hours has a negative impact on physiological, psychological and cognitive functions

• The Aging Process Impact on Mobility
  • Sarcopenia
    • The loss of muscle mass with age
    • Each decade the aging adult has 5lbs less muscle and about 15 pounds more fat
    • Resulting in a 20lbs change in physical status and appearance

• The Aging Process Impact on Mobility
  • The primary cause of the loss of muscle mass

DISUSE
• **The Aging Process Impact on Mobility**
  • Dieting alone without exercise does not have high success rates
  • 25% percent of weight lost during low calorie diets without exercise is actually lost muscle tissue
  • Less muscle leads to slower metabolism
    • Reduced muscle tissue is largely responsible for a 2 – 5% per-decade decrease in our resting metabolism
    • Slower resting metabolism leads to calories previously used by muscle are routed into fat storage

• **The Aging Process Impact on Mobility**
  • All adults should perform regular endurance exercise such as walking and cycling to enhance cardiovascular function, However
  • Aerobic activities do little to prevent gradual deterioration of the musculoskeletal system
  • One study of elite middle-aged runners, the subjects lost about 5lbs of muscle over a 10 year period in spite of extensive aerobic training.

• **The Effects of Immobility**
  **The Solution – Strength Training**
  • Systemic strength training — use of resistance
    • Adding muscle
    • Losing fat
    • Raising resting metabolic rate
    • Increase daily expenditure
    • Increase bone density
    • Enhance glucose metabolism
    • Increase gastrointestinal transit
    • Lower resting blood pressure and pulse
    • Decrease in depression
**Strength Training Exercise program:**
- Studies have shown that muscle mass can be increased at essentially any age through systemic strength training even if they have never done strength training before.

![Image](image1.jpg)

**Frequency of Strength Training**
- Strength exercises may be productively performed two to three days per week.
- Research has shown that 2 days a week of strength training is beneficial and just as effective as 3 days.

![Image](image2.jpg)

**PREVENT THE EFFECTS OF IMMOBILITY**
Governance & Leadership

• Administrator, DON and Management must fully support the program and be actively involved

• Assess your current Programs to Identify a Starting point
  • What is the mind set of the staff?
  • How many of your Residents depend on wheelchairs for mobility?
  • What is the relationship between Nursing, Therapy and Activities?
  • Do you currently have a Restorative Nursing Program and what does that provide?
  • What types of activities do you have during the day and in the evenings?
  • Do you have a sleep hygiene program?

• Get ALL staff on board
  • Initial Training on WHY???
Aim Toward Independence

“How to”

Rather than

“Doing for”

You are the coach!!

• Assemble Your Team:
  • Therapy
  • Restorative Nursing – Lead Nurses and Lead Nursing Assistants
  • Nursing assistants – All shifts
  • Floor nurses - all shifts
  • Nurse Managers/Supervisors
  • Physicians/Nurse Practitioners
  • Activities
  • Dietary
  • Maintenance
  • Housekeeping

What will be your facility’s benchmarking Data?

• Quality Measures
  • Long Stay:
    • Percent of Residents Experiencing One or More Falls with Major Injury
    • Falls
    • Activities of Daily Living Has Increased
• Environment
  • Floor surfaces: shiny, slippery, or do the surfaces change in areas (going from carpet to tile)
  • Grab bars and hand rails in good condition, clearly identified and throughout the entire building
  • Lighting bright no glare
  • Clear walkways
  • Contrasting colors

• Environment
  • Devices to promote self repositioning or mobility in resident rooms
  • Low beds ONLY for residents who cannot physically egress at all and roll out of bed
  • Proper width of the bed – wider widths (42 inches) shown to decrease falls
  • Careful use of floor mats
• **Environment**
  - Devices to promote self repositioning or mobility in resident rooms – for residents that can egress from bed
  - Proper egress height of the bed & mattress – feet flat on the floor with the knees slightly above a 90 degree angle
  - Mark the head board with tape for proper position of bed
  - Grab bars or transfer poles to stabilize

• **Environment**
  - Devices to promote self repositioning or mobility in resident rooms
    - Properly fitted and accessible
      - Wheelchairs
      - Walkers
      - Canes

• **Environment**
  - Devices to promote self repositioning or mobility in resident rooms
    - Clear path into the bathroom
    - Lighting at night – amber tones
    - Bathroom environment
      - Contrasting colors
      - Proper toilet seat height
      - Grab bars
• Environment
  • Stand Assist Devices to promote early mobility and exercise in a standing position dedicated to Therapy & Restorative Nursing

• Sufficient Resources
  • Accessible Exercise Equipment
  • Enough for groups of 4

• Exercise program:
  • Are specifically designed for older adults that can be done individually or in groups of 4 in 15 or 30 minute increments
  • Can be done in different positions depending on balance issues
    • Supine Position
    • Sitting Position
    • Standing in an assistive device
    • Standing
• Develop Exercises that call for exercise for each of the major muscle groups
  • Quadriceps
  • Hamstrings
  • Pectoralis Major
  • Latissimus Dorsi
  • Deltoids
  • Biceps
  • Triceps
  • Erector Spinae
  • Rectus Abdominus
  • Neck
  • Flexors/Extensors

• Strength Training
  • Proper warm-up and cool down are needed for strength training exercises
    • Simple walking or marching while sitting for standing balance issues
    • Large body movements (arm crosses) for wheelchair bound
    • When warming up no static stretching

• Proper Cool Down - Stretching
  • Tips:
    • Hold stretches for 30 seconds or more
    • Go to the point you feel the muscles stretching
    • Do not go past that point where it starts to hurt
    • Always ease into a stretch gently
Walking

Physical Activity (Steps per day)

- Public health recommendations of achieving 10,000 steps per day.
- While the physical activity assessment is designed to be a gauge for the resident’s physical activity status in the form of ambulation, targets of the following have been associated with higher health related quality of life outcomes:
  - Men: 5,500 steps/day
  - Women: 4,500 steps/day

A 10-minute walk is approximately comparable to 1,000 steps, depending on walking speed and stepping cadence. Adding 100 to 1,000 steps per day or week may enable residents to achieve recommendations.

Those residents who are capable may work up to the 10,000 steps per day recommendations.

Exercises for specific conditions/concerns

- Alzheimer’s Disease
  - Amyloid plaques in the brain
  - Interventions to decrease amyloid plaques
    - Adequate sleep
    - Exercise

Guest Column in McKnights:
http://www.mcknights.com/guest-columns/lifestyle-and-the-aging-brain/article/417260/?DCMP=EMC-MCK_Daily&spMailingID=11530562&spUserID=ODE2NDE0MDMwNDES1&spJobID=560074336&spReportId=NTYwM0M0MzM2M0
• Exercises for specific conditions/concerns
  • Parkinson Disease
    • Mobility – the ability to efficiently navigate and function in a variety of environments, requires balance, agility and flexibility all of which are affected by Parkinson Disease.
    • Rigidity, bradykinesia, freezing, poor sensory integration, inflexible program selection and impaired cognitive processing limit mobility in people with Parkinson Disease.

- King, Laurie A, Horak, Fay B., American Physical Therapy Association

• Exercises for specific conditions/concerns
  • Parkinson Disease
    • Obstacle Courses
    • Kayaking
    • Lunges
    • Kicks
    • Quick Boxing Movement

• Exercises for specific conditions/concerns
  • Parkinson Disease
    • Tai Chi

- King, Laurie A, Horak, Fay B., American Physical Therapy Association
Exercises for specific conditions/concerns

• Cognitive Impairment
  • Inability to simultaneously carry out a cognitive task and a balance or walking task has been found to be a predictor of falls in elderly people.
  • Agility program could progress task difficulty by adding cognitive or motor tasks that teach residents to maintain postural stability during performance of secondary tasks
    • Exercise Level 1: Have no dual tasks
    • Exercise level 2: has a motor task (bouncing a ball) added to the basic exercise such as an agility course
    • Exercise level 3: has a cognitive task (performing math or memory problems) added to the same basic exercise
  • The progression of adding secondary tasks to gait and balance tasks serves as a training device as well as a tool to help residents understand the relationship between safe mobility and secondary tasks in everyday life

Exercises for specific conditions/concerns

• Cognitive Task and Balance Task Example - One Foot and One Toe Behind
  • Stand behind your chair and hold on to it
  • Place your right foot flat on the ground and bring your left foot behind your right but as you set it down only allow the big toe to touch the ground
  • Most of your weight should be on your right foot
  • Balance there for 30 seconds and try to use your chair as little as possible
  • To make it harder, you can move your head up and down
  • Look up at the ceiling and then slowly move you head down and look at the floor and repeat for 30 seconds (do not strain to far back just enough to see the ceiling or too far forward just enough to see the floor)

Exercises for specific conditions/concerns

• Cognitive Task and Walking Task Example
  • Basic – Walk forward taking normal-length steps, but bring your knees up higher than usual with every step. The higher you raise your knees the more energetic you are, the harder it will be
  • Intermediate – Walk forward again, but this time, only raise your left knee as you walk. Your right leg should just take a normal-looking step forward without exaggerated knee lift. Try again with the opposite leg
  • Advanced – This time you will walk forward and take a high knee with every third step – Quite tricky!!
• Exercises for specific conditions/concerns
  • More Advanced Cognitive Impairments
    • Can participate if
      • They can follow simple commands and/or
      • They can mimic movements

• Involving the team:
  • Can be done during activities
    • Treasure hunts
    • Obstacle courses
    • Video exercise games
    • Throwing a ball
    • Tai Chi
    • Yoga
    • Dancing
    • Walking Courses
    • Do activities while standing (i.e, cooking or arts and crafts)
  • Offer programs during the day and evening

• Input on the program from residents and family members
Restorative & Mobility Programs

Restorative Nursing Program-MDS Requirements
- Technique, training or skill practice was performed for a total of at least 15 minutes per 24 hours
- The 15 minutes can be broken up (i.e. remove & clean splint and skin, inspect skin and perform ROM for a total of 5 minutes 3x/day)
- Need 2 or more 15 minute restorative programs for 6-7 days/week
- Restorative nursing does not include groups with more than four residents per supervising helper or caregiver.

Coordination of the Program:
- Physician must approve and order the exercise program
- Therapy to do the initial assessment and setting up of the individual resident’s program for Nursing/Designee
- Therapy to competency test Nursing/Designee implementing the individual resident’s program
- Dietary to ensure proper calories and protein intake for level of exercises
- Nursing to refer back to Therapy when a resident needs adjustment of the program (i.e. decline, plateau, need for more aggressive exercises, pain or change in ability to perform exercises)

Restorative & Mobility Programs

Restorative Nursing Program-MDS Requirements
- HD200C, H0500 **Urinary toileting program and/or bowel toileting program
- O0500A,B **Passive and/or active ROM
- O0500C Splint or brace assistance
- O0500D,F **Bed mobility and/or walking training
- O0500E Transfer training
- O0500G Dressing and/or grooming training
- O0500H Eating and/or swallowing training
- O0500I Amputation/prostheses care
- O0500J Communication training
**Count as one service even if both provided
• Restorative & Mobility Programs

  • Restorative Nursing Program-MDS Requirements

  O0500B, Range of Motion (Active) Code exercises performed by the resident, with cueing, supervision, or physical assist by staff that are individualized to the resident’s needs, planned, monitored, evaluated, and documented in the resident’s medical record. Include active ROM and active-assisted ROM.

  Provide Strength Training Exercises for the ROM

  • Offer Strength Training:
    • 15 minutes 6 days a week, staggering muscle groups
    OR
    • 30 Minutes 2 or 3 times a week, with 15 minutes of ROM on the non-strength training days

• Restorative & Mobility Programs

  • Restorative Nursing Program-MDS Requirements – Example of 2 programs

    • Active ROM exercises AND Walking
    • Active ROM exercises AND Transfers
    • Active ROM exercises AND Bed mobility
    • Active ROM exercises AND Bladder program
    • Active ROM exercises AND Splint or Brace assistance
    • Active ROM exercises AND Dressing and Grooming Training, etc.
• Restorative & Mobility Programs
  • Restorative Nursing Program
    • Skilled Care-Medicare A
    • Rehabilitation nursing: 2 activities, 15 minutes each per day for 6-7 days per week.
    • Must be in conjunction with therapy, 45 minutes, 3 days per week
  • Restorative Nursing Programs
    • Therapy set up functional maintenance and do periodic updates (Part B)
    • Restorative Nursing provides the activities
  • Restorative Nursing programs – maintenance
    • Restorative Nursing provides the activities
**Restorative & Mobility Programs**

- **Restorative Nursing Program-MDS Requirements**
  - The care plan & medical record must document **measurable objectives and interventions**
  - The medical record must reflect periodic evaluation by a licensed nurse.
  - Nursing assistants/aides must be trained in the techniques that promote resident involvement in the activity.
  - A registered nurse or licensed practical (vocational) nurse must supervise the activities in a restorative nursing program.

**Individual Resident Goal Setting**

- **Needed for Starting Point & to Measure Progress**
  - Short Physical Performance Battery (SPPB)
  - Anthropometric Measurements
  - Muscle Quality Index
  - Hand Grip Strength
  - Steps per Day
  - Resting Heart Rate
  - Resting Blood Pressure
  - Waist to Hip Ratio
  - The Resident’s Goal

**Restorative & Mobility Programs**

- **Restorative Nursing Program-MDS Requirements**
  - If the resident does not meet MDS requirements for reimbursement, the program should still be implemented – Payment shouldn’t drive the program.
  - Example: Resident can perform exercise program 3 days a week or can only perform one 15 minute program per day.
• Overall End Goal
  • Keep residents active during the day
  • Promote sleep at night

~ Mahatma Gandhi
“How to initiate change.”

“First they ignore you,
Then they laugh at you,
Then they attack you,
Then you win.”

Bibliography

References

- CDC Cost of Falls Among Older Adults: Downloaded 7/14/2015 from: http://www.cdc.gov/homeandrecreationalsafety/falls/fallcost.html
- CDC Falls in Nursing Homes: Downloaded 7/14/2015 from: http://www.cdc.gov/homeandrecreationalsafety/falls/nursing.html
- CDC Hip Fractures Among Older Adults: Downloaded 7/14/2015 from: http://www.cdc.gov/homeandrecreationalsafety/falls/adulthipfr.html

Thanks for your participation!!!

Jeri Lundgren, RN, BSN, PHN, CWS, CWCN
President
Senior Providers Resource, LLC
jeri@seniorprovidersresource.com
Cell: 612-805-9703