Slide 1
Thank you for joining us for “Fall Risk in Adults with Developmental Disabilities: Strategies in Fall Assessment, Intervention and Prevention” presented by the Quality Monitoring Program at the Department of Aging and Disability Services. I’m Daneen Machicek and I’m joined by Dr. Lilani Muthali. This webinar will provide information on translating evaluation strategies used for fall risk assessment, intervention and prevention in the general older adult population to adult individuals with developmental disabilities. The strategies discussed are relevant for consideration in the development of care plans by staff associated with providing services and supports to individuals with developmental disabilities in a variety of settings.
At the end of this presentation, you’ll be asked to complete a short survey regarding this webinar. Your participation in completing this survey will help us continue to improve future webinars and presentations.

Slide 2
During today’s presentation we will:
- Explain the importance of fall risk assessment and fall prevention
- Define a fall
- List intrinsic and extrinsic risk factors
- Describe differences in intrinsic fall risk factors in the general older adult population versus adults with developmental disabilities
- Identify steps in fall risk evaluation
- List additional fall risk factors unique to adults with developmental disabilities
- Identify intervention strategies, and finally
- Describe some prevention strategies

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Why is it important to evaluate for fall risk? The following list is not all inclusive, but identifies some of the more significant reasons to evaluate for fall risk. Generally:
- Falls are a common problem among all older adults. Roughly a third of Americans 65 and older fall each year.
- Falls are associated with considerable mortality, morbidity, reduced functioning and admission to long-term care facilities. Statistics indicate that falls are the leading cause of deaths due to injury in adults older than 65 in the United States, accounting for more than 10,000 deaths annually. 10 to 20% of those who fall suffer moderate to severe injuries that limit their mobility and threaten their independence.
- More often, older adults are not aware of risk factors and don’t recognize symptoms or hazards, report them to their physician or seek solutions. The risks are often overlooked and become evident only after an injury has already occurred.
Several studies have shown that the risk of falling increases significantly as the number of risk factors increases. And

Finally, the high cost of care after a fall. The CDC indicates that in the year 2000, the total direct cost of all fall injuries for people 65 and older exceeded $19 billion: $0.2 billion for fatal falls, and $19 billion for nonfatal falls. By 2020, the annual direct and indirect cost of fall injuries is expected to reach $54.9 billion (Calculated in 2007 dollars).

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As we narrow the focus to adults with intellectual and developmental disabilities or (IDD), additional unique facts have been identified. These unique facts include:

- An increased risk for falls compared to the general population as well as an increased risk for falling at an earlier age.

Although not all risk factors are unique to adults with developmental disabilities, the age of onset, rate of occurrence, and the impact these factors have on function and level of independence are unique. The degenerative changes seen in aging can occur as early as age 35 in some individuals with developmental disabilities. Once the aging process has begun, it progresses more rapidly than in the general population. Since this process begins earlier in life and lasts for a longer period of time, the likelihood that the individual will fall and require closer supervision and assistance at a younger age increases.

It is important to note that

- There are approximately 641,000 adults older than 60 with intellectual and developmental disabilities in the U.S. Currently, as many as 43% of injuries experienced are due to falls. But by 2028 the total number of individuals with IDD is expected to double, therefore increasing the number of possible injuries related to falls.

With these statistics in mind, the importance of fall assessment, intervention and prevention is really apparent.

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In the next few minutes we will discuss: the definition of a fall, and what we need to know when addressing fall reduction. To begin---

How is a fall defined?

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According to the American Nurses Association, a fall is defined as an unexpected event in which the participant comes to rest on the ground, floor or lower level. All types of falls are included when considering interventions for fall risk; whether they result from physiological reasons or environmental reasons.

Must an injury occur in order to consider interventions to prevent falls?

The presence or absence of a resultant injury is not a factor in the definition of a fall. A fall without injury is still a fall and must be considered when developing care plans for fall risk.

In addition, an episode where a person lost his/her balance and would have fallen if it were not for staff intervention, is still a fall.
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How do we reduce falls?
Falls in adults with IDD can be reduced by understanding and addressing:
Why falls occur
What factors are associated with fall risk
Which strategies reduce fall risk
What actions can be taken to prevent falls

Slide 8
Why do falls happen? Let’s look at two types of fall risks.

Slide 9
Falls are attributed two types of fall risk.
Fall risk factors are classified as either intrinsic or extrinsic factors and generally occur
due to the interaction between the two. The important fact to remember about fall risk is
that …The likelihood of falling increases with the number of risk factors a person has.

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What are intrinsic factors?
Intrinsic or internal factors include the physical conditions associated with each
individual.
In general, the most common intrinsic fall factors include:
• Prior falls or history of falls- We know that individuals who have fallen
previously are more likely to fall again. Many will fall repeatedly.
• Upper and lower extremity muscle weakness - Medical conditions such as
diabetes, arthritis, cerebral palsy, spasticity or other movement disorders with
associated fatigue may affect extremity muscle strength required to get out of bed
or up from a chair or toilet therefore providing an opportunity for a fall. --
• Gait and balance deficits – as seen post stroke or in individuals with diabetic
neuropathy
• Visual deficits - decreased vision caused by macular degeneration, cataracts,
glaucoma, and other conditions can prevent individuals from recognizing hazards
• Elimination problems –Urinary or bowel incontinence – This often causes the
individual to rush to the bathroom and fall
• Sleep disturbances (waking at night and trying to ambulate in the dark)
• Cognitive impairment - The inability to think clearly increases the risk of falls.
Poor judgment in differentiating between safe and hazardous activities or
conditions increases the risk for falls and fall injuries.
• Dizziness (often postural hypotension or dizziness on standing)
• Medications (especially when four or more prescription medications
and/or psychotropic medications are prescribed) A consistent association
has been identified between falls and psychotropic medications including
neuroleptics, benzodiazepines, antidepressants and anticholinergic
medications like diphenhydramine hydrochloride (Benadryl) and
benztropine (Cogentin). In addition, taking too much medication or the wrong combination of drugs can affect judgment, coordination, balance and cause sleepiness further increasing the risk for falls.

**Slide 11**
This slide summarizes the intrinsic fall factors associated with the general older adult population. Generally (read general elderly list) are all considered when assessing older adults for falls.

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In addition to those factors common to the general elderly population, those factors unique to adults with IDD, include: seizure activity occurring at least on a monthly basis, a history of destructive behavior or change in behavior, and individuals taking antipsychotic medications.

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The second type of risk factors are extrinsic factors. Extrinsic or external factors are conditions brought about by the environment. Also known as ---Hazardous conditions

Extrinsic factors include:

- Environmental factors such as:
  - Slippery floors, loose carpets, poor lighting, ill-fitting footwear, lack of surfaces to grab, low beds, low seat chairs or toilets, and assistive devices that have not been well maintained. Use of assistive devices – this includes worn tips and/or structural defects of canes, walkers, and wheelchairs.

**Slide 14**
The best way to determine an individual’s fall potential and identify associated risk factors is to complete a comprehensive fall evaluation.

**Slide 15**
Generally, a comprehensive fall evaluation begins with a medical history. The history includes: (read list)
A review of current medications taken
History of medical conditions/diagnoses
Age
Alcohol/drug use (current or past)
Current functional abilities
Current living environment and social/family support available
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For an adult with developmental disabilities you’ll also need to consider:
Information specific to his/her disability (such as seizure activity, behavior challenges, and use of assistive devices)
You’ll want to consider if the disability is degenerative in nature? and How rapidly are the changes occurring?
Are there other chronic illnesses like diabetes, heart disease, dementia, associated neuromuscular impairments
Any report of new or disease progression, change in abilities to perform activities of daily living or daily routine.

When discussing these issues with the individual, be sure to include a caregiver(s) in the interview especially when the person being evaluated has difficulty communicating or communicates via alternative methods. The input from a direct caregiver can be invaluable in investigating and resolving fall risk.

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The second step in a comprehensive fall evaluation is a physical examination.

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A physical exam should include details regarding: -Read list-

- Current mental status –
- Mobility –
- Vision –
- Postural hypotension –
- Range of motion – including details regarding contractures
- Strength and Coordination of the extremities
- Sleep disturbances – waking at night or excessive movement
- Elimination problems- frequent need for urination or increase in urge

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For adults between the ages of 20-30 years with intellectual and developmental disabilities, additional elements should be considered during a physical exam. These elements include:
- Endurance and reaction time-These begin to decline in early adulthood. Adults with IDD may be subject to early fatigue and may not have the protective reflexes to prevent serious injury when falling.
- Sensation (remember sensitivity to touch and pain often decreases after age 45-50 in people with developmental disabilities)
- Additional lab tests may be warranted (Since medications used to treat seizure activity, hypothyroidism and psychosis put persons at risk for osteoporosis and altered mental status the need for additional lab tests may be required.)
- Screening tools –Selecting a screening tool that provides the most valid indicators for fall risk for adults with developmental disabilities remains a challenging issue.
Despite the fact that adults with intellectual and developmental disabilities have an increased risk for falls, there has been little research done specifically regarding assessment and prevention of falls for this demographic.

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Deciding which assessment tool to use can be a dilemma.
Fall assessments are designed to help identify those individuals who are at the greatest risk for falling and to tailor prevention strategies to address individual risk factors.
Generally, there are many fall assessment tools available.
How do we select an appropriate assessment tool for adults with intellectual and developmental disabilities?

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This table provides a list of assessment tools for determining fall risk and the evidence for use in individuals with developmental disabilities.
Since there is such variability in individual cognitive ability, mobility and balance in individuals with developmental disabilities, some tools will prove more useful than others in assessing balance and mobility. Six tests have been found to be helpful for those individuals with walking and cognitive abilities that are more like the general older adult population and include the:

- **The Tinetti Performance-Oriented Mobility Assessment Tool**, also known as the Tinetti Gait and Balance Assessment or simply the Tinetti Assessment tool. This tool has been used widely to assess balance and gait in older adults. The tool identifies impairments in various components of gait and balance that indicate a person’s chances of falling within the next year. This test was found to be useful to assess gait and balance in people with intellectual disabilities. The tool was reliable in that it was easily administered in most living environments and items could be completed through observation of a person moving in their environment or with minimal verbal instructions. It is important to note that using observation to assess mobility proved to be the most useful aspect of the tool for those individuals with more cognitive limitations or behavior challenges.

- **Timed Up and Go Test**—In the Timed Up and Go Test the person is asked to stand up from a standard chair and walk a distance of approximately 10 feet, turn around and walk back to the chair and sit down again. The individual uses his/her usual footwear and can use any assistive walking device they normally use, such as a cane. The person is seated with his/her back to the chair, their arms resting on the arm rests, and any walking aid they may use should be in hand. Timing, using either a wristwatch with a second hand or a stop watch, begins when the individual starts to rise from the chair and ends when he/she is once again seated in the chair.
The normal time required to finish the test is between 7 – 10 seconds. Individuals who cannot complete the task in that time, probably have some mobility problems, especially if they take more than 20 seconds.
The modified Timed Get Up and Go Test has been found to be reliable but not valid for fall risk assessment in those ambulatory individuals with developmental disabilities. The modified test allowed for an assistant to help with walking which was found to cause a slower pace and high variability in performance.

- Dynamic Gait Index - Assesses the likelihood of falling in adults. Used to rate the ability of an individual to modify gait in response to changing task demands. The instrument is designed to test eight facets of gait. (level surface, speed, horizontal and vertical head turns, pivot turn, step over and around obstacles, stairs/steps)
- Functional Reach---Functional Reach test is a measure of balance and is the difference, in inches, between arm's length and maximal forward reach, using a fixed base of support. This test can be used to detect balance impairment, change in balance performance over time, and in the design of modified environments for older persons.
- Romberg is a neurological test that is used to assess the dorsal columns of the spinal cord, which are essential for joint sense (proprioception) and vibration sense, and lastly
- Falls Efficacy Scale- (FES) is a 10-item rating scale to assess confidence in performing daily activities without falling.

Modifications and adaptations to the tools may include:
- Giving visual directions, and
- Completing assessments through observation in the natural environment.

In addition, a change in score on the Mini-Mental State Examination was identified as a tool to predict fall risk for the general older adult population as well as individuals with cognitive impairments.

In summary, clinical judgment considering the individual’s cognitive and physical functioning is essential in determining which test would provide the most accurate information about balance and mobility.

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Although there are many factors that can cause falls, the good news is that many falls can be prevented. Since falls are the result of a combination of intrinsic and extrinsic factors, a multi-factorial approach to fall prevention should include:

- Medical
- Therapeutic, and
- Environmental strategies in order to be most effective in preventing falls.

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Falls can indicate medical problems and medical problems can contribute to falls. Identifying and treating underlying disease, disabilities and resulting risk factors such as vision deficits, cardiovascular irregularities, gait and balance problems, urge incontinence, and so on…. should be referred to a primary physician for further evaluation.
Review medications and consider discontinuation/substitution of medications that when combined have an intensified or duplicate effect. Of course, if stopping the medication will lead to something worse than a fall, the medication must be continued but with the knowledge that fall prevention intervention must intensify.

Diagnosing and treating osteoporosis. Again, review medications for those that contribute to osteoporosis such as:
- Proton pump inhibitors
- Anti-epileptics and
- Steroids and take necessary steps to off-set the effects.
Adding Vitamin D as a supplement should be considered.

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Individuals with mobility impairments may benefit from one or more therapeutic strategies. These strategies include:
- Physical training and exercise programs, use of assistive devices and ensuring the proper fit and composition of footwear.

The National Center on Physical Activity and Disability recommends balance training and flexibility exercises to reduce the incidence of falls of all people with disabilities. Evidence indicates that interventions that focus on the intrinsic factors related to falls improve physical activity, strength, endurance and sense of well-being in individuals with developmental disabilities.

Canes and walkers not only maintain or improve balance, but also furnish a visual presence of support that instills confidence during ambulation while helping to reduce fear of instability and falls.

All footwear should fit well and be slip-resistant. Balance is generally better with shoes that have thin, nonslip soles rather than shoes with thicker soles like running shoes.

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Eliminate hazardous environmental conditions.
Remove obstacles such as electrical cords, loose rugs and remedy uneven floors.
Modify environment to maintain safe mobility by: identifying and removing fall risks and adding supports and modifications to existing furnishings.
Add lighting, grab bars or other sturdy surfaces for support. Consider raised toilet seats and eliminate barriers in the path leading to the restroom. Ensure that clothing is not too long or too loose.

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The primary goal of fall prevention for adults with intellectual and developmental disabilities is to minimize fall risk while maximizing independence.
In order to accomplish this goal, comprehensive fall prevention programs should include:
- Exercise (especially for strengthening and balance)
• Training of caregivers and healthcare providers as well as the individual to be aware of hazards, their own limitations and to request help when needed.
• Frequently assess the environment and implement modifications as required.

Remember to follow-up and reassess for hazards frequently. Are current fall prevention strategies are working? and Are acceptable to the individual and caregivers?

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In conclusion, although all older adults share a majority of the same fall risk factors, we must also consider those additional unique factors related to adults with intellectual and developmental disabilities when assessing for fall risk. As previously discussed, the unique differences include:
• Assess/monitor for fall risk at a younger age and for possibly a longer period of time;

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Consider unique factors related to their disability; and

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• Include strengthening, balance, mobility, environmental assessment and educational programs for the individual and family in developing intervention and prevention programs.