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NGNA Section

## Summary of factors contributing to falls in older adults and nursing implications



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## A B S T R A C T

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Falls are a common cause of serious injury and injury-related death in the older adult population, and may be associated with multiple risks such as age, history of falls, impaired mobility, balance and gait problems, and medications. Sensory and environmental factors as well as the fear of falling may also increase the risk of falls. The purpose of this article is to review current best practice on screening fall risks and fear of falling, fall prevention strategies, and fall prevention resources to assist gerontological nurses in reducing falls by their older adult clients.

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## Introduction

Falls, defined as unplanned descents to the floor or lower level with or without injury,<sup>1</sup> are a frequent and devastating occurrence in older adults. The incidence of falls and injuries increases with

age. Between 30 and 40 percent of community-dwelling people over the age of 65 years sustain at least one fall per year,<sup>2</sup> increasing to about 50 percent for those 80 years and older.<sup>3</sup> Twenty to thirty percent of older adults who fall suffer moderate to severe injuries.<sup>4</sup> Frequently, significant sustained negative outcomes occur in this population as a result of a fall, including a decline in function, an increased likelihood of nursing home placement, and an increased utilization of medical services and costs.<sup>5–7</sup>

The fear of falling, commonly understood as the level of concern a person has about falling, or the degree of confidence a person has in performing common activities without falling, is also a concern. Fear of falling affects approximately 50–60% of community-dwelling older adults,<sup>8</sup> and is particularly prevalent among those who have previously fallen, occurring in as many as 70% after a fall.<sup>9</sup> Gait, mobility and vision issues are related to fear of falling, which is

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a marker of gait variability.<sup>10</sup> Greater fear of falling has also been associated with age-related macular degeneration and vision loss,<sup>11</sup> and with fear-related restriction of activity mitigated by visual acuity and contrast sensitivity.<sup>12</sup> Fear of falling is a psychological barrier to performing physical activities,<sup>13</sup> and often results in decreased activities of daily living, which may lead to decreased muscle strength and tone, loss of mobility and decreased quality of life.<sup>14–16</sup> Consequently, fear of falling may also play a role in future falls.<sup>17</sup>

The issue of falls in older adults often goes unnoticed by health care professionals for a variety of reasons which may include: 1) the older adult does not discuss falling because of fearing loss of independence; 2) at the time of the fall, little or no injury was incurred therefore the fall goes undocumented; 3) health care professionals fail to bring up the issue (or history of falls); 4) those involved (patient, family, health care professionals) think 'falling' is part of the aging process. Nurses have the opportunity to play an essential role in preventing falls in older adults through application of best practices.

### Background and significance

One-third of adults over 65 years of age fall every year.<sup>18</sup> In the older adult population, falls are the most common cause of traumatic brain injury,<sup>4</sup> and of injury-related death,<sup>19</sup> costing billions of dollars yearly in preventable health care expenditures.<sup>20</sup> Age, a history of falls, impaired mobility, balance and gait problems, specific medications and polypharmacy have all been identified as risk factors for falls.<sup>21</sup>

Currently, both single and multidisciplinary approaches are used to assess the risk of falls, employing a wide variety of instruments.<sup>22,23</sup> There are also a variety of evidence-based fall prevention interventions including exercise or physical therapy, psychotropic medication withdrawal, and falls education. Collaborative care by an occupational therapist, ophthalmologist, podiatrist, or cardiologist for problems related to home safety, cataracts, foot pain, or cardiac arrhythmias is also recommended.<sup>24</sup> Consequently, the purpose of this article is to review the current best practice evidence on screening fall risks and fear of falling, fall prevention strategies, and fall prevention resources to assist gerontological nurses in reducing falls by their older adult clients.

### Fall risk screening tools

Determining the risk for falls is complex and involves many factors. It is difficult for the nurse to screen multiple risks adequately without using a systematic method. At a minimum, simple yearly screening for a history of falls and medications (particularly those with central nervous system side effects) is recommended.<sup>25</sup> Assessment of cognition should also be considered, since research findings suggest that cognitive decline is associated with unsafe performance of mobility activities, thereby increasing the risk of falls.<sup>26</sup> Specific fall-related concerns in community-dwelling older adults can be addressed through the use of a variety of screening tools related to vision, balance, gait, leg strength, fear of falling, and home environmental safety. The following summarized tools require limited training, equipment, cost and time for administration (Table 1).

Incorporating the use of a general fall risk assessment tool such as The Hendrich II Fall Risk Model™<sup>45</sup> is recommended as a best practice approach in caring for older adults admitted to acute care for primary fall prevention screening and in post-fall assessment and secondary fall prevention.<sup>46</sup> This tool, along with documented evidence and directions for its use are readily available through the Hartford Institute for Geriatric Nursing.<sup>46</sup> Using the "4 W's" (What,

When, Where & Why) framework as part of the post-fall assessment may provide important insights into the previous fall and identify risks for future falls. Asking the client how he/she was feeling at the time of the fall and about the physical and emotional impact of the fall are also important data to gather in the post-fall assessment.<sup>47</sup>

### Fall risk factors

Risk factors which increase the likelihood of a fall in older adults can be divided into extrinsic and intrinsic categories.<sup>48</sup> Extrinsic factors are those that are external to the individual, such as uneven and slippery surfaces, poor lighting, loose rugs and clutter on the floor, and unsafe footwear. Intrinsic factors are those age-related changes and health related internal factors which affect the systems involved in effective balance performance and mobility. These can include things such as sensory loss (sight or hearing), chronic health conditions such as heart disease, diabetes, stroke, Parkinson's disease, arthritis, cardiac and antihypertensive medications, or polypharmacy.<sup>49</sup> Specific vision risk factors include binocular vision (strabismus, amblyopia, diplopia and nystagmus)<sup>50</sup> and self-reported poor vision (far or poor distance vision) regardless of actual visual acuity.<sup>51,52</sup> Other major intrinsic health-related risks for falls in active older adults have been identified as vertigo, which may accompany vestibular failure, peripheral neuropathy, and poor postural stability with associated movement intolerance.<sup>53</sup> Among community-dwelling older adults, orthostatic hypotension and carotid sinus hypersensitivity were reported as commonly associated with falls.<sup>54</sup> Medication-related mechanisms which increase fall risk include orthostatic hypotension, sedation, sleep disturbance, confusion, dizziness and other central nervous system side effects.<sup>55</sup>

Research focused on falls and mental health problems other than dementia is very limited, although a positive association has been identified.<sup>56</sup> Older adults with cancer who are receiving neurotoxic agents, especially those who receive multiple agents, are also at an increased risk of falls and fall-related injuries.<sup>57</sup> Often these fall risk factors do not exist in isolation, but are additive, such as a sensory deficit worsening an already unsafe environment or multiple central nervous system-active medications impairing postural balance.

### Fall risk reduction strategies

The Centers for Disease Control<sup>18</sup> and the National Institute on Aging<sup>58</sup> have published general fall reduction strategies with commonalities focusing on exercise, home/environmental modification, medical screening and management of sensory deficits and medication evaluation. The American Geriatric Society<sup>25</sup> made more specific recommendations including exercise (balance, strength, gait-training), management of foot problems and footwear, the withdrawal or minimization of psychoactive medications, management of postural hypotension, and vitamin D supplementation of 800 IU/day for those with deficiency or risk of falls. A recent systematic review further emphasized sarcopenia, frailty, polypharmacy, multi-morbidity, vitamin D status and home hazards as risks, noting that risk reduction strategies should be individualized and applied in combination to be optimally effective.<sup>59</sup>

### Exercise

Based on a Cochrane Review,<sup>24</sup> Tai Chi was the single type of exercise which was found to significantly reduce the risk of falls, but this reduction applied to those at low risk of falling only. Tai Chi

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