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Graduate Studies

A DESCRIPTIVE STUDY OF INJURIES AND DEATHS DUE TO FALLS AMONG
ADULTS 65 AND OLDER IN LINCOLN COUNTY, WISCONSIN

A Manuscript Style Thesis Submitted in Partial Fulfillment of the Requirements for the
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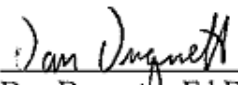
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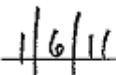
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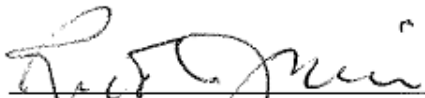
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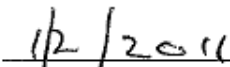
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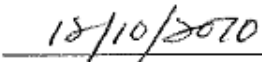
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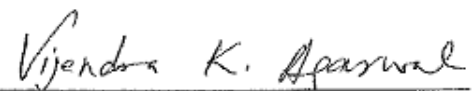


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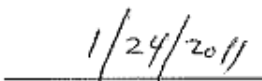


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ABSTRACT

Hersil, S. A descriptive study of injuries and deaths due to falls among adults 65 and older in Lincoln County, Wisconsin. MPH-CHE, December 2010, 73pp. (R.D. Duquette)

The purpose of this article was to determine where falls are occurring in Lincoln County, Wisconsin and provide a comparison to Wisconsin data. It also determined how local hospitals and nursing homes collect data on falls. The state of Wisconsin ranks third in the nation in the number of injuries caused by falls among adults 65 years and older. In Lincoln County, falls are the leading cause of injury deaths among adults 65 and older. The study analyzed data from the Wisconsin Interactive Statistics on Health (WISH) that houses injury data for the state. Data was also collected from hospitals and nursing homes located in Lincoln County. The study found that females are at a higher risk of fall injury in Lincoln County and Wisconsin and males have a higher rate in fall-related deaths. Also most falls that lead to an emergency room visit and or hospitalization occurs on average among those who are 80 years and older. The study also revealed that local data is not readily available for analysis from local nursing homes and hospitals and that state databases for injuries due to falls is limited. This study provided guidance on the importance of state and local interventions that can reduce the burden of falls. By the collection and analysis of adequate fall data, best practice interventions at hospitals, nursing homes and the community can be made to reduce preventable injuries and deaths due to falls.

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INTRODUCTION

Falls are a significant burden to public health in the State of Wisconsin and in Lincoln County. In Wisconsin and Lincoln County, the leading cause of injury deaths among older adults 65 and older is falls (Wisconsin Department of Health Services [WI DHS], 2006). Falls can cause immediate life-altering change in independence physically, financially, and psychologically. However, falls can be preventable through education, awareness, and implementation of evidenced-based strategies. This study explored, examined, and described the characteristics of persons 65 years of age and older who are injured or die due to falling.

According to Wisconsin's Burden of Falls Report 2010, the majority of falls that resulted in death occurred at home (55%) and at residential institutions (30%). Furthermore, in 2008 most deaths in Wisconsin due to falls occurred in hospitals (51%); nursing homes (25%); and 15% in a facility based hospice (Wisconsin Department of Health Services [WI DHS], 2010, August). When hospitalized for falls, hospital stays for elderly patients were almost twice as long after a fall than hospitalized for other reasons (Tinetti, 2003). In addition, 40% of people who were admitted to a nursing home had fallen in the last 30 days (WI DHS, 2010, August). More falls took place in nursing homes due to an older and frailer population. Part of the reason falls occurred in hospitals as reported by The Joint Commission in 2000 was because of the lack of patient assessment and reassessment, incomplete care plans or lack of protocol, and environment issues such as nursing stations and door locks. Most nursing home residents who were

admitted due to falls were at the facility for 100 days or less. Falls that took place in the home happened most frequently in bedrooms, kitchens, and dining rooms (Yoshida, n.d.).

Age was the most common risk factor associated with falls with most occurring after the age of 65; this risk doubled once a person turned 85 years old (Department of Health and Human Services, Centers for Disease Control and Prevention [DHHS CDC], 2008). According to the Burden of Injury Report 2006, emergency room visits per age-adjusted population was as follows for Lincoln County; 1) child 0-17 years was 2,337; 2) adults 18-64 years was 1,429; and 3) adults 65 and older was 3,142.

Older adults who fell were two to three times as likely to fall again within a year (O'Loughlin, Robitaille, Boivin & Suissa, 1993). This is where psychological factors of the fear of falling can be a risk factor. The loss of self-confidence to move around without falling can lead to reduced physical activity and mobility increasing one's actual risk of falling. Between men and women, women were more likely to fall and become injured (Stevens & Sogolow, 2005), while men were more likely to have a death due to a fall. Contributing factors include osteoporosis for women and chronic disease and risk taking activities for men (Centers for Disease Control and Prevention [CDC], 2006). Research reveals that if a person has four or more risk factors they increase their risk of falling by 70% (Tinetti, Speechley & Ginter, 1988). Balance, gait, and muscle weakness, as well as taking more than four medications were the leading cause of falls, in addition to acute and chronic disease. Sensory impaired vision, hearing, feeling of feet, and alcohol use were also contributing risk factors.

The state of Wisconsin has recognized falls as a health priority in their Healthiest Wisconsin 2010 and 2020 plans; as well as Lincoln County in their Healthy People

Lincoln County Community Health Improvement Plan for 2006-2011. The state health plan objectives for injury and violence are to 1) reduce the cause through policies and programs that create safe environments and practice; 2) increase access to primary, secondary, and tertiary prevention initiatives and services; and 3) reduce disparities in injury and violence among populations (Wisconsin Department of Health Services [WI DHS], 2010, July). Medicare has addressed the issue of falls in 2008 by no longer providing reimbursement to hospitals for the treatment of falls when the fall occurs during their stay at the facility.

During a review of clinical practice guidelines researched by the investigator for this study, it was concluded that screening and assessment are a high priority in the prevention of falls among those 65 years and older in the acute and long term setting, see Table 1. This review found that screening patients for multifactorial risks, such as balance and gait, was highly recommended in acute care, long term care, and the community setting. In addition, for facility settings such as hospitals and nursing homes, it was best practice to develop a care plan containing multiple interventions by multidiscipline, professional staff. Exercise programs, medication management, and home safety were strategies that have proven most successful in the community, acute care, and long term setting. It is important that exercise programs are specifically targeting an individual who is at high risk for most effectiveness. A complete list of Clinical Practice Guidelines can be found in Appendix B.

Table1. Summary of Intervention Focus Areas Recommended for Clinical Practice

Category	Recommended Intervention	Acute Care	Long Term Care	Community
Assessment, Screening, and Evaluating	Surveillance/Observation	✓ ^{2,8}	✓ ⁷	
	Screening and Assessment	✓ ^{1,2,3,4,5,6,8}	✓ ^{3,4,5,6,7,9}	✓ ^{1,4,5}
	Multi-risk Assessment	✓ ^{2,4,5,6,8}	✓ ^{1,4,5,6,7,9}	✓ ^{1,3,4,5}
	Multifactorial Interventions	✓ ^{4,5,6,8}	✓ ^{1,4,5,6,7}	✓ ^{3, 4,5}
	Multidisciplinary Care Team	✓ ^{1,2,3,6,8}	✓ ^{6,7,9}	✓ ¹
	Care Plan	✓ ^{2,3,5,6,8}	✓ ^{5,6,7,9}	✓
Specific Assessments	Post Evaluation	✓ ⁸	✓ ^{7,9}	
	Cognitive Assessment		✓ ^{7,9}	
	Continence Management	✓ ²	✓ ^{7,9}	
	Vision Assessment	✓ ²	✓ ⁷	
	Cataract Survey			✓ ¹
	Dizziness and Vertigo Assessment	✓ ²	✓ ⁷	
	Postural Hypotension Management	✓ ²	✓ ⁷	✓ ^{1,3}
	Cardiac Evaluation	✓ ^{2,5}	✓ ⁵	✓ ^{1,5}
	Vitamin D Supplements	✓ ^{2,6}	✓ ^{1,6,7,9}	✓ ¹
	Osteoporosis Management	✓ ²	✓ ^{7,9}	
	Calcium Supplements	✓ ²		
	Foot Assessment	✓ ²	✓ ⁷	✓ ¹
	Exercise Program	✓ ^{2,4,5,6}	✓ ^{1,3,4,5,6,7}	✓ ^{1,3,4,5}
	Medication Management	✓ ^{4,2,5,6}	✓ ^{4,5,6,7,9}	✓ ^{1,3,4,5}
Education	Staff Training/Education	✓ ^{2,5,6}	✓ ^{5,6,7}	✓ ^{1,5}
	Multi-Educational Component			✓ ⁵
	Single Education Component	✓ ⁶	✓ ^{6,9}	
Safety	Home Safety Assessment	✓ ^{2,4,5,6}	✓ ^{4,6,7}	✓ ^{1,3,4}
	Assistance Devices	✓ ⁸	✓ ^{7,9}	
	Hip Protectors (targeted use)	✓ ^{2,6}	✓ ^{3,6,7}	
	Institutional Environmental Assessment	✓ ^{6,8}	✓ ^{6,7,9}	
	Volunteer Sitter	✓ ²	✓ ⁷	

See complete bibliography in reference section.

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Overall, the population in Wisconsin and Lincoln County is aging which would lead to an even greater financial burden due to falls. It is known that most fall-related, medical expenses are reimbursed by government insurance programs such as Medicare and Medicaid. According to the Wisconsin Burden of Falls Report 2010, falls result in \$800 million in charges for emergency and hospitalizations in 2008; 62% of hospital charges are for those 65 and older (WDHS, 2010, August). Other medical care direct costs can include prescription drugs, medical equipment, home safety changes and insurance processing. The indirect costs are depending on others, being disabled, loss of productivity at work or at home, increase fear of falling, and the reduce quality of life.

For the purpose of this study it is important to note that Lincoln County is located in North Central Wisconsin with a population of 30,335 compared to Wisconsin's population of 5,679,639, (U.S. Census Bureau, 2009). Lincoln County consists of 99% Caucasian with 17% (5,162) of those 65 years and older (Office of Health Informatics, Wisconsin Department of Health Services [OHI WI DHS], 2009). In 2009, 13.5% or 764,997 of Wisconsin's population was 65 and older, see Table 2. In addition, the U.S. Census (2009) reported the population for two primary cities in Lincoln County, Merrill (population 10,146), and Tomahawk (population 3,770). The health care community has two hospitals that are affiliated with the Ministry Health Care System, a facility in Tomahawk and in Merrill, with each hospital having an adjoining clinic. There also are two additional clinics, Aspirus and Marshfield Clinic, which are located in Merrill and refer patients out of county for additional health services. In addition, Lincoln County has three nursing homes. One Merrill nursing home owned by the Lincoln County

government and two Tomahawk nursing homes owned by a national corporation serving 21 states.

Table 2. Population for Lincoln County (N=5,162) and Wisconsin (N=764,997), 65 and older, 2009

	Lincoln County n (%)		Wisconsin n (%)	
	Male	Female	Male	Female
Total	2,278 (100%)	2,884 (100%)	328,578 (100%)	436,477 (100%)
65-74	1,298 (25)	1,389 (27)	185,009 (24)	207,103 (27)
75-84	726 (14)	927 (18)	108,381 (14)	149,012 (19)
85+	254 (5)	568 (11)	35,139 (5)	80,362 (11)

According to data gathered by the State of Wisconsin there is a high incidence of falls and deaths due to falls in Lincoln County and the state of Wisconsin. Further research was needed to address where falls are occurring specifically in Lincoln County in order to gain community support for the issue and to develop and implement targeted evidenced-based prevention strategies. This study determined what data was available both locally and statewide on where falls were occurring in Lincoln County and provides a comparison to Wisconsin data. It also determined how hospitals and nursing homes collect data on falls. The study identified gaps and barriers to obtaining local data and recommend enhancements to aide in implementing strategies to reduce the burden of falls on communities. For a definition of terms see Appendix C.

METHODS

The Wisconsin Department of Health Services collects hospital admissions, emergency room visits, and Behavioral Risk Factor Surveillance Survey data through a public database system called Wisconsin Interactive Statistics on Health (WISH). WISH is available to the public online and queries can be developed to retrieve statistics for the state, region and county level. For the purpose of this study, secondary data was analyzed on hospitalization and emergency room visits due to injury, as well as mortality data using the WISH database and local data from nursing homes and hospitals in Lincoln County. WISH gathers mortality data from resident death certificates; injury hospitalizations come from inpatient hospitalizations discharge records, and injury emergency department data is from emergency department coding. Hospital discharges are also classified based on patient's county of residence versus location of the injury or hospitalization. Local nursing homes and hospitals collect data through internal databases developed for their organization. For the purpose of this descriptive study, data was examined for the years 2004-2008, as well as data for those 65 years of age and older. A comparison of Lincoln County fall data to the state of Wisconsin was performed by the investigator. This data was analyzed using Microsoft Excel 2007.

Primary data was collected using tools (Appendix D) developed and provided by the investigator to Lincoln County hospitals and nursing homes to collect data on those who have fallen that are 65 years and older from 2004-2008. Data collection tools were provided to each facility through a face-to-face meeting with each facility's Quality

Control Specialist in July 2010. Specifically long term care data was collected from Pine Crest Nursing Home (Merrill), as well as hospital data collected for Good Samaritan Health Care Center – Ministry Health Care (Merrill) and Sacred Heart Hospital – Ministry Health Care (Tomahawk). The two Tomahawk nursing homes, Golden Living and Golden Age, both affiliated with the Golden Living Corporation, refused to provide fall data to the investigator due to corporate privacy issues. Facilities were asked a series of questions on the history of falls among those 65 years of age and older that occur in their facility, as well as a description of data collection methods used by the facility. The data collection tool, a three page questionnaire, included quantitative and qualitative data questions on emergency room visits due to falls, causes of falls, number of falls among inpatients, frequency of falls for specific residents, number admitted to the facility if fall-related, discharge locations, number of deaths due to falls, when the fall occurred, age and other demographic characteristics of the population of the facility, and those who fall, refer to Appendix D. Data was provided by facilities to the investigator in September 2010.

Lincoln County fall data was compared with the state of Wisconsin on age-adjusted fall rates, when and where the fall occurred, age and other demographic characteristics. Fall data was also compared between facilities including frequency of falls among the population of the facility and how data is collected.

RESULTS

Emergency Room Visits

Of all the injuries resulting in an emergency room visit from 2004-2008 for persons 65 years and older, 55% or 924 of these visits in Lincoln County were due to falls compared to 59% or 136,806 visits in Wisconsin. During this time period for Lincoln County, the average age-adjusted rate for falls per 100,000 population for persons over the age of 64 was 3,691 for females and 3,087 for males. This compares to Wisconsin with the average age-adjusted rate at 3,945 for females and 2,941 for males. The average age for those who have fallen and visited an emergency room during this time period was 77 years of age for Lincoln County and 80 years of age for Wisconsin, see Table 3 and 4.

Table 3. Emergency Room Visits due to falls among those 65 and older, 2004-2008; Lincoln County (N=924), Wisconsin (N=136,806), and Sacred Heart (N=441) (Rate = average age adjusted rate per 100,000 population)

	Lincoln County			Wisconsin			Sacred Heart Hospital		
	n	%	Rate	n	%	Rate	n	%	Rate
Total	924	100	3,450	136,806	100	3,534	441	100	—
Male	330	37	3,087	44,671	33	2,941	169	38	—
Female	594	64	3,691	92, 135	67	3,945	272	62	—

Table 4. Average age at the time of the emergency room visit due to a fall among those 65 and older, 2004-2008 by gender; Lincoln County (N=924) and Wisconsin (N=136,806)

	Lincoln County	Wisconsin
	Age	Age
Overall	81	80
Male	72	79
Female	82	81

Sacred Heart Hospital - Ministry Health Care during 2004-2008 had 441 emergency room visits due to a fall-related injury for persons 65 years and older; 38% or 179 for males and 62% or 272 for females. Of the 441 visits, 6% or 27 of these patients had a repeat emergency room visit due to a fall.

Good Samaritan Health Care Center – Ministry Health Care had an annual average of 1,314 emergency room visits for all ages during 2004-2008. The average age of residents who visit emergency room due to a fall for persons over the age of 65 is 71. Good Samaritan data on the number of emergency room visits due to falls contained errors by the reporter for the facility thus could not be used for this study. No other data regarding emergency room visits during 2004-2008 was available for Good Samaritan Health Center.

Data was analyzed to determine any increase of fall-related emergency room visits during a given month of the year for Lincoln County or Wisconsin for persons 65 years and older from 2004-2008. The average number of falls reported to the emergency room during the winter months (December through March) was the same average number of falls occurring for the summer and fall months (April through November).

The reason for falls and a visit to the emergency room for Sacred Heart Hospital during 2004-2008 for persons 65 and older was 1) slip, trip and stumble; 2) striking object; 3) fall from bed; 4) not classified); and 5) fall from one level to another. Good Samaritan Hospital reported 1) unsteady and 2) fell at home while ambulating.

In Lincoln County the average cost of an emergency room visit for a fall during 2004-2008 for person over the age of 64 was \$1,015, totaling \$937,620 for 924 falls. The average cost for Wisconsin was \$1403 per visit, a total cost of \$62,663,138 for 136,806 falls. Ninety-two percent of emergency room visits for Wisconsin and Lincoln County was paid by Medicare. There was no further description as to what services are paid for by Medicare.

Hospitalizations

In Lincoln County during 2004-2008, 638 persons 65 years and older were hospitalized due to falls; 68% or 432 were females and 32% or 206 were males. This was 74% of all injury-related hospital admissions for persons 65 years of age and older. The average age-adjusted hospitalization rate per 100,000 population for persons 65 years of age and older was 2,615 for females and 1,942 for males. Wisconsin was similar to Lincoln County with 72% or 83,184 of all injury-related hospital admissions due to falls; 69% or 57,155 were females and 31% or 26,029 were males. For Wisconsin the average age-adjusted rates per 100,000 population for person 65 years of age and older was 2,333 for females and 1,730 for males, see Table 5 and 6.

Table 5. Hospital Admissions due to fall-related injury among those 65 and older, 2004-2008; Lincoln County (N=638), and Wisconsin (N=83,184) (Rate = average age adjusted rate per 100,000 population)

	Lincoln County			Wisconsin		
	n	%	Rate	n	%	Rate
Total	638	100	2,341	83,184	100	2,098
Male	206	32	1,942	26,209	31	1,723
Female	432	68	2,615	57,155	69	2,333

Table 6. Average age at the time of hospitalization due to a fall among those 65 and older, 2004-2008 by gender; Lincoln County (N=638) and Wisconsin (N=83,184)

	Lincoln County	Wisconsin
	Age	Age
Overall	82	82
Male	80	80
Female	83	83

Sacred Heart Hospital during 2004-2008 had 100 hospitalizations due to falls for those 65 and older. Good Samaritan during 2004-2008 reported an average number of two admissions per year to the hospital due to a fall for persons 65 or older or a total of nine.

Patients averaged five days for a hospital stay for a fall-related injury both in Lincoln County and Wisconsin for the years 2004-2008. For Lincoln County the cost was \$14,478 per hospital stay, a total of a little over 9 million. This compared to Wisconsin at \$20,630 per hospital stay, almost 2 billion in health care costs. During 2004-2008, Good Samaritan had an average of a three day hospital stay. Health care costs were not available. According to WISH, ninety-five percent of all fall hospitalizations in Lincoln

County and Wisconsin were paid by Medicare. Patients were most commonly discharged to skilled based facilities and home for those 65 years and older, see Table 7.

Table 7. Hospital discharge location among those 65 and older for a fall-related injury, 2004-2008; Lincoln County (N=638) and Wisconsin (N=83,184)

	Lincoln County		Wisconsin	
	N	%	n	%
Total	638	100	83,184	100
Skilled Care Facility	346	54	47,988	58
Home	205	32	24,334	29
Other Services	86	14	10,862	13

Fall-related Deaths

There were 38 deaths during 2004-2008 due to injury in Lincoln County for persons over the age of 65; 53% or 20 of these deaths were caused by falls. The average age-adjusted death rate per 100,000 population for persons over the age of 65 was 49 for females and 94 for males. For Wisconsin a total of 5,665 injuries for persons age 65 and older from 2004-2008 result in death; 67% or 3,794 of these deaths were caused by falls; 2,194 or 58% for females and 1,600 or 42% for males. Also for Wisconsin the average age-adjusted death rate per 100,000 population for persons over the age of 65 was 80 for females and 108 for males. Most fall-related deaths in Lincoln County and Wisconsin during 2004-2008 occurred at home followed by residential institutions; see Table 8, 9 and 10.

There were no deaths from 2004-2008 reported by Good Samaritan due to a fall that has occurred at the facility after a hospital admission. Data on deaths due to a fall-related injury was not available from Sacred Heart Hospital.

Table 8. Unintentional fall-related injury deaths among those 65 and older, 2004-2008; Lincoln County (N=20) and Wisconsin (N=3,794) (Rate = average age adjusted rate per 100,000)

	Lincoln County			Wisconsin		
	n	%	Rate	n	%	Rate
Total	20	100	67	3,794	100	91
Male	10	50	94	1,600	42	108
Female	10	50	49	2,194	58	80

Table 9. Average age at time of unintentional fall-related injury deaths among those 65 and older, 2004-2008 by gender; Lincoln County (N=20) and Wisconsin (N=3,794)

	Lincoln County	Wisconsin
	Age	Age
Overall	83	85
Male	83	83
Female	93	87

Table 10. Unintentional fall-related deaths for 65 years and older, by injury location, 2004-2008; Lincoln County (N=20) and Wisconsin (N=3,873)

	Lincoln County		Wisconsin	
	n	%	n	%
Total	20	100	3,873	100
Home	11	55	2,177	56
Residential institution	8	40	1,147	31
School, other institution and public administration area	1	5	123	3
Trade and service area	0	0	88	2
Sports and athletic areas	0	0	2	0.05
Street/Highway	0	0	57	1
Industrial and construction area	0	0	7	0.2
Farm	0	0	17	0.4
Unspecified	0	0	17	0.4
Other Specified Place	0	0	237	6

Nursing Homes

Pine Crest nursing home had an average of 134 residents per year from 2004-2008 with an average age of 86 years; average age for females being 87 and for males 83. Pine Crest during 2004-2008 had an average of 334 falls per year which suggested that a number of residents had repeat falls per year. Only in 2004 did the facility have additional data that was recorded on falls. This data showed that two-thirds of all falls (223) were among female residents whereas one-third (111) were among males, see Table 11. Also the data in 2004 indicated that 12% or 17 residents had repeat falls. Data was not available on how many repeat falls per resident; however, it appears to be a high number with the census data provided by the facility of a total of 140 residents in 2004 and in the same year 334 falls reported.

Table 11. Fall-related injuries among residents 65 and older, 2004; Pine Crest Nursing Home (N=334)

Lincoln County		
	n	%
Total	334	100
Male	111	33
Female	223	67

During 2004-2008 the top five causes of falls by residents at Pine Crest were 1) poor foot wear; 2) need to use the bathroom; 3) acute illness, delirium confusion; 4) poor lighting, and 5) wet floor caused by residents spilling liquids.

Data was not available on the number of deaths due to falls among residents. There was no further data available for nursing homes locally or through the state Wisconsin Quality Assurance Program for nursing homes.

Surveillance

Pine Crest Nursing Home reported documenting falls by preparing quality assurance reports. Both the Nursing committee and Safety committee review these quality assurance reports. Pine Crest only reports to the state if there was a fall and the facilities care plan was not followed. Golden Living Nursing Home also gathers fall data on individual incident reports which were reviewed by a quality assurance team.

Good Samaritan-Ministry Health Care and Sacred Heart-Ministry Health Care collect data on the number of emergency room visits and hospitalizations by sorting patient coding called International Classification of Diseases (ICD) codes from 2004-2008 on death certificates. All inpatient falls that have occurred in the facility were recorded electronically in an agency developed form. Both hospitals do not officially report data to the state of Wisconsin and they do not have databases set up to analyze falls. The state of Wisconsin collects data from hospitals through ICD-codes for emergency rooms and hospitalizations, as well as death certificates. Although both hospitals are Ministry Health Care they do not use the same database template for the purpose of collecting injury data.

DISCUSSION

The data shows that for Lincoln County and Wisconsin during 2004-2008 had very similar average age-adjusted rates of falls that led to emergency room visits, hospitalizations, and deaths for persons 65 years and older. Wisconsin had a slightly higher rate of emergency room visits; 3,534 per 100,000; and Lincoln County had a slightly higher rate of hospitalizations; 2,341 per 100,000. The average age-adjusted death rate for Wisconsin was higher per 100,000 population; Wisconsin's rate at 91 and Lincoln County's rate at 67 per 100,000 population.

Fall-related injury data confirms that females were at a higher risk of fall injury in Lincoln County and Wisconsin; and males had a higher rate in fall-related deaths. During 2004-2008 for Lincoln County, the average age-adjusted rate for emergency room visits per 100,000 population for persons over the age of 64 was 3,697 for females and 3,087 for males. This compared to Wisconsin with the average age-adjusted rate at 3,945 for females and 2,941 for males. The death rate for Wisconsin was 109 for males and 80 for females while in Lincoln County it was 94 for males and 49 for females per 100,000 population. While falls occur at all ages those who were 65 years and older had a higher rate of falls than any other age group. For those falls that had been reported to an emergency room or hospital, data shows the average age at the time of the fall was 80 years old or older. This was true in all cases except for males who on average report to an emergency room around 70 years old and females who die on average from a fall-related injury at approximately 90 years old.

Although there was adequate data on age and sex, data was lacking on reported risk factors that may have lead up to a fall. We know that falls not only place a burden on individual's health but also financially on the Nation costing billions of dollars in emergency room visits and hospitalizations. There is an assumption that as you age your risk factors for falling increases primarily due to chronic health conditions, but identification of risk factors could provide additional information that is needed to develop targeted interventions in the community, acute care and long term settings. Prevention strategies can be targeted to reduce these costs if risk factors were captured as part of standard collection methods.

The location of the fall and how the fall occurs are other key factors when looking at data collected or not collected. WISH included information on discharge location, but data on where the fall occurred and how were not available. This data is perhaps collected by facilities, but is not readily shared. Having statewide data available on the location of a fall would assist organizations and facilities to incorporate comprehensive, best practice interventions to assist in the prevention of falls.

With the data collected from Pine Crest Nursing Home, there was no data available on how many admissions where due to a fall. This only suggests that perhaps there is a need for improvement of data collection from hospital discharge to nursing home admission or from hospital discharge to one's home. Ideally collecting data after discharge will provide crucial data on what interventions are being implemented to prevent future falls.

This study provides new insight on how and what fall data is collected by local health care facilities, as well as other reporting requirements for the state of Wisconsin.

Currently, nursing homes and hospitals do not have reporting requirements for the state of Wisconsin for falls. Even state quality assurance departments for nursing homes do not have local fall data available to share. There is concern if data was more readily available at the local level; it still would not be shared with other organization do to privacy issues and lack of time. This sharing of data should be provided through a state data system such as WISH.

The Wisconsin Interactive Statistics on Health (WISH) is the only injury data source that is readily available; and the data that is available on WISH is limited based on the system's capacity as well as the data that is collected, hospital ICD codes and death certificates. In addition there is no data system for nursing home or urgent care clinics. WISH also has a barrier on the lack of instruction on how to formulate queries, which makes it a source that few community partners have the time and training to use. The WISH data system is not a tool promoted by the Division of Public Health which also leads to under utilization at the local level.

This study showed that it is very difficult for local public health departments to collect data from hospitals and nursing homes. One barrier is the lack of a data system specifically for falls at local facilities. It is very time intensive to provide a history data trend with data systems that are not in place. For the purpose of this study, it took one facility over three months before sharing data with the investigator and data was not available or provided to the investigator with errors. This shows that data is not readily useable for research. There is a second barrier with the unwillingness to share data. Some facilities will share no data while others will only share some data. Thirdly, hospitals and nursing homes are not use to sharing data with public health agencies. There is a wealth

of data that is available from health care providers, but very little data is provided to community partners and if it is provided it usually occurs at the state level. This is an indicator that health care professionals are not in the practice of collaboration with concerns to patient care and the benefits of collaboration with community partners has not been an incentive.

RECOMMENDATIONS

More data is needed about the burden of falls in Wisconsin from nursing homes, hospitals, clinics, and Medicare than what is currently available to public health professionals. WISH data needs to be expanded to record the presence of risk factors, location of injury, and how the injury occurred as well as including urgent care utilization data. Perhaps one way of retrieving this data is through requirements for reimbursement from Medicare. Data collection is important but it is only good if it is used by others. Adding data to annual report cards would be one way of providing education and awareness of the burden of falls to residents, community partners, caregivers, and elected officials. This will provide an increase in awareness and perhaps a commitment from the health care communities and policy makers in developing and funding policy initiatives. Public health departments would be a key stakeholder in advocating for these initiatives. Currently hospitals and nursing homes are not reporting data on fall-related injuries to community stakeholders or residents.

There needs to be an investment by the state of Wisconsin in implementing an electronic reporting system that will enable data to be more easily collected by nursing homes, and hospitals. This will provide an easier way for facilities to analyze data and share data among partners. It would be very important to expand this investment to urgent care and community-based residential facilities.

Like all prevention strategies it takes investment of dollars in order to reduce the public health burden of falls in Lincoln County and Wisconsin. Through adequate

reimbursement for care, financial incentives would encourage proper care coordination through the medical home model. With a care coordinator, clinical practice guidelines for assessment, screening, and follow-up, and referral could be better implemented in Wisconsin. Medical homes can address the various risk factors associated with falls such as chronic disease, medication management, and balance and gait issues to name a few. This care coordination can also help to link a patient to community resources, as well as providing additional resources, education, and support to caregivers. Family Care (case management of care of the elderly) implementation in Wisconsin and Lincoln County might be a promising approach to connect residents to a medical home which would provide better care coordination for those who are 65 years and older if successful.

The study also proves that there needs to be a way of measuring evidence-based practices to reduce the risk of falls. Research is very complete when it comes to addressing what interventions are recommended to reduce one's risk of a fall, but there needs to be more information on how implementing the interventions have been proven to be successful.

The burden of falls on Lincoln County and Wisconsin can be overwhelming. It is imperative for local and state fall prevention networks to be formed to build local capacity and programs addressing multi-risk factors and multi-interventions. These networks can provide a commitment across systems such as health care facilities, aging resource centers, public health departments, faith-based communities, and mental health agencies. Currently there are no community networks addressing falls in Lincoln County. Health care providers are not addressing falls except within their facility.

CONCLUSION

Falls place a significant burden on public health through direct costs of fall-related health care, as well as personal costs such as death and disability both physically and psychologically. It is important as our population increases in the number who are 65 and older that we are better able to identify through data analysis what interventions will successfully address the many risk factors associated with a fall in health care facilities, at home, and in the community. Falls are preventable through assessments, screening, community programs, and care management by caregivers and providers (Guidelines, 2001). In order to measure if we are successful data collection and data sharing needs to be part of this process. Through education and commitment of time and resources, we can reduce the burden of falls on Lincoln County and Wisconsin.

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APPENDIX A
LITERATURE REVIEW

INTRODUCTION

The purpose of this descriptive study was to assess the number of injuries and deaths due to falls among adults 65 and older in Lincoln County, Wisconsin, as well as to examine and explore the causes of falls and what evidence-based interventions are recommended for prevention purposes. The literature review focused on the following areas: 1) morbidity and mortality; 2) costs of fall related injuries; 3) risk factors; and 4) clinical practice guidelines of interventions to prevent falls.

INCIDENCE

Each year in the United States an estimated 30% of older adults fall and this percentage rises to 50% for those aged 85 and older (Department of Health and Human Services, Centers for Disease Control and Prevention [DHHS CDC], 2008; Blake et al., 1988). Older adults who fall once are two to three times as likely to fall again within a year (O'Loughlin, 1993). Unintentional injuries are the fifth leading cause of death in older adults in the United States (after cardiovascular, neoplastic, cerebrovascular, and pulmonary causes ("Guidelines", 2001). Of all of these unintentional injury deaths, falls are responsible for two-thirds of the deaths ("Guidelines", 2001). In the United States, a total of 15,802 persons aged 65 or greater died in 2005 as a result of injuries from falls (Department of Health and Human Services, Centers for Disease Control and Prevention, [DHHS CDC] 2006). In Wisconsin, falls are the leading cause of injury-related death resulting in 918 deaths in 2008, (Wisconsin Department of Health Services [WI DHS], 2010, August). In Wisconsin, the majority of falls that result in death occur in the home,

55% (WI DHS, 2010, August). This is followed by 51% of deaths occurring in hospitals, 25% of deaths in nursing homes, and 15% occurring in a facility-based hospice (WI DHS, 2010, August).

In the United States, falls are the leading cause of injury-related visits to emergency department (Tinetti, 2003). Furthermore, an estimated 1.8 million falls led to an emergency room visit among Americans age 65 and older in 2000 (Kochers, 2002). Older adults are hospitalized for fall-related injuries five times more often than they are for injuries from other causes (Alexander, Rivara, & Wolf, 1992). There were 433,000 hospitalizations due to falls in the United States in 2005 (Stevens & Sogolow, 2005). In 2006, Wisconsin had 16,000 hospitalizations among residents 65 and older and 25,000 emergency room visits ranking third in the nation for fall-related deaths and hospitalizations (Wisconsin Department of Health Services, n.d.). In addition, Wisconsin residents aged 85 years and older had the highest rate of fall-related hospitalizations at 5,712 per 100,000 people (Wisconsin Department of Health Services [WI DPH], 2006). From 2002-2004, Lincoln County had 273 hospitalizations due to falls among the 65 years old or older (WI DPH, 2006). Patient falls in hospitals are common and affect approximately 2% to 17% of patients during their hospital stay (Schwendimann, Buhler, De Geest, Sabine, & Milisen, 2006). The fall rate varies from 1.4 up to 17.9 falls per 1,000 patient days depending on hospital type and patient populations (Schwendimann et al, 2006). These hospital stays are almost twice as long after a fall than for elderly patients who are hospitalized for other reasons (Tinetti, 2003). Most (57%) of Wisconsin residents aged 65 years and older who were hospitalized in 2006 due to a fall were

discharged to a skill nursing or intermediate care facility (Wisconsin Department of Health Services, n.d.).

Approximately 40% of those admitted to a nursing home had a fall in the 30 days prior to admission (WI DPH, 2010, August). Nursing home residents tend to fall at a rate that is approximately three times as high as that of older people living in the community (Rubenstein et al., 2004). Although studies vary widely, 16% to 75% of the estimated 1.7 million nursing home residents fall annually (Fuller, 2000). Of those, 30-40% will fall two or more times, and up to 15% will sustain a serious injury as a result of the fall (Fuller, 2000). Among persons 85 years and older, 1 out of 5 fatal falls occurs in a nursing home (Baker & Harvey, 1985). Only about 4% of falls result in fractures, whereas other serious injuries such as head trauma, soft-tissue injuries, and severe lacerations occur in about 11% of falls (Hogue, 1982). Of those admitted to Wisconsin nursing homes in 2007, 73% ended up with nursing home stays of less than 100 days and 27% considered long-term admissions (WI DPH, 2010, August). More than one out of every ten admission to nursing homes in Wisconsin in 2007 involved a fall and resulted in a long-term stay (WI DPH, 2010, August).

At least 95% of hip fractures are caused by falls (Freeman et al., 2002). Hip fractures are one of the most serious consequences of falls, with more than 300,000 hospitalizations among persons 65 years and older to hip fractures each year (MacCulloch, Gardner, & Bonner, 2008). Nursing home residents have a disproportionately high incidence of hip fracture and have been shown to have higher mortality rates after hip fractures than community-living elderly persons (Rhymes & Jaeger, 1988). Approximately half of all fallers who fracture their hips are never

functional walkers again and 20% will die within six months (Freeman et al., 2002). Most patients with hip fractures are hospitalized for one week (Centers for Disease Control and Prevention [CDC], 2009). Up to one in four adults who lived independently before their hip fracture had to stay in a nursing home for at least a year after their injury (Magaziner et al., 2000). About 76% of all hip fractures occur in women (CDC, 2009).

COSTS

Falls place a burden on our nation, state, and county both through indirect and direct costs. In 2000, our nation spent \$.2 billion for fatal falls, \$19 billion for nonfatal falls (Stevens et al., 2006). The financial toll for older adult falls is expected to increase as the population ages, and may reach \$54.6 billion by 2020 (Englander, Hodson, Terregrossa, 1996). The Centers for Medicare and Medicaid Services has reported that in 2006, the average Medicare payment for a fall in the hospital was \$24,962 (Rosenthal, 2007). In the Wisconsin Burden of Falls Report 2010, falls resulted in \$800 million in charges for emergency department visits and hospitalizations, 62% of hospital charges among those 65 and older. Emergency room visits accounted for \$160 million, while inpatient hospitalizations accounted for \$638 million. Of those in Wisconsin who were hospitalized for a fall in 2008 and died in the hospital, the average length of stay was 6.5 days, resulting in over \$26 million in charges (WI DPH, 2010, August). The direct costs can include; fees for hospital, nursing home care, rehabilitation, community-based services, use of medical equipment, prescription drugs, environmental home safety changes, and insurance processing. This does not account for the indirect costs of being disabled, dependent on others, loss of productivity at work or at home, increase fear of falling, and the reduce quality of life. Medical costs in 2000 for women, who comprised 58% of older adults,

were two to three times higher than for men (Stevens et al., 2006). Over 70% of the costs for fall-related hospitalizations and emergency department visits are paid by governmental insurance programs such as Medicare and Medicaid (WI DPH, 2010, August). In 2008, Medicare no longer reimbursed hospitals for the treatment of eight conditions that occur in the hospital, including falls (Kaiser Daily Health Report, 2007). The facilities cannot bill the beneficiary for any charges associated with the hospital-acquired complication (Kaiser Daily Health Report, 2007).

RISK FACTORS

Several studies have indicated that a multiple risk factors lead to a person's higher rate for falls. Tinetti in 1988 surveyed community-dwelling elderly person and reported that the percentage of a person falling increased from 27% for those with no or one risk factor to 78% for those with four or more risk factors. Risk factors related to falls are broken down by 1) biological and behavioral and 2) environmental risks.

Biological and Behavioral Risk Factors

After adjusting for age, the unintentional fall fatality rate in 2004 was 49% higher for men than for women (Centers for Disease Control and Prevention [CDC], 2006). This may be because men 65 and older have more chronic conditions than do women of the same age or because they engage in risky behaviors, such as climbing on ladders (Centers for Disease Control and Prevention [CDC], 2001). Rates of fall-related fractures among older adults are more than twice as high for women as for men (Stevens et al., 2005). A biological risk factor contributing to women's increased risk is osteoporosis (Osteoporosis Society of Canada, 1996). In 2001, the rates of fall injuries for adults 85 and older were four to five times that of adults 65-74 (Stevens et al., 2005). Acute illness and chronic

disease is associated with falls such as infectious disease, arthritis, Parkinson's disease, hypotension, osteoporosis, incontinence, and cardiovascular conditions (Kronfol, n.d.). In addition, dizziness, balance, and syncope have also been identified as factors (Guse & Porinsky, 2003). Risk factors increase among those with a cognitive impairment such as confusion due to dementia and delirium ("Guidelines", 2001). Some studies have found that taking more than four medications, irrespective of type, increases one's risk ("Guidelines", 2001). The use of four or more medications is associated with a nine-fold increase risk of cognitive impairment and fear of falling (Todd & Skelton, 2004). The most common drugs associated with falls are those that act on the central nervous system, such as sedatives, tranquilizers, and benzodiazepines (Yoshida, n.d.). Benzodiazepine used in older people is associated with an increase of as much as 44% in the risk of hip fractures and night falls (Ray, Thapa & Gideon, 2000). Consumption of 14 or more drinks containing alcohol per week is associated with an increased risk of falls in older adults (Mukamal, Mittleman, Longstreth, Newman, Fried, & Siscovick, 2004).

A panel of the American Geriatrics Society, British Geriatrics Society and American Academy of Orthopedic Surgeons found muscle weakness and reduced physical fitness is one of the most important intrinsic risk factor for falling, increasing risk by four to five times ("Guidelines", 2001). Impaired control of balance and gait can lead to impaired ability to maintain upright stance or react to a sudden loss of balance and is a leading factor to instability and falls (Kronfol, n.d.). A history of falls is one of the best predictors of a future fall. Any previous fall increases the risk for another fall threefold ("Guidelines", 2001). Many people, who fall, even those who are not injured, develop a fear of falling. This fear may cause them to limit their activities, leading to

reduced mobility and physical fitness, and increasing their actual risk of falling (Vellas, Wayne, Remero, Baumgartner, & Garry, 1997).

Additional risk factors include visual impairment: visual acuity, contrast sensitivity, visual field, cataract, glaucoma, and muscular degeneration (Todd et. al., 2004), as well as bifocal or multifocal lenses (Lord, Dayhew, & Howland, 2002). Nutritional deficiencies: a low body mass index suggesting malnutrition is associated with increased risk (Tinetti, Doucette, Claus, & Marottoli, 1995). Foot problems: bunions, toe deformities, ulcers, deformed nails and general pain in walking increase balance difficulties while increasing fall risks (Tinetti, Speechley, & Ginter, 1988).

People in nursing homes are generally frailer than older adults living in the community. Frail, high-risk persons living in institutions tend to have a higher incidence of falls caused by gait disorders, weakness, dizziness, and confusion (Rubenstein et al., 2004). Vitamin D deficiency is particularly common in older people in residential care facilities and may lead to abnormal gait, muscle weakness, osteomalacia and osteoporosis (Todd et al., 2004). Muscle weakness and walking or gait problem are the most common causes of falls among nursing homes residents, accounting for 24% of the falls (Rubenstein et al., 2004).

Environmental Risk Factors

Fifty-six percent of falls occur outside the home such as in the yard, on the street, or in a public place (Yoshida, n.d.). Falls that occur inside the home happen most frequently in bedrooms, kitchens and dining rooms (Yoshida, n.d.). Relatively few falls occur in the bathroom, on the stairs, or from ladders and step stools (Campbell et al., 1990). Falls that occur indoors are more likely to result in hip fracture, whereas those that occur outdoors are

more likely to result in distal forearm fracture (Nordell, Jarnlo, Jetsen, Nordstrom, & Thorngren, 2000). Men are more likely to be more active and to fall outdoors while women tend to fall inside the home (Yoshida, n.d.). Risk-taking behavior can also be an indicator such as seniors climbing ladders, standing on unsteady chairs, and even participating in vigorous sports such as skiing or tennis (Kronfol, n.d.). Many older adults report that their fall occurred when they were rushing, not paying attention or not using mobility devices prescribed for them such as a cane or walker (Gallagher & Brunt, 1996). Limited accessibility to health and low income, little education and poor housing environments are associated with higher risk of chronic disease which may be associated with an increased risk of falling (Yoshida, n.d.). Foot wear is a potentially modifiable factor that is thought to play a contributing role in some falls (Frey, & Kubasak, 1998). According to Wisconsin's report on the Burden of Falls 2010, unmarried people are more likely than those with a partner to fall and be injured. Also those reporting having no insurance and less education have a higher percentage of falls.

Environmental risk factors in institutions are: conditions of the flooring, poor illumination, absence of grab rails bars in bathrooms, noncollapsing bed rails, items on the floor, IV poles, and tubing and placement of Foley's catheters (Stevens, Holman, & Bennett, 2001). Environmental hazards in nursing homes cause 16% to 27% of fall among residents (Centers of Disease Control and Prevention [CDC], 2008). Such hazards include wet floors, poor lighting, incorrect bed height, and improperly fitted or maintained wheelchairs (CDC, 2008). Attempting to move to or from the bathroom and nocturia (which necessitates frequent trips to the bathroom) has also been reported to be associated with falls (Rubenstein et al., 2004). Medications can increase the risk of falls and fall-

related injuries in nursing homes (CDC, 2008). Other causes of falls include difficulty in moving from one place to another (for example, from the bed to a chair), poor foot care, poorly fitting shoes, and improper or incorrect use of walking aids (CDC, 2008). About 35% of fall injuries occur among residents that cannot walk (Thapa, Brockman, Gideon, Fought, & Ray, 1996). Use of physical restraints and inappropriate footwear are other identifiable risk factors, but are supported with weak evidence (Tinetti, Inouye, Gill & Doucetter, 1995). The risk for a fall-related injury was 10 times greater for residents who had been restrained at some time during a 1-year study period than that of those who had not been restrained (Tinetti, Liu, & Ginter, 1992).

According to The Joint Commission on Accreditation of Healthcare organization's Sentinel Event Alert, July 12, 2000, identified communication as a root cause of falls in the hospital setting. These included failure to communicate information during nursing report; shift changes or a transfer from a hospital to a nursing home; caregivers not documenting changes in conditions in the medical record; and families' inadequate communication about conditions and history of falling. Forty-one percent of the organizations identified incomplete patient assessment and reassessment, and incomplete plan of care or lack of protocol and environment of care issues such as the design of windows, door locks and nursing stations (The Joint Commission, 2000).

Staffing levels can also increase one's risk of falls in a nursing home and hospital setting. A 2002 report by the Joint Commission on Accreditation of Healthcare Organization (JACHO) confirmed the gravity of the problem of falls. According to this JACHO report, lack of proper nursing staff levels has made this even worst in hospitals (Hosseini & Hosseini, 2008). Falls have been reported to increase when nursing home

nursing staffing is low, such as during breaks and at shift changes (Rubenstein et al., 2004).

INTERVENTIONS

There has been several clinical practice guidelines published to offer a complete and comprehensive guide for fall prevention clinical decision-making with recommendations based on a systematic review of current evidence. Interventions favor a multi-interdisciplinary team approach with a multifactorial intervention plan, see Table 1. Screening and assessments are a high priority when reducing falls among those 65 years and older in acute and long term settings. Exercise, medication management and home safety are interventions that are highly recommended for community, acute care, and long term care setting.

SUMMARY

The literature review has identified falls as a burden to public health specifically to those 65 years and older. This is measured through admissions to hospitals and nursing homes, emergency room visits, discharge data, and death certificates. In addition, it is measured through the financial burden it places on local communities. Those with multi-risk factors, both environmental and biological, have an increase chance of falling. By implementing evidence-based clinical practice guidelines risk factors can be reduced and ultimately falls can be prevented.

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APPENDIX B

CLINICAL PRACTICE GUIDELINES

1. Guidelines for the prevention of falls in older persons. (2010). <i>Journal of the American Geriatrics Society</i>, Retrieved June 14, 2010, from http://www.american geriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/2010/	Screening and Assessment 1. All older individuals should be asked whether they have fallen in the past year and frequency. 2. Older individuals should be asked if they experience difficulties with walking or balance. 3. Older persons who present for medical attention because of a fall, report recurrence in the past year, or report difficulties in walking or balance (with or without activity curtailment) should have a multifactorial fall risk assessment. 4. Older persons who have fallen should have an assessment of gait and balance using one of the available evaluations. 5. Older persons who cannot perform or perform poorly on a standardized gait and balance test should be given a multifactorial fall risk assessment. 6. Older persons reporting only a single fall and reporting or demonstrating no difficulties or unsteadiness during the evaluation of gait and balance do not require a fall risk assessment. 7. The multifactorial fall risk assessment should be performed by a clinician(s) with appropriate skills and training. 8. The multifactorial fall risk assessment should include focused history, physical examinations, functional assessment, and environmental assessment. Community Intervention 9. The multifactorial fall risk assessment should be followed by direct interventions tailored to the identified risk factors, coupled with an appropriate exercise program. 10. A strategy to reduce the risk of falls should include multifactorial assessment of known fall risk factors and management of the risk factors identified. 11. The most common components of effective interventions are: a. Adaptation or modification of home environment; b. Withdrawal or minimization of psychoactive medications; c. Withdrawal or minimization of other medications; d. Management of postural hypotension; e. Management of foot problems and footwear; and f. Exercise, particularly balance, strength, and gait training. 12. All older adults who are at risk of falling should be offered an exercise program incorporating balance, gait, and strength training. Flexibility and endurance training should be included. 13. Multifactorial/multicomponent intervention should include an education component complementing intervention being provided, tailored to individual cognitive function and language. 14. The health professional or team conducting the fall risk assessment should directly implement the interventions or
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	should assure that the interventions are carried out by other qualified healthcare professionals. 15. Psychoactive medications (including sedative hypnotics, anxiolytics, antidepressants) and antipsychotics (including new antidepressants or antipsychotics) should be minimized or withdrawn, with appropriate tapering if indicated. 16. A reduction in the total number of medications or dose of individual medications should be pursued. All medications should be reviewed, and minimized or withdrawn. 17. Exercise should be included as a component of multifactorial interventions for fall prevention in community-residing older persons. 18. An exercise program that targets strength, gait and balance, such as Tai Chi or physical therapy, is recommended as an effective intervention to reduce falls 19. Exercise may be performed in groups or as individual (home) exercises. 20. Exercise programs should be tailored to physical capabilities and health profile of the older person. 21. The exercise program should include regular review, progression and adjustment of the exercise prescription as appropriate. 22. In older women in whom cataract surgery is indicated, surgery should be expedited as it reduces the risk of falling. 23. There is insufficient evidence to recommend for or against the inclusion of vision interventions. 24. There is insufficient evidence to recommend vision assessment and intervention as a single intervention. 25. An older person should be advised not to wear multifocal lenses while walking, particularly on stairs. 26. Assessment and treatment of postural hypotension should be included as components of multifactorial interventions. 27. Dual chamber cardiac pacing should be considered for older persons with cardioinhibitory carotid sinus hypersensitivity that experience unexplained recurrent falls. 28. Vitamin D supplements of at least 800 IU per day should be considered for people with suspected vitamin D deficiency or who are otherwise at increased risk for falls. 29. Identification of foot problems and appropriate treatment should be included in multifactorial fall risk assessments and interventions. 30. Older people should be advised that walking with shoes of low heel height and high surface contact area may reduce the risk of falls. 31. Home environment assessment and intervention carried out by a health care professional should be included in a multifactorial
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	assessment. 32. The intervention should include mitigation of identified hazards in the home, and evaluation and interventions to promote the safe activities. 33. Education and information programs should be considered part of a multifactorial intervention for older persons living in the community. 34. Education should not be provided as a single, community intervention. Long Term Care Facilities 35. Multifactorial/multicomponent interventions should be considered in long-term care to reduce falls. 36. Exercise programs should be considered to reduce falls in older persons living in long-term care settings with caution regarding risk of injury in frail persons. 37. Vitamin D supplements of at least 800 IU per day should be provided to older persons residing in long-term care settings with proven or suspected vitamin D insufficiency or risk of falls. Cognitive impairment 38. There is insufficient evidence to recommend for or against multifactorial or single interventions to prevent falls in older persons with known dementia living in the community or in long-term care facilities.
<i>2. Preventing falls and harm from falls in older people: Best practice guidelines for Australian hospitals 2009.</i> (2009). Retrieved June 15, 2010, from http://www.safetyandquality.gov.au/internet/safety/publications/Content/FallsGuidelines-AustHospitals	Interventions 1. A multifactorial approach to preventing falls should be part of routine care for all older people in hospitals. 2. Develop and implement a targeted and individualized falls prevention plan of care based on the findings of a falls screen or assessment. 3. As part of discharge planning, organize an occupational therapy home visit for people with a history of falls, to establish safety at home. 4. Patients considered to be at higher risk of falling should be referred to an occupational therapist and physiotherapist for needs and training specific to the home environment and equipment. Screening and assessment 5. Document the patient's history of recent falls, or use a validated screening tool to identify people with risk factors for falls. 6. Use falls risk screening and assessment tools that have good predictive accuracy, and have been evaluated and validated across different hospital settings. 7. Conduct a systematic and comprehensive multidisciplinary falls risk assessment to inform the development of an individualized plan of care to prevent falls.

	8. When falls risk screens and assessments are introduced, they need to be supported by education for staff and intermittent reviews. Balance and Mobility Limitations 9. Use a multifactorial falls prevention program that includes exercise and assessment of the need for walking aids to prevent falls. Cognitive Impairment 10. Identified falls risk factors should be addressed as part of a multifactorial falls prevention program, and injury minimization strategies (such as using hip protectors or vitamin D and calcium supplementation) should be considered. Continence 11. Ward urinalysis should form part of a routine assessment. 12. As part of multifactorial intervention, toileting protocols and practices should be in place for patients at risk of falling. 13. Managing problems with urinary tract function is effective. Feet and Footwear 14. Include an assessment of footwear and foot problems as part of an individualized, multifactorial intervention. 15. Hospital staff should educate patients and provide information about footwear features that may reduce the risk of falls. Syncope 16. Patients with unexplained falls or episodes of collapse who are diagnosed with the cardioinhibitory form of carotid sinus hypersensitivity should be treated by inserting a dual-chamber cardiac pacemaker. 17. Assessment and management of postural hypotension and review of medications, including medications associated with presyncope and syncope should form part of a multifactorial assessment and management plan. (this can also be part of discharge planning). Dizziness and Vertigo 18. Vestibular dysfunction as a cause of dizziness, vertigo and imbalance needs to be identified in the hospital setting. 19. Use the Dix-Hallpike test to diagnose benign paroxysmal positional vertigo, which is the most common cause of vertigo in older people. Medications 20. Older people admitted to hospital should have their medications (prescribed and nonprescribed) reviewed and modified appropriately. 21. As part of a multifactorial intervention, patients on psychoactive medication should have their medication reviewed and, where possible, discontinued gradually. Vision
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	22. Use hospitalization as an opportunity to screen systematically for visual problems. 23. For a rough estimate of the patient's visual function, assess their ability to read a standard eye chart (eg a Snellen chart) or to recognize an everyday object (eg pen, key, watch) from a distance. Environmental Considerations 24. Environmental modifications should be included as part of a multifactorial intervention. 25. Falls can be reduced by using luminous toilet signs and night sensor lights. Individual Surveillance and Observation 26. Include individual observation and surveillance as components of a multifactorial falls prevention program. 27. Falls risk alert cards and symbols can be used to flag high-risk patients as part of a multifactorial falls prevention program, as long as follow-up occurs. 28. Consider using a volunteer sitter program for patients who have a high risk of falling. Restraints 29. Causes of agitation, wandering and other behaviors should be investigated, and reversible causes of these behaviors (eg delirium) should be treated, before restraint use is considered. Minimizing injuries from falls 30. Hip protectors must be worn correctly for any protective effect, and the hospital should introduce education and training for staff. 31. Hospital staff should check regularly that the patient is wearing their protectors, and ensure that the hip protectors are comfortable and the patient can put them on easily. Vitamin D and Calcium Supplements 32. Vitamin D and calcium supplementation should be recommended as an intervention strategy to prevent falls in older people. Benefits from supplementation are most likely to be seen in patients who have vitamin D insufficiency. Osteoporosis Management 33. People with diagnosed osteoporosis or a history of low-trauma fracture should be offered treatment. 34. Hospitals should establish protocols to increase the rate of osteoporosis treatment in patients who have sustained their first osteoporotic fracture.
3. Feder, G., Cryer, C., Donovan, S., & Carter, Y. (2000). Guidelines for the prevention of falls	Exercise Intervention findings 1. With the exception to T'ai Chi, exercise programs for prevention of falls for the general population should not be established. 2. Individual tailored exercise programs administered by qualified

in people over 65. <i>British Medical Journal</i>, Retrieved June 15, 2010, from http://findarticles.com/p/articles/mi_m0999/is_7267_321/ai_66881331/	professions targeted at the over the age of 80 should be established. - Exercise programs targeted at older people with mild deficits in strength, balance, lower extremity strength, and range of motion should be established. - T'ai chi classes with individual instruction should be offered to unselected older people living in the community. Multifaceted Interventions - Prioritize programs for prevention of falls that include more than one intervention. - Specific factors to target – priorities correction of postural hypotension, rationalization of drugs where possible, and interventions to improve balance, transfers, and gait. - Home based interventions – a program of medical and environmental assessment, with client education about risks and with referrals to relevant healthcare professionals should be established. - Follow-up for medical and occupational therapy for older people who have presented at accident and emergency departments after a fall should be established using a structured interdisciplinary approach. Residential Settings - All residents, non-selective, exercise programs for prevention of falls should not be implemented. - High risk residents, a program of risk assessment for residents who have had at least one fall, with referral to their primary physician for specific preventive measure if necessary, should be established. - All residents of nursing homes should be offered hip protectors.
4. Moreland, J., Richardson, J., Chan, D. H., O'Neill, J., Bellissimo, A., Grum, R. M., et. al. (2003). Evidence-based guidelines for the secondary prevention of falls in older adults. <i>Gerontology</i>, Retrieved June 20, 2010, from http://content.karger.com/ProdukteDB/produkte.asp?doi=	- Screening for deficits and environmental hazards followed by interventions targeted to these problems, i.e. multifactorial, is effective for community and institution-dwelling. - Psychotropic medication withdrawal in patients taking a benzodiazepine, hypnotic, antidepressant or major tranquilizer is effective in reducing falls in community-dwelling. - Balance exercises have evidence of effectiveness with both targeted and untargeted studies were combined for community and institutional-dwelling. - Screening of the home environmental with follow-up for any needed modifications by an occupational therapist is effective. - Repeated assessment of community-dwelling older adults using a disability rating scale is effective. - There is evidence to suggest that hormone replacement therapy for community-dwelling women who have a sustained a wrist fracture may be associated with increased falls. - Brisk walking in community-dwelling post menopausal women

10.1159/00006794 8	with a history of fracture in not advised. 8. In the community, targeted or untargeted education about falls or fear of falling with no follow-up of recommendations has no evidence of effectiveness. 9. Evidence about primary care clinics is lacking.
5. National Institute for Health and Clinical Excellence. (2004). <i>Clinical practice guideline for the assessment and prevention of falls in older people</i>. Retrieved on June 14, 2010, from www.nice.org.uk/page.aspx?o=cg021fullguideline	Case/risk identification 1. Older people in contact with health care professionals should be asked routinely whether they have fallen in the past year and asked about the frequency, context and characteristics of the fall/s. 2. Older people reporting a fall or considered at risk of falling should be observed for balance and gait deficits and considered for interventions to improve strength and balance. Multifactorial falls risk assessment 3. Older people who present for medical attention because of a fall, or report recurrent falls in the past year, or demonstrate abnormalities of gait and/or balance should be offered a multifactorial falls risk assessment. This assessment should be performed by a health care professional who specializes in falls should be part of a multifactorial intervention. May include the following: a. Identification of falls history; b. Assessment of gait, balance and mobility, and muscle weakness; c. Assessment of osteoporosis risk; d. Assessment of the older person's perceived functional ability and fear; e. Assessment of visual impairment; f. Assessment of cognitive impairment and neurological examination; g. Assessment of urinary incontinence; h. Assessment of home hazards; and i. Cardiovascular examination and medication review. Multifactorial interventions 4. All older people with recurrent falls or assessed as being at increased risk of falling should be considered for an individualized multifactorial intervention. In successful multifactorial intervention programs the following specific components are common: a. Strength and balance training; b. Home hazard assessment and intervention; c. Vision assessment and referral; and d. Medication review with modification/withdrawal. 5. Following treatment for an injurious fall, older people should be offered a multidisciplinary assessment and individualized intervention.

	Strength and balance training 6. Strength and balance training is recommended for community dwelling people with a history of recurrent falls and/or balance and gait deficit. A muscle strengthening and balance program should be offered by a trained professional. Exercise in extended care settings 7. Multifactorial interventions with an exercise component are recommended for older people in extended care settings who are at risk of falling. Home hazard and safety intervention 8. Older people who have received treatment in hospital following a fall should be offered a home hazard assessment and safety intervention/ modifications. 9. Home hazard assessment is shown to be effective only in conjunction with follow-up and intervention, not in isolation. Psychotropic medications 10. Older people on psychotropic medications should have their medication reviewed, with specialist input if appropriate, and discontinued if possible. Cardiac pacing 11. Cardiac pacing should be considered for older people with cardioinhibitory carotid sinus hypersensitivity, who have experienced unexplained falls. Encouraging the participation of older people in falls prevention programs 12. To promote the participation of older people in falls prevention programs the following should be considered. - Health care professionals involved in the assessment and prevention of falls should discuss what changes a person is willing to make. - Information should be relevant and available in languages other than English. - Falls prevention programs should address potential barriers, such as low self-efficacy and fear of falling. - Practitioners who are involved in developing falls prevention programs should ensure that such programs are flexible enough to accommodate participants' different needs and preferences. Education and information-giving 13. All health care professionals dealing with patients known to be at risk of falling should develop and maintain basic professional competence. Individuals at risk of falling, and their caregivers, should be offered information, both orally and in writing about: - What measures they can take to prevent further falls; - How to stay motivated if referred for falls prevention strategies;
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	c. The preventable nature of some falls; d. The physical and psychological benefits of modifying falls risk; e. Where they can seek further advice and assistance; and f. How to cope if they have a fall, including how to summon help and how to avoid a long lie. Brisk Walking 14. There is no evidence that brisk walking reduces the risk of falling. Low intensity exercise combined with incontinence programs 15. There is no evidence that low intensity exercise interventions, combined with continence promotion programs, reduce the incidence of falls in older people in extended care settings. Group exercise (untargeted) 16. Exercise in groups should not be discouraged as a means of health promotion, but there is little evidence that exercise interventions that were not individually prescribed for community-dwelling older people are effective in falls prevention. Cognitive/behavioral interventions 17. There is no evidence that cognitive/behavioral interventions alone reduce the incidence of falls in community dwelling older people of unknown risk status. Referral for correction of visual impairment 18. There is no evidence that referral for correction of vision as a single intervention for community dwelling older people is effective. Vitamin D 19. There is evidence that vitamin D deficiency and insufficiency are common among older people and that, when present, they impair muscle strength and possibly neuromuscular function, via CNS-mediated pathways. In addition, the use of combined calcium and vitamin D3 supplementation has been found to reduce fracture rates in older people in residential/ nursing homes and sheltered accommodation. Hip protectors 20. Reported trials that have used individual patient randomization have provided no evidence for the effectiveness of hip protectors in extended care settings or in their own homes. Data from cluster randomized trials provide some evidence that hip protectors are effective in the prevention of hip fractures in older people living in extended care settings, who are considered at high risk.
6. Registered Nurses' Association of	Assessments 1. Assess fall risk on admission. 2. Assess fall risk after a fall.

Ontario. (2005). <i>Fall prevention for older adults: Evidence-based protocol</i>. Retrieved June 14, 2010, from www.rnao.org/best_practices/PDF/BPG_Falls_rev05.pdf	Tai Chi 3. Tai Chi to prevent falls in the elderly is recommended for those clients whose length of stay (LOS) is greater than four months and for those clients with no history of a fall fracture. Exercise 4. Nurses can use strength training as a component of multi-factorial fall interventions. There is insufficient evidence to recommend it as a stand-alone intervention. Multi-factorial 5. Nurses, as part of the multidisciplinary team, implement multi-factorial fall prevention interventions to prevent future falls. Medications 6. Nurses, in consultation with the health care team, conduct periodic medication reviews in health care settings. Clients taking benzodiazepines, tricyclic antidepressants, selective serotonin-reuptake inhibitors, trazodone, or more than five medications should be identified as high risk. Medication review should be conducted periodically throughout the institutional stay. Hip Protectors 7. Nurses could consider the use of hip protectors to reduce hip fractures among those clients considered at high risk of fractures associated with falls; however, there is no evidence to support universal use in health care settings. Vitamin D 8. Nurses provide clients with information on the benefits of vitamin D supplementation in relation to reducing fall risk. In addition, information on dietary, life style, and treatment choice for the prevention of osteoporosis is relevant in relation to reducing the risk of fracture. Client Education 9. All clients who have been assessed as high risk for falling receive education regarding their risk of falling. Environment 10. Nurses include environmental modifications as a strategy. Nursing Education 11. Education on the prevention of falls and fall injuries should be included in nursing curricula and on-going education with specific attention to: - Promoting safe mobility; - Risk assessment; - Multidisciplinary strategies; - Risk management including post-fall follow-up; and - Alternatives to restraints and/or other restricted devices. Least Restraint 12. Nurses should not use side rails for the prevention of falls
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	however, other client factors may influence decision-making around the use of side rails. 13. Organizations establish a corporate policy for least restraint that includes components of physical and chemical restraints. Organizational Support 14. Organizations create an environment that supports interventions that includes: a. Fall prevention programs; b. Staff education; c. Clinical consultation for risk assessment and intervention; d. Involvement of multidisciplinary teams in case management; and e. Availability of supplies and equipment such as transfer devices, high low beds, and bed exit alarms. Medication Review 15. Implement processes to effectively manage polypharmacy and psychotropic medications including regular medication reviews and exploration of alternatives to psychotropic medication for sedation. Implementation Recommendations 16. Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. Implementation Plan may include: a. An assessment of organizational readiness and barriers to education; b. Involvement of all members who will contribute to the implementation process; c. Dedication of a qualified individual to provide the support needed for the education and implementation process; d. Ongoing opportunities for discussion and education to reinforce the importance of best practices; and e. Opportunities for reflection on personal and organizational experience in implementing guidelines.
7. Preventing falls and harm from falls in older people: Best practice guidelines for Australian residential aged care facilities 2009. (2009). Retrieved June 14, 2010, from http://www.safetya	Falls prevention interventions 1. A multifactorial approach using standard falls prevention interventions should be routine care for all residents of residential aged care facilities. 2. In addition to a multifactorial approach using standard falls prevention interventions, develop and implement a targeted and individualized falls prevention plan of care based on the findings of a falls screen or assessment. 3. Provide vitamin D with calcium supplementation to residents with low blood levels of vitamin D, because it works as a single intervention to prevent falls. 4. Residents should have their medications reviewed by a

ndquality.gov.au/intermet/safety/publicising.nsf/Content/com-pubs_FallsGuidelines/\$File/30458-Guidelines-RACF.PDF	pharmacist. Falls risk screening and assessment 5. If a falls risk screening process is used as a first step, rather than an assessment of all residents on admission, all residents should be screened as soon as practicable thereafter, then regularly (every six months) or when a change in functional status is evident. 6. Use separate screening tools for residents who can and cannot stand unaided. 7. The introduction of falls risk screens and assessments needs to be supported with education for staff and intermittent reviews to ensure appropriate and consistent use. 8. Screens and assessments will only be useful when supported by appropriate interventions related to the risks identified. 9. Identifying the presence of cognitive impairment should form part of the falls risk assessment process. Balance and mobility limitations 10. Use supervised and individualized balance and gait exercises as part of a multifactorial intervention to reduce the risk of falls and fractures in residential aged care facility residents. 11. Consider using gait, balance and functional coordination exercises as single interventions. Cognitive impairment 12. Residents with cognitive impairment should have other falls risk factors assessed. Continence 13. Older residents should be offered a continence assessment to check for problems that can be modified or prevented. Feet and footwear 14. In addition to standard fall risk assessments, screen residents for ill-fitting or inappropriate footwear. Syncope 15. Residents who report unexplained falls or episodes of collapse should be assessed for the underlying cause. Dizziness and vertigo 16. Vestibular dysfunction as a cause of dizziness, vertigo and imbalance needs to be identified in residents in the residential care setting. A history of vertigo or a sensation of spinning is highly characteristic of vestibular pathology. 17. Use the Dix–Hallpike test to diagnose benign paroxysmal positional vertigo. This is the most common cause of vertigo in older people, and can be identified in the residential aged care setting. This is the only cause of vertigo that can be treated easily. Medications 18. Residents of residential aged care facilities should have their
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	medications (prescribed and nonprescribed) reviewed at least yearly by a pharmacist after a fall, or after initiation or escalation in dosage of medication, or if there is multiple drug use. Vision 19. Arrange regular eye examinations (every two years) for residents in residential aged care facilities to reduce the incidence of visual impairment. Environmental considerations 20. Residents considered to be at a higher risk of falling should be assessed by an occupational therapist and physiotherapist for specific environmental or equipment needs and training. Individual observation and surveillance 21. Include individual observation and surveillance as components of a multifactorial falls prevention program. 22. Falls risk alert cards and symbols can be used to flag high-risk residents as part of a multifactorial falls prevention program, as long as appropriate interventions are used as follow-up. 23. Falls alerts used on their own are ineffective. 24. Consider using a volunteer sitter program for people who have a high risk of falling, and define the volunteer roles clearly. 25. Residents with dementia should be observed more frequently for their risk of falling, Restraints 26. Causes of agitation, wandering or other behaviors should be investigated, and reversible causes of these behaviors (eg delirium) should be treated before the use of restraint is considered. Note: physical restraints should be considered the last option for residents who are at risk of falling Hip protectors 27. When assessing a resident's need for hip protectors in a residential aged care facility, staff should consider the resident's recent falls history, age, mobility and steadiness of gait, disability status, and whether they have osteoporosis or a low body mass index. 28. Assessing the resident's cognition and independence in daily living skills may also help determine whether they will be able to use hip protectors. Vitamin D and calcium supplementation 29. Vitamin D and calcium supplementation should be recommended as an intervention strategy to prevent falls in residents. Osteoporosis management 30. Residents with a history of recurrent falls should be considered for a bone health check.
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	Post-fall management 31. Staff of residential aged care facilities should complete a post-fall assessment for every resident who falls.
8. Gray-Micelli, D. Capezuti, E, Zwicker, D., Mezey M, & Fulmer, T., (2008). Preventing falls in acute care: Evidence-based geriatric nursing protocols for best practice. Retrieved on June 10, 2010, from http://www.guideline.gov/summary/summary.aspx?doc_id=12265&nbr=6349&ss=6&xl=999	Parameters of Assessment 1. Assess and document all older adult patients for intrinsic risk factors. 2. Assess and document patient care-environment routinely for extrinsic risk factors to fall and institute corrective action. 3. Perform a post-fall assessment following a patient fall to identify possible fall causes as determined during the immediate, interim, and longitudinal post-fall intervals. Observe all patients for 48 hours after an observed or suspected fall. 4. In the acute-care setting, an integrated multidisciplinary team plans care for the older adult, at risk for falls or who has fallen, hinged on finding from an individualized PFA includes use of standardized measurement tools of patient risk in combination with a fall-focused history and physical examination, functional assessment, and review. When plans of care are targeted to likely causes, individualize interventions, the standard of care warrants a reexamination of the older adult and their falls. Nursing Strategies. 5. General safety precaution and fall prevention measures that apply to all patients, especially older adults. 6. Identify specific patients requiring additional safety precautions and/or evaluation by a specialist. 7. Review and discuss with interdisciplinary team finding from the individualized assessment and develop a multidisciplinary plan.
9. Health Care Association of New Jersey. (2007). <i>Fall management guideline</i>. Retrieved April 4, 2010, from http://www.hcanj.org/docs/hcanjbp_fallmgmt6.pdf	Assessment 1. Clinical assessment, recommended rating scale, completed by register nurse, time of completion, frequency of reassessment. 2. Rehabilitation assessment, completed by physical or occupational therapist, Form should include transfer evaluation, evaluate vestibular imbalance, completion time, and frequency. 3. Continence protocol, toilet schedule, bladder training. 4. Mental status assessment, recall, judgment, mini-mental status assessment. 5. Pharmacological assessment, completed by pharmacist or physician, review of medication profile as needed, evaluate risk for osteoporosis and recommended treatment, evaluate need for vitamin D or calcium supplements. 6. Environmental assessment, physical room lay out, equipment and assistive devices, lighting, other. 7. Analysis/assess level of risk assessment; identify risk based on collective assessments and professional judgment. Dynamic Treatment Plan 8. Interventions are based on assessment results. The following

	should be addresses by an interdisciplinary team. Resident, staff, and family teaching, room modifications, resident's daily routines, mental status/behaviors, physical limitation, pain, medication use, consistent and proper uses of assistive or protective devices based on assessments. 9. Updated information consistently communicates to the staff, resident and family. Staff general classification system identifying resident's potential to fall, summary of assessments/changes in plan of care, verbal and written reports, residents – one-to one education and review, families- care conferences. Evaluations 10. Post fall evaluations.
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APPENDIX C
DEFINITION OF TERMS

DEFINITION OF TERMS

The terms used in this study were defined as follows:

Clinical Guideline - A document that aims to guide decisions and criteria in specific areas of healthcare through systematically developed statements, as defined by an authoritative examination of current evidence. They integrate identified decision points and respective courses of action to the clinical judgment and experience of health practitioners (Agency of Health Care Research and Quality, 2009)

Community Based Residential Facility (CBRF) - A place where five or more unrelated people live together in a community setting. Services provided include room and board, supervision, support services, and may include up to three hours of nursing care per week (Wisconsin Department of Health Services [WI DPH], 2010, October).

Fall - A fall is an event which results in a person coming to rest inadvertently on the ground or floor or other lower level (Haines, Massey, Hons, Varghese, Fleming, & Gray, 2009).

Medicaid - Title XIX of the federal Social Security Act and 42 CFR 430 to 456; pays for medical care for low-income persons; state-administered; same as Medical Assistance (WI DPH, 2010, October).

Medicare – Title XVIII of the federal Social Security Act and 42 CFR 405 to 424; insurance-like payments for medical care of persons aged 65 and over; administered by federal Social Security Administration (WI DPH, 2010, October).

APPENDIX D
DATA COLLECTION TOOLS

Data Collection Tool											
Nursing Home Survey 2010											
ADMISSION DUE TO FALLS											
1. What is the total number of residents 65 and older at your facility for the years 2004-2008?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
2. What is the average age of residents for those 65 and older at your facility from 2004-2008?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
3. What is the number of male and females 65 and older at your facility from 2004-2008?											
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
4. How many residents 65 and older were admitted to your facility due to falls from 2004-2008?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
5. What is the average age of residents for those 65 and older at your facility due to falls from 2004-2008?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
6. What is the number of male and females 65 and older at your facility due to falls from 2004-2008?											
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
7. What month of the year where these residents admitted to your facility?											
Jan	Feb	March	April	May	June	July	August	September	October	November	December

8. List top five reasons residents 65 and older are admitted if fall related from 2004-2008?									
1. _____					4. _____				
2. _____					5. _____				
3. _____									
9. If admitted to nursing home due to a fall, what is the average length of stay for those 65 and older at your facility for 2004-2008?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
FALLS AT FACILITY									
1. How many residents 65 and older have fallen at your facility from 2004-2008?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
2. What is the average age of residents for those 65 and older that have fallen at your facility from 2004-2008?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
3. What is the number of male and females 65 and older that have fallen at your facility from 2004-2008?									
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:
4. How many residents 65 and older had repeated falls at your facility from 2004-2008? (fell more than once a year)									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
5. What are the top five causes of falls for those 65 and older at your facility from 2004-2008?									
1. _____					4. _____				
2. _____					5. _____				
3. _____									
6. Has your facility had any deaths among those 65 and older due to falls from 2004-2008?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	

7. What is the average age of residents for those 65 and older who have died due to falls at your facility from 2004-2008?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
8. What is the number of male and females 65 and older who have died from a fall at your facility from 2004-2008?									
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:
9. What method does your facility use to gather data on falls?									
10. How do you use fall data at your facility?									

Data Collection Tool									
Hospital Survey 2010									
EMERGENCY ROOM VISITS									
1. How many total visit your emergency room from 2004-2008 for those 65 and older?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
2. What is the average age of residents who visit your emergency room from 2004-2008?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
3. What is the number of male and females 65 and older who have visited your emergency room from 2004-2008?									
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008
4. How many total visits to the emergency room due to a fall had your facility had from 2004-2008 for those 65 and older?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
5. What is the number of male and females 65 and older who have visited your emergency room due to a fall from 2004-2008?									
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008
6. What is the average age of residents who visit your emergency room due to a fall from 2004-2008?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
7. How many repeat visits to the emergency room due to falls occurred from 2004-2008 for those 65 and older? (fell more than once in a year)									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
8. What are the top five causes of falls reported by patients 65 and older at the time of their emergency visit 2004-2008 at your facility?									
a. _____					d. _____				
b. _____					e. _____				
c. _____									
9. How many emergency room visits were admitted to your facility for falls from 2004-2008 for those 65 and older?									
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	

HOSPILIZATIONS											
10. How many total inpatients did your facility have from 2004-2008 for those 65 and older?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
11. What is the average age of inpatients at your facility for those 65 and older from 2004-2008?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
12. What is the number of male and females who were inpatients that were 65 and older from 2004-2008?											
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
13. How many inpatients 65 and older fell at your facility from 2004-2008?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
14. Of those that have fell from 2004-2008, what is their last place of residence?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
15. What is the average age of residents 65 and older that fell at your facility from 2004-2008?											
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:			
16. What is the number of male and females 65 and older who fell at your facility from 2004-2008?											
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
17. What month of the year where these residents admitted to your facility?											
Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
18. How many inpatients 65 and older had repeated falls from 2004-2008? (more than one fall per year)											

Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
19. What are the top five causes of falls among those 65 and older from 2004-2008 at your facility?										
a. _____					d. _____					
b. _____					e. _____					
c. _____										
20. If admitted to the hospital due to a fall, what is the average length of stay at your facility for 2004-2008?										
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
21. What are the top five discharge locations for patients 65 and older who have fallen?										
a. _____					d. _____					
b. _____					e. _____					
c. _____										
22. Has your facility have had any deaths among those 65 and older due to falls from 2004-2008?										
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
23. What is the average age of residents for those 65 and older at your facility that has died from a fall from 2004-2008?										
Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:		
24. What is the number of male and females 65 and older at your facility that have died from a fall from 2004-2008?										
Male	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
Female	Year 2004:		Year 2005:		Year 2006:		Year 2007:		Year 2008:	
25. What method does your facility use to gather fall data?										
26. How do you use fall data for your facility?										