

Final Progress Report: An Intervention to Reduce Falls Among Adults with Intellectual Disability R03 HS022353-02

Title of Project: An Intervention to Reduce Falls Among Adults with Intellectual Disability

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**Structured Abstract (215 Words)**

**Purpose:** To develop the evidence base for interventions to reduce falls in the population with intellectual disability.

**Scope:** This preliminary research study was conducted in partnership with a community-based provider agency. This study examined a clinical fall-prevention intervention targeted at adults with intellectual disability (ID) living in community residences.

Previous analyses by the authors suggest that the population receiving services is at least as likely to fall as the population over age 65, with about 1 in 3 falling every year.

**Methods:** Adult participants with an intellectual disability were recruited to participate in the study. A clinician completed an evaluation and a Falls Risk Screening Tool at baseline and recommended treatment, including balance, strength, and flexibility activities. The study team collected Plan of Care information to characterize the intervention. The evaluation and Falls Risk Screening Tool were repeated at 3 months and at 6 months.

**Results:** Preliminary analyses have been completed, with additional analyses underway; 58 participants enrolled, with an age range from 29-90. The average age was 58.7, the median age was 57.5, and 78% of people used a mobility device (walker or wheelchair). Of the people enrolled, 59% were women and 41% were men. Fall risk factors most associated with high falls risk were unsafe footwear, tripping hazards, previous falls, and difficulty ambulating.

**Key Words:** intellectual disability, fall prevention

**Purpose**

This study was designed as a first step in testing the research hypothesis that a multifactorial fall-prevention program that combines screening, post-falls assessment, and a care plan aimed specifically at adults with ID living in residential settings will be effective in reducing risk of falls, as determined by falls risk screening and documented rates of falls.

This purpose of this research is to assist in developing the evidence base for interventions to reduce falls in people with ID. A secondary purpose is to develop research methods that can be used in future fall-prevention studies in the population of people with ID.

**Study Objectives:**

- Characterize all elements of the community-based fall-prevention program, *Upright and Onward*, including defining processes by which at-risk adults with ID are identified and successfully referred to services, estimating staff time and training costs for implementing *Upright and Onward*, and documenting recommendations for targeted interventions. This step also included operationalizing elements in the falls risk screening tool and recommended Plan of Care.
- Evaluate the fidelity of the fall-prevention intervention in selected provider sites/residential settings.

- Provide initial data on the efficacy and outcomes of the *Upright and Onward* intervention.

### **Scope**

This preliminary research study was conducted in partnership with a community-based provider agency, Visiting Rehab Services (VRS). This study examined a clinical fall-prevention intervention targeted at adults with intellectual disability (ID) living in community residences. The intervention program, *Upright and Onward*, was created by VRS using evidence-based approaches developed for use in the geriatric population. Administration of the *Upright and Onward* program was conducted solely by VRS. Individuals who are enrolled in the *Upright and Onward* program had the option of participating in the research portion by having their data from this clinical program shared with researchers at UMMS.

**Background and Significance:** More than one third of adults aged 65 and older are estimated to experience a fall each year (Stevens 2008), with enormous health and social impacts, including accelerated loss of independent living, secondary health effects, and premature death. According to the American Geriatrics Society,<sup>i</sup> direct medical costs for fall injuries in older adults in the U.S. totaled \$19.2 billion in 2000. In response, falls prevention has been identified as a cornerstone of prevention strategies developed and disseminated by local and national public health agencies.

Among people with ID, falls contribute to as many as 50% of reported injuries.<sup>ii</sup> Wagemans and Cluitmans<sup>iii</sup> reported that 57% of people with ID living in residential settings experienced one or more falls over a 33-month period and that a third of these falls resulted in injury. Finlayson et al.<sup>iv</sup> showed that falls were more common among people with ID aged 18-64 than in the general population: 40% experienced at least one fall in 12 months, suggesting a frequency even higher than that of adults aged 65 and over. In addition, Finlayson et al. found that adults with ID aged 18-64 years were significantly more likely (RR=2.9) than the adults in the same age group in the general population to have experienced at least one injury caused by a fall.

This research study responded to the gap in evidence-based fall-prevention programs for people with ID. General population guidance, such as the USPSTF fall prevention recommendation, is not entirely applicable in the adult population with ID due to the increased falls risk at a younger age, the frequent occurrence of comorbidities in the population, and the different model for community supports among people with ID that may result in variable training in fall prevention for people who provide support to adults with ID. Additionally, strategies used to evaluate and prevent falls in the general population of older adults may differ for adults with ID because of cognitive and functional limitations specific to this population.<sup>v</sup>

**Prior Analyses:** In an analysis of incidents reported to the Massachusetts Department of Developmental Services (DDS), our research team identified approximately 41% of unexpected hospital visits involving an injury among 18,000 adults that were related to a fall.<sup>vi</sup> Based on this finding, researchers from UMMS partnered with DDS to establish a

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pilot fall-prevention program. Falls were monitored in 910 adults with ID living in community-based residences (group homes) over a 6-month period; 473 falls were recorded among participants---a rate of 51 falls per 100 people---and 24% of adults with ID in the pilot experienced at least one fall (see Table 1).

**Table 1: Number of falls experienced by adults w/ ID in a 6-mo falls prevention pilot**

Number of Falls	Number of People	% of people
0	617	76%
1	114	14%
2	33	4%
3	19	2%
4	13	2%
5	5	1%
6	4	0%
7	2	0%
8	0	0%
9	0	0%
10+	4	0%

There is a critical gap in the amount of information on interventions specifically targeted to the population of people with ID,<sup>vii</sup> even though there are more than 600,000 individuals with ID who live in supervised, out-of-home residential settings<sup>viii</sup> who could benefit from targeted intervention and increased understanding of their unique fall risk. This study is one step toward addressing the need to develop the evidence base for interventions that reduce fall injuries in the adult population with ID.

**Methods**

This project was completed through a collaboration with a community provider of rehabilitation services, VRS. Responding to a need for interventions to reduce falls among adults with ID in Massachusetts, Visiting Rehab Services, LLC, a provider of outpatient rehabilitation services, developed the *Upright and Onward* falls prevention program using evidence of effective assessment and intervention strategies in the elderly population. By collaborating with VRS, the University of Massachusetts Medical School researchers could collect data for preliminary analyses of efficacy and to establish the fidelity of the intervention.

Research ethics approval was received from both the University of Massachusetts Medical School’s IRB and the Research Review Committee of the Massachusetts Department of Developmental Disabilities Services (DDS).

*Recruitment and Inclusion Criteria*

Recruitment was accomplished through outreach to agencies that provide residential support services to clients of the MA DDS. Clients referred for evaluation and treatment by VRS were offered the opportunity to participate in the study by having their data shared with UMMS researchers for aggregate analysis of their clinical assessment data. Individuals who did not consent to participate in the research study, or whose guardians did not provide consent to participate, were still able to receive fall-prevention services from VRS.

Participants included in this study met the following inclusion criteria:

- A client of the Massachusetts Department of Developmental Disabilities Services, who therefore has met the eligibility requirements of having an IQ of

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approximately 70 or below and deficits in two or more areas of adaptive functioning.

- An adult over the age of 18.
- Receives residential supports from a community provider agency whose leadership has agreed to have their staff participate in the study.
- Able to provide consent or have a legal guardian who is able to provide consent.
- Agreed to participate in the *Upright and Onward* program.

Individuals were enrolled for a period of 6 months from the time of each individual's initial falls risk assessment with a registered therapist from VRS. Enrollment of individuals was completed on a rolling basis, beginning in January 2014 and continuing until February 2015.

Design. This is a prospective, observational study. All study participants receiving the intervention (enrollment in *Upright and Onward*) and who consented to participate were followed by monitoring of fall status as measured using a fall-monitoring tool and reassessment with the falls risk screening tool.

Procedures: The *Upright and Onward* program is aimed at preventing falls among adults with ID living in community-based residential settings. The program includes 1) comprehensive assessment of an individual's fall risk using the VRS **Falls Risk Screening Tool (FRST)** by a licensed occupational or physical therapist, 2) determination of a **Falls Risk Index** based on the Falls Risk Screening Tool, 3) development of preventive recommendations and (when necessary) implementation of an individualized Plan of Care for outpatient occupational or physical therapy to address fall risk factors identified in the screening, and 4) re-assessment after any fall through follow-up with provider agency staff. Participants will receive the intervention for 6 months from the time that they begin the program. Fall risk was reassessed using the Falls Risk Screening tool after 3 months and 6 months.

### Inter-rater reliability

Inter-rater reliability among the VRS assessing clinicians was assessed through repeat assessments and development of a Plan of Care by a second therapist for 12 of the study participants.

### Fall-tracking Calendars:

Each participant had their fall status monitored during the study period with a simple calendar at the person's residence. Research staff provided a Falls Calendar to each participant (one for each month) for use in recording falls experienced during the study period. Residential staff assisted in recording information in case a fall occurred, including the date and time of the fall and whether or not the individual sustained an injury.

### Data Collection

The data collected as part of the research study is summarized in Table 2.

Table 2. Measures collected for analysis

<b>Falls Risk Screening Tool</b>	<b>VRS Evaluation</b>
<i>Activities of Daily Living</i> (bathing, dressing, transferring, toileting)	<i>Environmental Assessment</i> (poor lighting, loose rugs, unsteady furniture, etc.)
<i>Mobility</i> (ambulating inside and outside)	<i>Fall History</i> including baseline for falls: number of falls per month in the previous 3 months
<i>Conditions</i> (behavior changes, falls history, incontinence)	<i>Medical conditions and diagnosis</i>
<i>Tests</i> (TUG and Functional Reach)	<i>Functional and community mobility</i>
<i>Risk Factors</i> (difficulty ambulating, four or more medications, unsafe footwear, dizziness, low vision, tripping hazards)	<i>Activities of Daily Living</i> (dressing, bathing, toileting, etc.)
	<i>Instrumental ADLs</i> (household management, shopping, ability to follow safety procedures)
	<i>Vitamin D Supplementation</i>

**Results:**

Data collection was completed in February 2015. In total, 58 participants were enrolled, with an age range from 29-90. The average age was 58.7, the median age was 57.5, and 78% used a mobility device (walker or wheelchair). Of the people enrolled, 59% were women and 41% were men.

Analyses to date have examined the risk factors that are related to a high fall risk, as assessed in the individual's Plan of Care. The findings, detailed in Table 3, demonstrate that history of falls, difficulty ambulating, unsafe footwear, and the presence of tripping hazards are most associated with the assignment of a High Fall Risk.

Table 3

	High risk (N=32)	p value	Chi-sq value
<b>History of Falls</b>	30	0.001	13.281
Acute medical condition	11	0.137	3.973
<b>Difficulty ambulating</b>	32	0.002	12.018
4+meds	30	0.218	3.046
<b>Unsafe footwear</b>	26	0.001	14.976
Low Vision	11	0.138	3.958
<b>Tripping Hazard</b>	26	0.001	14.452
Change in Behavior	18	0.063	5.526

When examining the fall risk factors that are most highly correlated with the fall risk (Falls Risk Index), the following risk factors were found to be most correlated:

Timed Up and Go raw score (r=0.57)

Functional Reach (r=0.79)

ADLs/Shower Transfer Support (r=0.522)

Data entry and analysis were delayed slightly by leave of absence taken by the project coordinator for a maternity leave during the course of the grant. Additional analyses are underway.

Exploration of FRST and VRS Evaluation Performance. An item-level analysis of each component of the VRS Falls Risk Screening Tool (FRST) will be performed in comparison with the VRS evaluation results. Differences in fall risk factors across participants will be examined through correlation matrices. Items will be reviewed for redundancy and risk prediction value; multiple variations on the tool's current weighting scheme will be examined in order to align the summary score spread with the spread of falls risk and balance it with the level of necessary intervention.

The project team is working diligently to complete analyses of the complete dataset and develop the final manuscript. Analysis continues at UMMS/Shriver with the same project team. Data analysis will be completed by October 30, 2015, with manuscript submission targeted for December 1, 2015.

**Publications and products:**

A poster was developed with preliminary data analyses for the American Association on Intellectual and Developmental Disability (AAIDD) annual meeting in June 2015.

Bonardi A, Impact of a Fall Injury Prevention Program Among People with Intellectual Disability. Poster presentation at AAIDD, June 2, 2015, Louisville, KY.

A manuscript detailing the results is under development by the author and project staff.

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### Citations

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