STrategies to
Reduce
Injuries and
Develop confidence in
Elders

STRIDE

Manual of Procedures
(MOP)

TITLE: RANDOMIZED TRIAL OF A MULTIFACTORIAL FALL INJURY PREVENTION STRATEGY

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THE PEPPER CENTERS CONSORTIUM FOR PREVENTION OF SERIOUS FALL-RELATED INJURIES

FUNDING AGENCIES: **National Institute on Aging and PCORI**

NIA GRANT NUMBER: **UO1AG048270**

APPLICANT ORGANIZATION: **Brigham and Women's Hospital**

VERSION: **7.0**

12/10/2019

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ABBREVIATIONS

ACOVE	Assessing Care of Vulnerable Elders Study
AE	Adverse Event
AGS	American Geriatrics Society
AHRQ	Agency for Healthcare Research & Quality
BGS	British Geriatrics Society
CAT	Computer Adaptive Testing
CBE	Community Based Exercise
CDC	Centers for Disease Control and Prevention
CDRN	Clinical Data Research Network
CPM	Central Project Management
CTSA	Clinical Translational Science Award
CCFP	Connecticut Collaborative Falls Program
CMS	Centers for Medicare and Medicaid Services
CPMC	Central Project Management Center
CTS	Clinical Trial Sites
D & I	Dissemination and Implementation
DCC	Data Coordinating Center
DE	Design Effect
DSMB	Data and Safety Monitoring Board
DSMP	Data and Safety Monitoring Plan
EDC	Electronic Data Capture
EHR	Electronic Health Record
EMR	Electronic Medical Record
EuroQOL 5D	European Quality of Life Instrument - 5 Dimensions
FCS	Falls Care Software
FCM	Falls Care Manager
FICSIT	Frailty and Injury Cooperative Studies of Intervention Technologies

FRID	Fall Risk Increasing Drug
FES	Falls Efficacy Scale
GCP	Good Clinical Practice
HIPAA	Health Insurance Portability and Accountability Act
ICC	Intracluster Correlation
ICF	Informed Consent Form
ICH	International Conference on Harmonization
IT	Information Technology
ITS	Information Technology Services
LIFE	Lifestyle Interventions and Independence for Elders
LPSC	Local Patients and Stakeholders Council
LL-FDI	Late Life Function and Disability Instrument
MAR	Missing at Random
MD	Medical Doctor
MMSE	Mini-Mental State Examination
MOP	Manual of Procedures
MSO	Medical Safety Officer
NIH	National Institute of Health
NIA	National Institute of Aging
NP	Nurse Practitioner
NPSC	National Patients and Stakeholders Council
OAC	Outcomes Adjudication Committee
OAIC	Claude D. Pepper Older Americans Independence Centers
OHRP	Office of Human Research Protections
OT	Occupational Therapist
PCORI	Patient-Centered Outcomes Research Institute
PCORTF	Patient-Centered Outcomes Research Trust Fund
PCP	Primary Care Provider

PDC	Publications and Dissemination Committee
PHI	Personal Health Information
PI	Principal Investigator
PPRN	Patient Powered Research Network
PreFIT	A Fall Injury Prevention Trial in the UK
ProFaNE	Prevention of Falls Network Europe
PROMIS	Patient Reported Outcomes Measurement Information System
PVQ	Pre-visit Questionnaire
PT	Physical Therapist
RAC	Recruitment and Assessment Center
RCT	Randomized Clinical Trial
RFA	Request for applications
RN	Registered Nurse
SAE	Serious adverse event
SAP	Statistical Analysis Plan
SAS	Statistical Analysis System
SC	Site Coordinator
SCD	Site Clinical Director
SPPB	Short Physical Performance Battery
SO	Safety Officer
STEADI	Stopping Elderly Accidents, Deaths, and Injuries
STRIDE	Strategies to Reduce Injuries and Develop Confidence in Elders
USE	Unanticipated Safety Event
VA	Veterans Administration
YPPS	Yale Printing and Publishing Service

CHAPTER 1 – ORGANIZATIONAL STRUCTURE

1.0 STUDY'S ORGANIZATIONAL STRUCTURE

This program is a cooperative agreement with NIH and PCORI. The project is led by three joint Principal Investigators (PIs) – Bhasin, Gill and Reuben. The PIs have the primary responsibility for all aspects of the study, but work in close coordination, cooperation, and participation with NIA and PCORI staff. The Steering Committee is the primary high-level decision-making body. Members of the Steering Committee include the three PIs, the Director of the Data Coordinating Center, a representative of PCORI, NIA scientific officer, two clinical trial site PIs, a nurse scientist, the Safety Officer, three content experts, and an IT and Data Management expert. Additionally, the NIA Program Officer, the Study Director, the Study Manager and a patient representative serve as nonvoting members.

The Operations Committee is responsible for overall operational management and coordination of the entire project, synthesizing information from various committees, preparing and executing operational plans, identifying problems and disseminating information throughout the operation. The Operations Committee includes the three Joint PIs, Director of the Data Coordinating Center, and the Study Director. A complete list of all staff and their roles is found in Appendix 1.1.

1.1 COMMITTEES

Table 1-1 displays the functions of the current committees. The committees include scientific chairs, other highly regarded experts in the area of falls prevention, and patient and stakeholder representatives. The committees conduct their business through regularly scheduled conference calls; their approved minutes are posted in the STRIDE Study Box. The list of all committees, subcommittees and working groups and their members is provided in Appendix 1.2.

Table 1-1 Functions of the Committees

Committee Name	Committee Function
Steering Committee	Overall decision making body
Clinical Trial Sites Committee	Provides venue for bidirectional flow of information between site PIs and the Study's leadership. Provides high level guidance for trial's implementation and conduct at the trial sites. Includes all site PIs.
Operations Committee	Responsible for the overall operational management. Includes the three PIs, the director of the DCC and the study director.
Recruitment, Screening, and Retention	Responsible for high level guidance on recruitment, screening and retention; develops the conceptual framework of recruitment and screening strategies and monitors recruitment, enrollment and retention across the clinical trial sites and practice sites.

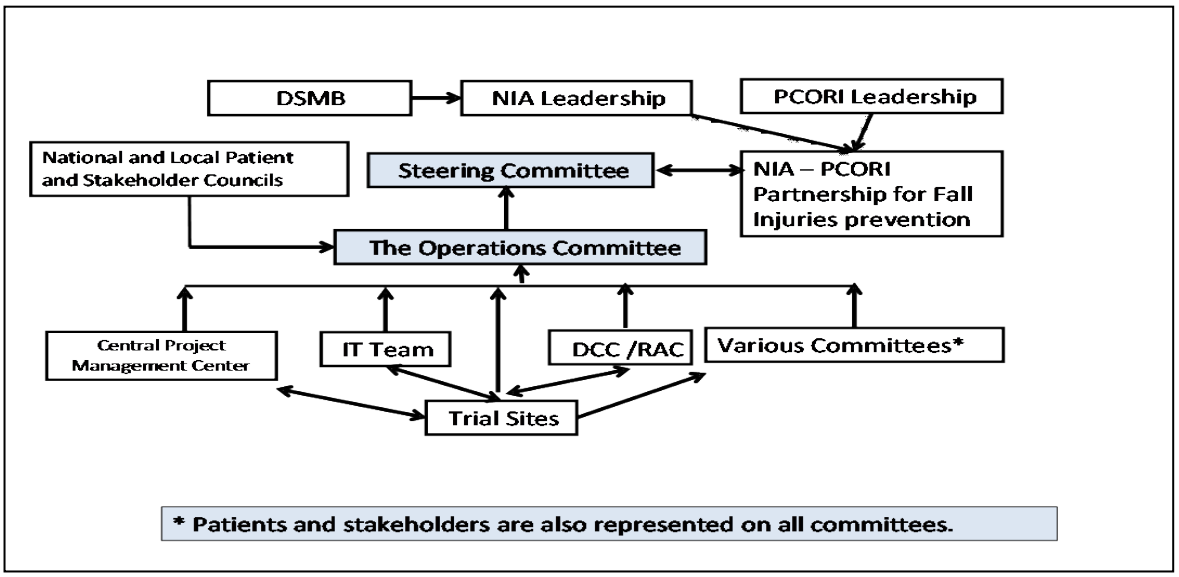
Intervention Committee	Responsible for developing the protocols for intervention protocol, FCM evaluation and training, and overseeing the implementation of intervention at trial sites
National Patient Stakeholders Council	Responsible for developing protocols for patient and stakeholder engagement, overseeing the formation and training of local patient and stakeholder councils, providing input into protocol development and any study materials seen by patients and all aspects of trial's implementation and management.
Biostatistics	Responsible for sample size estimation, power calculation, practice randomization, DSMB reports, and data analyses
Data Management and IT Platform	Responsible for building the IT infrastructure for data collection and management, staff training in data recording, building appropriate interfaces with the EMRs at sites to allow data collection, creating data forms, ensuring data security, overseeing FCM software development, ongoing management all data systems and providing tracking reports of recruitment and other study processes.
Assessments and Study Outcomes	To develop the procedures and monitor the implementation of the ascertainment of the primary outcome and the assessment of the secondary outcomes.
Protocol Committee	Develop the study protocol for the pilot and main protocol (Note: this committee only met in Year 1)
Ancillary Studies Committee	To review the ancillary studies proposals and make recommendations to the study PIs and NIA on the inclusion or not of ancillary studies in the trial
Publications Committee	To review proposals and manuscripts for secondary publications for the study.
SUBCOMMITTEE (S)	
Practice Selection: A Subcommittee of the CTS	Responsible for establishing eligibility criteria for practice selection and for evaluation of practices proposed by sites. (Note: this committee only met in Year 1)
Physical Components/ Rehabilitation group: A Subcommittee of the Intervention Committee	Responsible for developing the protocols for physical intervention, training of the rehabilitation and exercise staff at sites, evaluation of CBE programs and providing ongoing input to the intervention committee and FCMs as the intervention is implemented.
Self-Management and Training group: A Subcommittee of the Intervention Committee	Responsible for developing training procedures for different STRIDE team members and developing strategies and materials to promote patient self-management
WORKING GROUPS	
Implementation – A working group of the Intervention Committee	To provide an opportunity for communication between CTS and intervention team members about the roll-out of the intervention in the CTS. This working group will stop meeting when the intervention has launched at all of the practice sites

Site Coordinators A working group of Clinical Trial Sites Committee	To provide ongoing training and communication about the study procedures between all of the site coordinators and STRIDE team members
FCM – A Working Group of the Intervention Committee	To provide ongoing training and communication about the intervention between all of the FCMs and STRIDE team members.
Assessments & Study Outcomes/ Adjudication	This working group is to discuss in detail the procedures for outcomes adjudication and assessment.

1.2 REPORTING STRUCTURE

As shown in **Figure 1-1**, the various committees, DCC, and IT Management Group report to the Operations Committee, which in turn reports to the Steering Committee, which is the highest decision making body. The leadership of NIA and PCORI interfaces with the Stride Study leadership through the Steering Committee or directly with the PIs through the Operations Committee.

Figure 1-1 The Organizational Structure of the STRIDE Study Team



1.3 MEETING SCHEDULE AND FUNCTIONS OF THE LEADERSHIP

The Operations Committee [three PIs, Study Director, and Director of the OAIC Coordinating Center] holds a conference call weekly to review progress, establish work objectives, and discuss operational problems.

The Steering Committee meets by conference call. The committee met every two weeks in years 1-2, and then monthly beginning in study year 3. When necessary, individuals from the broader group of Co-Investigators and/or co-chairs of various committees will join the Steering Committee with regard to specific agenda items.

1.4 PATIENT AND STAKEHOLDERS

Patient engagement occurs at two levels – locally, at the clinical trial sites, and nationally, at the central project management level. The NPSC is comprised of 10 to 12 members, half of whom are patients (see Appendix1- 2 for list of current NPSC members). The NPSC is representative of the U.S. population in terms of the type of stakeholder, sex, race, ethnicity, and geographic region. Each Local Council engages with investigators at its respective trial site and reports to the NPSC. The NPSC engages with all committees, PIs and Co-Investigators.

1.4.1 Local Patient and Stakeholder Councils

The criteria for selection of local patients and stakeholders are described in **Table 1- 2.**

Table 1-2. Composition of the Local Patient and Stakeholder Councils (LPSCs). At least half the members of each local council are patients. Not all stakeholders will be represented on every local council but there is broad representation from each of these stakeholder groups across the ten local councils.

Term	Number	Definition
Patients	2 to 3	Have a history of a fall or fall related injury or are at risk for a fall or fall related injury, are from the local community served by the clinical study site, and have no specialized training or experience in health advocacy or health research.
Caregiver	1	Have provided care as a non-health professional to a friend or family member who is at risk for falling or has experienced a fall or fall related injury.
Public/Community	1 to 2	Representatives from the local geographic communities that the health systems of the clinical sites serve, e.g. YMCA.
Engagement professional – health	1	Representative from local patient and family centered care programs from the clinical sites.
Clinician	1	Those providing care at the sites in which the study will be done (clinical sites). (e.g. NPs, physicians, PT).
Government	1	Representative of local or state health department.
Advocate/consumer group	1	Local area agency on aging.

The NPSC chair and 2 patient advisors from the NPSC worked with trial site PIs to identify potential participants, assure representativeness (e.g. race, sex, ethnicity), and prepare invitations, which included processing group expectations, the importance of their authentic participation, and resources available to enable their participation (e.g. payment; e-mail access). Each Local Patient and Stakeholder Council (LPSC) designed their group to include 8 to 10 members and a facilitator with experience in engaging patients and stakeholders in research. The Local Patient and Stakeholder Councils are being co-chaired by the facilitator and a patient stakeholder. Members of the NPSC provided individual training seminars in person and/or through webinar to all the trial sites to train the council members.

1.4.2 National Patient and Stakeholder Council

The NPSC is comprised of 10 to 12 persons, with at least one representative from each Clinical Trial Site. (**Table 1-3**). The members of each local council recommended individuals for inclusion in the NPSC, giving attention to diversity of stakeholder type, sex, race/ ethnicity, and geographic location. The NPSC: 1) serves in a consultative capacity to local councils and site PIs, various committees and study leadership; 2) integrates the input from the 10 local councils and communicates that to the trial's PIs and committees; and; 3) coordinates activities for reviewing study protocols, screening and recruitment methods and materials, and all participant-facing print materials and d) will make recommendations for disseminating the results.

Table 1-3. Composition of the National Patient and Stakeholder Council (NPSC). The NPSC includes 10 to 12 members, at least half of whom will be patients.

Term	Number	Description
Patients	5 to 6	Are from a local stakeholder group, have a history of a fall or fall related injury or are at risk for a fall or fall related injury, and have no specialized training or experience in health advocacy or health research.
Caregiver	1 to 2	Are from a local stakeholder group and have provided care as a non-health professional to a friend or family member who is at risk for falling or has experienced a fall or fall related injury.
Public/Community	1 to 2	Representatives from a Pepper Center Community group or CTSA Community Engagement group from the participating clinical sites.
Engagement professional – health	1	Representatives from a patient and family centered care programs – may or may not be on a local stakeholder group.
Clinician	1 to 2	Individuals who provide health care or related services to older adults on a regular basis (over 80% in clinical care).
Government	2	One representative each from NIA and PCORI.
Advocate/consumer group	1	National Area Agency on Aging.

1.4.3 Engaging Patients and Other Stakeholders as Partners in All Phases of the Research

The bidirectional process of engaging patients and other stakeholders takes place in local councils and the NPSC throughout the duration of the project. The local councils will meet at least quarterly and the NPSC will meet at least monthly during the study (ie while active patient engagement was taking place). The local facilitator on the LPSC will work with the representative to the NPSC for their local group to ensure that local

issues are communicated to the national council, and issues from the national council are communicated back to each LPSC. Each LPSC provides an update at least once per quarter to the NPSC during their meeting.

The local councils help to identify, evaluate, and engage their trial sites' local community resources that support recruitment, the implementation of the intervention(s), assessment and outcomes, and strategies for disseminating the trial's findings. The local councils provide recommendations to the NPSC and to site PIs and continually support the local Falls Care Manager(s). The NPSC collates the information from all local councils through meeting minutes and by individual phone calls between NPSC leaders and the LPSC facilitator to provide guidance to the PIs and various committees.

1.5 CLINICAL TRIAL SITES

Ten clinical trial sites were chosen to ensure geographic, rural/urban, academic/nonacademic, and racial/ethnic diversity, and to include a range of health care systems and models of care (**Table 1-4**). The ten trial sites provide care to over 470,000 persons aged 70 or older. Researchers at the sites have substantial expertise in geriatric medicine, clinical trials, patient centered outcomes research, implementation science, information technology, preventive medicine, patient safety, and healthcare systems.

Table 1-4. The geographic, racial/ ethnic, urban/ rural, health care delivery model, and payer mix diversity at the 10 trial sites

Site/Region/Site Leads	AHC	CTSA	OAIC	HMORN	ACO	Urban	Rural	Persons >70 y	Minority Representation
Essentia Health (Midwest)		X		X	X	X	X	45,000	
HealthCare Partners (Southern California)					X	X		44,885	Latino/Hispanic
Johns Hopkins Medicine (Mid-Atlantic)	X	X	X		X	X		25,000	African American
Mount Sinai Health System (Northeast)	X	X	X		X	X		35,000	Latino/Hispanic
Partners HealthCare (Northeast)	X	X	X		X	X		24,000	
Reliant Medical Group (Northeast)				X	X	X		25,000	
U of Iowa Health Alliance (Midwest)	X	X			X	X	X	15,000	

U of Pittsburgh Medical Center (Mid-Atlantic)	X	X	X			X		90,000	
U of Texas Medical Branch, Galveston Health (Southwest)	X		X			X		10,000	
U of Michigan (Midwest)	X	X	X			X		21,000	
CTSA = Affiliated with Clinical Translational Science Awardee institution; AHC = Academic Health Center-based; OAIC = Older American Independence Center; HMORN = HMO Research Network member; ACO = Accountable Care Organization									

1.6 CENTRAL PROJECT MANAGEMENT CENTER

The Brigham and Women's Hospital is the applicant organization and serves as the administrative center for the STRIDE study. The Central Project Management Center, located at the Brigham and Women's Hospital, provides comprehensive oversight of all aspects of the trial, including trial's implementation, regulatory oversight, financial and administrative management, and research management.

Table 1-5. Central Project Management Team

Nancy K Latham —Study Director	617-999-9195	nklatham@bwh.harvard.edu
Molly Lukas-Sr. Adm Asst to Communicating PI	617-525-9159	mlukas@bwh.harvard.edu
Lori Goehring—Project Manager	671-732-6911	lagoehring@bwh.harvard.edu
Brooke Brawley—cIRB Liaison	617-525-9146	bbrawley@bwh.harvard.edu
Siobhan McMahon – Nursing Director	612-625-3225	skmcmaho@umn.edu
Amy Larson —Budget and Administrative Director	617-525-9147	alarson6@bwh.harvard.edu

1.7 DATA COORDINATING CENTER

The Yale Data Coordinating Center at Yale University serves as the Data Coordinating Center for the STRIDE study. Dr. Peter Peduzzi serves as the Director of the STRIDE Data Coordinating Center and leads the Biostatistics Committee. The members of the Biostatistics Committee can be found in Appendix 1.2.

1.8 SPONSORS

The project is being funded as a cooperative agreement by the National Institute on Aging through the NIA-PCORI Partnership for Fall Injury Prevention.

CHAPTER 2 – OVERVIEW OF STUDY

2.0 STUDY SUMMARY

The STRIDE Study is a cluster randomized trial to determine the effectiveness of an evidence-based, patient-centered, multifactorial intervention that will combine elements of ACOVE-2 practice redesign; a multifactorial, individually-tailored intervention developed at Yale; and practice guidelines offered by the CDC's "STEADI" toolbox and the joint American Geriatrics Society /British Geriatrics Society guidelines. A fall is defined as an unexpected event in which the participant comes to rest on the ground, floor, or lower level. The primary outcome is serious fall injuries operationalized as a fall resulting in: (1) (fracture other than thoracic/lumbar vertebral; joint dislocation; or cut requiring closure) AND any medical attention; OR (2) (head injury; sprain or strain; bruising or swelling; or other) requiring hospitalization. The trial originally had a slightly different primary outcome definition. The first primary outcome definition will be explored as a secondary outcome as explained below. The definition was changed based on the recommendation of a DSMB working group. Secondary outcomes, based on input from patients and stakeholders, include all injurious falls and all falls regardless of injury. The pre-existing operationalized primary outcome which was “a fall resulting in (fracture other than thoracic/lumbar vertebral; joint dislocation; or cut requiring closure; head injury; sprain or strain; bruising or swelling; or other) AND any medical attention” is now a secondary outcome. Other secondary outcomes are indicators of well-being, including fall efficacy, physical function and disability, anxiety, and depressive symptoms.

The trial is being implemented in 86 primary care practice sites (PS) at 10 clinical trial sites (CTS) and will enroll racially and ethnically diverse men and women aged 70 and over.

Table 2-1. Study Summary Table

Title	RANDOMIZED TRIAL OF A MULTIFACTORIAL FALL INJURY PREVENTION STRATEGY
Study Design	The design is a cluster randomized, parallel group superiority trial with practices stratified by healthcare system and patients nested within practices. The unit of randomization is the practice.
Study Duration	5 years
Trial Sites	10 trial sites: The Partners’ Health Care System; Essentia; Hopkins Health Care System; HealthCare Partners; Reliant Health Care System; Mount Sinai Health Care System; University of Pittsburgh Health Care System; University of Texas Medical Branch Health Care System; University of Iowa Health Care System; University of Michigan Health Care System.
Objective	Conduct a cluster-randomized trial to determine the effectiveness of an evidence-based, patient-centered multifactorial fall injury prevention strategy.

Number of Subjects	The original target sample size was 6,000 participants enrolled from 86 practices to provide 90% power to detect a 20% reduction in the rate of the primary outcome with intervention relative to control. Later, the duration of the trial was extended to a total of 40 months (20 months of recruitment and an additional 20 months of follow-up), which reduced the target sample size to 5,322 participants. Recruitment ended after 20 months on March 31, 2017, with a total of 5,451 participants enrolled.
Main Inclusion Criteria	Community-living persons, 70 years or older, who are at increased risk for serious fall injuries.
Intervention	An evidence-based patient-centered intervention that will combine elements of a multifactorial, risk factor-based, standardly-tailored fall prevention strategy developed at Yale, practice guidelines offered by the CDC's "STEADI" toolbox and the joint American Geriatrics Society/British Geriatrics Society guidelines, and ACOVE practice change approach.
Duration of Intervention	A minimum of 24 months and a maximum of 44 months.
Primary Outcome	The primary outcome is serious fall injuries, operationalized as a fall resulting in: (1) (fracture other than thoracic/lumbar vertebral; joint dislocation; or cut requiring closure) AND any medical attention; OR (2) (head injury; sprain or strain; bruising or swelling; or other) requiring hospitalization.
Primary Analysis	The risk of any serious fall injury (i.e., time to first event) will be analyzed using a survival model that incorporates competing risks (due to death) and clustering. In this analysis, participants who are lost to follow-up without a prior serious fall-related injury will be censored at their date last seen. In a secondary analysis, we will adjust for the pre-specified set of baseline covariates to examine their influence on the intervention effect.
Secondary Outcomes	Number of falls, number of all fall injuries, and measures of well-being.

Adaptive Components	**Adaptive components of the trial** include: 1) monitoring the accrual rate to determine whether the study eligibility criteria need to be reconsidered if recruitment is lower than expected, taking into account that any changes could affect the inferences; 2) monitoring the potential for ascertainment bias because of interactions between the FCMs and study participants and changing the primary outcome definition if necessary; 3) monitoring the primary outcome rate to determine whether the outcome needs to be adapted, e.g., from time to first serious fall-related injury to time to all recurrent serious fall-related injuries if the former rate is too low, affecting the power of the study; 4) interim monitoring for efficacy or futility, if necessary; and 5) refining the analytic methods based on the validity of the assumptions; such an adaptation will be done blinded to treatment, e.g., if the death rate is low, competing risks could be considered as a secondary, rather than a primary, analysis.
Interim Analysis	Interim monitoring will focus on patient accrual, baseline comparability of treatment groups, protocol adherence, data completeness and quality, accrual of fall events, safety, and efficacy or futility.

2.1 ELIGIBILITY CRITERIA

Table 2-2. Inclusion and Exclusion Criteria

Inclusion Criteria	
i.	**The patient is at least 70 years of age.**
ii.	**The patient must answer 'yes' to one or more of the following questions:**
ii.a	**Have you fallen and hurt yourself in the past year?**
ii.b	**Have you fallen 2 or more times in the past year?**
ii.c	**Are you afraid that you might fall because of balance or walking problems?**
Exclusion Criteria	
i.	**The patient is enrolled in hospice.**
ii.	**The patient resides in a nursing home.**
iii.	**The patient is not capable of providing informed consent (or assent), and a proxy is not available.**
iv.	**The patient does not speak English or Spanish.**

Because participants must be able to provide consent (or assent) over the phone, it is not feasible to enroll participants who do not speak English or Spanish. A full explanation of the consent and assent processes if provided in Chapter 3.

The screening for fall risk is based on the patient's own self-reported responses to the three screening questions. In this study, a fall is defined as an unexpected event in which the participant comes to rest on the ground, floor, or lower level. The word "hurt" means any physical injury or other health problem that a person thinks he/she experienced as the result of a fall.

2.2 OVERVIEW OF RESEARCH PROCEDURES

The STRIDE Study will follow patients for up to 44 months through contacts every four months to inquire about falls. At 12 and 24 month selected participants will have a longer contact for the Wellbeing outcomes subsample (n=720). **Table 2-3** provides an overview of the key research activities in STRIDE. Details about the Screening,

Recruitment and Enrollment process are provided in Chapter 3; Outcomes Assessment in Chapter 7 and the data systems supporting these processes in Chapter 9. The intervention is described in Chapter 5.

Table 2-3. Schedule of STRIDE Research Activities

The STRIDE Study will follow subjects for up to 44 months through contacts every four months to inquire about falls. At 12 and 24 months, selected participants will have a longer contact for the Wellbeing outcomes subsample (n=720).

Activity/assessment	**Screen / Enroll**	**BL**	**4 mon**	**8 mon**	**12 mon**	**16 mon**	**20 mon**	**24 mon**	**28 mon**	**32 mon**	**36 mon**	**40 mon**	**44 mon**
Screening for high fall risk	X												
Recruitment packet mailed	X												
Enrollment - Verbal Consent / Assent	X	X											
Telephone interview	X	X	X	X	X	X	X	X	X	X	X	X	X
Demographic characteristics		X											
Cognitive screen		X											
Chronic conditions		X											
Fall history		X											
Self-rated health, height/weight		X											
Physical function and disability*		X			X			X					
Concern about falling*		X			X			X					

Anxiety/depressive symptoms*		X			X			X					
Falls, fall injuries, serious fall injuries			X	X	X	X	X	X	X	X	X	X	X
Health care utilization			X	X	X	X	X	X	X	X	X	X	X
BL: Baseline; mon: months *Among a random subset of 720 participants													

CHAPTER 3 – SCREENING, RECRUITMENT AND ENROLLMENT

3.0 SCREENING, RECRUITMENT AND ENROLLMENT OVERVIEW

The recruitment of patients into STRIDE has three main steps: screening, recruitment and enrollment. ***Screening*** refers to the process by which patients, identified by each practice as being over the age of 70, are determined to have a fall risk factor and, therefore, be potentially eligible for participation in STRIDE. ***Recruitment*** refers to the process of informing the potentially eligible patients about the STRIDE study and providing the opportunity for them to "opt-out" if they do not want any further contact. ***Enrollment*** refers to the process of contacting potentially eligible persons who have not opted-out to invite them to participate in the STRIDE study.

Screening, recruitment, enrollment and consent procedures are a collaborative effort between clinical trial sites (CTS), the Yale Recruitment and Assessment Center (RAC), the Yale Data Coordinating Center (DCC) and Central Project Management. An overview of the workflow of screening, recruitment, enrollment and data transfer procedures is provided in Appendix 3.1. Screening, Recruitment and Enrollment Procedures are described in this section. Outcome assessment procedures are described in Chapter 7 and Additional Data Management details that support these processes are described in Chapter 9

A brief overview of the three main steps in the recruitment process is provided below so that the whole process can be understood. In the subsequent sections in this chapter, the specific details about the procedures associated with each of these steps are provided. All recruitment materials and interviews are available in both English and Spanish.

Step 1 - **Screening**

Lists of patients who are over the age of 70 from 86 practices within 10 study sites will be created. It is estimated that more than 100,000 patients will be identified using this method.

Patients will be screened for their fall risk by asking them three questions to identify their risk of falling and being injured. At most practices, age-eligible persons will be sent a postcard with the 3 questions and asked to return the postcard. At some practices, age-eligible persons will be asked the 3 questions when they visit their doctor. We expect about 40,000 of the patients will be identified as having elevated risk for falls.

Step 2 - Recruitment

Patients who return the postcard and screen positive for being at risk for falls will be sent a recruitment packet of information about the STRIDE Study. The packet will include an "opt-out" card they can send back if they are not interested. The packet also tells them that if they do not send in the opt-out card, they will receive a call from the Recruitment Assessment Center at Yale in approximately two weeks. Individuals are allowed up to 3 weeks to respond before RAC staff begin trying to reach them by phone.

Step 3 - Enrollment

Patients who do not return the opt-out postcard will be called and invited to enroll in the study. Additional screening will be conducted to rule out:

- Persons who live in nursing homes

- Persons who are enrolled in hospice
- Persons who do not speak English or Spanish

The Enrollment phone call has three parts:

1. The Informed Consent Process
2. The Baseline Interview
3. Training in Use of the Monthly Fall Calendar

1) The Informed Consent process will ensure that the patient/participant understands the purpose, risks, and benefits of the study, as well as what their participation entails.

2) The Baseline Interview will collect information about the participants' health history and current status. There are 2 versions of the baseline Interview:
   a. Basic version
   b. Wellbeing version – This has all the items of the Basic version plus additional scales that measure wellbeing factors. 720 participants will be randomly assigned to receive this version of the Baseline Questionnaire.

3) Training the participant in the use of the Monthly Fall Calendar will be done before the Baseline Interview is closed. Persons who do not complete the baseline interview will not be considered enrolled in the study.

Table 3-1. Steps in the Screening, Recruitment and Enrollment Process

Steps in the Screening, Recruitment and Enrollment Process

3.1 SCREENING

Screening Overview

From each practice, patients aged 70 or older will be identified via the electronic health record (EHR) and subsequently screened to identify those at increased risk for falls and fall-related injuries. The participating practices will provide the RAC with the names and contact details of patients in the practice who are aged 70 years or over. The following contact information will be provided: name, address, phone number, date of birth, medical record number, name of the primary care physician, name of primary care clinic, preferred language (if possible), sex, race and ethnicity.

Three questions will be used to screen patients for fall risk. The patient must answer 'yes' to one or more of these three questions to 'screen in'. These questions are: Have you fallen and hurt yourself in the past year?; Have you fallen 2 or more times in the past year?; and Are you afraid that you might fall because of balance or walking problems?.

Two approaches will be used for screening: central screening and clinic screening. The primary strategy will be central screening. Patients will be sent a letter addressed from their primary providers asking them to complete the fall screening postcard, which will include the three questions, and mail it back to the RAC. A second and third mailing may be sent out to non-responders to improve response rates. In addition, patients who return their screening card with no fall risk factors may be sent a "rescreen" mailing after some time has passed.

A clinic screening strategy will be used in one CTS (Reliant). Practice staff, usually medical assistants, will screen all age-eligible patients during routine primary care visits. Those responding positively to any of the 3 screening questions will be deemed to have "screened in." The number of recruitment packets mailed to screen positive patients was set by study investigators. As part of a practice change, the screening questions will be embedded in the usual workflow, as a part of standard vital signs. The details of these screening processes are outlined below.

3.1.1 Central Screening

In nine Clinical Trial Sites, the screening will be managed using Central Screening as the main protocol. Under Central Screening, contact information about age-eligible patients will be imported from EHR data warehouses at each site and stored in a patient information database (described in more detail in MOP Chapter 9, Data Management). Patients will be randomly selected for screening from this database, and sent the following items in an envelope having the patient's clinic logo printed on it:

- A personalized letter, on clinic letterhead and digitally signed by a physician selected to represent the practice (e.g., Medical Director), about fall risk and introducing the postal screener as a contribution to a medical research study. STRIDE is not mentioned in this letter. (Appendix 3.2)
- A postcard on which is printed the 3-question fall risk screen. Patients from sites having high proportions of Spanish-speaking patients will also receive a Spanish-language postal screener (letter and postcard) as well as the English version. (Appendix 3.3).
- A story card printed on a postcard double-sided with one side featuring a quote and a picture of the physician selected to represent the site and the other side including a picture and a quote from a patient belonging to the site. A generic story card postcard is used for those sites without site specific physician

and patient quotes. A second story card in Spanish is included in the letters to patients at sites having high proportions of Spanish-speaking patients. (Appendix 3.3.1)
- A bookmark with a quote about falls, double-sided in English and Spanish, is also included in the recruitment packet. (Appendix 3.3.2)

Central Screening activities have a monthly cycle that involves both DCC and RAC. These tasks are described below:

DCC Central Screening tasks

Each month, DCC will randomly select patients for screening. The number selected will depend on the observed screening and enrollment characteristics of each clinical trial site practice (i.e. the number of age-eligible patients at a practice site, the target number of patients to be recruited at a practice site). The goal is to control the enrollment rate by adjusting the mailing volume.

Records for the selected participants will be placed into a table in the Study Database, where it will be available to the Tracker utility that is operated by RAC staff.

RAC Central Screening tasks

RAC will be responsible for organizing the mailing of the postal screens and accompanying letters that are customized to each patient's clinic practice, and for processing the returned screens.

Monthly mailing tasks:

1. Use a data management utility called the Tracker to generate a mail/merge file for selected patients ("mail/merge" function, "postal screener ready to send" filter).
2. Use the Document Generator to create (1) a PDF document of Clinic letters, and (2) a PDF document of Postal Screener postcard "back pages."
3. Transmit by Secure File Transfer the mail/merge spreadsheet and the two PDF documents to Yale Printing and Publishing Services (YPPS).
4. Confirm the receipt of the transferred documents by the end of the day.
5. YPPS will be responsible for printing, collating and mailing the supplied materials. This will occur by the end of the week. YPPS will notify RAC upon completion of these tasks.

Weekly processing for returned Postal Screeners:

1. Using the instructions outlined above under Guidelines for Processing Forms, postal screeners will be scanned, cataloged and processed by OCR software.
2. A utility developed by the data management team will be used to identify patients who have screened positive for fall risk. These patients will be sent recruitment packets, as described below.

3.1.2 Clinic Screening

Reliant Medical Group will use clinic based screening for the study. The Reliant trial site has incorporated the STRIDE screen into its Epic-based EHR system and into its routine clinical workflow.

For this Clinic screening, the medical assistants will ask patients the three fall screening questions as part of their regular work in the clinic when they room patients and collect vital signs.

Questions are embedded within the Epic-based EHR system. Patient responses will be recorded by the medical assistants directly into the database.

For this one site, STRIDE data management will support a special screening mode whereby the site staff will receive weekly data transmissions of screen responses and contact information for age-eligible patients seen at its participating practices.

Each week an automated DCC process will transfer Reliant EHR screening data to the Study Database. The number of recruitment packets mailed to Reliant screen positive patients was set by study investigators.

3.2 RECRUITMENT

3.2.1 Recruitment Overview

Patients who screen positive with either screening strategy (i.e. central or clinic based screening) will be mailed a recruitment packet. Included in the recruitment packet are: letters describing the study, an opt-out postcard, information about the consent process and privacy, the STRIDE brochure, a sample calendar; and a card from Martha Stewart, encouraging participation in STRIDE. The letter will indicate that the patient can opt out from being contacted about the study by returning a self-addressed, pre-stamped opt-out postcard to the RAC within two weeks.

Screen-positive patients in both the intervention and control practices who do not opt out will be called for possible enrollment by a study staff member at the RAC. At UTMB and MT Sinai, patients may also be called for possible enrollment by local staff trained by RAC and blind to the treatment assignments of the practices. During this consent process for the telephone interview, the recruiter will review the purpose of the study, confirm conformity to inclusion criteria and the absence of any exclusion criteria, answer any questions, invite participation and, after obtaining verbal consent, collect baseline data.

Screen-positive patients will be enrolled until the desired number (average is approximately n=70) has been enrolled from each practice site.

Because randomization of practices occurs prior to participant screening and enrollment, it will be important to minimize any potential bias due to lack of treatment assignment concealment. The central recruitment staff and the UT and MS enrollment staff will be kept blind to randomization status of the practices and will be rigorously trained to reduce potential bias.

3.2.2 Specific Recruitment Procedures

The Tracker will alert RAC staff of patients who screen positive for fall risk, so that they may be called for possible recruitment. The first stage of recruitment is the mailing by RAC of a recruitment packet.

The recruitment packet mailings are handled by RAC staff as a daily task, as soon as possible after fall risk identification (through central postal screener or clinic screener EHR data transfer). The steps to the recruitment packet mailing are as follows:

1. Use the Tracker to generate the mail/merge data for newly identified positive screens (“mail/merge” function, “recruitment packet ready to send” filter). The Tracker will assign a recruitment ID code to each screen-positive patient. Each batch of recruitments will comprise a contiguous numeric range of recruitment ID codes.
2. Use the Document Generator to create and print the personalized Clinic and STRIDE letters.

3. Retrieve from inventory sufficient numbers of STRIDE brochures, copies of the consent/privacy information sheet, clinic-specific large-format envelopes, sample calendars, Martha Stewart cards and the pre-printed opt-out postcards having the recruitment ID code range for the current batch.
4. Assemble the recruitment materials personalized for each patient.
5. Research assistants will check each other's accuracy in combining materials for each patient. Packets having no omissions or mismatches will be sealed in envelopes. If errors are identified these will be corrected, and the team will consider modifications to the process to eliminate errors.
6. Any issues that arise, such as potential misspellings, uncertainty of language preference, etc. will be discussed with the director of the RAC and decisions about how to handle each type of situation documented for consistency.
7. Log each recruitment packet as mailed in the Tracker.
8. Affix stamps and place in the outgoing mail bin.

The contents of the recruitment packet mailed in a large-format envelope having the clinic logo printed on it include the following items:

1. An "opt-out" postcard, which, if mailed back by the patient, will permanently exclude the patient from STRIDE recruitment. The postcard is pre-printed and bar-coded with a recruitment ID code (Appendix 3.4).
2. A personalized letter, on clinic letterhead and signed digitally by the physician representing the practice, that introduces the STRIDE Study (Appendix 3.5 and Appendix 3.6).
3. A personalized letter, on STRIDE letterhead and signed digitally by a STRIDE Principal Investigator, that describes STRIDE and includes instructions for the opt-out postcard (Appendix 3.7).
4. A STRIDE brochure (Appendix 3.8).
5. Consent and Privacy Information sheet (summary of consent form) (Appendix 3.9).
6. A sample calendar (Appendix 7.2).
7. A Martha Stewart card (Appendix 3.4.1).

All materials listed above are available in English and Spanish.

The Tracker monitors each patient's progress through the recruitment process and provides the RAC staff with lists of patients who have not returned opt-out cards within two weeks of the recruitment packet mailing. These lists are used by RAC interviewers to begin the enrollment process.

3.3 ENROLLMENT

3.3.1 Baseline Interview Overview

All patients who screen in as eligible and who have not returned an opt-out postcard will be called by the RAC. Up to 5 attempts are made to reach each patient by RAC staff calling at various times of the day and days of the week. Included in the 5 attempts are at least one evening (adjusted to the hours of the particular time zone of the site) and one weekend call. The goal of the telephone calls is to confirm eligibility, invite study participation, and conduct a baseline interview to enroll interested patient. The outcome of every call is recorded and "final" outcomes include: enrolled, refused, not reached after 5 attempts, permanent or temporary ineligibility. The "baseline" interviews are managed using REDCap with a special extension or "plug in," designed by the DCC that extends REDCap's features to better support the interviewers' workflow (Appendix 3.10). This extension allows the field director to manage each interviewer's caseload for maximum efficiency, and allows the interviewer to view the status of each assigned interview, and to quickly initiate the consent and enrollment process.

If recruitment packets are returned to RAC as “undeliverable,” every effort is made to confirm the correct address and re-mail the packet. If patients are called and indicate they are interested but never received a recruitment packet, a second recruitment packet is mailed. If a third recruitment packet is required, it is sent by certified mail. Standard REDCap techniques will be used to conduct the interviews. Scripts will be provided for every question, and skip patterns enforce all branching logic. The Consent/Enrollment/Baseline interview will be organized into six Case Report Forms or CRFs. As each CRF is completed and saved, the interviewer will be instructed whether to proceed to the next. Every CRF includes a “comments” field where interviewers may perform the paper form equivalent of “writing in the margins.” The Baseline CRFs are as follows:

1. Baseline Call Record – logs and tracks attempts to reach the Patient.
2. Patient Verbal Consent Part 1.
3. Cognitive Impairment Screen.
4. Patient Verbal Consent Part 2.
5. Proxy Consent.
6. Baseline Interview.

A patient is enrolled in the study upon completion of the baseline interview.

3.3.2 Post-Enrollment: Initial Mailing and Site Notification

A. The Administrative Tracking application identifies newly-enrolled patients and provides tools to manage the post-enrollment mailings. The initial post-enrollment mailing, the “enrollment packet”, is packaged in a large-format STRIDE envelope. The contents associated with this mailing are:

- STRIDE thank you letter (Appendix 7.6).
- Welcome letter that tells the participant if their PCP practice is a Control or Intervention Site (Appendix 3.7.1).
- For patients at Control sites, a copy of the CDC STEADI Stay Independent Brochure (Appendix 6.1).
- A copy of the STRIDE Study Brochure (Appendix 3.8).
- A copy of the Consent/Privacy information sheet (Appendix 3.9).
- 5 months of calendars (Appendix 7.2).
- Instructions on how to fill out the calendar (Appendix 7.3).
- A magnetic clip to hold the calendars (Appendix 3.9.1).
- NIA flyer - What to do in Case of a Fall NIA (Appendix 3.9.2)

The initial post-enrollment mailings will be handled by RAC staff as a twice-weekly task, as soon after enrollment as is practical. The steps to the enrollment mailing were described earlier.

If enrollment packets are returned to RAC as “undeliverable”, patients are called to confirm the correct address and the second packet is sent by certified mail.

A. Enrollment data transferred to Site resources (e.g., Site Coordinator Website and FCM Software). Site Coordinator notifies FCM of patient enrollment.

B. ENROLLED INTERVENTION PARTICIPANTS: NOTIFICATION TO FALLS CARE MANAGERS
Upon study enrollment, contact information, screener data and demographics will be transferred to the FCM software. Falls Care Managers will be notified of newly enrolled participants via new event in the FCM software.

3.4 INFORMED CONSENT

3.4.1 STRIDE Consent Overview

For the STRIDE study, contact between the interviewer and the participants will be by telephone. Therefore, the informed consent process will consist of an IRB approved verbal script read to the potential participant and/or his/ her surrogate. The script contains all the elements of information and disclosure required by Federal law. Consent will be obtained orally over the phone because the participant is not available to sign a standard consent form. The consent process will consist of a series of conversations between the research participant and the interviewer who has been trained in the protection of human subjects in research, HIPAA privacy and security for research and good clinical practice for research.

3.4.2 STRIDE Consent Documentation

Before the interview is conducted, the research staff member will electronically sign an attestation that the elements of informed consent have been presented orally to the participant. This signature will be dated to confirm that the process took place prior to the start of the interview.

3.4.3 Elements of the STRIDE Consent Process

In the STRIDE study, the IRB approved scripts will include questions:

1. to establish a potential participant's eligibility.
2. to determine a potential participant's capacity to provide informed consent.
3. to obtain informed consent (or assent) from the participant.
4. to obtain consent from a surrogate, if needed.
5. to document who obtained the consent and when.

The questions are designed to 1) screen out prospective participants who are ineligible because they live in a nursing home, are receiving hospice care, or do not belong to the practice of record, 2) determine the need for a surrogate, 3) confirm that the participant or his/her surrogate understands and has agreed to participate in the STRIDE study, and 4) to verify when and by whom the consent/assent was obtained. The full consent script is provided in Appendices 3.11, 3.12 and 3.13.

3.4.4 STRIDE Telephone Consent Instructions

The telephone interviewer will locate the computer screen containing the "Script for Obtaining Verbal Consent to Participate in the STRIDE Study via Phone." The REDCap system will populate the form with the details needed for each potential participant, including the patient's name, clinic and provider names, and the details related to screening. These details will address why the particular person is being contacted by STRIDE. The complete consent script is in Appendices 3.11, 3.12 and 3.13.

3.4.5 Consent for Patients with Cognitive or Hearing Impairment

A. Evaluation of Cognitive Capacity

Patients with cognitive impairment will be included in the study because: (1) cognitive impairment is a risk factor for fall injuries; (2) patients with cognitive impairment may benefit from several components of the multifactorial intervention, including physical exercise; and (3) the inclusion of patients with cognitive

impairment will enhance the generalizability of this pragmatic trial, facilitate the subsequent translation of results into clinical practice, and reduce the likelihood of selection effects. Patients with significant cognitive impairment/dementia will be required to have a surrogate/proxy willing to: (1) provide consent; (2) facilitate adherence to the study protocol, and (3) assist with implementing the intervention as needed. The person with cognitive impairment will need to provide verbal assent for the surrogate/proxy to provide this information on their behalf and provide assent for their own participation in the study.

Significant cognitive impairment will be defined as 4 or more errors on the Callahan 6-item cognitive screener (Appendix 3.14). The six-item screener is a brief and reliable instrument for identifying participants with cognitive impairment and its diagnostic properties are comparable to those of the full Folstein Mini-Mental State Examination (MMSE). The six-item screener can be administered by telephone and is easily scored by a simple summation of errors. The six items include the three-item recall (apple, table, penny) and three-item temporal orientation (day of the week, month, year) from the MMSE.

The cognitive assessment will be conducted as part of the consent script. This will determine the need for a surrogate respondent due to the participant's cognitive status. The RAC staff will read the script for the Callahan Six-Item Screener to Identify Cognitive Impairment (Appendix 3.14).

The score is a count of the number of errors made. The score can be 0-6 errors. A score of 4, 5, or 6 errors indicates the need for a surrogate.

B. Surrogate/Proxy Consent

Surrogate/proxy consent will be obtained, if possible, when the patient is unable to complete the telephone interview because they have been identified as having significant cognitive impairment OR the person has significant hearing impairment that makes it impossible for the interviewer to communicate directly with them over the telephone. The specific steps and process to identify a surrogate are included in the first portion of the surrogate consent script.

The scripts for obtaining surrogate consent are found in Appendix 3.12 (when patient answers phone) or Appendix 3.13 (when surrogate answers phone).

At the time any potential participant is approached, the study staff will use professional judgment to determine the need for surrogate consent with assent by the participant. Study personnel responsible for recruitment and consent will be highly trained and experienced in determining decisional capacity in senior populations. In addition, specific assessment of decisional capacity will be part of study training. For example, potential participants will be considered impaired with regard to decisional capacity, regardless of Callahan cognitive score, if they: 1) are unable to express or communicate a preference /choice; 2) cannot understand the consequences of a potential situation e.g. cannot understand the implications of releasing their personal health information (this is usually determined by the patient asking questions related to access to their medical records that indicate a lack of comprehension and/or this can be determined by a surrogate informing the interviewer); 3) are unable to provide a logical rationale for participation/non-participation; 4) have a legal guardian or have been identified legally as incompetent to make decisions for themselves (this is usually determined by a surrogate telling the interviewer this information).

If the interviewer determines that the person is cognitively or hearing impaired, the interviewer will ask some additional questions that are embedded in the database in the verbal consent section to determine if there is a surrogate and who the surrogate is. Examples of such questions include:

With your permission, I would like to talk about the study with someone you trust. Is there someone I can contact? This can be your spouse, a child or someone else who knows you best.

May I contact this person to answer questions on your behalf?

What is this person's relationship to you?

Permission from potential participants will be obtained to contact the surrogate.

When surrogate consent is deemed necessary, and the potential participant has provided permission, the surrogate will be approached for consent via a HIPAA alteration. The hierarchy that we will use for selecting surrogates (assuming surrogate is cognitively unimpaired) is the following: 1) spouse, 2) adult child who lives with person, 3) other relative (most commonly, an adult grandchild, sibling, or daughter-in-law) who lives with person, 4) live-in caregiver. This hierarchy will be modified slightly for participants at the University of Pittsburgh Medical Center so that this approach is consistent with Pennsylvania state laws. This has been reviewed with University of Pittsburgh's IRB Director and the cIRB's Director. If the patient has several live-in caregivers, the patient will be asked who they think knows them best and who they trust to answer questions on their behalf. If there is confusion in identifying the most appropriate surrogate, the interviewer will consult with the RAC supervisor about the details of the particular situation. For example, the care coordinator or conservator might need to be contacted in order to make a final determination.

If permission is granted by the surrogate to enroll the participant, the potential participant will then be notified and asked to provide verbal assent, using the following items defined clearly to the potential participant:

1. A simplified description of the purpose of the research study;

2. A description of the measures/outcomes to be collected and their method of collection;

3. An explanation of the procedures involved and how long the study will last;

4. An indication that the study is voluntary;

5. A question/answer opportunity in which the potential participant will be encouraged to ask questions.

If verbal assent is granted, the participant will be enrolled.

Information about the surrogate will be completed as part of the baseline interview. This is found at the end of the surrogate consent script.

3.5 INTERVIEWER TRAINING AND QUALITY CONTROL

A. Interviewer Training will be conducted and the interviewing staff will have been certified in the Standard Procedures for the STRIDE Study. The training curriculum is included in Appendix 3.15.

Interviewer Training and Certification

After carrying out the questionnaire training, the program coordinator (PC) should conduct at least two sessions with each data collector/interviewer prior to having them collect data on real participants. The following format is suggested:

Use colleagues, clinic staff, or other nonparticipant volunteers.

Interview prospective age-eligible participants/volunteers while being observed by the PC.

1. Human Subjects Protection training
2. HIPAA Privacy training
3. REDCap data capture system training
4. Consent form
5. Callahan screener
6. Proxy consent/participant assent procedures
7. Eligibility questions
8. All Study specific items
9. Late Life Function Computer Assisted Telephone Interview (CATI)
10. STRIDE Monthly Fall Calendar (Appendices 7.2 and 7.3)

Corrective Actions: Should any problems related to bias, standardization, interviewing skills, or forms completion be apparent, the PC will work with the data collector/interviewer on these areas.

The second set of interviews will be observed as soon as possible. If problems are still apparent, the PC will assess the appropriateness of using this staff member for data collection on STRIDE.

Every data collector/interviewer will meet STRIDE standards in order to be a part of the study.

Certification: Certification of each data collector/interviewer is complete when the training and practice has been completed to the satisfaction of the Program Coordinator.

Performance Monitoring through the REDCap System

REDCap is able to count the number of calls made by each interviewer as well as the outcome for each call, time of day and day of the week, and the duration of time spent on each portion of the interview. This information will be used in conjunction with other information – such as total number of hours worked and other assignments to evaluate the performance and productivity of each interviewer.

Re-certification: Re-certification on standardized methods of administering the questionnaires should take place annually by the Program Coordinator or another certified assessor. Periodic checks might also be conducted by “sitting in on a random interview” (after asking permission from the participant).

Productivity will be evaluated using the individual assessor’s enrollment rate and the number of calls made and enrollments completed given the number of hours worked. Other Quality Control measures, such as successful retention of participants, are assessed through the REDCAP data capture system.

B. Quality Control Monitoring: In addition to performance, data generated by the REDCap system, re-certification of interview staff and supervisory observations will be conducted twice annually (see Appendix 3.16 and 3.16.1). New or specialized procedures are itemized on the certification forms and sign off by the supervisor is required. Regular meetings will be held with staff to identify any adjustments to procedures that may be required after the initiation of the Study. A sign-in attendance sheet and agenda of topics kept for each meeting. The attendance sheet and list of topics will provide documentation of the training topics and who attended. Each interviewer is assigned a notebook to hold copies of their individual training related materials. Proof of up-to-date training in the Protection of Human Subjects and Good Clinical Practice for Research is maintained in a separate file and also sent to the CPM.

CHAPTER 4 – PRACTICE SELECTION AND RANDOMIZATION

4.0 SELECTION OF PRACTICES AND RANDOMIZATION

4.1 PRACTICE SELECTION PROCESS

At the request of the Steering Committee, a Practice Selection Subcommittee was created to establish eligibility criteria for practice selection and for the evaluation of practices proposed by the site PIs. The criteria and the practice evaluation processes proposed by the Practice Selection Subcommittee were reviewed and approved by the SC. Using the eligibility criteria as a guide, the site PIs submitted a list of ~116 practices. The practice selection subcommittee evaluated these practices using the eligibility checklist with particular attention to practice size, the available resources, including community exercise resources, and the commitment of the practice leadership to participating in the trial. These practices had their community-based exercise (CBE) programs evaluated based on SC-approved criteria.

Based on this structured, iterative process, the Practice Selection Subcommittee submitted a list of 96 approved practices, of which 86 practices were randomized.

The original proposal had planned for randomization of 80 practices, each randomizing an average of 75 participants, for a total of 6,000 randomized participants in a study of 36 months duration (18 months of recruitment and a further 18 months of follow-up). Increasing the number of randomized practices would decrease the number required per practice along with the overall sample size for the trial, but would also increase the required number of falls care managers, central staff, and overall trial costs. Accordingly, after considerable discussion, it was decided to randomize 86 practices given the budgetary considerations, but maintain the number of participants at 6,000. The duration of the trial was extended to a total of 40 months (20 months of recruitment and an additional 20 months of follow-up), which reduced the target sample size to approximately 5322 participants.

The DCC evaluated the characteristics of these 86 practices in collaboration with the Practice Selection Subcommittee with the goal of reducing heterogeneity and achieving optimum balance between the intervention and control groups.

4.2 RANDOMIZATION PROCEDURE

All 86 participating clinical practices that met eligibility criteria were randomized to either the intervention or the control group at one time using covariate constrained randomization with stratification by clinical site to control for potential site differences. Covariate constrained randomization was used to balance practice characteristics within and across the clinical sites (strata) to provide some control for the ICC to maintain the power of the trial. The balancing covariates were practice size, geography (urban vs. rural), and race/ethnicity (primary identification nonwhite vs. white).

To perform the constrained randomization, a published SAS macro (Chaudhary MA, Moulton LH. A SAS macro for constrained randomization of group-randomized designs, Computer Methods and Programs in Biomedicine. 83:205-210, 2006) was adapted for use with the STRIDE design. The macro generates a set of randomizations that satisfy balance on practice size, geography and race/ethnicity both within and across strata. From this set of valid assignments, one was selected at random. Only the trial biostatisticians participated in the generation

of the randomization. No one else from the trial was involved in the process. To minimize the risk of selection bias, practice site names were masked during the process. The practice site randomization assignments to intervention or control groups were only released to the clinical sites only after careful vetting of the entire randomization process by the trial biostatisticians.

There is no plan to add practices after trial initiation; all available practices that met the eligibility criteria have been randomized. If a randomized practice drops out of the trial, we expect to ascertain study outcomes in individual participants because follow-up is being conducted centrally.

C HAPTER 5 – INTERVENTION

5.0 INTERVENTION OVERVIEW

The intervention includes a multifactorial risk assessment and individually tailored intervention for participants enrolled in the study. The intervention utilizes a primary care co-management of a dynamic Falls Care Plan between the FCM and PCP. Falls Care Managers are supervised locally, by Site Clinical Director (SCD). Study participants will herein be referred to as “patients” as the intervention is within the scope of clinical care.

The Intervention follows four major components:

1. **Risk assessment**. The FCM assesses each patient’s fall risk initially and at least annually. This assessment is guided by standardized procedures and algorithms. Data that contributes to risk factor assessment is captured using four strategies: The first is that the FCM briefly reviews the patient’s medical record, if available, for their history of osteoporosis and bone mineral density testing, BMI, and medications. The second is the Pre-Visit Questionnaire (PVQ) that patients complete before their first in-person visit with the FCM. The PVQ addresses several factors that contribute to each fall risk factor (Appendix 5.1). The third is that the FCM reviews the completed PVQ, and asks probing questions during the in-person visit regarding PVQ topics for which they need clarification or further detail. The fourth is that the FCM conducts a physical examination focusing on each risk factor (see section 5.3 below, Intervention Procedures).
2. **Communication of fall risk status and evidence based treatment options**. After they assess risks, the FCMs explain the findings to the patients and important others (e.g., family, caregivers) when appropriate. In particular, the FCM explains why each risk increases the chances of injurious falls and introduces evidence-based interventions to reduce falls. This communication is done using basic motivational interviewing approaches to elicit patient preferences and readiness to participate in treatments.
3. **Individualized Falls Care Plan.** Together, the FCM and patient develop an initial Falls Care Plan, considering risk-specific algorithms, personal preferences and resources. This initial Falls Care Plan is presented to the primary care provider (PCP) for review, potential modification, and approval. The contents of each plan include:
   - Fall risk reduction interventions that the FCM or patient can directly implement (e.g., home-based exercises).
   - Recommendations that the PCP can implement (e.g., medication changes).
   - Referrals to health providers (e.g., physical therapy) for more detailed assessment and treatment of specific risk factors.
   - Referral to community-based organizations for access to resources that support fall-reducing behaviors (e.g., Tai Chi).
4. **Longitudinal Follow-up.** The FCM and the patient monitor and evaluate their response to treatment as indicated in the Falls Care Plan. Scheduled in-person visits (minimum of once per year) enable evaluating the Falls Care Plan and enable a reassessment of risk factors, while follow-up phone visits (minimum of once between the first and second year of the intervention) enable evaluating the Falls Care Plan. Either telephone or in-person follow-up and reassessment of risk factors at scheduled intervals by the FCM may lead to Falls Care Plan revision.

5.1 THE REGISTERED NURSE FALLS CARE MANAGER

The Falls Care Manager (FCM) is a Bachelor of Science in Nursing (BSN) prepared Registered Nurse who is responsible for providing the STRIDE intervention. The FCM has at least 5 years of experience working as a Registered Nurse, and least 2 years of experience in the care of older adults, preferably within an ambulatory setting. Exceptions have been made; with approval by the Intervention Committee and Steering Committee, a non-baccalaureate Registered Nurse may serve as a FCM.

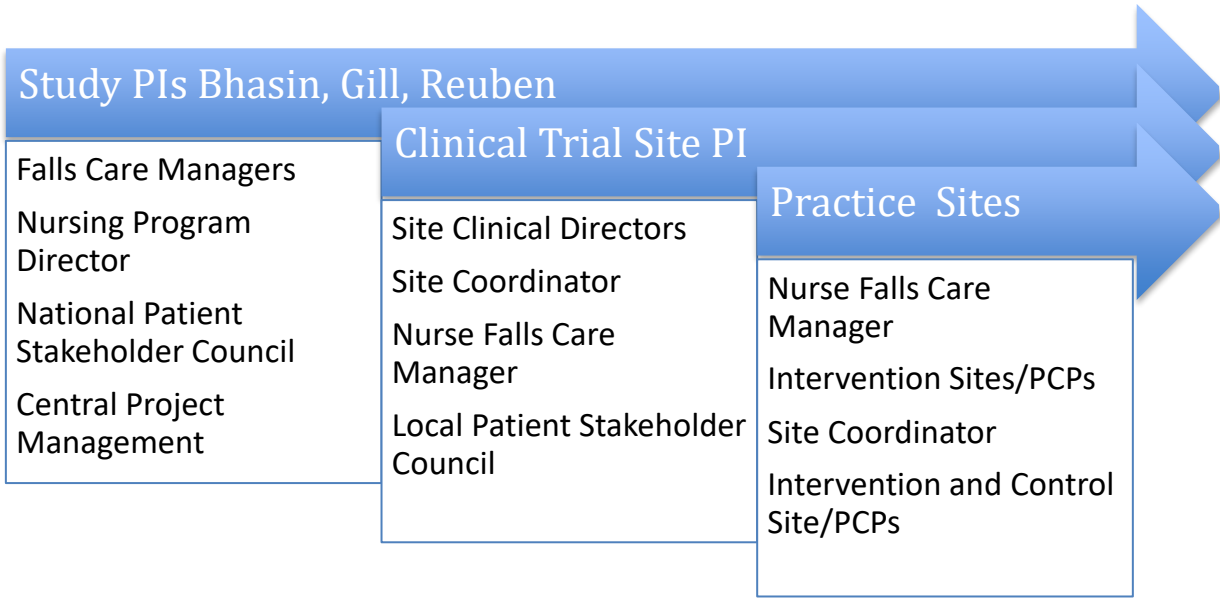
5.1.1 FCM Knowledge, Skills, and Abilities

1. Ability to establish and maintain professional cooperative and collaborative working relationships and project a professional demeanor while working with patients, caregivers, peers, administrators, and providers.
2. Competency in addressing cultural issues that can affect responses of diverse groups to aspects of the intervention that require active participation.
3. Ability to communicate with patients and caregivers with differing levels of health literacy.
4. Ability to work collaboratively in a multidisciplinary team structure including primary care, other health providers, and community agency staff.
5. Ability to deal effectively with changing priorities.
6. Ability to triage and manage problems as they arise on an as needed basis.
7. Ability to develop care plans and communicate effectively verbally and in writing to convey clinical information and recommendations accurately and precisely.
8. Ability to organize and prioritize tasks.
9. Ability to read, interpret, apply, and/or follow institutional policies, procedures, and written and verbal instructions.
10. Skill in working independently and following through with minimal direction.
11. Ability to utilize Excel, Word, and local EHR (if currently working in the organization).

5.1.2 The Role of the Nurse Falls Care Manager

The FCM's role is to implement the STRIDE intervention to prevent falls and fall related injuries among community-dwelling elders. The FCM utilizes a co-management model in collaboration with the primary care physician and other members of the inter-professional health care team at each practice setting. The FCM functions within the local CTS that is comprised of a team led by the Site PI. Each CTS team includes at a minimum the Site PI, SCD, FCM and SC. The FCM, SC, and SCD work as a team and report to the site PI. The FCM at each CTS is a member of the LPSC, and the LPSC reports to the NPSC, which also includes FCM representation. The Nursing Program Director guides the role of the FCM and supports the FCM in implementation of the study intervention. **Figure 1** shows how the FCM is integrated across the study.

Figure 1: FCM Integration Across the Study



5.1.3 Responsibilities of the FCM

1. Perform a multifactorial risk assessment of patients at risk for falls guided by a standardized structured visit note.
2. Develop an individualized Falls Care Plan in partnership with patients, using structured visit notes and algorithms.
3. Communicate the Falls Care Plan with the patient's primary care provider (PCP) for review, potential modification and approval including:
   a. Fall risk reduction interventions that the FCM can directly implement.
   b. Recommendations that the PCP can implement (e.g., medication changes).
   c. Referrals to health providers or community-based organizations for more detailed assessment or implementation of specific components identified in the Risk Assessment.
4. Use basic motivational interviewing to elicit patient preferences, priorities and readiness to participate in fall-reducing behaviors and treatments.
5. Monitor and evaluate the patient response to changes in behavior and treatment as indicated in the Falls Care Plan.
6. Reassess patient risk factors at scheduled intervals and revise the Falls Care Plan as needed.
7. Serve as a member of the LPSC.
8. Develop and maintain a database of current, appropriate, community resources, in collaboration with the site coordinator and LPSC.
9. Establish and maintain relationships with local agencies that promote physical activity and falls prevention.

5.1.4 Falls Care Manager Training Materials

The FCM completes a comprehensive training course that includes both asynchronous online modules and face-to-face instruction. The FCM curriculum is directed by an advanced practice registered nurse with a PhD and expertise in care of older adults and fall prevention. The online course emphasizes aspects of the FCM role within primary care settings, processes of falls care management, and evidence-based fall-prevention interventions developed by subject matter experts, instructional designers, and educational delivery experts. The content was developed in accordance with the standards of the American Nurses Credentialing Center (ANCC) and provides nurse participants with continuing education credits. Please note that these are not

currently available to the general public and anyone wishing to access these modules must contact the central project management team to arrange a password to allow access. However, a modified version is available to providers within the website.

The goal of the FCM training course is to provide RNs with the supplemental competencies necessary to fulfill the complex role of falls care manager (FCM) during the STRIDE study.

The FCM online course contains the following modules:

1. Introduction to FCM nursing
    a. Introduction to the Falls Care Manager Course
    b. Introduction Falls among Community-Dwelling Older Adults
    c. Introduction to the STRIDE study
2. The FCM's integration into her/his environment
    a. Integration into the primary care practice
    b. Integration into the local community (i.e., community resources)
    c. Integration into the FCM professional network
3. Essential skills for FCMs
    a. Recovery after Falling
    b. Initial assessment and care planning
    c. Using the Pre-visit Questionnaire (PVQ)
    d. The Patient's Initial Visit
4. Implementing Procedures to reduce risks of falls and injuries
    a. Vision Problems
    b. Unsafe Feet and Footwear
    c. Impaired strength and balance
    d. Osteoporosis
    e. Inadequate Vitamin D intake
    f. Postural hypotension
    g. Medication risks
    h. Unsafe home environments
5. Care Planning and Longitudinal follow-up
    a. Drafting the preliminary Falls Care Plan
    b. Refining the patient's Falls Care Plan
    c. Implementing the patient's Falls Care Plan
    d. Engaging patients in self-management
    e. Supporting patients in implementing their exercise plans
    f. Managing reports of recent falls
    g. Patients out of pocket cost

Additional FCM Training

In-person training meetings, held 1-2 times after the FCM has been hired, to reinforce learning from the online modules with additional focus on concepts of patient self-management, motivational interviewing, finding community resources, the physical intervention, and software training.

In addition to these formal learning programs, FCMs receive continuing education through webinars and one-on-one motivational interviewing skills coaching. Informal reinforcement of learning occurs during the weekly FCM phone meeting. Periodically, the Nursing Director will review FCM documentation in the form of initial visit notes and PCP communications to provide feedback for skill improvement. This documentation is securely

transmitted to CPM following the SOP Transmitting Intervention Documents with PHI (on the CTS page under Administrative Documents-SOPs). FCMs also have access to the Nursing Director and an online discussion forum for just-in-time questions and clarifications.

5.1.5 Evaluation of Learning Outcomes

Successful completion of the FCM training course is required for all FCMs. Achievement of learning outcomes is measured by completing the final exam with a score of 90% or better. Motivational interviewing skill is evaluated periodically using taped sessions with volunteer older adults, led by a motivational interviewing training expert.

5.1.6 Roles and Responsibilities of the STRIDE Nursing Program Director

The STRIDE Nursing Program Director is responsible for leading, mentoring and coaching the FCMs and overseeing the implementation of the intervention in all settings. The Nursing Program Director is a link between the central study team and the 10 clinical sites. The Nursing Program Director has at least 5 years' experience in a nursing leadership role and research management.

The Nursing Program Director has the following knowledge, skills, and abilities:

1. Ability to establish and maintain professional cooperative and collaborative working relationships and project a professional demeanor while working with FCMs, peers, and all study staff.
2. Communicates and interprets the STRIDE intervention to the FCMs and monitors FCM implementation of the intervention.
3. Develops, maintains, and implements nursing procedures that conform to current standards of nursing practice while maintaining fidelity to the STRIDE intervention.
4. Ensures that the STRIDE intervention is implemented within the scope of practice of the Registered Nurse.
5. Chairs weekly FCM team meetings.
6. Mentors, coaches and leads the FCM to implement the STRIDE intervention confidently, consistently and professionally.
7. Serves as a support for FCM practice. Maintains frequently asked questions (FAQ) about the Study Intervention.
8. Oversees the training and initial competency evaluation.
9. When requested by the SCD, collaborates with the SCD in developing and implementing a performance improvement plan (PIP) for FCMs as needed.

5.1.7 Roles and Responsibilities of the Site Clinical Directors

The Site Clinical Director (SCD) has overall responsibility for ensuring that the clinical components of the intervention are administered with fidelity at the site practices. In this role, he or she will be the principal local STRIDE supervisor for the Falls Care Manager (FCM) and will provide clinical expertise for administering the intervention. Additionally, the SCD shares his or her knowledge that is not specifically about falls, but relates to other general medical conditions and navigating the health care system that may affect the Falls Care Plan. The relationship between the FCM and SCD is collaborative and supportive, respectful of the skills that each brings to the team. In addition to their specialized knowledge as an MD or NP, the SCD will need a thorough understanding of the procedures and the clinical care of falls provided by the STRIDE intervention.

5.2 THE FALLS CARE MANAGER WORKFLOW

First Intervention Contact

1. CTS staff (FCM, SC or other designee) retrieves the patients' contact information and ready to contact date from the internal page of the STRIDE website—***www.stride-study.org***.
    a. Ready to contact date: A period of several days after enrollment that allows the mailed enrollment packet sent by RAC to arrive at the intervention patient's home. The enrollment packet contains the following, which are available from the internal page of the STRIDE website:
        - STRIDE Thank You Letter
        - Group B Letter
        - STRIDE brochure
        - Consent and Privacy Information Sheet
        - Fall Calendar with Instructions
        - Magnetic clip to hold the calendars
        - NIA What To Do In Case of a Fall information sheet
2. The patient is contacted to schedule an initial visit and receives by mail:
    a. FCM PVQ Cover Letter (Appendix 5.3)
    b. CDC Home Fall Prevention Checklist
    c. PVQ (Appendix 5.1).
        - The patient is asked to review and complete the PVQ and CDC Home Fall Prevention Checklist and to bring them both to their appointment along with their usual shoes.
3. The appointment date is recorded in the assessments manager on internal page of the STRIDE website—***www.stride-study.org > staff login > Falls care managers > FCM Tools > Assessments Manager.***

4. Procedure when unable to reach patients
    i. Attempt calling patient 5 times
        1. Make calls on different days, different times of the day
        2. Ask site coordinator to reach out to Katie Araujo regarding the Data Coordination Center's (DCC) ability to reach this patient. Communicate to FCM any additional contact information or preferences discovered by the coordinating center.
        3. Leave message, if possible, with call back information
    ii. If patient does not answer after 5 calls or return the phone call, then
        1. Send a letter to the patient that explains how and why to contact the FCM
        2. Send the patient a packet of fall prevention materials --(same packet used when patient leaves a practice)
        3. Send a memo/note to PCP explaining that *"we have been unable to reach xxxxxx, and thus s/he has not yet received the fall prevention intervention. If you see or talk to the patient in the near future, please encourage her/ him to contact us at xxx-xxxxx. Thank you for your continued support of the falls care management program. "*
    iii. Repeat initial scheduling telephone call every 6 months
    iv. Document in Falls Care Manager Software:
        1. Assessments Manager
            a. Variable/ Column titled: Initial Visit Status
                i. Not compl/ Status Change, or
                ii. Unable to complete

Pre Visit

1. Pre visit telephone contact is made by the FCM or designee to prepare for upcoming appointment.
2. Pre visit medical record review is performed by the FCM.
    a. Pre Visit Chart Review for data that informs the fall risk assessment (e.g., history of osteoporosis, BMI).
3. The FCM confirms that the patient has signed a HIPAA form at the local practice annually.
4. A FRAX assessment is completed by the FCM using the online FRAX calculator found at http://www.shef.ac.uk/FRAX/index.aspx.
5. The Patient Binder is assembled by the FCM or designee with the following handouts:
    a. Falls and Fractures Age Page
    b. How to Get Up From A Fall
    c. Eldercare Locator
    d. Community Safety Advice
    e. My Falls Risk Assessment

Initial Visit

1. The FCM or designee greets the patient/caregiver at the clinical practice site.
2. The FCM reviews the patient's PVQ.
3. The FCM reviews the overall agenda and goal for the visit including the interview, the physical exam, and the mutual care planning process.
4. The FCM continues the initial in-person visit by:
    a. Discussing pertinent positives on the PVQ (**Appendix 5.1**) with the patient (and caregiver when appropriate).
    b. Performs a physical exam targeting fall risk factors.
    c. Summarizes the risk factors that have been identified with the patient (and caregiver when appropriate).
    d. Uses basic motivational interviewing to identify and support patient priorities and mutual care planning.
    e. Uses mutual care planning to develop the initial Falls Care Plan (Appendix 5.6**,** using either Appendix 5.6.1 or 5.6.2 as appropriate).
    f. Informs the patient/caregiver that the findings from the visit will be reviewed with the patient's primary care provider (PCP).
    g. Provides the patient/caregiver with a copy of their My Falls Risk Assessment
    h. Provides patient counseling/ education based on positive risk factors and Falls Care Plan.

Post Visit

Immediately, post-initial visit

The FCM:

1. Completes an Initial Assessment clinic/Visit Note (Appendix 5.7).
2. Shares the initial assessment clinic/ visit note shared with the PCP and other health care team members as necessary.
3. Uses standardized, written communication regarding the evidence-based recommendations and individually tailors Falls Care Plan to ensure that all providers on the patient's health care team are aware of the STRIDE recommended interventions.

4. Receives confirmation of the Falls Care Plan along with any additional recommendations from the PCP.
5. Calls the patient (and caregiver when appropriate) after PCP has confirmed the initial Falls Care Plan and made additional recommendations (or not).
    a. Discusses and schedules next follow-up contact with patient (and caregiver when appropriate).
6. Completes any referrals that have been approved by the PCP and agreed upon by the patient.

Longitudinal Follow-Up

The FCM:

1. Conducts regular follow-up with the patient/caregiver to check on changes to patient's health status, assess any recent falls, and discuss implementation of the Falls Care Plan.
2. Conducts follow up telephone calls 6 months post-Falls Care Plan initiation and ad hoc, as indicated by the Falls Care Plan or requested by the patient.
    a. Telephone follow up calls are conducted using the Follow-up Call Structure (Appendix 5.8).
3. Conducts in-person follow-up visits 6 months after the initial visit and ad hoc, only for patients whose health status or functional status has changed significantly.
4. Conducts in-person follow-up visits a minimum of 1 year after the initial visit for all patients, and then yearly until the completion of the study.
    a. The FCM asks the patient to complete a Follow Up PVQ (Appendix 5.9) and conduct the physical exam. Either the complete PVQ or an abbreviated version may be used depending on the clinical information that the FCM anticipates needing for this assessment.
    b. The goals of the annual in-person follow-up are the same as the telephone follow-up with the addition of reassessment of all fall risk factors.
5. Procedure when unable to reach patients for follow-up visits
    a. Attempt calling patient 3 times over a one to two-week period
        i. Make calls on different days, different times of the day
        ii. Ask site coordinator to reach out to Katy Araujo regarding the Data Coordination Center's ability to reach this patient. Communicate to FCM any additional contact information or preferences discovered by the coordinating center.
        iii. Leave message, if possible, with call back information.
    b. If patient does not answer after 3 calls or return the phone call, then move patient to the next visit time point.
6. If during any follow-up activities the FCM learns of a fall, the FCM will follow the procedures described in triaging acute or recent falls described in Section 5.5.

Communication and Coordination

1. FCM uses the EHR to communicate routine care and electronic mail or telephone to communicate urgent concerns with the PCP.
2. FCM coordinates the care between the patient and other health care team members.
3. FCM re-evaluates and modifies the care plan accordingly at least annually.

Special Circumstances

During a patient's time under the care of their Falls Care Manager, circumstances that require adapted procedures may occur.

5.2.1 In-patient Hospitalization

1. FCMs are notified when a patient has been hospitalized in their health care system through the EHR or comparable system.
2. To determine the appropriate follow-up procedure, the FCM reviews the EHR notes and discharge plan for patients who were treated in the ED but were not hospitalized, were electively admitted, or were admitted as observation status.
3. If there was a new fracture, other falls-related injury, or the visit/admission was due to syncope, the patient is scheduled for an in-person visit assessment of risk factors and counseling or, if homebound and needing reassessment of gait, strength, and balance and postural hypotension, a home health referral. If patient refuses, declines, or "no shows" for an in-person visit, proceed as in #4.
4. If no new fracture, falls-related injury, or visit/admission due to syncope, the FCM calls the patient and asks whether the following changes have occurred since the hospitalization/ED visit:
   - Walking or balance has worsened
   - Became more afraid of falling
   - Now unable to get up from a chair by themselves
   - Now using a cane or a walker
5. If yes to any of the above, the patient is scheduled for an in-person visit assessment of risk factors and counseling or, if homebound, a home health referral. If no to all, the patient receives a telephone-only assessment of risk factors and counseling.
6. Post-hospitalization in-person assessments are not required if:
   - Patient was discharged to SNF
   - PT evaluation in the hospital that provides guidance for physical component
   - Home health or outpatient PT referral was placed at the time of discharge
   - They refuse or are a "no show" for an in person visit
7. Content of the assessment:
   7.2.1 History (e.g. What happened to cause the hospitalization/ED visit, if it was fall-related, if patient dialed 911, Length of time hospitalized or in ED, how and when the patient went home, how they are doing now physically, mentally/emotionally, if someone staying with them, discharge instructions from ED)
   7.2.2 Risk factors are reassessed, especially medications, postural hypotension, gait, strength and balance. Vision, osteoporosis, feet and footwear, and home safety can be omitted, as appropriate.
   7.2.3 The Falls Care Plan is reassessed based on risk factors identified and relevance of existing care plan (e.g., Does the current plan make sense to patient? Are there outstanding issues that haven't been addressed? Does the patient want to address additional risk factors identified at an earlier visit, but not prioritized at the time? If there is a caregiver, do they have any questions? Do they need help now that they don't have? What could be done to keep this from happening again?)
8. Post-hospital visits can replace other follow-up contacts if they occur close in time to scheduled follow-up.

5.2.2 Unable to Complete Initial Visit Post-Enrollment

1. Whenever possible, evaluations should be conducted in the primary care clinic. However, exceptions can be made on a case-by-case basis in the following situations:
   a. Patients have been admitted to nursing home or hospice after consent and randomization.

- Short-term NH: Can wait until patient is discharged to home
- Long-term NH or hospice: These patients will not receive in-person evaluations

b. Patients are residing at home or Assisted Living Facility, but are considered homebound per following Medicare criteria:

Patient is homebound. It is a taxing effort and unsafe for the patient to leave home alone for the following reasons:

- needs assistance in all activities of daily living
- requires another human to leave the home
- pain is aggravated by prolonged activity
- extreme shortness of breath
- motor or sensory deficits that make it difficult or taxing to leave home
- cognitive impairments, dementia or mental confusion that make it unsafe for patient to leave home

2. If the initial visit takes place at a site other than the primary care clinic, the intervention may be modified as needed according to the "unable to complete in-person initial visit" protocol.
3. Location of all visits (e.g., clinic, phone, home) are now documented within the Falls Care Manager software.

5.2.3 Patients Who Leave the Health System Post-Enrollment

1. If a patient leaves the health system post-enrollment, the FCM will follow the procedure for patients who leave the health system (Appendix 5.42).
2. Patients who leave the health system include patients who move, leave the current clinical practice, are admitted to long term care or hospice.

Specific Intervention Procedures, including algorithms used by the FCM, are described below.

5.3 INTERVENTION PROCEDURES

5.3.1 Physical Assessment and Interventions (Exercise)

Purpose

The FCM will assess all patients for the need, capacity, and preference for exercises that will decrease their risk of falling due to impaired lower extremity strength or balance.

Definition

Exercise recommendations are made by the FCM based on the patient's cognitive function, pain level, preference, and results of the modified Short Physical Performance Battery (SPPB) test.

Equipment

Mini Cog worksheets

1. Standardized words for three item recall
2. Blank clock drawing template

Scoring instructions

Modified Short Physical Performance Battery

1. Script and scoring used while administering SPPB (Appendix 5.10)
2. Summary of test administration and scoring (Appendix 5.11)
3. Area clear of objects to perform three balance tasks
4. Three-meter measured course for 3-meter walk test
5. Start line indicated with tape or similar at 0 meters
6. Finish line indicated with tape or similar at 3 meters
7. Space at end of walk course of at least 1-meter
8. Armless chair with hard seat

Procedures

1. Review the PVQ (Appendix 5.1).
    a. Assess presence of pain and its impact on function.
2. Perform and score the Mini Cog (Appendix 5.13).
3. Perform and score the modified SPPB exactly as described.
4. Evaluate the need for exercise based on the Algorithm (Appendix 5.12).
    a. Communicate recommended exercise intervention to PCP.
    b. After PCP approval of the initial exercise intervention, the FCM will complete the referral to the appropriate HH, PT or CBE to forward the recommendations for exercise and to establish initial contact between the patient and the exercise provider.
    c. Referrals may be made using the local clinical practice site referral forms. Templates for PT and CBE referrals are also available for use if not available at the clinical practice site.
5. Provide patient education using the Home Exercise Handouts and videos (Appendices 5.17, 5.17.1, 5.17.2, 5.17.3, 5.34).

Exercise Interventions

1. **Home Healthcare (HH)**
    a. Patients referred to HH are homebound and typically have significant mobility limitations and may be cognitively impaired, have clinically meaningful pain, or both. They must meet the Medicare homebound criteria that is described in section 5.2.2.1b.
    b. The exercise intervention consists of the Otago Exercise Program (OEP) modified so that it is performed in the context of activities of daily living following the LIFE model. A training video describing this exercise program will be made available to HH providers.

2. **Outpatient Physical Therapy (PT)**
    a. Patients referred to physical therapy usually have moderate to severe mobility limitations and may be cognitively impaired, have clinically meaningful pain, or both. The patients may also meet the definition of homebound (Because of illness or injury, supportive devices are needed; the use of special transportation or the assistance of another person is required in order to leave their place of residence or the person has a condition such that leaving the home is medically contraindicated) but, consistent with that definition, may be able to travel to a physical therapy clinic for treatment. Patient preference will determine in part the choice between PT and HH.
    b. The exercise intervention is the Otago Exercise Program.

3. **Community-Based Exercise (CBE)**
    - **a.** Individuals referred to CBE have minimal mobility limitation, normal cognition.
    - **b.** Patients with moderate to severe mobility limitation as defined by SPPB scores of 4-10, normal cognition, and pain that limits function who would otherwise be referred to PT may opt for a CBE.
    - **c.** CBE programs may be chosen from a list of CDC-endorsed programs as well as alternative CBE programs that have been vetted for their inclusion of evidence-based components of fall prevention exercise programs. CBE programs are vetted by a working group of the Physical Components Subcommittee. All CBE programs must be one of the CDC endorsed exercise programs or include all the Essential Elements of Exercise (Appendix 5.18). Examples of approved CBE programs are shown on Appendix 5.19. FCMs will follow the Implementation of Best Practices for CBE document for ensuring CBE fidelity (Appendix 5.35).
    - **d.** FCMs together with patients whose assessment indicates appropriateness for CBE collaboratively choose a CBE program from the FCM's matrix of approved exercise programs in each practice group as found in the Community Resource Manual. These programs have been vetted for their compliance with STRIDE's essential elements required in all exercise interventions.
    - **e.** It is possible that a patient may already participate in a CBE of their choosing and may prefer to continue. This can be appropriate especially if the patient's CBE program includes the essential elements. If not, the FCM can discuss the merits of trying a convenient, approved CBE.

4. **Home Exercises**
    - **a.** Patients referred to home exercises usually have minimal to moderate mobility limitation and normal cognition.
    - **b.** Patients who refuse or are unable to participate in HH, CBE, or PT; patients who have completed PT or a CBE; or patients who prefer home exercises may use home exercises to improve or maintain strength, gait, and balance.
    - **c.** FCMs work together with their patients to determine the level of appropriate exercise to begin at home using the documents My Exercise Plan for Strength and Balance (Appendix 5.34) and Exercise Handouts and videos (Appendices5.17, 5.17.1, 5.17.2, 5.17.3) and demonstrating exercises in visit if needed.

Training Exercise Intervention Providers

1. In-Person Training
    a. Representatives from HH, PT, and CBE agencies as well as providers were invited and encouraged to attend in-person training at their site. At least one clinical lead or champion from each agency receiving referrals was requested to attend. The Site Coordinators at each site were responsible for contacting providers, and setting training logistics, (e.g., date, time, location). A topical outline for this in-person training can be viewed in Appendix 5.20**.**
    b. This in-person training was conducted in year 1. Otago training is available online at http://www.med.unc.edu/aging/cgec/exercise-program for physical therapists and home health providers. The cost is $35. Three continuing education credits are given for completion of the online course.

c. A training video for Home Health Providers on the Otago program modified for activities of daily living was available online at no cost during the first year of the trial. Please note: This content is no longer available at the link used previously.
d. The in-person training slide deck, with narration, is available to providers either for use in structured webinars or as stand-alone training material.
e. Selected training modules developed for the FCMs were also shared with PCPs.

2. Monitoring Fidelity of Exercise Interventions

a. Fidelity refers to delivering a program as intended. Successful replication of approved exercise programs for fall prevention requires attention to fidelity. Each site established its own procedures for reviewing intervention fidelity at their site to ensure that the HH, PT, and CBE programs are administered faithfully and comply with the essential elements of exercise training. The local patient and stakeholder council which usually include representatives from Home Health Agencies, Outpatient Physical Therapy, Community Based Exercise Programs or the Falls Prevention Coalitions provide input to this process to site representatives such as the Site PI, Co-I, Clinical Site Director, and/or Site Coordinator.

Adherence

The purpose of adherence monitoring is to assist the FCM in follow-up conversations with patients regarding future exercise decisions.

The approach to patient adherence monitoring will follow that for other components including asking on follow-up phone calls or visits whether he or she has been able to complete the exercise action which he or she planned to complete. If not, the patient is asked a series of open-ended questions. Questions include: “What difficulty did you run into? Can you think of a way to overcome this? How can I help you to overcome this difficulty? Shall we try again? (perhaps modifying the action to make it easier to complete).” For CBE programs, these can be augmented by asking: “Were you able to participate regularly? What kinds of activities did you do in your programs?” These observations and conversations are documented in the EHR.

Adherence monitoring is inherent in the Otago Exercise Program and is part of the clinical care provided by rehabilitation therapists.

5.3.2 Assessment and Intervention Procedure: Medication Risk Reduction

Purpose

The FCM reviews patient medications to assess for the presence of fall risk inducing drugs (FRIDs), presence of fall risk side effects or symptoms, medication adherence problems or alcohol use concerns that may lead to a fall.

Definition

Fall risk inducing drugs include benzodiazepines, first generation antihistamines, skeletal muscle relaxants, long acting hypoglycemic agents, tertiary tricyclic antidepressants and alcohol (Appendix 5.21).

Drug related falls are most likely to occur when a new medication is introduced, doses are increased, or the patient is taking multiple FRIDs.

Fall risk drug-related side effects include: unsteady, dizzy, drowsy, foggy, or sleepy. Other medication

symptoms that may increase risk for falls include cognitive impairment, confusion, slowed reaction time, parkinsonism, postural hypotension, weight gain/elevated blood glucose, insomnia, urinary incontinence, syncope, weakness/fatigue. A FRID symptom list is available for reference in identifying other medications that increase the risk for falls if symptoms are present (Appendix 5.45).

Equipment

Patient medication lists from PVQ and Medical record

Medications to Avoid

Medication related symptoms

FRIDs symptoms List

Procedures

1. Before the patient's initial visit
   a. Review the patient's list of prescribed medications and use of alcohol in the medical record.

2. During the initial visit (see Panel 1 of Medication Risk Reduction Procedure, Appendix 5.22)
   a. Review the patient's list of prescribed medications and use of alcohol as listed on the pre-visit questionnaire (PVQ) (Appendix 5.1).
   b. Review patient medication bottles if available.
   c. Assess for medicine related symptoms, side effects, or adherence problems. Refer to FRIDS symptoms list to identify medications that may be causing symptoms. (See Appendix 5.21 and Appendix 5.45).
   d. Provide information about medicines causing falls (Appendix 5.24).

3. After the initial visit (Appendix 5.22, Medication Risk Reduction Procedure)
   a. The FCM refers to Pharmacist or Site Clinical Director if:
      - Patient reports FRID symptoms
      - Patient reports adherence problems
      - Patient is taking medications without clear indication
      - Patient is taking a 'medication to avoid'
   b. If medication problems or alcohol concerns are identified, either as a result of a specific FRID or other symptom, the FCM sends the medication list and concerning medications to the site pharmacist or Site Clinical Director (SCD) (Appendix 5.26) with the appropriate medication de-escalation information (Appendices 5.65 through 5.73).
   c. The site pharmacist or SCD communicates recommendations to the PCP and copies the FCM (Appendix 5.36).
   d. The PCP communicates medication changes to the FCM. At some sites the FCM communicates recommended medication changes to the PCPs.
   e. The FCM confirms/clarifies the PCP suggestions, including the use of appropriate "You May Be at Risk" handout (on website under Appendices 5.37, 5.38, 5.39 & 5.40).

4. First follow-up visit/call (Panel 2 of Medication Risk Reduction Procedure, Appendix 5.22)
   a. Update the current medication list with the patient.
   b. Solicit reaction to the handouts.
   c. Present PCP suggested option for possible changes in medications.

d. Solicit patient opinions and plan the details of selected changes.
e. Recommend filling all prescriptions at one pharmacy.
f. Schedule next follow-up contact.

5. After the first follow up visit/call (Panel 2 of Medication Risk Reduction Procedure, Appendix 5.22)
   a. Arrange for any needed prescription changes with the PCP or Pharmacist.
   b. Facilitate the patient obtaining any needed medications, equipment, or reminder systems by referring to appropriate community agencies.
   c. Schedule follow-up contact as needed.
   d. Evaluate the need for further treatment based on the Medication Risk Reduction Procedure.

5.3.3 Assessment and Intervention Procedure: Postural Hypotension

Purpose

The FCM assesses postural hypotension on all patients to detect signs and symptoms associated with changes in position that may lead to a fall.

Definition

Postural hypotension is defined as a drop in the systolic blood pressure when changing position from lying to standing. An abnormal finding for this test includes one or more of the following signs or symptoms associated with a change in position:

- A drop in the systolic blood pressure equal to or greater than 20 mmHg.
- A systolic blood pressure of less than 90 mm hg when standing.
- No compensatory rise in heart rate when BP drops 20 mmHg or more.
- Patient reports symptoms of lightheadedness or dizziness, and 1 or 2 is present.

Equipment

- A horizontal surface on which the patient can lie and sit on
- A pillow or head raise-able head-of- bed for patients who cannot lie flat
- An analog or digital sphygmomanometer with multi- sized BP cuff
- Stethoscope
- Watch with a second hand or digital second counter
- A system to record the blood pressure and pulse readings

Procedures

1. Supine Blood Pressure
   a. Explain the Procedure.
   b. Invite patient to lie down, allow the patient to rest supine 5 minutes.
   c. Expose the patient's arm.
   d. Choose an appropriately sized cuff.
   e. Record a 10 second pulse (If irregular, take for 60 seconds).
   f. Record the supine blood pressure.

i. If using a manual sphygmomanometer, place the diaphragm of the stethoscope over the brachial artery. Palpate the radial artery and inflate the cuff to 20 mm HG above the occlusion of the radial pulse.

g. Record the supine pulse rate and BP.

2. Standing Blood pressure
   a. Help the patient to a stable standing position.
   b. Repeat the BP and pulse after standing at one and three minutes of standing.
   c. Assess the patient for symptoms such as lightheadedness or dizziness.
   d. Record the BP and pulse and presence of symptoms.

3. Evaluate the need for further treatment based on the Postural Hypotension Procedure (Appendix 5.41). Provide patient education using the Managing Postural Hypotension handout (Appendix 5.43).

5.3.4 Assessment and Intervention Procedure: Feet and Footwear

Purpose

The FCM assesses all patients for foot-related risk factors and unsafe footwear that may lead to a fall.

Definition

Foot-related risk factors include pain, reduced range of motion, numbness, weakness of toes and/or ankles, deformities such as bunions or hammer-toes, long toenails. footwear-related risks include walking barefoot or in slippers or wearing shoes that have inadequate fixation, tall and/or narrow heels, soles that are smooth thick and/or soft.

Equipment None

Procedures

1. Review the patient history to determine presence of foot problems.

2. Examine both of the patient's bare feet looking for:
   a. Swelling and skin breakdown
   b. Deformity (e.g. bunions, hammer toes)
   c. Long toenails
   d. Tenderness and/or stiffness (reduced range of motion)
   e. Weakness of ankle, foot and/or toes

3. Examine the patient's shoes looking for:
   a. Soles that are smooth, thick, soft and flexible
   b. Heels that are 2-plus inches high and/or narrower than the foot
   c. Shape that is loose fitting, flexible back, small toe box, and/or lack of Velcro closures

4. Evaluate the need for further treatment based on the Feet and Footwear Procedure (Appendix 5.44) and referral templates (Appendices 5.46 & 5.47).

5. Provide patient education using the Proper Shoes handout (Appendix 5.48)

5.3.5 Assessment and Intervention Procedures: Home Safety

Purpose

The FCM assesses all Patients for home safety risks that may cause a fall.

Definition

Home safety risks are environmental hazards in the home that can lead to falls and injuries.

Equipment Home Safety checklist

Procedures

1. Review the completed PVQ (Appendix 5.1) and fall prevention checklist with the patient (Appendix 5.4).
2. Evaluate the need for home safety assessment based on the Home Safety Procedure (Appendix 5.49).
   a. Review eye doctor's notes, and if necessary assess visual acuity using the SNELLEN chart to document need for home PT/OT.
3. Provide patient education using the appropriate handout CCFP Home Safety Recommendations and Travel Safety Checklist (Appendices 5.51 and 5.27).

5.3.6 Assessment and Intervention Procedures: Osteoporosis

Purpose

All patients are assessed for their risk of an osteoporotic fracture.

Definition

Osteoporotic fracture is the occurrence of a minimal trauma fracture of any bone.

Equipment None

Procedures

1. Review the medical record for the "t" score from the patient's most recent DEXA scan, if available, (if performed within the past 2 years). If there is no recent DEXA, sites can elect to order one and include in the FRAX calculator or use the FRAX calculator without a DEXA scan.
2. When including DEXA scan in FRAX, provide name of machine and value of result rather than generic "T" score. If machine name is not available, enter "T" score.
3. Review the PVQ (Appendix 5.1).
4. Determine whether the patient has a history of osteoporosis.
5. Calculate FRAX using online calculator (http://www.shef.ac.uk/FRAX/tool.jsp). Evaluate the need for further treatment based on the Osteoporosis Procedure (Appendix 5.52).
6. Provide patient education using the Osteoporosis Age Page handout (Appendix 5.53).

5.3.7 Assessment and Intervention Procedures: Vitamin D

Purpose

The FCM assesses all patients to determine if they are receiving adequate Vitamin D Supplementation.

Definition

Vitamin D 800-1000 units is recommended to all patients, unless the patient has documented Vitamin D deficiency.

Equipment None

Procedures

1. Evaluate if the patient is taking Vitamin D at the correct dose based on the Vitamin D Procedure (Appendix 5.54).
2. Recommend Vitamin D 800 -1000 units with calcium carbonate 1200 mg daily (refer to Osteoporosis Procedure, Appendix 5.52).
3. Provide patient education using the Vitamin D Fact Sheet (Appendix 5.55).

5.3.8 Assessment and Intervention Procedure: Visual Impairment

Purpose

The FCM assesses all patients for adequate treatment of any visual impairment that may lead to a fall.

Definition

Visual impairment that may lead to a fall includes decreased visual acuity, impaired contrast sensitivity, reduced visual fields and incorrect lenses for outdoor activity.

Equipment None

Procedures

1. Review the patient history to determine:
    - Visit with an eye doctor in the past year.
    - Documented history of cataracts, macular degeneration, glaucoma, or visual loss.
2. Evaluate the need for further treatment based on the Vision Procedure (Appendix **5.56**), referral templates (Appendices 5.57, 5.58, and 5.59).
3. Provide patient education using the Picture of Cracked Sidewalk, Cataract Surgery information and Cataract NEI handouts (Appendices 5.60, 5.61 & 5.62).

5.4 SPECIAL CIRCUMSTANCES

5.4.1 Procedure for patients who are unable to complete in-person visit with FCM

Purpose

There will be patients who are unable to complete an in-person visit with the FCM. Site staff can determine whether to follow up in person with these patients on a case-by-case basis.

Definition

A patient who is unable to complete an in-person visit may face barriers based on transportation, mobility, health status, being otherwise homebound or moving to a nursing home after enrollment.

Equipment

PVQ, CDC home fall prevention checklist, Falls and fractures, How to get up from a fall, Eldercare locator, Community safety advice, Falls Care Plan template.

Procedures

Pre-visit Procedures

1. Mail the following items to the patient or caregiver:

    - PVQ
    - Educational materials (omit for patients admitted to Nursing Home)
        - CDC home fall prevention checklist
        - Falls and fractures
        - How to get up from a fall
        - Elder care locator
        - Community safety advice
    - Falls Care Plan

2. Review the medical record (medications, PMHx, DEXA, etc.).

3. Perform a FRAX.

4. Schedule a telephone meeting to review PVQ and initial assessment over the phone.

Phone vs. In-person Visit Risk Factor Assessment

The following risk factors can be assessed over the phone:

1. Medications: Retrieve current medication list from medical record and review with the patient over the phone. Review symptoms and adherence. If positive FRID, symptoms or adherence concerns, refer to SCD/PharmD/PCP, Individualized follow plan may be necessary based on current prescriber.
2. Osteoporosis: Review FRAX. Assess need for/current use of Bisphosphonates and calcium.
3. Vitamin D: Assess need for/current use of Vitamin D.
4. Vision: Assess if annual vision appointment, history of unrepaired cataracts.
5. Home Safety: review checklist.

The following risk factors require a physical exam:

1. Strength gait and balance: assess for pain that limits function. (Home Health PT for homebound and PCP documentation of a skilled need).
2. Postural hypotension: assess for symptoms of postural hypotension. (Home Health nurse or Home Health PT for homebound and PCP documentation of a skilled need).
3. Feet and footwear: assess for foot pain (Home Health nurse for homebound and have PCP documentation of a skilled need).

Use the Care Plan to review and discuss with the patient common risks for falls, risks that the patient does not currently have or is currently addressing (e.g., their strengths), which risk factors are significant for the patient and can be modified, and which risk factors require further assessment.

Work with patient to identify their priority risk factors. The following are examples of dialog:

- *"Overall, your assessment today highlighted some of your strengths, things you are already doing well, in addition to some fall risks & and opportunities for reducing those risks. Is it ok with you if we go over your results?"*
- "*What you are doing well"*
  - (i.e. Medications, Osteoporosis, Vitamin D, Vision, or Home safety)
- *"These are some areas where we can decrease your risk for falls right now"*
  - (i.e. Medications, Osteoporosis, Vitamin D, Vision, or Home safety)
- "*These are some areas where we need to get more information to decrease your risk for falls"*
  - Strength, Gait, & Balance
  - Postural BP
  - Feet/Footwear
- *"Given the risks we discussed, which one(s) do you think you would like to work on? I can share some strategies for reducing these risks …"*

Risk Factor Assessment and Care Plan Adaptation to Accommodate Special Circumstances

Below are adaptations for special circumstances for being unable to complete the in-person visit:

1. **Strength gait and balance**
   a. Homebound
      - Home Health PT to assess what level of exercise is appropriate with PCP documentation of skilled need
   b. Not Homebound
      - Outpatient PT evaluation OR
      - Home exercises -FCM to send handout and video link
   c. Admitted to Nursing Home
      - PT consult if in SNF, assess availability if in LTC NH

2. **Medications**
   a. Discuss FRIDs, symptoms, and adherence with Pharm D/SCD/PCP to see if there are any changes that can be made. Home Health nurse if PCP documentation of skilled need to evaluate concerns about medication adherence).

3. **Postural Hypotension**
   a. Homebound
      - Home Health or Home Health PT for postural VS check if PCP documentation of skilled need
   b. Not Homebound
      - Recommend postural VS at next PCP visit
      - Postural BP check in PCPs office as nurse visit without seeing PCP
   c. Admitted to Nursing Home
      - Request PCP prescribe postural VS check by NH.

4. **Feet and footwear** (assess for foot pain)
   a. Homebound
      - Home Health for foot exam if positive symptoms and PCP documentation of skilled need
      - Send education re proper footwear.
   b. Not homebound

- HH for foot exam if positive symptoms and PCP documentation of skilled need
- Encourage podiatry exam or wound clinic
- Send education re proper footwear.

5. **Home Safety**
   a. Homebound
      - Home Health for home safety evaluation if PCP documentation of skilled need (recent fall)
      - Send education on home safety.
   b. Not Homebound
      - Home Health for home safety evaluation based on eligibility and patient willingness to pay any uncovered costs.
      - Send education on home safety.

6. **Osteoporosis**
   a. Inform PCP of FRAX results and osteoporosis recommendations
   b. Recommend calcium if not taking already
   c. Send osteoporosis/calcium handout.

7. **Vitamin D** (asses if taking Vitamin D)
   a. Recommend Vitamin D if not taking already
   b. Send Vitamin D handout.

8. **Vision**
   a. Recommend annual vision exam
   b. Send educational materials based on patient history (Cracked sidewalk, cataract surgery).

Summarize the discussion, let the patient know the recommendations will be shared with PCP and you will call them back in a week or two to discuss next steps.

5.4.2 Procedure for 6-month visits

Purpose

The 6-month follow-up visit will consist of a telephone call or a telephone call plus an in-person visit, according to the following:

Procedures

Determining the mode of the 6 month follow-up visit

The 6-month follow-up will consist of only a phone call if:

- The patient has not fallen; there has been no change in medical, functional, or mobility status; and the patient is engaged in exercise.
- The patient has not fallen; there has been no change in medical, functional, or mobility status; and the patient is not engaged in exercise but the last SPPB was >10.
- The patient has been hospitalized; the post-hospitalization procedure is used to determine the need for an in-person visit (section 5.2.1).
- The patient refuses an in-person clinic visit.

Equipment None

6-month follow-up phone call

Six months after the initial visit, the FCM (or her representative) will contact the patient by phone to determine:

- Whether the patient has fallen since the last contact.
- Whether the patient's medical status has changed (i.e., the patient has been hospitalized).
- Whether the patient's functional status or mobility have changed.
- Whether the patient is engaged in exercise, including home exercises.

If the patient has not fallen; there has been no change in medical, functional, or mobility status; and the patient is engaged in exercise, then there is no need for an in-person visit. Rather, the FCM can facilitate a conversation with the patient about the action steps in the Falls Care Plan, and provide any additional counseling or referrals as needed.

If the patient has not fallen; there has been no change in medical, functional, or mobility status; and the patient is not engaged in exercise but the last SPPB was >10, then there is no need for an in person visit. Rather, the FCM can facilitate a conversation with the patient about the action steps in the Falls Care Plan, and provide any additional counseling or referrals as needed.

If the patient has been hospitalized, the post-hospitalization procedure is used to determine the need for an in-person visit (section 5.2.1).

If the patient has fallen; has decreases in their functional or mobility status; or had an SPPB of $\leq$ 10 during their last in-person visit and is not engaged in an exercise program (including home exercises), then the FCM recommends an in-person visit.

6-month follow-up in-person visit:

If the FCM recommends a 6-month in-person visit and the patient agrees, it builds on the 6-month follow-up phone call with these elements:

- Follow-up PVQ.
- Evaluate progress and outcomes from Falls Care Plan developed during the initial visit.
- Conduct a physical exam to re-assess fall risk factors, identical to that conducted during the initial visit.
- Review the assessment results with the patient.
- FCMs together with patients revise the Falls Care Plan according to the reassessment, existing algorithms, patient's preferences and resources.
- FCM documents the visit in the EHR and communicates the new Falls Care Plan to the PCP.
    - The PCP reviews, modifies and approves the Falls Care Plan, and communicates any additional concerns or suggestions to the FCM.

5.5 TRIAGING ACUTE OR RECENT FALLS

Purpose

To ensure that patients receive adequate assessment following an acute or recent fall.

Definition

An acute fall is where the fall is reported to have occurred within the previous 24 hours. A recent fall is one where the fall is reported to have occurred greater than 24 hours but within the past month.

Procedures

All patients receive a general one-page handout addressing what to do in the case of a fall from the RAC. Additionally, FCMs review the local clinic procedures with the patient regarding what to do in case of a fall.

During the initial visit, the FCM instructs the patient or caregiver about what to do in the event of an acute fall (occurring within the previous 24 hours). The FCM reviews "How to get up from a fall" with all patients. The FCM reviews the instruction on the My Independence plan that state "If you fall, please seek medical attention as needed and remember to discuss all falls with your Primary Care Provider and let your Nurse Falls Care Manager know about the fall within the next few days."

The patient is instructed to notify the PCP and the FCM in the case of a fall**. If the patient is injured, then this notification should occur after the acute situation has been stabilized. If the patient is not injured, the notification should occur within several days after the fall.** Upon learning of a recent fall, the FCM reviews the medical record to gather as much background information as possible, calls the patient and/or caregiver and asks open-ended questions about the circumstances of the fall, using principles of self-management to validate the patient's explanation of the fall, and elicit permission to review ways to reduce fall risk. Open-ended questions that the FCM will use are as follows:

Investigate the circumstances of the fall.

- What is the patient and/or caregiver's explanation of the fall?
- Were there any preceding factors that made a fall more likely?
- What was the actual trigger for the fall?
    - On an "as-needed" basis, the FCM follows up with open-ended questions about fall circumstances with focused questions, Fall Triggers and Predisposing Factors (Appendix 5.50), that have not already been addressed by the patient and/or caregiver.

Investigate the consequences of the fall.

- Were there injuries? What type? What treatments were provided, if any?
- Was the patient on the ground for a long time?
- What were the psychological consequences?
- Is there fear of a subsequent fall?
- What were the functional consequences?
- Were activities of daily living affected? Which?
- How are the patient and/or caregiver adapting to the patient's change in condition, if applicable?
- Have the patient and/or caregiver put any new fall/injury risk reduction strategies into place?

Review potential causes of falls that may not be present in the patient and/or caregiver's report.

- Has there been a change in medication type, dose, or frequency?
- Has there been a recent change in physical or mental condition (other than the fall or related injury)?
    - Acute problem?
    - Worsening of chronic problem?
- Did any of these changes result in a hospital stay?

Evaluating the Falls Care Plan.

- Is there an acute condition predisposing or precipitating falls that should be referred back to a medical provider?

    - Stroke/transient ischemic attack symptoms?
    - Seizures?
    - Syncopal episodes?
    - Palpitations?
    - Possible infection?
- If no acute conditions are present, the FCM determines if the patient now has findings that suggest new or worsened risk factors for falls and follows appropriate procedures as described.
    - Determine if Falls Care Plan for previously known risk factors for falls requires modification or further reinforcement with patient and/or caregiver.
    - Determine need for subsequent follow-up and mode of contact (phone, in person).
    - Reinforce with patient the appropriate means to contact the care manager for any fall-related concerns.

CHAPTER 6 –CONTROL INTERVENTION

6.0 CONTROL INTERVENTION SUMMARY

In designing the control intervention, the Protocol Committee with substantial input from representatives of the Intervention Committee, CTS Committee, and the NPSC aimed to achieve an appropriate level of activity in the control practices that would keep the primary care providers and the participants in the control practices engaged, but which would not result in any appreciable dilution of the intervention effect.

The control group needs to receive some fall prevention information that is part of the current standard of care for the following reasons: (1) all participants will be at increased risk for falls, so there is an ethical obligation to inform their PCP that they are at risk; (2) to increase adherence to using the fall calendars and responding to the fall ascertainment phone calls (and avoid differential reporting of the study's primary outcome between the two groups), the control group needs to believe that they are part of some program to prevent falls; (3) to avoid cross-overs to the intervention group (i.e. patients choosing to change their practice if they believe other patients in their health system are receiving superior care at practices located near their home) or drop-outs from the study (i.e. patients refusing to report falls and/or to allow their health information to be shared), it is important that the control group does not perceive that they are receiving a clearly inferior intervention; (4) the standard of care for falls is evolving and the Center for Disease Control (CDC) is heavily marketing its patient education handouts rendering it likely that these materials will become even more widely used in clinical practice than they are today. (5) Recognizing the substantial variation in fall prevention practices across institutions, standardizing the activity in the control practices would have the additional benefit of minimizing heterogeneity and maintaining uniformity throughout the trial, thus further reducing the risk of dilution. From a biostatistical standpoint, this reduction in heterogeneity would help to reduce the intraclass correlation coefficient (ICC) across control practices, and maintain the power of the trial.

6.1 CONTROL INTERVENTION COMPONENTS

The following activities are part of the control intervention:

- The Recruitment and Screening Center (RAC) will inform all patients enrolling in STRIDE that their practices are delivering fall prevention programs. The RAC will identify eligible patients (i.e., those who have met eligibility criteria and consented to the study) and transmit their names to the site coordinators at the relevant clinical sites through the REDCap site coordinators page on the secure STRIDE website.
- The participants receiving care at Control group practices will receive a two-page falls informational pamphlet in the post-enrollment packet that is mailed out from the RAC and will be encouraged to discuss fall prevention with their primary provider at their next clinic visit. This pamphlet, entitled "Stay Independent" (Appendix 6-1), is one of many patient education brochures and materials available freely online in the CDC STEADI (Stopping Elderly Accidents, Deaths and Injuries) tool kit. The pamphlet has a checklist that the patients can use to get a sense of their fall risk. This booklet will be mailed to patients in the control practice as part of the post-enrollment mailing that also includes a thank you note, consent summary, fall calendar and other study materials.
- The site coordinators will inform the PCPs of patients in the control group that their patient is identified as being at increased risk of falls and is enrolled in the STRIDE study. Once this task is complete for a

patient, they will indicate on the REDCap form on the site coordinators page that this task has been completed.

- The PCPs at control practices will be told about the STEADI Webinar for Health Care Professionals. This is freely available on the internet at http://www.cdc.gov/steadi/webinar.html. The communication template in Appendix 6.2 provides this information. The site coordinators will either include this information as part of the communication to inform the PCPs that they have a patient in the control group, or they will distribute it to all control group PCPs in a single mailing/electronic communication.

- The control group participants (as well as intervention participants) will receive the information sheet based on the NIA document "What to do after a fall" as part of the post-enrollment packet mailed by the RAC.

- These materials have been produced by Federal agencies to raise awareness about falls among providers. These materials can be considered part of standard of care since they are currently being disseminated widely.

CHAPTER 7 – STUDY OUTCOMES

7.0 OUTCOMES AND ASSESSMENTS OVERVIEW

The primary outcome in STRIDE is serious fall-related injury, operationalized as a fall resulting in: (1) (fracture other than thoracic/lumbar vertebral; joint dislocation; or cut requiring closure) AND any medical attention; OR (2) (head injury; sprain or strain; bruising or swelling; or other) requiring hospitalization. Other outcomes will also be captured in STRIDE. The following table summarizes the main outcomes in STRIDE:

Table 2. Primary and Secondary Outcome Measures, assessed centrally by Yale RAC

Domain	Measure (1˚ & 2˚)	Source, Frequency, and Sample
Fall-related	Serious fall injuries (1˚)	Telephone interview every 4 months, supplemented by administrative claims/encounter data (including data from clinical trial sites and Medicare) for date and type of injury; medical record adjudication for discrepancies with fall-injury claims
	All fall injuries (2˚)	Telephone interview every 4 months: serious fall injuries plus other injuries that may not come to medical attention
	Original operationalized definition of primary outcome (2˚)	Telephone interview every 4 months
	All falls (2˚)	Telephone interview every 4 months
Well-being	Concern about falling (2˚)	Modified FES at baseline, 12 m and 24 m (telephone) in 720 participants, representing a random sample of participants enrolled in first 12 months
	Physical function and Disability (2˚)	LL-FDI via CAT at baseline, 12 m and 24 m (telephone) in 720 participants
	Anxiety/Depressive symptoms (2˚)	PROMIS scales measured at baseline, 12 m and 24 m (telephone) in 720 participants

CAT: Computer Adaptive Testing; FES: Fall Efficacy Scale; LL-FDI: Late-Life Function and Disability Instrument; PROMIS: Patient Reported Outcomes Measurement Information System

7.1 BASELINE ASSESSMENTS

7.1.1 General Interview Guidelines

Consistency and standardization in procedures are critical for good data collection. All interviewers in the STRIDE study will follow standard procedures in reading questions and recording participant information. Each question will be asked of each participant in the same way and in the same order to ensure that comparable information is being obtained from all participants in the study. The data collection forms in the REDCap electronic data capture system contain specific instructions and scripts that will be followed precisely. It is essential that interviewers:

1. Present questions appropriately,
2. Record participants' replies precisely and accurately, and
3. Probe for additional information meaningfully.

To maintain an objective information-gathering atmosphere, the interviewer will convey that he/she is an understanding, interested person capable of accepting information in a non-judgmental manner. When talking to a receptive, supportive interviewer, participants will feel more comfortable, without fear of appearing inadequate.

Previous studies have identified several factors that increase the respondents' receptiveness:

- Be prepared and know your material. Participants need to feel that you are interested in the study and in their opinions. Be an active listener and establish comfortable rapport with the participant.
- Offer convincing statements about the purpose of the study.
- Describe the beneficial uses of the research findings to both the respondent and to the community.

There are two main types of questions: pre-coded and open-ended. With pre-coded questions, the interviewer will click the appropriate response box. With open-ended questions, the interviewer will record the participant's answer word-for-word by recording it in the space provided. Open-ended questions do not suggest possible answers; the participant's responses should be recorded in his/her own words. The guidelines for asking questions and recording answers are listed in Appendix 7.1

7.1.2 Privacy and Confidentiality

Each interview will be conducted in a quiet, private area that is comfortable for the participant and free from intrusions. Ask the participant if s/he is in a comfortable space, good for a call, before starting the interview.

Similarly, it is important that the participant be the only respondent during the interview. The spouse/partner, friends, or relatives should not be present during the interview, because their presence will influence the participant's responses to questions. If someone is with the participant and is reluctant to leave, explain the necessity of privacy for study purposes.

Participants will be assured of confidentiality and confidentiality will be maintained throughout the study.

Care will be taken to maintain confidentiality of completed questionnaires while they are in the study team's possession. Data collected for the STRIDE study are protected under the HIPAA act. All interviewers on the STRIDE study have completed HIPAA privacy training. Violation of HIPAA rules is a Federal offense under the Civil Rights Act.

Information collected or heard during an interview can be shared only with the research team, whose members are under the same ethical or moral obligation as you are to the participants interviewed.

7.1.3 Preparation for the Interview

The interviewer will:

1. Review the Manual of Procedures and training materials.
2. Go through the structured interview carefully.
3. Organize all the necessary materials, including telephone, computer, pencils, a notebook for unusual comments related to the study, etc.
4. Be certain the interview space is quiet and organized.
5. Review the information available about the participant and information needed for the interview (e.g., time zone of appointment, names of participant and provider, surrogates if necessary, etc.).

7.1.4 Administration of Instruments to Hispanic/Latino Participants

Bilingual staffs will be requested to ask potential participants what their language of preference is (English or Spanish) and administer questionnaires in the language they specify.

7.2 BASELINE INTERVIEW MEASURES

During the baseline interview, basic health and demographic information will be collected from all participants. In addition, measures of well-being will be assessed by phone at baseline, 12 month, and 24 months in a random sample of 720 participants enrolled in first 12 months of the study.

Based on input from stakeholders, the four indicators of well-being will include: fall efficacy, physical function/disability, anxiety, and depressive symptoms. We identified instruments that were brief and could be administered by phone. We gave preference to computerized adaptive testing (CAT), when available and with demonstrated responsiveness to change in studies of comparable populations. Fall efficacy will be operationalized as the level of concern for falling (4-point scale: not at all, somewhat, fairly, very) when performing a series of activities, using a modified version of the Fall Efficacy Scale (FES). While fall efficacy had been operationalized originally as degree of confidence, more recent work by the ProFaNE group has asked about level of concern. Fall efficacy has been used previously as an outcome in two successful interventions to reduce falls and improve falls care in primary care.

The Late-Life Function and Disability Instrument (LL-FDI) measures two areas that stakeholders viewed as important consequences of sustaining a fall injury (physical function and disability). The LL-FDI has been validated psychometrically and can be administered efficiently by phone via CAT. The physical function area includes items such as going up a flight of steps, getting in/out of a car, and walking around one's home; while the disability area includes items such as visiting friends/family, taking part in organized social activities, taking care of personal errands and preparing meals. The LL-FDI is responsive to interventions designed to improve physical function, and effect sizes of .3-.45 SD units are considered minimally important differences.

We will use the Patient Reported Outcomes Measurement Information System (PROMIS) to assess anxiety and depressive symptoms. The eight-item anxiety short scale asks about the frequency of feeling fearful, worried or anxious (among others), while the eight-item depression short scale asks about the frequency of feeling worthless, hopeless or having nothing to look forward to (among others). Somatic items are not included because they are confounded with symptoms of frailty, do not fit the item response theory model well, and exhibit differential item functioning by age. The brevity of these measures obviated the use of CAT. These measures are responsive to clinically meaningful changes over time, using both mixed methods and anchor-based effects. Changes of 0.33 to .5 SD units have been observed in very similar PROMIS cancer instruments, and an effect size of 0.33 is considered a minimally important difference.

The content for the complete baseline interview (including the well-being items) is located in Appendix 7.4. As described previously, this interview will be administered over the telephone by trained interviewers who will adhere to the interview guidelines specified in the previous section. All specific instructions for interviewers are included within this document.

To review the section on surrogate information, please refer to Appendix 7.5 for the complete questionnaire.

7.3 SERIOUS FALL RELATED INJURIES

Serious fall injuries include a fall resulting in: (1) (fracture other than thoracic/lumbar vertebral; joint dislocation; or cut requiring closure) AND any medical attention; OR (2) (head injury; sprain or strain; bruising or swelling; or other) requiring hospitalization. A fall is defined as "an unexpected event in which the participant comes to rest on the ground, floor, or lower level." (Lamb SE, et al. Development of a common outcome data set for fall

injury prevention trials: the Prevention of Falls Network Europe Consensus. J Am Geriatr Soc. 2005;53(9):1618-22). To ensure that this definition is met, participants are asked, “Did you fall all the way to the floor, ground or other lower level when you fell?”

All fall injuries, a secondary outcome, include serious fall injuries as well as less severe falls that result in bruises, cuts, persistent pain, and restricted activities, but not necessarily medical attention. The importance of these less severe injuries was recognized and articulated by our stakeholders. Data on falls, serious fall injuries, and other fall injuries will be collected every four months in all participants using a structured telephone interview. This interview will ask about falls, injuries, hospitalizations, emergency department (ED) visits, and other health care utilization. To facilitate recall, participants will be instructed to record their falls/injuries on a monthly fall calendar. To enhance efficiency and consistency, ascertainment of these outcomes will be conducted centrally by the RAC at Yale, which has an unparalleled track record for falls surveillance and participant retention.

To confirm participant reports of the primary outcome (serious fall injuries), we have developed a verification system based on administrative health care claims and encounter data that will be provided by sites and by Medicare, and medical records that will be provided by sites. Participants reporting a fall-related injury that led to medical attention will have this injury confirmed in administrative claims/encounter data; we will request medical records when administrative claims/encounter data do not confirm the injury. Once appropriate data have been assembled as noted above, fall-related injuries will be reviewed independently by two members of the Outcomes Adjudication Committee (OAC), which will be masked to group assignment. These physicians will use available data to confirm: a) the occurrence of a fall; b) whether a fall-related injury has occurred; and c) the type of injury. For cases where the two initial reviewers disagree and cannot reconcile their differences, the OAC as a whole will review the case masked to group assignment to make a final designation. Similar procedures have been used successfully in the Lifestyle Interventions and Independence for Elders (LIFE) Study, under the direction of Dr. Gill.[i] This triangulation approach will ensure that the primary outcome is captured accurately and completely.

7.3.1 Ascertainment of Serious Fall Injuries from Patients

STRIDE will collect data on fall-related outcomes such as falls, serious fall injuries, and other fall injuries at 4-month intervals. To assist the study participant in tracking their falls, they will be sent a FALL CALENDAR. The first “sample” calendar is a single page printed on each side to capture two months printed on each side. This is what participants will be looking at when the interviewer calls them. The second “main” calendar is a booklet that includes one page for each month for a 5-month interval (see a one month sample in Appendix 7.2). A magnetic clip will also be provided to allow the participant to place it on their refrigerator (Appendix 3.9.1). At the time of enrollment, participants will be instructed to record their falls/injuries each day on monthly fall calendars.

7.3.2 Sending Calendars to Patients

Participants will be mailed the main calendars immediately after enrollment, and then every fourth month until the end of the trial. The Administrative Tracking application developed by the Data Management team will identify newly-enrolled patients and provides tools to manage the post-enrollment mailings. The first post-enrollment mailing is packaged in a large-format STRIDE envelope and consists of:

- STRIDE Thank you letter (Appendix 7.6)
- Welcome letter that tells the participant if their PCP practice is a control or intervention site (Appendix 3.7.1)

- For patients at Control sites, a copy of the CDC STEADI Stay Independent Brochure (Appendix 6.1).
- A copy of the STRIDE Study Brochure (Appendix 3.8).
- A copy of the Consent/Privacy information sheet (Appendix 3.9).
- 5 months of calendars (Appendix 7.2).
- Instructions on how to fill out the calendar (Appendix 7.3).
- A magnetic clip to hold the calendars (Appendix 3.9.1).
- NIA flyer - What to do in Case of a Fall NIA (Appendix 3.9.2)

The post-enrollment mailings will be handled twice weekly by RAC staff as soon after enrollment as is practical. If there are two or more participants in one household, each individual will be assigned their own fall calendar. Each calendar is marked with the participant's ID.

7.3.3 Training the Participant to Use the Fall Calendar

Participants will receive a sample fall calendar during the screening process. Participants who screen positive for fall risk will be mailed a study recruitment packet that includes a sample calendar.

Data Collection for falls will begin on the sample calendar. Verbal instructions on the Fall Calendar will be given to the participant by the onterviwer after the baseline interview has been completed and before the recruitment call ends.

Interviewers will review the following procedures for completing the calendar with the participant:

1. The participant will be asked to post the calendar some place where it is in full view, perhaps on the refrigerator. A magnet clip for the main calendar will hold the calendar to the refrigerator door (or other ferritic surface) and will be mailed as part of the enrollment package.
2. The participant will be asked to keep track of all falls on a daily basis, regardless of whether an injury was sustained from the fall.
3. The interviewer will review with the participant the definition of a fall: an unexpected event in which the participant comes to rest on the ground, floor, or lower level, including falls that occur on stairs.
4. The participant will be instructed to mark, on a daily basis:

    a. "F" for a FALL
    b. "N" for NO fall.

5. At the end of each month, each participant will be asked to answer questions located at the bottom of the sample calendar or the back of the main calendar.

After the interviewer confirms that the participant understands how to complete the calendar correctly, the interviewer instructs the participant to place an "X" on the day prior to the current day (when the interview is completed), to indicate that the participant will begin the recording on the interview date (today).

The interviewer will use a specific script to train participants to use the fall calendars as shown in Appendix 7.7.

7.3.4 4-Monthly Outcome Interviews

RAC interviewers will conduct the 4-monthly phone interviews to obtain reports from the patient and/or their proxy of falls, fall-related injuries, hospitalization or other serious health events. The interviewers will follow the same procedures and approach as those described for the baseline assessments (Section 7.1)

The interviewers will follow a standard script for these interviews. This script is included in Appendix 7.8, Four-Monthly Outcome Interviews. As indicated in the interview script, patients will be asked to use their fall calendars as a memory aid when completing this interview. The technical support for these interviews is described in Chapter 9 (9.3.5).

7.4 FALL INJURY ADJUDICATION

Adjudication is the process of reconciling various sources of information to determine what happened to patients in the study. In this case, we need to adjudicate the serious fall injuries because there are multiple sources of information about the primary outcome and no one of these sources is perfect in and of itself.

7.4.1 Definition of the Primary Outcome?

A. Serious fall injuries, operationalized as a fall resulting in:
(1) (fracture other than thoracic/lumbar vertebral; joint dislocation; or cut requiring closure) AND any medical attention; OR (2) (head injury; sprain or strain; bruising or swelling; or other) requiring hospitalization.

B. A fall is defined as "an unexpected event in which the participant comes to rest on the ground, floor, or lower level."

7.4.2 What Data Sources Are We Using to Adjudicate the Primary Outcome?

There are three sources of information for the primary outcome:

1. Patient reports
   - Follow-up telephone interviews every four months, informed by monthly fall calendars that serve as a memory aide (but are not collected or reviewed by the STRIDE team)
2. Claims or encounter data
   - Sites will provide a full "data dump" of claims/encounters for all STRIDE participants every six months. Data will also be obtained from Medicare.
3. Specific information from the medical record
   - Hospital admission notes
   - Hospital discharge summaries
   - Emergency Department (or urgent care) notes
   - Radiology reports
   - Office visit history & physicals
   - Office visit initial consult notes
   - Office visit progress notes

7.4.3 Who Will Be Adjudicating?

At least one physician from each of the ten sites will be involved in adjudication.

7.4.4 What Is the Adjudication Process?

- Adjudicators have several specific tasks with respect to the primary outcome:
  - Determining whether an injury meets the definition of the primary outcome
    - The injury must be related to a fall
    - The injury must have led to use of health care services that would be considered billable to Medicare for injuries

- The injury must fall into a pre-defined list of types as noted in the definition.
- Providing supporting information that will assist in descriptive and statistical analyses
- Specifying the body site of the primary outcome, if applicable

- Two site-based adjudicators will be responsible for initial adjudication of each case. Each adjudicator will proceed independently of the other. Adjudicators will not review cases from their own sites. Cases where the two site-based adjudicators do not agree will be discussed in a monthly case conference of all adjudicators.

7.4.5 How Will We Attempt to Maintain Blinding in the Adjudication Process?

- It is very important that those making decisions about which events count as the primary outcome are unaware of whether patients are in the intervention or control group, so as not to bias the results of the study in favor of one group or another. Maintaining this unawareness is called “blinding.”
- Blinding is not a simple matter in this study, as those who routinely work as part of the STRIDE study may observe differences in medical records, claims and patient reports that help to indicate which group a patient is in. For this reason, we propose the following safeguards to maintain blinding:

  Upon receipt, all requested medical records will be reviewed centrally by data coordinating center personnel first. These individuals are not expected to remain blinded because they will not be adjudicating events. These personnel will remove any identifiable information that might unmask study group assignment.

  - Adjudicators will not review cases from their own sites.
  - A programmer uninvolved in the adjudication process will strip off identifying information from claims/encounter data provided by sites, prior to such data being adjudicated, so that only the following items are left: participant’s study ID, dates of service, place of service, diagnosis codes, and procedure codes.
  - We will request only selected medical record information (hospital and emergency department documents, radiology reports, and medical office notes) rather than entire medical records, unless these selected records are insufficient and the entire medical record is needed.
  - Despite these safeguards if, at any point, an adjudicator feels that he or she has been un-blinded to a particular case, the adjudicator will recuse him- or herself from that case. The case will go back to STRIDE personnel to be de-identified, and a different adjudicator will be identified to review the case.

7.4.6 What Is the Role of the Site Coordinator?

The site coordinator will assist the STRIDE investigator team in obtaining necessary data from the site. This includes working with site information technology personnel to extract appropriate claims/encounter data from administrative data warehouses at the site. It also includes facilitating medical record retrieval in coordination with the STRIDE data coordinating center.

7.4.7 How Often Will Administrative Data Extracts Be Requested?

Extracts are being requested every six months.

7.5 TECHNICAL NOTES ON ADJUDICATION PROCEDURES

7.5.1 Sources of Data

A. Patient Reports

Patient reports include any information where the patient's verbal or written report is the direct source of the data. In this study, patient reports stem from a telephone follow-up interview conducted every four months.

B. Claims or Encounter Data from Administrative Sources

In this study, we define administrative data sources as those routinely used for healthcare operations, most typically for billing insurance or tracking provider workload. While providers' billing activities may be entered through the electronic health record and patients' health care encounters may be viewed through the electronic health record, for the purposes of this study, we distinguish administrative data from electronic health record data in that administrative data are generally not used for direct clinical care, whereas the electronic health record is typically accessed for provision of clinical care. Extracts from administrative data can be created by healthcare operations personnel for analysis.

In this case, we seek administrative data on health care claims and/or encounters. Claims are requests for payment, typically from a provider of services to an insurer. Encounter data are similar to claims, but are not submitted for payment. Encounter data are typically used in healthcare systems that receive a capitated payment for care, such that billing for individual services is not needed, but information about care that patients are receiving still needs to be tracked for workload purposes as well as for submission to the Centers for Medicare and Medicaid Services.

C. Medical Records

Medical records are a data source that documents interactions between patients and providers, including patients' illness histories, physical examination findings, providers' assessment of the patient's current conditions, and a plan of care. Medical records may be available in paper and/or electronic form. In some cases, medical records may overlap with administrative data in recording patients' diagnosis codes and dates of encounters. For the purposes of this study, however, we are focused on obtaining medical record data not otherwise obtainable from administrative data, including hospital history and physical notes, hospital and emergency department discharge summaries, and radiographic reports.

To minimize time and effort required to obtain medical records, we will focus these efforts primarily, but not exclusively, on records that come from the study sites/health care system. Records will only be requested from outside healthcare facilities if study sites' medical records are insufficient to confirm or refute a possible serious fall injury.

The expected hierarchy of medical record acquisition is as follows:

1. Emergency Department visit summary, inpatient history and physical, radiographic report(s) and/or hospital discharge summary from study site
2. Progress note (any source) with clear wording describing injury from study site
3. Full medical record from study site during relevant time window
4. Relevant records from outside the study site/health care system

7.5.2 Background and Rationale for Proposed Approach

The approach to adjudication outlined below starts from the acknowledgment that there is no single data source that serves as the criterion standard for identifying the primary outcome of serious fall injuries. All data sources have limitations; for example, a patient may forget that her fall resulted in an injury requiring medical care, and therefore not note it when interviewed by phone. Administrative claims/encounter data may be inaccurately or incompletely coded, or not be available for all participating practices. Medical records may not record that a fall occurred when describing an injury. For these reasons, the most precise way to determine the outcome of serious fall injuries is to synthesize information from all of these different sources.

Special comment is merited regarding the use of administrative data in this study. In theory, patient reports could be completely adjudicated with only the use of medical record data. However, medical record acquisition and review is very expensive and time-consuming, and the costs of review rise proportionately with the number of patients whose cases need to be adjudicated. Costs of medical record review include the process of obtaining medical records from various healthcare systems, de-identifying records, and adjudicators' time reviewing records. We have invoked the use of administrative data in this study to reduce the time and expense associated with medical record review, which will still need to occur, but hopefully for significantly fewer patients. Administrative data may also supplement information from medical records in situations where medical records cannot be obtained.

7.5.3 Steps in the Adjudication Process

A. Data Acquisition

1. Acquiring patient reported data. The STRIDE manual of procedures details the process of acquiring patient-reported data via telephone interviews. Of relevance to this manual, telephone interviews cover a rolling four-month interval (i.e., the start date of the four month interview period will be variable depending on when participants were recruited) prior to the interview.
2. Acquiring administrative claims/encounter data. Each of the ten participating sites' principal investigators will assist the STRIDE investigator team in obtaining administrative claims/encounter data every six months from the sites' IT departments. For simplicity, all claims or encounters for currently enrolled STRIDE participants, cumulative from the date of enrollment of the first patient at the site, will be requested. The claims/encounter data extracts should have the same format as is used for submission to Medicare. After appropriate regulatory permissions have been obtained and recruitment has closed, site principal investigators will also be asked to obtain Medicare health insurance claim numbers and/or social security numbers for all enrolled patients, to allow participants' Medicare data to be reviewed.
3. Acquiring medical records. Medical records will be acquired on an as-needed basis, based on an algorithm described later in this manual. We expect that the information required to find medical records will come from patient-reported data, with the assistance of site coordinators as needed to determine whether the medical records are from the participating site or from an outside facility. In the event that medical records are determined to be needed from an outside facility that is not participating in STRIDE, and this determination is made prior to the end of telephone follow-up, we will ask permission from the relevant study participants to obtain outside records during a routinely scheduled 4-monthly telephone interview. For participants who grant permission, the adjudication coordinator at Yale will then obtain the appropriate signed release from the participant via mail to allow medical records to be obtained from that outside facility. If records from an outside facility are determined to be needed after the end of telephone follow-up, we will request permission from participants to obtain records by mail, accompanied by a release form that they can return to Yale.

B. Data Preparation and Cleaning

In order for pre-adjudication to occur, as described later in this manual, patient-reported data and administrative claims/encounter data need to be aligned with respect to calendar time. Since patient-reported data come every four months on a rolling basis, and claims/encounter data will be requested every six months on a calendar basis, the first step for both sets of data is to align data so that time horizons match. For example, for claims/encounter data, the first six months of data would extend from June 1, 2015 through November 30, 2015. However, patients will be enrolled for the main study on a rolling basis. So if a patient is enrolled on October 8, 2015 and completes a telephone follow-up interview February 16, 2016, we will need to wait for the second set of claims/encounter data (cumulative from June 1, 2015 to May 31, 2016) to review the case. Over the long run, master files will be built that contain a continuous record of 1) patient-reported events and 2) claims/encounters for enrolled patients.

Data preparation steps for patient-reported data will be covered in Chapter 9. With respect to data preparation and cleaning for claims/encounter data, we expect that multiple steps will be required. First, since these data are coming from ten different sites and from Medicare, we will need to inspect the format in which we have received the data and ensure that we understand the data as it was sent to us. In addition, we will need to ensure that the minimum specified sets of data fields are included (some type of patient identifier that can be matched to a blinded study ID, dates of service, place of service codes, and diagnosis codes). Subsequently, data will need to de-duplicated and then data will need to have unnecessary identifiers removed.

C. Pre-adjudication

Pre-adjudication is the process of deciding on which information from patient-reported data and administrative claims/encounter data requires further adjudication with medical records. Pre-adjudication will be performed by a central adjudication coordinator who has been trained by the adjudication team. Pre-adjudication processes will involve manual inspection of claims/encounter data and comparison to patient-reported information.

Patient-reported events fall into several different categories: falls without injury, non-serious fall injuries, and serious fall injuries. In some cases, the exact type of event will not be clear from patient reports (e.g., a patient reports a cut with bleeding that resulted in a trip to the Emergency Department but cannot remember whether stitches/staples/glue were required to close the cut). The next step for all patient-reported events is to cross-check the claims/encounter data for the relevant time window of the patient report for any codes that would qualify as a serious fall injury (examples of commonly used codes that would qualify are in Appendix 7.9). If a patient reports a serious fall injury that meets the definition of the primary outcome (a fall occurred with a qualifying type of injury, and the correct level of medical attention was received for the injury) and a qualifying diagnostic or procedure code (i.e., a code consistent with a serious injury) is found in the appropriate date range, the serious fall injury is considered preliminarily confirmed. Note that this statement is true even if the qualifying claims/encounter code does not match the body site or injury type reported by the patient, because the purpose of claims/encounter data is primarily to verify the receipt of medical care and that an injury of a type that has been defined as "serious" has occurred. If a patient reports a fall without injury, or reports a fall-related injury that does not meet the definition of the primary outcome, and no qualifying code is found in claims within an appropriate date range, these cases are considered preliminarily confirmed as not meeting the primary outcome. All other situations (including situations where it is unclear whether the patient-reported event meets the primary outcome based on patient-reported data) advance to medical record acquisition.

In the scenario where the patient reports seeking healthcare for an event, the patient's report of the date of that event will be considered accurate when it is reported precisely (i.e., with a specific date rather than just the month or year). This is because in some instances, healthcare claims/encounter data may not be a complete

representation of all health care encounters. Given the high likelihood of a date mismatch between claims/encounter data and the participant's report, we will count a qualifying claim/encounter code that falls any time within the period the patient was asked to recall serious fall injuries (approximately four months), as long as such a window is not logically inconsistent with the participant's current or prior reports. Because participants are expected to be interviewed every four months, we will have to screen for claims/encounters of the same types and date range that are matching to data from two consecutive interviews, and ensure that the same event is not counted twice. Use of a four-month window should decrease the incidence of double-counting, since the eligible window thus has a maximum span of approximately 120 days, but there is still some double-counting risk, given that health care received for a particular injury typically extends over a period rather than being on an isolated day.

When participants fail to provide an exact date (e.g., a fall injury is reported as being "August 2014") or no date is provided, a presumptive event date will be pegged to the midpoint of the potential four-month window of event dates. Claims/encounters will be searched for the entire four-month window covered by the patient's report. In this situation, the first qualifying claim/encounter date will count as the event date.

When claims/encounter data differ with patient report with respect to body site of injury, the body site reported in claims will take precedence over the body site reported by the participant.

Adjudication Proper

The adjudication process is grounded in the need to confirm the three key characteristics of the primary outcome: 1) that a fall occurred, 2) that an injury of a specific type or types occurred due to the fall, and 3) that the injury in question resulted in medical attention. All cases, whether or not they require medical record review, will be independently reviewed by at least two adjudicators. Where these two adjudicators differ and the two adjudicators cannot reconcile their decisions, the case is brought to a monthly case conference.

The pilot period offers an opportunity to develop "example cases" that can be shared, in de-identified fashion, with the overall adjudication committee. These cases will be used to train and create a shared set of norms among adjudicators.

The exact scenarios that will be encountered by adjudicators are too numerous to be outlined here, so below the focus is on explaining what are likely to be a few common scenarios and outlining a general approach to handling these scenarios. The adjudication process is subject to modification based on our experience in the pilot period.

1. **Agreeing whether a fall occurred as the mechanism of action for the injury**. If a patient reports a fall, such a report will be treated as sufficient evidence that a fall occurred. In situations where a patient's report is unavailable for the injury in question, subsequent decisions about whether the injury is a fall injury will depend on prior knowledge of how likely the particular injury type is to be related to a fall, and any information in claims/encounter data (e.g., external cause of injury codes) or medical record data that would support or refute a fall as the mechanism of injury.

2. **Agreeing that health care utilization occurred for the injury.**

   In general, a qualifying diagnosis or procedure code in claims/encounter data during an eligible date window will count as sufficient evidence of health care utilization. However, in the absence of a patient reporting such utilization (e.g., a patient reports a fall or fall injury but does not mention seeking medical attention in the telephone interview), and health care utilization is found, adjudicators will be

asked to review the case and decide whether medical record review is warranted. The decision could turn upon whether the qualifying claims code closely matches in the injury reported by the patient.

If a patient reports health care utilization for a fall injury but no utilization is found in claims in the relevant date window, then medical records will be pursued and reviewed by the adjudication committee. If medical records cannot be obtained from the study site or facility outside of the study site, the patient's report in isolation will be considered unconfirmable for the purpose of assessing the primary outcome.

3. Agreeing on the type of injury (e.g., fracture, dislocation, etc.). If the patient reports an injury that definitely falls into a type that is included in the definition of the primary outcome (e.g., fracture, or bruising/swelling), then claims/encounter data will be reviewed for a qualifying diagnosis or procedure code during an eligible date window, as noted in the pre-adjudication section. As long as a qualifying diagnosis or procedure code is found, even if it does not match the patient's report of the type of injury, the injury will be categorized as being a primary outcome, with the type being defined by the results from claims/encounter data. In the event that claims/encounter data report more than one qualifying type of injury, the claims/encounter data will be reviewed by the adjudicators, and all confirmed injury types will be listed.

   If the patient reports a fall with an injury not included as a major injury type, and an injury type is found in claims that would count as a primary outcome type during an eligible date window, medical records will be pursued. If medical records confirm the injury reported in claims, this event will be counted towards the primary outcome, with the medical record version of the injury type being the one recorded as final.

4. **Handling other injuries that do not fall into one of the pre-specified types.** The primary outcome includes "other" injury in the definition. Examples include rhabdomyolysis, internal injuries, and hypothermia, but the "other" category is not limited to these examples. The adjudication committee will review injuries reported as "other" by patients to determine whether further information should be gathered on these cases.

5. **Agreement on body site of injury (where applicable).** As noted in the pre-adjudication section, the body site reported in claims/encounter data will take precedence over the body site reported by the participant, when the two disagree. In the event that multiple body sites of injury are reported in administrative claims/encounter data and not by the patient, the adjudicators will review the administrative data and determine the body site(s) of injury, with the option to request medical records if needed.

7.5.4 Quality Assurance

Quality assurance will be maintained through a case finalization process, in which the adjudication overreader (a geriatrician) will review all cases noted to be serious fall injuries by adjudicators. Should the overreader have reason to call into question the decision of the adjudicators to consider the case a serious fall injury (in cases that did not come to case conference for review), he will review these cases with two other geriatrician members of the central STRIDE team to determine the final disposition of the case.

7.5.5 Limitations of Adjudication Approach, and Strategies to Mitigate Limitations

A. Incomplete claims/encounter data. Because the ten sites participating in this study are, for the most part, not closed systems, they may not receive information on all health care encounters experienced by their patients enrolled in the study. This may limit our ability to verify patient-

reported events using claims/encounter data. This limitation specifically applies to patients enrolled in Medicare Advantage plans and patients without a valid Medicare health insurance claim number or social security number as provided by the clinical trial sites. In these situations, claims data from Medicare will not be available to cover out-of-system encounters.

B. Bias generated by interaction of changes in the healthcare delivery process due to the intervention with incomplete claims/encounter data. If claims and encounter data are incomplete as described above, and the STRIDE intervention causes intervention group patients to be more likely to seek initial or follow-up care at the site after a serious fall injury than control patients, the potential for biased confirmation and detection of events exists. For this reason, we will not count falls care manager visits as "medical attention." Only visits to a provider who can bill Medicare will count as "medical attention." The bias discussed above would be reduced by adequate retrieval of medical records in cases where no claims/encounter data include a qualifying diagnosis or procedure code, as is our plan. However, we know that medical record retrieval may not be perfect.

7.6 EXPECTED TIMELINE TO CONFIRM THE PRIMARY OUTCOME AT THE PATIENT LEVEL

The time between the moment a serious fall injury occurs to the time it is a confirmed event will vary based on several factors. First, patients are asked to recall their fall injuries over a four-month look-back period. Whether the event in question occurred early or late during this look-back period will matter. Second, claims/encounter data are expected to be pulled by study sites every six months on a calendar basis. Confirmation of an event in claims after acquiring patient-reported data via telephone may thus happen quickly (if the scheduled claims data retrieval happens to coincide with a patient's recently completed telephone interview) or slowly (up to six months after the patient's report is available). For example, if a patient was interviewed on February 1, 2016 about events covering October 1, 2015 through February 1, 2016, and claims data were pulled on January 2, 2016 and are next due to be pulled on July 1, 2016, a patient-reported event occurring on January 15, 2016 could only be confirmed in claims after data became available on July 1, 2016. In addition, because some events will require confirmation in medical records, and time is required to a) acquire medical records, b) de-identify medical records, and c) adjudicate medical records, it is reasonable to assume and extra three months' time for any cases that require confirmatory medical record review. Considering these factors and the time required to prepare survey and claims/encounter data for use, it is reasonable to assume that most cases of serious fall injuries will only be confirmed sometime between three and nine months after the actual event occurred. Complex cases where site-based adjudicators disagree and additional claims and medical record review is required may not be confirmed for 10-11 months after the actual event.

CHAPTER 8 – SAFETY MONITORING AND REPORTING PROCEDURES

8.0 SAFETY MONITORING AND PROCEDURES FOR ADVERSE EVENTS AND SERIOUS ADVERSE EVENTS

8.1 ETHICAL AND REGULATORY CONSIDERATIONS

8.1.1 Good Clinical Practice Statement

The trial will be conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki, and that are consistent with the ICH guidelines for Good Clinical Practice (GCP) and all federal as well as local regulatory requirements.

8.1.2 Informed Consent

Details of the informed consent process are outlined in the Screening and Enrollment Manual of Procedures (MOP); portions of that process that impact participant safety are briefly described below.

The principles of informed consent are described in ICH guidelines for GCP (ICH E6 [R1]). The consent process used by the investigators will be reviewed and approved by the Trial's Data Safety Monitoring Board (DSMB), central Institutional Review Board (IRB) and the site's IRB, and Informed Consent obtained in accordance with those procedures.

Participants identified by age and screening eligibility will be contacted by phone if they do not otherwise opt out. Informed verbal consent will be obtained by trained study personnel with all potential participants receiving a general description of the study, including the baseline and surveillance evaluations, along with the study specific evaluations. Importantly, written consent was not considered necessary to implement specific components of the intervention that will vary by risk assessment in any given individual, because the intervention is facilitating standard of care in a consistent fashion, not providing an experimental intervention. The central IRB (cIRB) agreed with this premise. Further, given the cluster randomized design, extensive discussion of the intervention with a specific individual may bias substantially the sample from site to site. The data collection requires consent and thus will be the primary focus of the consenting process.

A. **Decisional capacity and proxy consent**: Potential participants with possible impaired decisional competency will be identified for this study using the Callahan 6-item screener, as described earlier.

   It is recognized that participants with impaired decisional capacity need to be identified. The goal is not to exclude them from participation, but to identify those who require added processes to participate in an ethical manner. Therefore, at the time a potential participant is approached, professional judgment will be used to determine the need for surrogate consent with assent by the participant. Study personnel responsible for recruitment and consent will be highly trained and experienced in determining decisional capacity in senior populations. In addition, specific assessment of decisional capacity will be part of study training. For example, potential participants will be considered impaired with regard to decisional capacity, regardless of the score on the Callahan 6-item screener, if they: 1) have an inability to express or communicate a preference/choice; 2) cannot understand the consequences of a potential situation – e.g. cannot

understand the implications of releasing their personal health information (PHI); 3) are unable to provide a logical rationale for participation/non-participation; 4) have a legal guardian or have been identified legally as incompetent to make decisions for themselves. If there is any uncertainty, study personnel will be instructed to obtain surrogate consent.

When surrogate consent is deemed necessary, the surrogate will be approached for consent. Potential participants deemed not to have decisional capacity will be informed that we would like to approach their surrogate. If permission is granted by the surrogate to enroll the participant, the potential participant will then be notified and asked to provide verbal assent, using the following items defined clearly to the potential participant:

- A simplified description of the purpose of the research study including risks/benefits;
- A description of the measures/outcomes to be collected and their method of collection;
- An explanation of the procedures involved and how long the study will last;
- An indication that the study is voluntary;
- A question/answer opportunity in which the potential participant will be encouraged to ask questions.

If verbal assent is granted, the participant will be enrolled.

Further details of capacity screening and the consent process are described in the screening and enrollment MOP.

8.1.3 Institutional Review Board

A central IRB (cIRB; Partners Human Research Committee) has been established and will be responsible for review and approval of the protocol, amendments, and any other materials provided to participants. The cIRB is also responsible for rulings on unanticipated problems, deviations, participant complaints and any study non-compliance. Reliance Agreements with Partners through the cIRB have been signed by all clinical trial sites (CTS) and non-trial sites (NTS), making the cIRB the IRB of record. However, at each trial site, an appropriately constituted IRB as described in ICH guidelines for GCP will also be responsible for any needed review and approval of the study protocol, and any other materials provided to the participants within the terms of the Reliance Agreement. The site IRB may also review any amendments to the study protocol unless the change is necessary to remove an immediate danger to the participant, in which case the site IRB will be informed as soon as possible.

The Study's PI is responsible for the study's interactions with the cIRB. The CPMC cIRB Liaison is responsible for all communications between; the cIRB and the CTS and the NTS; the CTSs and the CPMC PI; the DCC and the cIRB. The CTS PIs are responsible for communications and coordination with all of their Practice Sites.

The cIRB and site IRBs will be informed of any event likely to affect the safety of the participant or the continued conduct of the trial. Records of cIRB review and approval of study protocol and amendments will be provided to the site PI. It is the responsibility of each site PI to keep his/her site IRB informed of all cIRB actions and communications.

8.1.4 Protocol Amendments

Any major change in the study protocol must be approved by the DSMB, NIA, and the Project's Steering Committee. All changes in the study protocol will be approved by the cIRB before it can be implemented.

8.2 RISKS TO HUMAN SUBJECTS

The risks associated with participation in the study intervention itself are deemed to be minimal because: 1) the intervention is aimed at maximizing participation in components of current standard of care; and 2) the intervention is being implemented by trained professionals in the care setting in which they typically provide care. Our assessment of minimal risk does not, however, preclude the possibility that adverse events, and serious adverse events could occur. Therefore, a comprehensive Safety Monitoring Plan is outlined in the following sections. Authority for monitoring the safety of the protocol will reside in an independent DSMB responsible for holding the PIs accountable for data quality and completeness, and assessing the ongoing safety of the trial participants through periodic meetings/review. Ongoing participant safety monitoring is the responsibility of site PIs who will report adverse events to a Medical Safety Monitor appointed by the PIs.

There are potential risks associated with data collection and information management and, in fact, these risks are the major reason consent will be required in this trial. These include inadvertent disclosure of personal health information or research data collected. Every effort will be made to inform the participant of this potential risk and minimize the risk as outlined below.

8.2.1 Protection Against Risks

The study protocol will be implemented at each practice only after the site PI, Falls Care Manager (FCM), and study coordinator have undergone protocol training. The training and monitoring of performance in accordance with the Manual of Procedures for the study will be the responsibility of the study PIs (Drs. Bhasin, Gill and Reuben). All efforts will be made to minimize risks and participant inconvenience, and mitigate interruptions of therapy. Risks will be minimized by: 1) adequate training of all staff with proficiency testing; 2) ensuring participants are verbally informed of the details of the interventions as they are delivered; 3) frequently encouraging participant questions throughout the interventions; and 4) Serious Adverse Event (SAE) Reporting and monitoring overall study safety by a DSMB as outlined below.

8.2.2 Potential Benefits of the Proposed Research to Human Participants and Others

There are a number of potential benefits of the study for the participants including: 1) close monitoring of the participant during the trial; 2) identification of fall risk factors during the customized risk assessment; and 3) medication reconciliation by trained professionals with experience in the care of seniors.

The potential societal benefits from this protocol are also substantial. Optimizing models of care for reducing the risk of serious fall injuries has the potential to greatly enhance patient care – including the potential to reduce both morbidity and mortality, as well as reduce costs. Further, quality of life benefits may be derived from reducing injurious fall risk, particularly as one's confidence in balance and mobility is increased.

8.2.3 Importance of the Knowledge to be Gained

The knowledge to be gained from this trial is extensive. Injuries that result from falls pose a substantial public health burden, especially among older persons with risk factors for falling. Serious injuries, including hematomas, broken bones and lacerations may be important factors that contribute to older persons' loss of independence. This research proposal aims to mitigate this public health burden by rigorously evaluating whether the multifactorial intervention reduces the risk of serious fall injuries. Our major goal is to address the obstacles of effectively reducing falls risk including: 1) establishing an effective method for control over implementation of preventive interventions; 2) enhancing provider knowledge/expertise/adherence to guidelines; 3) overcoming geographic, racial, ethnic, and cultural barriers; 4) enhancing patient adoption of

self-management risk modification; and 5) organizational structure and support needed to implement and coordinate multifactorial strategies. The sustainability and effectiveness of scalable, multifactorial strategies have not been assessed previously, but are goals of this clinical trial.

8.3 DATA AND SAFETY MONITORING PLAN (DSMP)

8.3.1 Background

This section describes the requirements and processes for reporting adverse events (AE), serious AE (SAE) and Unanticipated Problems (UP) to the Central IRB (cIRB), National Institute on Aging (NIA), and the trial's Data and Safety Monitoring Board (DSMB). It incorporates guidelines provided by the Office of Human Research Protections (OHRP) of the Department of Health and Human Services (DHHS) and Food and Drug Administration (FDA) reporting requirements. NIH is obligated to ensure that researchers comply with their approved reporting procedures. Clinical trial investigators funded by NIA are obligated under federal regulations to appropriately inform the Institute of adverse events and unanticipated problems, and NIA is required to ensure that the appropriate procedures are in place to support this reporting.

8.3.2 Definitions

Adverse Event Because 45 CFR 46 does not provide a specific definition for an adverse event (AE), the definition of an AE will conform to the International Conference on Harmonization (ICH) Good Clinical Practice (GCP) Guidelines. The same definition is used by the U.S. Food and Drug Administration (FDA) except that "drug" is typically used instead of the term "intervention." An AE is defined as any untoward medical occurrence in a patient or clinical investigation subject administered an intervention and which does not necessarily have a causal relationship with this treatment. An AE can therefore be any unfavorable and unintended sign (including an abnormal laboratory finding), symptom, or disease temporally associated with the use of an investigational intervention, whether or not related to the intervention.

Serious Adverse Event (SAE) Any AE that:

- Results in death;
- Is life threatening, or places the participant at immediate risk of death from the event as it occurred;
- Requires or prolongs hospitalization;
- Causes persistent or significant disability or incapacity;
- Results in congenital anomalies or birth defects;
- Is another condition, which the investigators judge to represent significant hazards.

Unanticipated Problem Any incident, experience, or outcome that meets all of the following criteria:

- Unexpected, in terms of nature, severity, or frequency, given (a) the research procedures that are described in the protocol-related documents, such as the IRB-approved research protocol; and (b) the characteristics of the study population;
- Related or possibly related to participation in the research; in this guidance document, possibly related means there is a reasonable possibility that the incident, experience, or outcome may have been caused by the procedures involved in the research;
- Suggests that the research places participants or others at a greater risk of harm (including physical, psychological, economic, or social harm) than was previously known or recognized.

Unanticipated problems can be either Unanticipated Safety Events, which are unexpected events that relate directly to patient safety or protocol deviations that put patient privacy at risk or put patients at risk in some way

does not have an impact on their health and safety. The process for dealing with unanticipated safety events is defined here. The procedures for dealing with unanticipated problems that relate to protocol deviations are described in Chapter 10.

Adverse Event Reporting Period The study period during which adverse events must be reported is normally defined as the period from the initiation of any study procedure to the end of the study treatment follow-up.

Preexisting Condition A preexisting condition is one that is present at the time of providing the consent for the study. A preexisting condition is considered an adverse event if the frequency, intensity, or the character of the condition worsens during the study period.

8.3.3 Responsibilities

Both the NIA and the investigators it funds have responsibilities with respect to safety reporting.

NIA program staff members are responsible for providing:

- Assistance to extramural investigators in understanding and applying adverse event and serious adverse event guidelines and for ensuring compliance with OHRP guidance in all NIA-funded clinical research.
- Oversight of these guidelines, which includes periodic review and revision as relevant rules and regulations change.
- Assurance that the Data and Safety Monitoring Plan (DSMP) addresses reporting of adverse events, serious adverse events, and unanticipated problems.
- Verification that all corrective action plans have been adequately implemented.
- Assurance that the study has an independent safety monitoring body commensurate with study risk.
- Ongoing oversight of the safety reporting process to assure that potential safety issues are addressed.

Investigators conducting clinical research are responsible for:

- Assurance that their procedures are conducted in compliance with these guidelines.
- Submission of IRB-approved protocol to the NIA program office. A DSMP that is commensurate with the study risks and reflects these guidelines will also be submitted to the NIA program staff.
- Development of a DSMP that describes the plans for adverse events, serious adverse events, and unanticipated problems commensurate with the nature and complexity of the study.
    - Recipients of Serious Adverse Event and Unanticipated Problem reports must include the IRBs, DSMB or Safety Officer, and NIA.
    - Adherence to the DSMP with respect to timely submission of adverse events, serious adverse events, and unanticipated problems.

8.3.4 Level of Monitoring in the STRIDE Study

This pragmatic trial differs from a typical randomized, controlled trial (RCT) in important ways. First, no experimental interventions are used. All interventions are standard of care and not research. Indeed, the consent script does not include language for consent to an intervention, only for collecting data. Thus, the definitions of research and therefore AE, SAE, Unanticipated Safety Events and Pre-existing conditions do not apply to the intervention. However, this appraisal does not preclude the need to monitor the study and its impact on participant safety. The data collection methodologies include questionnaires, telephone interview,

EHR review, and examination of claims data. Therefore, our safety monitoring procedures focus on data collection via the methodologies described in the protocol design. Our plan is based upon the following principles:

1. It is not feasible or necessary for participant safety to monitor AEs, as the definitions above do not apply because the intervention is not research.
2. Limited monitoring is justified for serious adverse events (SAEs) as many of these will not occur in our study population (e.g. congenital anomalies) AND this is not a trial that has implications for FDA approval. Thus, only Good Clinical Practice (GCP) needs dictate the level of monitoring in accordance with Federal Registry Title 21.
3. It is not necessary to assign monitored SAEs as "related" or "unrelated" to the study protocol because there is inherent bias in this assessment, attribution of "relatedness" would be a tremendous burden, and whether a difference in SAE burden is considered "related" or not, a significant difference between groups would be treated with similar concern by the DSMB.
4. Mechanisms for timely reporting after SAE ascertainment are important, but collective totals of monitored SAEs at assigned intervals will meet "timeliness" for the purposes of this study.
5. The primary and secondary study outcomes will not require additional SAE reporting even though they are likely to meet the definition of an SAE as outcomes will be monitored by the DSMB at the same intervals as safety reports.

8.3.5 Safety Personnel

Safety Officer (SO) The SO will coordinate and oversee the reporting of the safety data. The SO will monitor and evaluate all collected UPs and SAEs by regular review of SAE and USE reports generated by the DCC using processes described below in section 2.6. The SO will review bi-annual reports of USEs and SAEs generated by the DCC (in total, but not segregated by treatment assignment to maintain data integrity). Once approved by the SO, the SAE reports will be sent to the DSMB, NIA, cIRB, and for distribution to the site PIs for filing with the local IRB. The summary will include descriptive information about SAEs reported and indicate both the number of participants enrolled as well as those experiencing a given SAE.

If the SO believes that a finding or trend in reported UPs or SAEs suggests a significant safety threat to participants, the SO will notify the PIs, NIA Official and chair of the DSMB.

8.3.6 Ascertainment of Adverse Events, Serious Adverse Events and Unanticipated Safety Events (USE)

A. Adverse Events (AEs)

As noted in d. above, AEs will not be collected in this trial since "any unfavorable and unintended sign (including an abnormal laboratory finding), symptom, or disease temporally associated with the intervention" will be occurring in the course of routine care, not research. Limited SAEs will be collected and reported as outlined in iii below.

B. Unanticipated Safety Events (USE)

The participating institutions must have written procedures for ensuring prompt reporting to the IRB and NIA, and others as appropriate, of any Unanticipated Safety Event(USE) involving risks to study participants or others (45 CFR 46.103(b) (5)). If the site PI or study coordinator identifies an Unanticipated Safety Event (USE), they will contact the SO within 48 hours of first knowledge of the event and fax a completed USE form (Appendix 8.1) to the SO within 48 hours at the following fax number: 617-525-9148. The

investigator/coordinator will keep a copy of this USE form (Appendix 8.1) on file at the study site. The SO will determine whether the event meets the criteria for a USE outlined in section 2.2 and, if confirmed, report the USE to the cIRB within 48 hours. A USE will result in corrective plans and measures to prevent reoccurrence. An electronic record of such concerns and the action plan will be filed by the SO, so that concerns can be tabulated and reported as outlined.

C. Ascertainment of SAEs and Deaths

Our plan focuses on the acquisition and monitoring of a limited set of SAEs with data derived from the following sources:

- RAC interviews conducted every 4 months
- Regularly scheduled EHR data downloads
- Review of claims data

Only hospitalizations and deaths will be collected, which will ensure the protection of participants from potential harm but remain feasible within the study design. SAE ascertainment will occur from either the telephone interviews or from the regularly scheduled data downloads from the EHR. Aggregate claims data may be available very late in the study (given turnaround times of claims data) and if available will be collated separately to avoid double counting of events.

The participants who die within the participating health care systems will be verified by EHR review by the DCC from regularly scheduled EHR data downloads. However, participants who die at home or outside the participating health care systems, may be missed in this process. Therefore, we will ask their designated contact person whether s/he has died. If unable to speak with designated surrogate and death cannot be confirmed through the EHR, we will consider querying the CMS Master Beneficiary Summary File. If the CMS data does not provide relevant information, as a back-up option, we will request the relevant clinical site to obtain a death certificate. These procedures worked well in the recent multi-center NIA-sponsored LIFE Study. The National Death Index cannot be used routinely because of substantial delays in recording deaths, but we will also consider this as a back-up option.

D. Summary of Procedures for USE, Hospitalization and Death Reporting

Unanticipated Safety Events (USE)

- If the site Principal Investigator (PI), Falls Care Manager (FCM) or the study coordinator identifies an Unanticipated Safety Event, they will report this to the SO within 48 hours.
- The site study staff will report this Unanticipated Safety Event by completing the *Unanticipated Safety Event Form* (Appendix 8.1) and faxing to the SO within 48 hours at the following fax number: 617-525-9148. The Site PI/ FCM/ Study Coordinator will keep a copy of this Form on file at the site.
- The SO will determine whether the event meets criteria for an Unanticipated Safety Event and will work with the trial leadership to devise a Corrective Action Plan (CAP) to prevent recurrence.
- The *Unanticipated Safety Event Form* will be approved by the SO and sent to DCC for filing so that it can be reported to the DSMB during scheduled meetings.

SAEs (Hospitalizations)

- The DCC will obtain EHR data on hospitalization on a regular basis, generate *REDCap SAE Electronic Forms* for each hospitalization. These SAEs are MedDRA-coded by KAI. The SO reviews and approves these events in REDCap.

- *Yale Recruitment and Assessment Center (RAC) calls participants* every 4 months and records any hospitalizations that occurred since last contact. On a regular basis the hospitalizations are reviewed by DCC and sent to KAI for MedDRA coding. These data are then transferred in batches to *REDCap SAE Electronic forms*. The SO reviews and approves these events in REDCap.

1) *Source of SAEs*:

    a. ***Intra-Health System Hospitalizations***: The source of ***all*** Intra-Health System Hospitalizations for SAE reporting will ***only be EHR data***. These will also be MedDRA-coded by KAI and included in the DSMB report.
    b. ***Extra-Health System Hospitalizations***: The source of ***all*** Extra-Health System Hospitalizations for SAE reporting will ***only be RAC interviews.*** The RAC interviewers will record all hospitalizations that are reported by the participants on the phone call. All Extra-Health System Hospitalizations will be identified and coded. Then the information will be transferred in batches to *REDCap SAE Electronic forms* for review by SO. These will also be MedDRA-coded by KAI and included in the DSMB report.

- The sites will be instructed ***to continue to report all SAEs*** (this will ensure compliance with GCP and with OHRP policies). The SO will continue to review these SAEs in RedCap forms. However, site-reported SAEs will **not** be part of the main DSMB report [as these SAEs will be duplicative and already captured via EHR data (Intra-Health) and RAC interviews (Extra-Health)]. Site-reported SAEs will be presented to the NIA (and *possibly* the DSMB) as a brief separate report that will only list these SAEs [similar to the safety section (pages 32-35) from the DSMB report from April 2016]. Drs. Basaria and Romashkan have already sought DSMB's approval on this point.

- The REDCap project, STRIDE SAE, contains reports for managing batch review of SAE records including:

    - New SAE for Review, In-process SAE Review, Closed/Final SAE Review

SAEs (Deaths)

- During their telephone calls every 4 months, if the Yale RAC does not get a response from a participant, the participant's designated contact person will be called.

- Deaths reported by designated contact person will be recorded on *In Event of Death Interview form*. This form will collect basic information about the death such as the date of occurrence and whether it occurred in a hospital or home. DCC will generate *REDCap SAE Electronic Form* for these types of cases.

- Yale RAC also reviews online obituaries for information if unable to reach the participant or designated contact person after a period of time.

- If the event is *detected at the clinical trial site* during interaction with study staff (site coordinator/FCM/PI/EHR alert), the site personnel will complete the *REDCap SAE Electronic Form*.

- The REDCap project, STRIDE SAE, contains reports for managing batch review of SAE records including:
    - New SAE for Review, In-process SAE Review, Closed/Final SAE Review
- If the death occurred in the *Intra-Health System*:
    a) Regular EHR data downloads *will capture this event*.
    b) The DCC will generate *REDCap SAE Electronic Form* for SO review and approval in REDCap.

- The KAI Research will obtain these SAE Forms from the DCC to code the SAE based on MedDRA and SOC Classification prior to the DSMB meetings.

- If the death has occurred in the *Extra-Health System or home*, as reported by designated surrogate at time of call with RAC interview, the DCC will generate a *REDCap SAE Electronic Form* in regular batches for SO review and approval.
- If the Yale RAC *cannot reach the designated contact after 5 attempts* and a death *cannot be confirmed by designated contact person or EHR data*, we will:
    - Send a letter to designated contact person to express condolences and ask if he/she would be willing to participate in brief telephone interview.
    - If unable to speak with designated surrogate, we will consider querying the CMS Master Beneficiary Summary File.
    - If the CMS data does not provide relevant information, as a back-up option, we will request the relevant clinical site to obtain a death certificate. If a certificate is obtained successfully, the site staff will complete the R*EDCap SAE Electronic Form.*
    - The National Death Index cannot be used routinely because of substantial delays in recording deaths, but we will also consider this as a back-up option.

8.4 REPORTING OF UNANTICIPATED SAFETY EVENTS AND SERIOUS ADVERSE EVENTS

A summary report of the USE, hospitalizations and deaths collected by each method of ascertainment (masked versus unmasked study personnel) will be prepared by the SO and DCC for submission to the DSMB, NIA and cIRB in accordance with the Safety Monitoring Plan.

8.4.1 Safety Monitoring Plan

Safety monitoring will be accomplished in accordance with Safety Monitoring Manual of Procedures (MOP) to be approved by the DSMB and NIA. NIA will endorse all members of the DSMB, and the DSMB will determine reporting procedures and meeting frequency outlined in the Safety Monitoring MOP.

8.4.2 Data Safety Monitoring Board (DSMB)

A. Membership

Members of the DSMB will be appointed by the NIA and serve as advisory to the NIA. It is anticipated that members will be physicians, scientists, statisticians, ethics specialists and patient/participant advocates. Members will not be involved in the study in any way, have no vested interest in its outcome, and have no substantive ties to the investigators. Members will self-elect a Chair of the DSMB at the first meeting – the Chair is subject to approval by the NIA.

B. Responsibilities

The DSMB will be responsible for assuring study participants are not exposed to unnecessary, unreasonable or unexpected risk. Further, the DSMB is charged with ensuring that the study is conducted according to the highest scientific and ethical standards. Specific tasks include:

- Review and approval of the proposed interim monitoring plans prior to study initiation
- Assessment of trial performance with respect to recruitment, retention, follow-up, protocol adherence/deviation and data quality
- Monitoring of interim safety and efficacy data so that the trial will be concluded as soon as there is clear evidence of a treatment effect (positive or negative)
- Review and recommendation for considered protocol modifications or ancillary studies proposed after the main trial has begun to ensure that ancillary studies do not impact the major trial outcome
- Advise the PIs and NIA re: whether the protocol should continue as scheduled, be paused or modified, or be terminated.

C. Meeting Frequency and Format

Prior to study initiation, the DSMB will meet with the PIs and other key investigators to review the study protocol. Specific attention will be focused on the main study outcomes and their clear definition, the analysis plan, procedures for recording and reporting SAEs, the monitoring proposal, informed consent documents, and responsibilities of the group. At the initial meeting, the DSMB may recommend modifications or request clarifications of the protocol. It will also formulate operating procedures for the group setting meeting schedule, expectations of the statisticians for reporting prior to each meeting, protocol-directed study stopping procedures and interim data releases that will be allowed to the PIs.

D. Interim Look and Stopping Rules for Efficacy and Futility

Interim monitoring will focus on patient accrual, baseline comparability of treatment groups, protocol adherence, fidelity of the treatments, data completeness and quality, accrual of outcomes, safety, efficacy, and futility. A risk-based centralized monitoring approach

h will be taken to ensure the adequate protection of the rights, welfare, and safety of the study participants and the quality and integrity of the study data. Centralized monitoring will include: 1) monitoring data quality in real time – values out of range, missing data, etc., 2) conducting statistical analyses to identify trends in the data, and 3) developing metrics for monitoring of site performance (e.g., protocol adherence) based on the aggregated data, such as enrollment of ineligible patients, protocol violations, timeliness and quality of the data, losses and withdrawals. A set of data monitoring tables will be developed that include the above elements for presentation to the DSMB at intervals chosen by the DSMB (anticipated to be approximately six months).

Per RFA, a "preliminary statistical analysis of the effects of the preventive strategy on the rate of serious fall injuries must be reported in March 2017." At this time, recruitment will have ended and about 55% of the expected number of primary events will have been accrued, sufficient for an interim look.[ii] (The expected number of events is based on the ratio of average follow-up time at the interim look [1.25 y] relative to the average total follow-up time for the study [2.25 y, assuming recruitment begins on June 1, 2015].) Thus, we propose consideration of stopping the trial at this time only for compelling evidence of efficacy (~$p<0.008$) or a trend in the wrong direction (i.e., futility) taking into account trends in secondary outcomes. Future looks will be left to the purview of the DSMB based on emerging trends in the data; however, by March 2017, there will be less than one year left in the trial and it may be impractical to conduct another interim look before it ends in February 2018. Interim monitoring boundaries will be established using an alpha spending approach.

The original proposal to the DSMB included an interim look in March 2017, but that date was considered unrealistic because of the trial's late start and the accrual of insufficient numbers of adjudicated events by that date. Accordingly, the sponsors and the DSMB left the exact timing and content of the interim monitoring to the discretion of the investigators. At its May 2017 meeting, the trial's DSMB approved a revision to the interim monitoring plan specifying "that a formal interim analysis for efficacy or futility with the potential for early termination may not be necessary, and that a final decision about a formal interim analysis can be made sometime in 2018."

E. Communication of Recommendations

At the conclusion of each DSMB meeting, the DSMB will provide a verbal report to the PIs noting areas of concern in study performance and/or safety. Care will be exercised to ensure no information is conveyed that could compromise the study or its outcome. Within 2 weeks of each meeting, the DSMB Chair will provide a written report to the NIA and the PIs which includes the DSMB recommendation for continuing, discontinuing, amending or suspending the trial. The report will cover data reviewed, recommendations and date of the next scheduled review. This will then be forwarded by the PIs to the cIRB and each clinical site for submission to their IRB.

CHAPTER 9 – DATA MANAGEMENT

9.0 DATA COLLECTION AND MANAGEMENT OVERVIEW

Components required to screen and recruit participants, collect baseline assessments, and obtain outcome data are managed centrally by the Yale Data Coordinating Center (DCC). Field operations, including interviewing and mailings, are carried out by Yale Recruitment and Assessment Center (RAC) staff following workflows that are closely supported by DCC systems. In addition to support for RAC activities, DCC provides workflow support and other tools for Site Coordinators, Falls Care Managers, and STRIDE study investigators and staff.

9.1 ELECTRONIC DATA CAPTURE

Almost all STRIDE data collection and data entry are based on REDCap, an NIH-supported electronic data capture (EDC) application that is used at more than 2000 institutions in 60 countries (http://project-REDCap.org). The DCC hosts Yale's implementation of REDCap and has the expertise to thoroughly exploit its many features, and to extend REDCap's capabilities as required to meet special study needs.

9.2 GENERAL GUIDELINES FOR DATA COLLECTION FORM HANDLING

Refer to Appendix 9.1 *STRIDE DCC Field Operations Support* for a diagram of STRIDE form handling. Forms, such as postcards, are permanently stored as scanned documents in PDF format. RAC has two scanners capable of creating PDFs and placing them on HIPAA-secure file shares (folders). PDF documents created through scanning are automatically cataloged and associated with participants. A web-based tool developed by DCC allows DCC and RAC staff to view scanned images and to resolve conflicts such as multiple screeners returned for a patient, or data entry ambiguities.

Our form-handling guidelines are as follows:

1. Received forms are scanned and converted to PDF. Newly scanned documents are placed by the scanning software into a temporary default location.
2. The forms are logged into the Administrative Tracking Application (“The Tracker”).
3. Forms are reviewed for completeness and if necessary, routed to the appropriate supervisor for further review and action.
4. Forms passing review are processed according to whatever procedures pertain to them. Some forms will require no processing beyond logging their receipt.
5. Newly scanned documents are automatically processed by Optical character-recognition (OCR) software that “patrols” the default folder. At a minimum, the OCR software will determine form type and participant ID code, since all data collection forms are pre-printed with this information. Certain forms will have additional data collection fields defined, which for reliability reasons are limited to non-text, checkbox fields. These are called “OCR-enabled” forms, and require additional processing as described below. The OCR software will generate spreadsheets of resolved data, and issue reports of errors and ambiguities.
6. Each day the RAC Research Assistant will:

a. Operate a DCC utility application that will use the OCR form type and content data to rename each scanned file and place it into the appropriate content folder.
b. Operate the OCR software and resolve any problems detected for OCR-enabled documents scanned that day. Affected data spreadsheets are regenerated.

7. The RAC research associate will compare the data capture reports to the received documents and verify successful scan and data entry resolution. An OCR-enabled form is not considered processed until this step is completed.
8. A batch process that is run nightly will import the OCR software-generated spreadsheets into the study database (REDCap). This software can also be run on-demand by RAC or DCC staff. This software will issue a report of records imported into REDCap. RAC research associate will review reports to ensure all records were incorporated into the study database.

9.3 SUPPORT FOR STRIDE ACTIVITIES

The data management overview for STRIDE operations is diagrammed in Appendix 9.1. This Figure includes the major databases, web-based and pc-based software applications, services and products provided by DCC to support STRIDE operations, including the RAC workflow. Appendix 9.2 *Overview DCC STRIDE Work Flow* is a diagram of the data flow for RAC operations. It summarizes, in broad strokes, RAC workflow.

The major activities are outlined below.

9.3.1 Screening

A. Central Screening

In nine Clinical Practice Sites, screening is managed using Central Screening as the main protocol. Under Central Screening, age-eligible patient contact data are imported from EHR data warehouses at each site and stored in a patient information database Appendix 9.2 *Overview DCC STRIDE Work Flow*. These processes are outlined in MOP Section 3.1.1 Central Screening.

DCC Central Screening tasks

Monthly, the DCC will randomly select patients for screening. The number selected will depend on the observed screening and enrollment characteristics of each clinical trial site practice. The goal is to control the enrollment rate by adjusting the mailing volume.

Records for the selected participants are placed into a table in the Study Database, where it is available to the Tracker utility that is operated by RAC staff.

RAC Central Screening tasks

RAC is responsible for organizing the mailing of the postal screens and accompanying letters that are customized to each patient's clinic practice, and for processing the returned screens.

<u>Screener mailing tasks:</u>

1. Use the Tracker to generate a mail/merge file for selected patients ("mail/merge" function, "postal screener ready to send" filter).

2. Use the Document Generator to create (1) a PDF document of Clinic letters, and (2) a PDF document of Postal Screener postcard "back pages."
3. Save mail/merge spreadsheets and associated PDF documents in secure study folder available to Yale Printing and Publishing Services (YPPS).
4. RAC confirms the receipt of the transferred documents by the end of the day.
5. YPPS is responsible for printing, collating and mailing the supplied materials. YPPS will notify RAC upon completion of these tasks.

Weekly processing for returned Postal Screeners:

1. Using the instructions outlined above under Guidelines for Processing Forms, postal screeners are scanned, cataloged and processed by OCR software.
2. The Tracker utility is used to identify patients who have screened positive for fall risk. These patients are sent recruitment packets, as described below, according to site schedule set by RAC and investigators.

Clinic Screening

Clinic screening will take place at one CTS, Reliant Medical Group. The processes related to this are described in MOP Section 3.1.2 Clinic Screening. Each week an automated DCC process will transfer Reliant EHR screening data to the Study Database. Reliant patients who screen positive for fall risk will then be recruited using the same procedure as for Central Screen patients. This procedure is described next.

9.3.2 Recruitment

The Tracker will alert RAC staff of patients who screen positive for fall risk, so that they may be recruited. The recruitment volume is 500 patients per week. The specific recruitment procedures are outlined in MOP Section 3.2 Recruitment.

The recruitment mailings are handled by RAC staff as a daily task, as soon as possible after fall risk identification (through postal screener or EHR data transfer). The steps to the recruitment mailing are as follows. Two research assistants are required to ensure QC.

1. Use the Tracker to generate the mail/merge data for newly-identified positive screens ("mail/merge" function, "recruitment packet ready to send" filter). The Tracker will assign a recruitment ID code to each screen-positive patient. Each batch of recruitments will comprise a contiguous numeric range of recruitment ID codes.
2. Use the Document Generator to create and print the personalized Clinic and STRIDE letters.
3. Retrieve from inventory sufficient numbers of brochures, clinic-specific large-format envelopes, and the pre-printed opt-out postcards having the recruitment ID code range for the current batch.
4. Assemble the recruitment materials for each patient, stack outside of envelopes.
5. Research assistants will check each other's accuracy in combining materials for each patient. Packets having no omissions or mismatches are sealed in envelopes.
6. Log each recruitment packet as mailed in the Tracker.
7. Affix stamps and place in the outgoing mail bin.

The Tracker monitors each patient's progress through the recruitment process and provides lists to RAC staff of patients who have not returned opt-out cards within two weeks of the recruitment packet mailing, so that RAC interviewers may attempt to contact and enroll those patients.

9.3.3 Consent and Enrollment

A. Baseline Interviews

The recruitment, consent and enrollment or "baseline" interviews are managed using REDCap with a special extension or "plug-in," designed by DCC that extends REDCap's features to better support the interviewers' workflow (Appendix 9.3 Overview REDCap Support STRIDE Work Flow). This extension allows the field director to manage each interviewer's caseload, and allows the interviewers to view the status of each assigned interview, and to quickly initiate the interviewing process. A patient is enrolled in the study upon consent and completion of the baseline interview.

B. Wellbeing Outcomes Subset

A subset of 720 participants have been selected for an expanded interview that includes secondary outcome measures. These participants will also be interviewed at 12 and 24 months. The expanded assessment includes an external, "computerized adaptive test" (CAT) interview called the Late Life Disability Inventory or LLFDI. STRIDE computers are equipped with two screens and a desktop link to the LLFDI, so that it may be run without exiting or hiding the REDCap interview. Instructions for loading and running the LLFDI are built into the secondary outcomes interview.

C. The Status Change Form

The "Status Change" (termination) form is used to record why a patient was not enrolled, or why a patient dropped out or was otherwise withdrawn from the study. This REDCap form must be completed for such events as:

- Refusal to participate
- Opt-out
- Decision to withdraw
- Death

9.3.4 Post-Enrollment Mailing and Site Notification

C. The Administrative Tracking application identifies newly-enrolled patients and provides tools to manage the post-enrollment mailings.
D. The post-enrollment mailing will be packaged in a large-format STRIDE envelope.
E. The contents associated with this are described in MOP Chapter 3
   - Welcome to STRIDE and thank you letter
   - Protocol card that tells the participant if their PCP practice is a Control or Intervention Site
   - For patients at Control sites, a copy of the CDC brochure entitled "Stay Independent"
   - NIA Flyer "What to do in case of a fall?
   - A copy of the e STRIDE Study Brochure
   - 5 months of calendars
   - Calendar instructions

- Consent and privacy summary
- Magnet

The post-enrollment mailings are handled by RAC staff as a twice-weekly task, as soon after enrollment as is practical. The steps to the enrollment mailing were described earlier.

Site Notification

1. RAC uploads enrolled patient names and enrollment information into Site Coordinator webpage and FCM software
2. Site Coordinator notifies PCP of patient enrollment
3. Site Coordinator notifies FCM of patient enrollment

9.3.5 Outcome Surveillance

The Tracker identifies patients nearing the end of their 4-monthly surveillance cycles, so that Follow-up mailings that include next 5-Month supply of calendars can be mailed. The expected weekly count of outcome surveillance events will increase over time. By the end of the first year of operations, we anticipate 230 events per week, and at 19 months it will level off to about 450 per week. That level will be sustained until field operations cease at 44 months.

A. 4-Monthly Fall Ascertainment Interview

The Interviewers are alerted to the 4-monthly interviews by the Assigned Interviews plug-in described for the Baseline Interview. As for the Baseline Interview, the Field Operations Supervisor will have the option of reassigning follow-up interviews based on staff availability and workload.

From the technical standpoint, the fall interview is distinguished from standard REDCap-managed interviews by the incorporation of a REDCap plug-in that is used to manage the fall events. The interface is shown in Appendix 9.4 (Fall Events Plug-in). Unlike the normal REDCap interview which always scrolls down, the Fall Events section effectively scrolls left-to-right, as events are accessed using “previous,” “next,” and drop-down navigation aids. Additional events can easily be added as needed, if probing reveals unreported falls.

For the 720 participants included in the secondary outcomes subset, the follow-up interview will include the secondary outcomes interview at 12 and 24 month follow-ups. These items are added automatically, with no action required on the part of the interviewer.

9.4 SUPPORT FOR NON-RAC ACTIVITIES

9.4.1 YALE NETID

Study staff are required to have Yale NetID to access all study support systems.

Study staff should contact Geraldine Hawthorne-Jones (Geraldine.hawthorne@yale.edu) and Katy Araujo (katy.araujo@yale.edu) to complete paperwork for Yale NetID. Once paperwork is received at RAC it is sent to personnel office for processing. ***It can take up to 4 weeks to obtain a NetID.***

9.4.2 The Portal Website (https://strideportal.med.yale.edu)

An important portal or private website developed and maintained by DCC is strideportal.med.yale.edu, which provides access to content based on user role. This resource is only available to authorized STRIDE staff.

The Portal Website is designed to promote intra-project communications, and to provide access to web-based tools used by Site Coordinators, FCMs and Adjudicators. This section requires login authentication, and provides role-specific pages (Site Coordinator, FCM, etc.), blogs, discussion forums and other features focused on study activities. Connections to this website are encrypted and it adheres to Yale guidelines for data protections, although PHI is not exposed on this website.

9.4.3 The Site Coordinator Tool

DCC developed a secure website tool for use by site coordinators to help them monitor patient study status (Appendix 9.5).

Through this website a site coordinator can identify patients enrolled, enrollment date, and ready to contact date (FCM contact after enrollment materials sent to participant; set for 3 business days after enrollment packet mailed to participant), document notification to Primary Care Provider (PCP) and Falls Care Manager (FCM). Specialized views are provided, such as lists of enrolled patients, patients by group assignment, PCP and FCM notification status (Due, Overdue, Done), Deceased, and overall study status.

The Patient Info feature provides:

Name
Practice
PCP
Address
Phone
Best times to reach participant
How participant would like to be addressed
Demographics (gender, DOB, race, ethnicity)
Enrollment information
Contact information
Surrogate and other contacts information

Using the Pre-Screening/Patient Info feature, site coordinators can make patient updates to pre-screen study opt-outs, PCP, death, and contact information.

The Reports feature allows the site coordinator to select data filter (e.g., all, intervention) and download to an excel spreadsheet. Site coordinators are instructed to save/store files or printouts in a secure location. Save each file with appropriate date/time stamp for tracking purposes

9.4.4 Serious Adverse Event (SAE) reports from Site

Site coordinators will enter all *Hospitalizations* and *Deaths* that are reported to them by participant or surrogates and through medical record alerts.

All SAEs are entered into a REDCap project (see Appendix 9.6)

9.4.5 The Adjudication Tool

A second secure website tool will support adjudication activities. Features offered by this tool will include:

- Access to claims/encounter data acquired from site EHR data warehouses,
- A means to request medical records,
- Access to scanned medical record documents (a PDF browser).

9.4.6 The FCM Tools

An important component of the intervention is specialized software that supports the Falls Care Managers (FCMs). As Appendix 9.7 *STRIDE FCM Workflow Support Application* illustrates, this software has two major components: a REDCap-based electronic data capture module that is designed and maintained by DCC, and a workflow support module that is designed and maintained by an external vendor (High5LA).

A third component has been added to the FCM software suite: The FCM Assessments Manager. This administrative support tool provides features for scheduling and tracking the initial visits.

Two FCM software usage documents are provided on the Stride Portal Website (https://strideportal.med.yale.internal):

- **fcm_assessments_manager.pdf** – A User Guide for the Assessments Manager.
- f**cm_software_tutorial.pdf** – A training document that covers the basic steps of creating an Initial Visit, managing tasks and performing data entry.

Instructions for downloading these documents are provided in Appendix 9.9, Downloading FCM Software Documents.

All of the software systems associated with FCM support are managed by Yale ITS in a HIPAA-secure, virtualized environment.

9.5 IT INFRASTRUCTURE

Appendix 9.8, (IT Infrastructure), shows the overall architecture of the IT infrastructure. Critical DCC systems are located in two data centers that are located in different Yale campuses. The production systems are managed by Yale ITS within a virtualized hosting environment (“cloud”) that is extremely well protected against individual equipment failure. The development and failover systems are managed using DCC-purchased servers that are jointly managed by DCC and Yale ITS. Managing our own development and failover systems gives us maximum flexibility to devise to develop and troubleshoot systems, and to react quickly in the event of a system-wide shutdown of the cloud environment. DCC-purchased servers are equipped with redundant disk drives and power supplies to protect against individual component failure, and all systems are covered by same-day service warrantees.

The Patient Information Database and the Study Database are Microsoft SQL Server databases hosted by Yale ITS, and are certified by ITS as secure for PHI. Access to these databases is strictly limited to DCC staff. By 2015 Q3 the production and failover databases are synchronized by disk mirroring.

All of the application and database systems are monitored by the Yale Information Security Office, and are certified as following Yale and NIH HIPAA guidelines.

9.6 THE DATA MART

To facilitate the production of conduct-of-study reports, error-check reports and interim analyses, a read-only SAS “data mart” is maintained and updated weekly. The data mart is a well-documented, read-only snapshot of administrative and research data, in a format readily accessible to data managers and statisticians. The data mart is the basis for all conduct-of-study reports, which are generated by SAS programs and posted on the Study Website. Permanent copies of the data mart are created for DSMB reports and interim analyses.

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CHAPTER 10 - PROCEDURES FOR HANDLING EARLY WITHDRAWAL, EARLY TERMINATION, OR PROTOCOL DEVIATIONS

10.0 PROCEDURES FOR HANDLING EARLY WITHDRAWAL, EARLY TERMINATION, OR PROTOCOL DEVIATIONS

10.1 EARLY WITHDRAWAL OF PARTICIPANTS

Because the intervention will be integrated into the work flow of the practice, we expect that the withdrawals from the intervention will be limited. If the participant elects full withdrawal from the study, this will be recorded on the Participant Final Disposition Form and all contact with the participant will cease.

Because this trial is based on the principle of “intent-to-treat”, all participants in a particular practice will be analyzed in the group to which that practice was randomly assigned, regardless of whether they complete the intervention or are noncompliant. This preserves the effect of randomization.

10.1.1 Research Follow-up Status Change

If a patient and/or their surrogate states that they no longer wish to participate in the research follow-up component of STRIDE and communicates this to clinical trial site staff:

1. The CTS staff will inform the patient that the team at Yale who enrolled them in the study are the people who will complete the withdrawal procedure. The staff will tell the patient that a person from Yale will call them at a time that works for the patient for a brief call to complete this process. There is no need to ask any of the questions in step 2 if the patient has agreed to receive a call from Yale.

2. This step is only if the patient has refused to allow a final call from the Yale team who enrolled them. If it is not clear that the patient is totally withdrawing consent for all participation in the study tell them:

    - You can delay, stop or modify your participation in any way. I will make sure that any changes you want in your participation in the study take place.
    - Your information is very important to the study, even if you do not wish to participate in the intervention. If you would allow STRIDE to call you 3 times a year it would give us useful information.
    - If you want to stop all phone calls, we will make sure you do not receive any further phone calls or anything in the mail again relating to this study.
    - To better understand how to prevent falls, we are planning to look at the medical records of people in your doctor’s practice. This was part of what you had initially agreed to do. May we still look at your medical records? This will not require any additional contacts with you.
    - If you change your mind at any time and wish to rejoin the study, we are always happy for you to call us.

3. Staff can retrieve a copy of the Research Follow Up Status Change form (see Appendix 10.1) from the CTS page of the internal website or from Nancy Latham at nklatham@partners.org and/or Katy Araujo at katy.araujo@yale.edu.

4. Once completed by Site Coordinator, FCM and/or any other STRIDE staff at the CTS, the form should be emailed to Nancy Latham at nklatham@partners.org and Katy Araujo at katy.araujo@yale.edu. This form should NOT contain any PHI, except for the STRIDE ID number. Note: If a patient is allowing the RAC to contact them, sections 8 and 9 of the form are not required to be completed.

5. The **STRIDE Research Follow-up Status Change Form** will be reviewed by RAC staff and finalized.

6. The Status Change Form will be entered into STRIDE research database by RAC data team.

10.1.2 Intervention Participation Status Change

If a patient and/or their surrogate states that they no longer wish to participate in the intervention component of STRIDE and communicates this to Clinical Trial Site staff:

1. If someone other than the FCM is having this conversation with the patient/surrogate, ask if it is possible for the FCM to talk to the patient about intervention options.

2. FCM will explain options for modifying the intervention, including delaying the initial visit, decreasing phone contact etc.

3. If patient does not want to participate in direct contact with the FCM at all, the FCM will mail a letter and information materials about fall prevention (see Chapter 5 of MOP for sample letter and materials to be mailed in Appendix 5.42).

4. FCM and/or Site Coordinator should complete an Intervention Status Change form (see Appendix 10.2) to document when a patient is withdrawing from the intervention and/or having a significant modification in their intervention participation (i.e. unable to come in for any in-person visits). Staff can retrieve a copy of the Intervention Follow Up Status Change form from the CTS page of the internal website or from Nancy Latham at nklatham@partners.org and/or Katy Araujo at katy.araujo@yale.edu.

5. Once completed by Site Coordinator, FCM and/or any other STRIDE staff at the CTS, the form should be emailed to Nancy Latham at nklatham@partners.org and Katy Araujo at katy.araujo@yale.edu .This should NOT contain any PHI, except for the STRIDE ID number.

6. The STRIDE Intervention Participation Status Form will be reviewed by RAC staff and finalized.

7. The Status Change Form will be entered into STRIDE research database by RAC data team.

10.1.3 Practice or Health System Participation Status Change

When staff at the CTS discover that a patient is no longer receiving their primary care at the practice site and/or health system that they were thought to be in at the time of enrollment:

1. For patients in the intervention group, if the patient continues to be part of the health system and the FCM is able to partner with a PCP at the practice, the FCM should continue to deliver a modified intervention and/or follow Appendix 5.42 of the MOP.

2. For patients in the intervention group, if the patient is not in a participating practice or part of the health system and/or the FCM is not able to partner with a PCP at the new practice, a letter and study materials as outlined in the MOP Appendix 5.42 will be mailed to the patients, along with a phone call to the patient to explain the situation.

3. For patients in the intervention group, if the patient was enrolled in an Intervention practice but upon review of PCP/Practice prior to and/or at the time of the initial contact is in fact receiving care at a Control Practice, the FCM will not provide a modified intervention and will only send the CDC Stay Independent Brochure which is provided to Control patients at the time of enrollment.

4. Patients continue to be part of the STRIDE study even if they leave the practice that they were considered to be part of at the time of enrollment and/or if they cannot receive any part of the intervention. If the patient states that they wish to withdraw from participating in the research study (i.e. stop phone calls from Yale and stop CMS data from being included in the study), follow the procedures for Research Status Change outlined in Section 10.1.1 above. This information can be recorded in the second part of the Practice or Health System Change form (Appendix 10.3).

5. A Practice or Health System Status Change Form will be completed. Staff can retrieve a copy of the form from the CTS page of the internal website or from Nancy Latham at nklatham@partners.org and/or Katy Araujo at katy.araujo@yale.edu. Once completed by Site Coordinator, FCM and/or any other STRIDE staff at the CTS, the form should be emailed to Nancy Latham at nklatham@partners.org and Katy Araujo at katy.araujo@yale.edu. This form should NOT contain any PHI, except the STRIDE ID number.

6. The STRIDE Practice or Health System Status Change Form will be reviewed by RAC staff and finalized. Status Change Form will be entered into STRIDE research database by RAC data team.

10.2 EARLY TERMINATION

Because of the pragmatic nature of the trial, and the intent-to-treat analytical design, there are no plans to terminate the participation of any participant regardless of his/her compliance with the study protocol.

If an interim analysis is conducted, we propose consideration of stopping the trial only for compelling evidence of efficacy (~$p<0.008$) or a trend in the wrong direction (i.e., futility) taking into account trends in secondary outcomes. Interim monitoring boundaries will be established using an alpha spending approach.

10.3 PROCEDURES FOR HANDLING PROTOCOL DEVIATIONS

10.3.1 Protocol Deviation

A. Definitions/Description

Deviation means any alteration/modification to the cIRB approved research without prospective cIRB approval.

Major Deviation means any alteration/modification to the cIRB-approved research that has the potential to negatively impact subject safety or integrity of study data (ability to draw conclusions from the study data), or affect the subject's willingness to participate in the study.

Minor Deviation means any deviation from the cIRB-approved research that does not have the potential to negatively impact subject safety or integrity of study data (ability to draw conclusions from the study data), or affect subject's willingness to participate in the study.

Unanticipated problem means any event involving risks to subjects or others means any incident, experience, information, outcome, or other problem that is unexpected given the research procedures and which indicates that the research places subjects at increased risk of physical, psychological, economic, legal, or social harm than was previously known or recognized.

Unexpected means that the incident, experience, or outcome in terms of nature, severity or frequency is not described in the protocol-related documents, such as the cIRB-approved research protocol and/or other approved documents, or the characteristics of the study population being studied.

Deviations are a subset of ***Unanticipated Problems***.

B. Examples of Major and Minor Deviations

Major Deviations

- Failure to obtain informed consent, i.e., there is no documentation of informed consent
- Informed consent obtained after initiation of study procedures
- Enrollment of a subject who did not meet all inclusion/exclusion criteria
- Failure to report serious adverse event to the IRB and/or sponsor
- Failure to follow safety monitoring plan
- Use or performance on non-approved study materials or procedures
- Inadvertent disclosure of personal health information or research data collected

Minor Deviations

- Implementation of unapproved recruitment procedures
- Use of outdated/expired consent script that contains all required information and elements of informed consent
- Failure to follow the approved study procedure that, in the opinion of the PI, does not affect subject safety or data integrity
  - Study procedure conducted out of sequence
  - Omitting an approved portion of the protocol
- Over-enrollment
- Enrollment of subjects after IRB-approval of study expired

- Failure to submit continuing review application to the IRB before study expiration

10.3.2 Corrective Action Plan for Unanticipated Problems

Since Site Investigators rely on the Partners cIRB for review of human-subjects research, they are required to report unanticipated problems and deviations to the cIRB Liaison in order for the cIRB Liaison to report according to the cIRB reporting policy of Unanticipated Problems in Human-Subjects Research.

A. Reporting Protocol Deviations

1. Site Investigators will provide a detailed description of the unanticipated problem (deviation); this should include details of what happened, when it first happened, how many times it occurred, how it was identified, when it was first identified and by whom, and any other pertinent information so the situation can be assessed prior to reporting to the cIRB. This requested information should be submitted to the cIRB Liaison.

2. The basis for determining that the deviation is unexpected; (how it relates/deviates to/from the actual approved protocol).

3. The basis for determining that the deviation indicates that the research places subjects at an increased risk of harm; and/or integrity of study data (ability to draw conclusions from the study data),

4. Whether any changes to the research or other corrective action are warranted.

5. Provide a corrective action plan. This plan should detail what steps will be taken to help prevent this situation from happening again at the institution.

The above procedures include the actions that need to be taken by the Site Investigator. Once the Investigator reports a deviation to the cIRB Liaison it is accessed and then if applicable submitted to the cIRB.

10.3.3 Timeline for Reporting Protocol Deviations

When a Site Investigator discovers or is made aware of a protocol deviation, s/he must report the deviation to the cIRB Liaison as soon as possible. The cIRB Liaison will access the incident, review the incident with the Communicating PI if deemed necessary and report the unanticipated problem to the cIRB while meeting the timelines as follows:

1. Unapproved major deviations must be reported to the cIRB within five (5) working days of the date the investigator becomes aware of the unapproved deviation.

2. Unapproved minor deviations are to be reported to the cIRB Liaison at the time of occurrence. The cIRB Liaison will keep track of all reported STRIDE minor deviations via a Minor Deviation Log. This Deviation Log will be submitted to the cIRB at the time of continuing review.

The Communicating PI along with the cIRB Liaison is responsible for reviewing the Minor Deviation Log periodically to monitor compliance with the approved research**.** Frequent minor deviations of a similar nature should be reported to the cIRB as a major deviation.

10.3.4 Protocol Violation vs. Deviation

Partner's cIRB does not distinguish between violations and deviations. The terms are used interchangeably. The distinction is instead made between major and minor deviations.

10.4 QUALITY ASSURANCE AUDITS / MONITORING

The study sites will be subject to quality assurance audits by the Central Project Management, The Data Coordinating Center, the Sponsor or designees (i.e. KAI). The monitoring and auditing may take place electronically, through audio or video conferencing or through an in-person visit. In this circumstance, the designated auditor/ monitor will contact the site in advance to arrange an auditing visit. The auditor may ask to visit the facilities where the study is being conducted and any other facility used during the study. The investigators and participating institutions will guarantee access for quality assurance auditors to all study documents.

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