Blueprint for a Fall Prevention Program
A Summary of the Innovating and Successful Empira Study
By Sue Ann Guildermann, RN, BA, MA and Linda Williams, RN, BSN, MPA

In 2008, a Minnesota quality improvement collaborative of older adult service providers, called Empira, submitted an application to the Minnesota Department of Human Services (DHS) for a pay-for-performance (PIPP) three-year grant to reduce resident falls by 20 percent over baseline measures in 16 participating nursing homes. Over the course of the three years, the facilities not only achieved the goal of fall reduction, but significantly improved the quality of care and life for its residents. Jean Jorlett, the fall coordinator and quality assurance coordinator at one of the participating facilities, Minnesota Masonic Home, wrote about their story "Taking Fall Reduction to a New Level". The article below delves deeper into the steps taken and insights gained from this study, as presented by Sue Ann Guildermann, RN, BA, MA, the Director of Education for Empira. The following are highlights from Sue Ann's presentation on their innovative and successful Fall Prevention Program to the Iowa Health Care Association in 2014 and 2015, used with permission.

Empira Fall Reduction Program

How did Empira assist 16 facilities in cutting nearly one-third of their risk adjusted prevalence of resident falls and reduce their recurrent falls from double to a single digit? Guildermann explained, "Success was achieved by implementing best practices from evidence-based studies and getting every employee involved in determining the root causes of the fall, which was the single biggest change in our practice."

First Responder's Responsibilities

Prior to the study, nurses were the primary staff who responded to resident falls, but that changed when all employees were empowered to "Check, Call and Care" when responding first to a resident that had fallen. Instructions for first responders include these six steps:

1. Immediately go to and stay with the resident;
2. If you are not a nurse, call for a nurse;
3. Encourage the resident not to move, ask, "Are you okay?"
4. Ask them, "What were you doing just before you fell?" and/or "What were you trying to do just before you fell?"
5. Begin getting answers to the "10 questions"; and
6. Stay for the fall huddle and assist in getting it started.

As reminders, the six steps were laminated, placed in work areas and on employee name badges. All employees were required to finish all six steps and ancillary staff was given permission to stop what they were doing to participate in the care and huddle as fall situations arose. Administration ensured staff that their supervisors would provide them with assistance to finish their previous tasks, as needed. The Fall Risk Coordinator in each facility reports to the administrator, who oversees the program, so it's no longer solely a nursing program.

During this phase, observation skills are critical because it's easy to miss something you're not looking for. The "10 Questions" referenced under step five are:

1. Ask Resident: Are you OK?
2. Ask resident: What were you trying to do?
3. Ask resident or determine: What was different this time?
4. Position of Resident?

a. Did they fall near a bed, toilet or chair? How far away?
　　　　　b. On their back, front, left side or right side?
　　　　　c. Position of their arms and legs?
　　5. What was the surrounding area like?
　　　　　a. Noisy? Busy? Cluttered?
　　　　　b. If in bathroom, contents of toilet?
　　　　　c. Poor lighting – visibility?
　　　　　d. Position of furniture and equipment? Bed height correct?
　　6. What was the floor like?
　　　　　a. Wet floor? Urine on floor? Uneven floor? Shiny floor?
　　　　　b. Carpet or tile?
　　7. What was the resident's apparel?
　　　　　a. Shoes, socks (non-skid?), slippers, bare feet?
　　　　　b. Poorly fitting clothes?
　　8. Was the resident using an assistive device?
　　　　　a. Walker, cane, wheelchair, merry walker, other?
　　9. Did the resident have glasses and/or hearing-aids on?
　　10. Who was in the area when the resident fell?

Fall Huddle

The fall huddle takes around 10 minutes and is performed immediately after the resident is stabilized. To do this, the charge nurse asks all the staff working in the area of the fall to meet briefly together to determine the root cause analysis (RCA) of the fall. First, they review the "10 Questions," and then the supervisor asks the staff:

- "Who has seen or has had contact with this resident within the last few hours?"
- "What was the resident doing?"
- "How did they appear? How did they behave?"

Next, the persons involved in the fall or incident are asked to re-create what happened, or in other words, do exactly what they did when the fall happened the first time. The same people, equipment, room and timespan of day should be used. Sometimes the resident is too excited to simply tell the staff what happened, so it helps to have them get back into the original position and show the staff what was done. If the resident is cognitively impaired, still ask them the same questions and note their responses, even if they don't verbally answer. They can frequently communicate a non-verbal or garbled response. It is up to staff to further interpret what that means when doing the RCA. For example, a resident responding, "Come in, come in," could in reality, have heard the sound from the pill-crusher on the med cart in the hall.

The charge nurse on duty completes a [Falls Scene Investigation (FSI)](#) form soon after the fall occurs and/or during the fall huddle. It is a data collection tool used to investigate and determine the RCA. The information is stored in an Empira software tracking system, where reports are generated and discussed at the next monthly Fall Committee meeting.

There are primary four unmet needs that contribute to unassisted movement that often result in a fall. To identify these, staff should go on rounds one hour before and one hour after the time the fall had occurred for the next couple of days. People tend to be routine creatures of habit, so identifying these unmet needs can help answer the "why?" question. The unmet needs to check for are known, as "the 4 Ps":

　1. Position:

- Does the resident look comfortable?
- Ask the resident, "Would you like to move or change your position?"
- Also ask, "Are you where you want to be?"
- Report to the nurse

2. **Personal (Potty) Needs:**
   - Ask the resident, "Do you need to use the bathroom?"
   - Ask if they'd like help to the toilet or commode.
   - Report to the nurse
3. **Pain:**
   - Does the resident appear to be uncomfortable or in pain?
   - Ask the resident, "Are you uncomfortable, aching or in pain?"
   - Also ask what you can do to make them comfortable.
   - Report to the nurse
4. **Placement:**
   - Is the bed at the correct height?
   - Are the phone, call light, remote, walker, trash can, water, urinal, and tissues all near the resident?
   - Place them all within easy reach.

Root Cause Analysis (RCA)

When conducting a RCA, most facilities are locked into a proactive fall prevention approach, where they:

- Speculate on specific risk factors for falls
- Take actions based on the assessment of conditions or problems with the resident
- Act on predictions

The problem with this approach is that it doesn't work well to treat everyone the same (e.g. all residents with dementia get an alarm, gripper socks, low bed, etc.) because each person and each fall are unique and different. For better results in determining a RCA, staff should look at the person and situation individually, which led Empira to take a post-fall reactive approach that is evidence-based, where they:

- Investigate current falls that occur
- Collect factual evidence from the fall event (as previously described)
- Study the causation of falls

The RCA is a process to find out what happened, why it happened and determine what can be done to prevent it from happening again. Aiming performance improvement operations at root causes is more effective than merely treating the symptoms of problems. Problems are best solved by eliminating and correcting the root causes, as opposed to merely addressing the obvious symptoms with "scatter-gun approaches" to solutions.

To effectively conduct a RCA, there are three areas to investigate:

1. **Internal/Intrinsic conditions** – check such things as:
   - Vital signs
   - Pain
   - Orthostatic blood pressure – nurses should be consistent and use CDC Guidelines
   - Neuro checks

- Lab results
- Diagnoses – make sure nurses are knowledgeable of them. For example, there is a huge difference between macular degeneration (can only see peripheral vision) and glaucoma (can only see ahead)
- Medications –diuretics can work within 20 minute intervals for up to four hours, so the nurse should inform nursing assistants when to anticipate toileting needs. Nurses should know the side effects, adverse drug reactions, Black Box Warnings, etc. They should beware of a "Prescribing Cascade" of drugs when a side-effect develops from a medication. Oftentimes, the side effect is interpreted as a sign or symptom of a new diagnosis, so more medications are prescribed, resulting in more side-effects, and so on.
- Vision and hearing conditions
- Cognitive, confusion, mood status
- Wandering – usually has no goal, but provides comfort, calming
- Pacing – a need is not met, rhythmic or repetitive
- Grabbing – can be due to dizziness to stop from spinning, so staff should not move or hold onto the resident.
- Pushing – to get away from being startled or attacked, so staff should slowly back away from the resident.
- Poor balance, strength and/or endurance
- Recent changes in conditions

If a resident has changes in mood and cognitive status, frequent napping, and increased falls and agitation, it could be caused by sleep fragmentation, such as being awakened every two hours. It can be difficult to give residents undisturbed sleep, as they will need hydration control, silence, firmer mattresses, etc.

Nurses should eliminate noisy medication carts and avoid disturbing sleeping residents (in order to take medications) as much as possible. They need to understand what makes a drug "unnecessary" according to CMS F329, which is any drug when used:

- In excessive dose; or
- For excessive duration; or
- Without adequate monitoring; or
- Without adequate indications for its use; or
- In the presence of adverse side effects, which indicate the dose should be reduced or the drug discontinued; or
- Any combinations of these reasons.

2. **Environment/Extrinsic conditions** – the primary external conditions for falls are:
   - Noise levels (staff, alarms, television) – residents in noisy areas (e.g. near nurse's station) fall down more often than those in quieter areas. The noisiest time is during shift change and meals.
   - Busy activity – the busiest month is frequently December
   - Incorrect bed height
   - Clutter, such as mats on the floor – the presence of a floor mat can create a fall hazard because staff, families and residents can trip over them. They create an uneven floor surface, do not go the full length of the bed, are confusing to residents with dementia, and the efficacy of mats has not been proven, according to a VA Study.
   - Personal items and/or assistive devices not seen or within reach

- o Visual conditions– aging decreases depth perception and color definition, so residents need more illumination and contrast, such as a dark call light, toilet seat, tissue box, phone, etc.
- o Incorrect footwear – such as crepe soles, gripper socks (only good for shiny, even linoleum floors) and open-backed slippers or shoes. Residents need fully enclosed, slip resistant footwear that is easy to get on and off and the color contrasts to the floor color.

3. **Operational/Systemic conditions** – check these for clues:
   - o Admission period (first 72 hours)
   - o Room and household or unit change
   - o Time of day – high risk of falls during shift change, break or meal times
   - o Days of the week specific to the facility
   - o Location of the fall:
     - Rehab/short stay – they want independence and to go home, so may try to do more than they are able. Staff should encourage them to work at their own pace.
     - Memory loss/secured – residents are less likely to fall if the unit is sunny, bright, active and engaging.
     - Long term care
   - o Type of fall – transfer, walking, reaching, or however they were initiating movement from one place to another because they had an unmet need
   - o Staff times, staff assignments, number of staff, etc.
   - o Routines of services, such as PT and activities – these are needed more in the evening

The place of the resident's fall is very important to the RCA, according to a former CMS investigator, Molly Morand, suggests the "why?" question can be answered by understanding how far away the resident was from a sitting position (transfer surface) when they fell:

- At bedside – think orthostatic blood pressure, are medication changes needed?
- Five feet away – they probably lost their balance/gait, do they need a PT evaluation and treatment for balance?
- Greater than 15 feet away – they probably have problems with strength/endurance and need a PT evaluation and treatment for strength and endurance

If the fall occurred in or near the bathroom, it is important to always check for urine on the floor, as well as the contents of the toilet for further clues as to why they fell, such as:

- Foul smell – Urinary tract infection? Dehydration?
- Huge amount of stool – Vagal nerve stimulation? Constipation?
- Blood – Possible internal bleed?

Beware of situations that can inadvertently hinder, divert or prevent a successful root cause analysis. The Minnesota Department of Health in a recent educational session focusing on root cause analysis mentions the following hindrances:

- **Blame Game** – the goal is to understand why the fall happened, rather than blaming someone for the cause of the fall. The point of a human error investigation is to understand why actions that are now questionable, made sense to people at the time they did it. You have to keep asking why, again and again. Likewise, give staff permission to trust their instincts, question or tell others "I don't think it's safe" when indicated, rather than remaining silent and risk a fall.
- **Tunnel Vision** – at the time the accident occurred, people usually behave seeing only one way to perform. They weren't aware of the consequences of their actions. In reconstructing the event,

they can view it from an outsider's perspective, and because they now have hind-sight knowledge, they will likely see different actions that could have been taken.

The RCA should not be a simple five minute judgement call by one staff member, but instead should be a process undertaken by a team in a concerted effort to identify the true primary root cause for the resident fall. Shortcuts too often lead to inappropriate, canned interventions that have nothing to do with meeting the resident's actual needs (the real problem), and can even hasten the next fall because true preventative measures were missed. Staff must be diligent in their investigation and continue to ask "why?" until they find the real cause(s) of the particular issue. For example, take the following scenario:

Mr. SP, 74 y/o lives alone, recently widowed, alcohol dependent, slightly confused, easily agitated, has multiple hematomas from many falls.

Most facilities would simply implement interventions to treat the falls, such as to provide a personal alarm due to his confusion. Some may even look further and try to treat the agitated behaviors with ways for staff to gently approach him. Neither of these interventions will be effective for long with Mr. SP because the confusion and his behaviors were only symptoms, not the root cause. Upon digging deeper, staff would have found:

- He had many falls and hematomas (Why?)
- Due to his confusion and agitation (Why?)
- Those began when he started drinking heavily (Why?)
- He started drinking after his wife recently died, leaving him alone (Why?)
- Unresolved grief over the recent death of his wife.

By looking backwards at the conditions that existed before the fall, staff will discover proximal causes. Once the primary root cause for the fall is identified, interventions that match the causative agent for the fall can be implemented. In this case, grief counseling by the resident's pastor eventually addressed the symptoms and eliminated the falls.

Interventions

By now, most of the clues and evidence, by observation, examination, interviews and assessments, have been gathered. Primary root causes for the fall, based upon the aggregate data, should have been identified. The next step is to implement corrective actions and interventions to eliminate the root cause(s) of the problem.

- Determine what can be done to prevent the problem from happening again?
- Do the interventions/solutions match the causes of the problem?
- How will it be implemented?
- Who will be responsible to do what?
- How will the interventions effect other operations or people in the facility?
- What are the risks to implementing the solutions?
- How will it be audited and evaluated?

A medical intervention can be defined as patients receiving treatments or actions that have the effect of preventing injury, illness, and/or prolonging of life.

Pre-Fall Interventions
Fall interventions should not start after the resident's first fall has taken place, but instead, when the

resident first arrives at the facility upon admission. A "Falls Admission Risk Assessment" should address the following:

1. Identify the individual's specific risk factors for being at high risk for falling.
2. If the person has a recent history of falls, determine the predisposing causes or triggers for the falls.
3. Consider psychological/emotional factors; grief depression, self-imposed restriction of activity.
4. Focus on lower-extremity balance and strengthening status. Do a physical therapy assessment upon admission for balance and lower extremity strength.
5. Individualize admission interventions to keep the resident safe and minimize falling.
6. Create brochures that talk about your fall program. Then, distribute and discuss with residents, family and friends, inviting them to become part of the program too. View the [Family & Friends: Fall Prevention](#) brochure for a sample.

Other fall interventions to be done during admission include:

- Select a roommate with similar sleep/wake patterns
- Offer slow, repeated orientation to room, roommate, etc.
- Create a room/bed area that most closely represents the resident's home environment (placement of items in and on nightstand, bed, furniture and equipment). Make sure they get out on the same side of the bed as before.
- Personalize the room so that the resident will know it is their room (signs, pictures, items, own bedspread and pillow, etc.).
- Adapt the room to the resident's physical limitations (nightstand, equipment placement, bed in relation to bathroom or door, etc.).
- Create contrast with items to background areas (toilet seat, call light, etc.).
- Set bed height to be correctly heighted to the resident – mark it.
- Individualized correct footwear.
- Staff should check the "4Ps" during rounds

Residents with a diagnosis of osteoporosis, hip/pelvis fractures and osteoarthritis may benefit from the use of hip protectors, not because they prevent falls, but because they may reduce the severity of injury if a fall occurs. According to the "Veteran's Administration – [Hip Protector Implementation Tool Kit](#)," the hip protectors with the highest rated efficacy are:

- [ComfiHips](#)
- [Hip Saver](#)
- [SAFEHIP](#)

Post-Fall Interventions
Remember, interventions must match the causative agents of the fall, as identified by the RCA. The best interventions have stronger actions, rather than to simply rely on education or memory alone. According to the National Center for Patient Safety's "Hierarchy of Actions," the classification of corrective actions and interventions range from:

- **Weak** – actions that depend on staff to remember their training, policies, assignments, regulations, etc.
  - Examples include, "remind staff to ___," or "remind the resident to ___."
- **Intermediate** – actions are somewhat dependent on staff remembering to do the right thing, but tools are provided to help the staff remember or to help promote better communication.

- o Examples include lists, pictures, icons, color bands, etc.
- **Strong** – does not depend on staff to remember to do the right thing. The tools or actions provide very strong controls.
  - o Examples include timed light switches, auto lock brakes, etc.

An example of a good intermediate-to-strong action/intervention concerning correct bed height is:

- Resident sits on the edge of the bed with their feet flat on the floor, hips are slightly higher than knees
- Mark wall with tape to indicate top of the mattress or top of the headboard at this position
- Bed heights are checked routinely and maintained by all staff as they enter or leave a resident's room.

The Monthly Fall Committee

The Fall Committee should always meet at the same time and day. All appropriate departments are represented, and the charge nurse and nurse aide from the fall are "ad hoc" members. They will bring with them the FSI report, medication administration record (MAR), resident's chart, fall huddle findings, and hourly rounding notes. The agenda for the meeting includes:

- New resident falls information:
  - o Review FSI report, huddle findings and RCA
  - o Review interventions – do they match the RCA? Are they weak, intermediate or strong interventions?
  - o Discussion and suggestions
- Status of residents from previous falls and interventions
- Status reports and audits from related on-going facility-wide projects, such as alarm reduction, medication reduction, QI/QM reports, etc.
  - o Are we seeing any trends, commonalities and/or patterns to the falls, facility-wide?
  - o Are systems and operational changes needed?

Lessons Learned

At the conclusion of the Empira three year study, the primary findings from the RCA of falls were:

- Internal conditions of residents at the time of the fall were primarily:
  - o Unmet needs (4 Ps)
  - o Sleep fragmentation and sleep deprivation
  - o Poor balance
  - o Reduced mobility
  - o Reduced strength
  - o Sarcopenia (the loss of muscle mass and coordination that results from the process of aging)

  The lessons learned from the falls prevention program prompted Empira to pursue improved residents' sleep, which could encourage mobility, balance and strength, and dramatically reduce the prevalence of falls.

- External conditions of environment at the time of the fall were primarily:
  - o Noise levels (staff, personal alarms, televisions)
  - o Busy activity (shift change, meals)

- Moving in (first 72 hours)

The biggest lesson learned was that if they could stop the noise and stop disturbing sleep, then they could reduce falls.

- Operational conditions of facilities at the time of the falls were primarily:
  - Shift change
  - Meals
  - Staff not knowing the resident's routines

Rarely was the root cause of a fall only a clinical or environmental condition, but rather the result of an underlying systemic breakdown. The operations and management of systems, processes and procedures had the greatest impact and effect on fall reduction. For example, at least two facility-wide projects were created from these findings related to balance in therapeutic recreation, and alarm and restraint reduction and elimination.

Balance in Therapeutic Recreation

Balance is a combination of posture, range of motion, strength, reaction time, visual perception, somatosensory and pain. As we age, we lose our balance because we become more sedentary. This is especially true in health care facilities where staff tend to do things for residents. According to a study by the Journal of the American Geriatrics Society in December 2008, "the greatest effect in preventing falls was seen with exercise that challenged balance." As previously stated, the 16 facilities quickly identified balance as a leading contributor to resident falls, so they created opportunities for residents to stand and reach more often, incorporating balance into current activity programs, activities of daily living and newly created Therapeutic Recreation (TR) programs. The TR programs worked because:

- Residents were assessed by physical therapy for their ability to stand and balance (both static and dynamic).
- Residents were identified as:
  - Hand free
  - One hand support
  - Two hand support
  - Assist by staff
- New TR programs were specifically created and designed to offer opportunities to balance.

Opportunities for standing, reaching and turning were also incorporated in daily routines, such as:

- When offering something to residents, have them reach for meds, toothbrush, tissues, foods, etc.
- Turn to get toilet paper and perform self-hygiene
- Turn and reach for clothing items once they are set up
- Lift arms and lift head to assist with dressing
- Encourage resident to self-propel their own wheelchair to enhance muscles, posture, balance and independence.

Alarm and Restraint Reduction and Elimination

The use of personal alarms with residents can easily startle and constrain them from normal repositioning movements, which can be problematic. It also can be considered a form of restraint, as defined by CMS F221. Personal alarms are alerting devices designated to emit a loud warning signal when a person moves. The most common types of personal alarms are:

- Pressure sensitive pads placed under the resident while they are sitting on chairs, in wheelchairs or when sleeping in bed
- A cord attached directly on the person's clothing with a pull-pin or magnet adhered to the alarming device
- Pressure sensitive mats on the floor
- Devices that emit light beams across a bed, chair or doorway

The thought process behind the use of personal alarms is that, when a resident moves, they fall down. So, if you prevent unassisted movement or mobility, you can prevent the fall. The truth is, the resident has needs, and their needs may trigger them to move and because they are weak they fall down. When residents, who are at risk, move they can fall. If staff addresses the resident's needs and gets them physically active and stronger to prevent immobility, they can reduce their falls.

Through a RCA process of determining resident needs (that set the alarm off) and what they were doing beforehand, the facilities were able to eliminate most of the personal alarms in their buildings over time. Using multiple evidence based studies, they worked with residents on an individual basis and developed effective protocols and procedures for removing alarms and restraints. Instead of just reacting to alarms, this new fall program relied heavily upon anticipatory care.

The Next Empira Study

Since Empira was so successful with their fall reduction program, Sue Ann Guildermann has been busy training various providers and CMS affiliates across the country. In addition, Empira applied for and was awarded another three-year MN DHS PIPP grant for a restorative sleep vitality program, which began Oct. 1, 2011. This program is a combination of nationally recognized, evidence-based, sleep fragmentation studies, as well as the application of cutting edge practices to enhance residents' sleep. The goals for this program are to provide undisturbed sleep at night and to keep residents active and engaged during the day. Like their previous study, Empira will be challenging some of the standards of practice and operational procedures for providing cares and services in skilled nursing facilities. CMS affiliates and long term care providers across the country look forward to hearing their results.

References:

For a complete list of fall prevention and elimination; evidence based resources, reports of practice, and articles used by Empira, 2015.