Quality improvement interventions with a focus on falls management

Ian Scott

Director of Internal Medicine and Clinical Epidemiology, Princess Alexandra Hospital

Associate Professor of Medicine, University of Queensland, Brisbane

Adjunct Associate Professor of Medicine, Monash University, Melbourne

CRE Patient Safety Seminar 4/4/14
Pre-requisites for QSII

- Full characterisation of the problem
- Change theory underpinning QSII
- Testing to confirm proof of concept
- Standardised, replicable QSII
- Evidence of effectiveness
- Reconciliation of effects with underpinning change theory
  - Process evaluations to test fidelity
- Adverse or unintended effects
- Costs and resources
- Sustainability and generalisability
Falls

An event which results in a person coming to rest inadvertently on the ground or floor or other lower level’ (WHO 2009)
Falls burden

Queensland hospitals 2007-08

• 11,928 fall-related clinical incidents

• 2,205 falls resulting in injury among patients aged over 65 years (80%)
  - Rate: 0.79 in-hospital falls in this age group per 1,000 patient days.
  - Most result in non-fracture injuries (84%) or fracture (16%); 493 resulted in death

• Most reported falls were not witnessed by staff (80%)
• Most occurred during walking or sitting to standing activities
• Most occurred in bathroom or bedside areas
• Most occurred in early morning or late afternoon
• Most involved patients with delerium, dementia, neurodegenerative diseases, extreme frailty

• Falls and fall-related injuries in acute hospitals
  - Account for 80% of PRIME incidents in general medicine units
  - In a department of 70 beds about 2-4 falls a day

• Incur complications
  - Fractures, injury
  - Post-fall syndrome
  - Loss of morale among clinical staff
  - Litigation and complaints
  - Prolonged length of stay
Falls burden

- Total hospital costs for falls were assessed in 2001 as $54 million
  - costs projected to quadruple in the next 40 to 50 years

- Taking into account all costs including general practitioners, residential aged care facilities, specialists and pharmacy, projected costs set to increase to $320 million by 2051

- Queensland hospitals already spend more than twice as much on the treatment of falls in older people than on victims of road traffic crashes


National Safety and Quality Health Service Standards
—Standard 10: Preventing falls and harm from falls
Challenges

• What causes falls (risk factors)

• What can be done to prevent or reduce falls from occurring

• How to minimise any damage that may result from a fall
  - eg. hip protectors, softer flooring

• What’s the best way is to rehabilitate a person after a fall
Whole of system approach

1. Reduce harm from falls
   - Leadership actions to reduce harm from falls
     - Board leadership: establish falls prevention group
     - Governance & risk leadership: improve analysis and learning from falls
     - Train and develop staff in falls prevention
     - Facilities & estates leadership: create a safe environment

2. Post fall protocols: care and secondary prevention
   - In depth assessment and multifaceted care plan
   - Ask about falls on every admission
   - Avoid unnecessary hypnotic/sedative medication
   - Ensure patients have appropriate footwear
   - Ensure call bell visible and within reach

3. High risk patients
4. All patients
   - "The four basics"

1. Rate of patients harmed by a fall
2. % of staff who have received falls management training
3. % of patients with appropriate observations after a fall
4. % of high risk patients with an action plan
5. % of patients who received the four basics of falls prevention

Oliver et al
Clin Geriatr Med 2010
Causative factors

Clinical factors
- Confusion, delerium, dementia
- Impaired balance, gait
- Reduced muscle strength; malnutrition
- Slowed reaction time
- Poor vision
- Polypharmacy, especially cardiovascular and CNS drugs
- Depression
- Incontinence, poor toileting regimens
- Inappropriate footwear

Environmental hazards
- Unstable furniture
- Inappropriate use of bed rails
- Cluttered areas
- Inadequate lighting
- Slippery/wet floors
- Restraints, IV drips, IDCs

Most falls are preventable
Assessing falls risk

- Clinical judgement

Figure 4. Accuracy of clinical judgement based on level of nurse. ■, enrolled nurse; □, graduate nurse; △, registered nurse; ■, clinical nurse.

Figure 5. Accuracy of clinical judgement based on years of nursing. ■, 0–1 year; □, 1.5–5 years; △, 6–18 years; ■, 20–40 years.
Assessing falls risk

- Formal risk prediction tools (~35)
- STRATIFY and MFS are best validated
  - Various modifications
- Must be accurate, reliable, quick and easy to use, no discomfort

<table>
<thead>
<tr>
<th>Risk assessment method</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRATIFY¹</td>
<td>67%</td>
<td>51%</td>
<td>23%</td>
<td>94%</td>
</tr>
<tr>
<td>Modified STRATIFY²</td>
<td>65%</td>
<td>79%</td>
<td>23%</td>
<td>86%</td>
</tr>
<tr>
<td>Nurse judgment³</td>
<td>84%</td>
<td>38%</td>
<td>12%</td>
<td>96%</td>
</tr>
</tbody>
</table>

1. Oliver et al Age Ageing 2008
3. Webster et al J Clin Epidemiol 2010

Reliability - fair for modified STRATIFY; poor otherwise
Preventive strategies

*Nurse-driven*

- Educate patients/carers in falls risk
- Regular toileting
- Regular rounding
- Supervise mobility
- Buzzers within reach and explained
- Lower bed to lowest level
- Keep curtains open
- Keep patient visual at all times
- Activate bed alarms
Preventive strategies

**MDT**

- Assess eyesight, ensure glasses/visual aids are available, undertake eyewear cleaning
- Request pharmacist to conduct medication reviews
- Request podiatrist to conduct foot health checks and safe shoe reviews
- Request physiotherapist to conduct balance check, promote walking if safe, organise a Tai Chi or Otago Exercise Programme
- Ask volunteers/family/carers to take patients for walks
- Request occupational therapists to perform hazard check
- Request medical staff to assess for risk factors, remove IDCs and IV lines unless absolutely necessary, assess and reverse factors provoking delerium
- Educate family/carers on how to reduce falls risk
  - Queensland Stay On Your Feet® BeSafe brochures
**Risk assessment and management**

**Falls Assessment and Management Plan**

<table>
<thead>
<tr>
<th>Category</th>
<th>Date</th>
<th>Initial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment / Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation / Treatments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility / Physical Therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management / Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature Log</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Assessment and Management Plan**

1. **Risk factors**
   - The patient uses a mobility aid
   - The patient requires supervision or assistance for transfer
   - The patient is visually impaired
   - Existing condition such as frequency or assistance
   - New onset condition - mid-stream urine examination and catheterization
   - The patient is on high risk medications
   - The patient is on more than 4 medications
   - The patient reports past medical history
   - History of syncope (loss of consciousness)
   - The patient has a minimal trauma fracture (any fracture sustained in a fall from standing height or without trauma)

2. **Assessment**
   - Conduct pre-assessment
   - Refer to relevant health care providers
   - Consider referral to a specialist
   - Consider referral to a cardiologist
   - Consider referral to a neurologist

3. **Management**
   - Refer to appropriate treatment facility
   - Refer to appropriate medication
   - Refer to appropriate lifestyle modification
   - Refer to appropriate physical therapy

**Notes**

- No patient is at risk of falling
- No stratification of risk
- Same multidisciplinary care approach for everybody
Evidence of effectiveness

- Cochrane review of fall prevention in hospitals and nursing homes (Cameron et al 2012)
  - 41 trials; 25,422 participants
  - Multifactorial interventions in hospitals
    - Reduced rate of falls RR=0.69 (0.49-0.96) (4 trials; 4512 participants)
    - Reduced risk of falling RR=0.73 (0.56-0.96) (3 trials; 4824 participants)
  - Supervised exercise interventions
    - Reduced risk of falling RR=0.44 (0.20-0.97) (3 trials; 131 participants)
  - Educational session by a trained research nurse targeting individual fall risk factors in patients at high risk of falling in acute medical wards
    - Reduced risk of falling RR = 0.29 (0.11 to 0.74) (1 trial; 1206 participants)
  - Multidisciplinary care in geriatric ward after hip fracture surgery vs usual care in an orthopaedic ward
    - Reduced rate of falls RR 0.38 (0.19 to 0.74)
    - Reduced risk of falling RR 0.41 (0.20 to 0.83) (1 trial, 199 participants)

12 of 41 trials (11,488 of 25,422; 45%) had positive effects
No data on fall-related injuries
No cost-effectiveness analyses
Multifactorial intervention

Cluster randomised trial of a targeted multifactorial intervention to prevent falls among older people in hospital

Why no effect?

Short LOS
Too little time to change culture by researchers
Restricted coverage 8am-4pm
Contamination in control wards
No blinding of intervention status
Low low beds

Pragmatic, Cluster Randomized Trial of a Policy to Introduce Low-Low Beds to Hospital Wards for the Prevention of Falls and Fall Injuries

Why no effect?

Too few low-low beds (1:12)
Poor targeting of patients
Beds not used appropriately

Terry P. Haines, PhD,†† Rebecca A.R. Bell, PhD,‡ and Paul N. Varghese, FRACP‡‡

SETTING: Public hospitals located in Australia.

PARTICIPANTS: Patients of 18 public hospitals.

INTERVENTION: Provision of one low bed for every 12 on a hospital ward, with written guidelines for patients at greatest risk of falls.

MEASUREMENTS: Falls and fall injuries were measured using a computerized incident reporting system.

RESULTS: There were 10,937 admissions to control and intervention wards combined during the pre-intervention period. There was no significant difference in the rate of falls per 1,000 occupied bed days between intervention and control group wards after the introduction of the low-low beds (generalized estimating equation coefficient = 0.23, 95% confidence interval = −0.18–0.65, P = .28). The rate of bed falls, falls resulting in injury, and falls resulting in fracture also did not differ between groups. Some difficulties were encountered in intervention group wards in using the low-low beds as directed.
More nursing staff

Cross-sectional analysis of routinely collected data from 8069 nursing units in 1361 US hospitals within National Database of Nursing Quality Indicators

Staggs, Dutton Int J Qual Health Care 2014

Increasing non-RN nursing staff associated with increased fall rate

![Graphs showing the relationship between RN hours per patient day and unassisted falls per 1,000 patient days for Step-down unit and Acute medical unit.](image)
Falls or fall-related injuries

Vic public hospitals
Various interventions

Brand, Sundurarajan Qual Saf Health Care 2010

Barker et al Qual Saf Health Care 2009
Variations in fall rates

8915 nursing units (1994 critical care, 1328 step-down, 1663 medical, 1279 surgical, 2217 medical-surgical, and 434 rehabilitation units) in 1171 hospitals

He et al Med Care 2012
Best performers

Boushon et al IHI 2012

Making fall reduction everybody’s concern and commitment

- Engage
- Enable
- Enforce

At the level of clinical microsystems and individual clinicians
In ways that are simple, routine, consistent and measurable
Engage

- Why should I worry about this?
  - Falls are common but serious injuries are rare
    - But they can be devastating (clinical narratives)
  - Falls are inevitable
    - Most are predictable and preventable
  - Our fall rates are no worse than anywhere else
    - Considerable variation between wards/hospitals
  - There are many other things that take priority
    - Preventing falls has now become an institutional priority
  - Only the quality folk or the falls co-ordinator get fired up about this, not the people at the coalface
    - But there must be reasons why the former have passion around this
  - This is not something that I can influence as an individual (it’s a system problem)
    - But preventing injury reflects a caring approach and we collectively are the system
Engage

- Present the facts around fall burden and its causes
- Showcase best achievers and what they have done
- Create a sense of professional discomfort with current state of play
- Assess readiness to change and ascertain barriers to change
- Identify folk motivated to change who can influence others
  - clinical leads, champions, advocates
- Take heed of legitimate criticisms of those not so keen
- Develop interventions compatible with busy, real-world practice
- Communicate clearly what is being proposed – how, who, when
- Trial interventions openly with the ‘foot soldiers’ (proof of concept)
Engage

- Intervention development - 3 phases
  - Phase 1: qualitative inquiry to identify barriers and facilitators to fall risk knowledge and actions
  - Focus groups: 23 nurses and 19 nurse assistants

<table>
<thead>
<tr>
<th>Overcome Barriers</th>
<th>Strengthen Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge/Communication</strong></td>
<td><strong>Capability/Actions</strong></td>
</tr>
<tr>
<td>Providing care, including help with morning toileting, before receiving report</td>
<td>Receive accurate and timely report about patients’ fall risk and what to do to prevent a patient from falling</td>
</tr>
<tr>
<td>Fall risk status and/or fall prevention plan is cumbersome and not accessible to all stakeholders</td>
<td>Easy access to up-to-date fall risk information and prevention plan for all providers and patient/family</td>
</tr>
<tr>
<td>Fall risk signs are too common and generic to be helpful</td>
<td>Obvious, unambiguous, individualized visual alerts</td>
</tr>
<tr>
<td>Not knowing how to access needed equipment, eg, walker; environmental clutter</td>
<td>Personal effects and equipment nearby; furniture arranged to meet patients’ needs; clear path to the bathroom</td>
</tr>
<tr>
<td>Not responding to a call light because of not knowing what to do if the patient wants to get out of bed or needs toileting</td>
<td>Staff working together as a team; answering any call light rapidly</td>
</tr>
<tr>
<td>Patients not following instructions given by staff, eg, to call for assistance to help get out of bed or to walk to the bathroom</td>
<td>Working with families and visitors to carry out the fall prevention plan</td>
</tr>
</tbody>
</table>

Enable

- Consider *actions* that individuals feel they have the time, skills and desire to make
  - ‘Walk in their shoes’ – ‘a day in the life of…’
  - KISSS: keep it simple, sensible, specific
  - DO NOT expect policies and procedures to enact themselves
  - Provide checklists, aids, tools, pocket guides at point of care
  - Integrate actions into daily care routines
  - ‘Documenting’ does not equal ‘doing’

- Legitimise actions as mainstream care
  - Full support from line managers
  - Support from educated family/carers
  - Adequate training and resources
  - Expectation that, having identified high risk patients, prescribed actions must follow
A. FPTK Icons Validated for Communication of Fall Risk Status and Actionable Interventions

Up to six icons will display on FPTK Outputs (Bed poster/Patient education handout/Fall Prevention Plan). Fall prevention plan prints in hospitals where paper plan in place (academic medical centers) and populates electronic where electronic plan in place (community hospitals).
Enable

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fall: current admission</td>
<td>3</td>
</tr>
<tr>
<td>2. Fall in last 12 months</td>
<td>1</td>
</tr>
<tr>
<td>3. Confused, disorientated, intellectually challenged, agitated or has</td>
<td>1</td>
</tr>
<tr>
<td>impulsive behaviour</td>
<td></td>
</tr>
<tr>
<td>4. Patient needs supervision or assistance with mobility</td>
<td>1</td>
</tr>
<tr>
<td>5. Impaired balance or hemiplegia</td>
<td>1</td>
</tr>
<tr>
<td>6. 80 years or older</td>
<td>1</td>
</tr>
<tr>
<td>7. Requires frequent toileting</td>
<td>1</td>
</tr>
<tr>
<td>8. Visually impaired to the extent that everyday function is affected</td>
<td>1</td>
</tr>
<tr>
<td>9. Presented with drug-related or alcohol-related problems</td>
<td>1</td>
</tr>
<tr>
<td>Total score of 3 or more = high risk</td>
<td></td>
</tr>
</tbody>
</table>

1. Placement of a ‘falls alert’ sign above the patient’s bed.
2. Supervision of patients while in the bathroom.
3. Use of a low-low bed.
4. Ensuring that the patient’s walking aid is within reach at all times.
5. Establishment of a toileting regime.
6. Use of a bed/chair alarm when the patient is positioned in the bed/chair.

Barker et al Inj Prev 2011
Enforce

• Single person accountability
• Falls risk assessment repeated on each shift
• Communicate falls status to incoming shifts
• Audits to ensure prescribed actions are occurring
  • Corrective strategies if not
• Ongoing regular feedback of falls/fall injury event data from incident reports, nursing notes, admin data, discharge summaries
• Set SMART targets
• Rewards/recognition for good results
• Support and mentoring for not so good results
Pre-requisites for QSII
How does 6-PACK measure up

✓ Full characterisation of the problem
✓ Change theory underpinning QSII
✓ Testing to confirm proof of concept
✓ Standardised, replicable QSII
  • Evidence of effectiveness
  • Reconciliation of effects with underpinning change theory
    - Process evaluations to test fidelity
  • Adverse or unintended effects
  • Costs and resources
  • Sustainability and generalisability

Scott & Wakefield Med J Aust 2013
The ultimate measure of success in minimizing falls risk