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Leveraging Behavioral Nudges to Mitigate Patient Falls in Hospitals

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Addressing Falls and Behavioral Changes

Falls are the second leading cause of unintentional injury deaths worldwide. Adults older than 60 years of age, suffer the greatest number of fatal falls. Those individuals who fall and suffer a disability, particularly older people, are at a major risk for subsequent long-term care and institutionalization *(Reference: World Health Organisation, 2021).*

Patient falls have adverse effects on both the patients themselves and the hospital. Patients can suffer no harm to severe harm such as hematoma, fractures of leg, hand, shoulder or hips to name few. Even in instances where injury is not involved, there are other impacts that affect both the patient and caregivers. These include psychological distress, fear of falling again, extended hospital stays, litigation, guilt, and dissatisfaction.

Consequences of a fall include both direct and indirect costs. Direct costs include increased length of stay, medicines, investigations such as an x-ray, CT, etc., while the indirect costs include transportation and lodging of patient's attendants, absence from work resulting in loss of wages of both the attendant and the patient, cost of food services, prolonged fear of fall, mental distress, etc.

To address the issue of falls and its associated expenses it is crucial to realize that not every problem requires changes or expensive interventions. Many fall related incidents can be effectively managed through simple behavioral modifications. Changes in behavior of both hospital staff and patients play a role in reducing fall risks.

By implementing prompts and behavioral interventions hospitals can encourage staff and patients to adopt practices. Simple solutions like personalized assessments of risk followed by feedback for patients, prominently displaying boards where patients can make commitments to their wellbeing and sharing personalized family photos to remind patients of their goals can bring about significant changes in behavior. Similarly incorporating safety reminders through eye catching posters along with adjustments can positively influence behaviors.

By focusing on changing behaviors healthcare facilities can effectively tackle the problem of falls. This approach not helps reduce the consequences associated with falls but also minimizes both direct and indirect costs related to such incidents.

Key factors why patient falls are a problem in healthcare:

Figure 01: Why Patient Falls is a problem?

As per the Joint Commission Centre for transforming healthcare project, 2016, following conditions were identified most frequently by hospitals for falls and falls with injury:

- fall risk assessment issues
- handoff communication issues
- call light issues
- toileting issues
- training and organizational culture issues, and
- medication issues

Impacts of inpatient falls:

Falls have various direct and indirect impacts on healthcare facilities, staff, patients, and the healthcare system overall. Here is an arial view of impact of patient falls on healthcare:

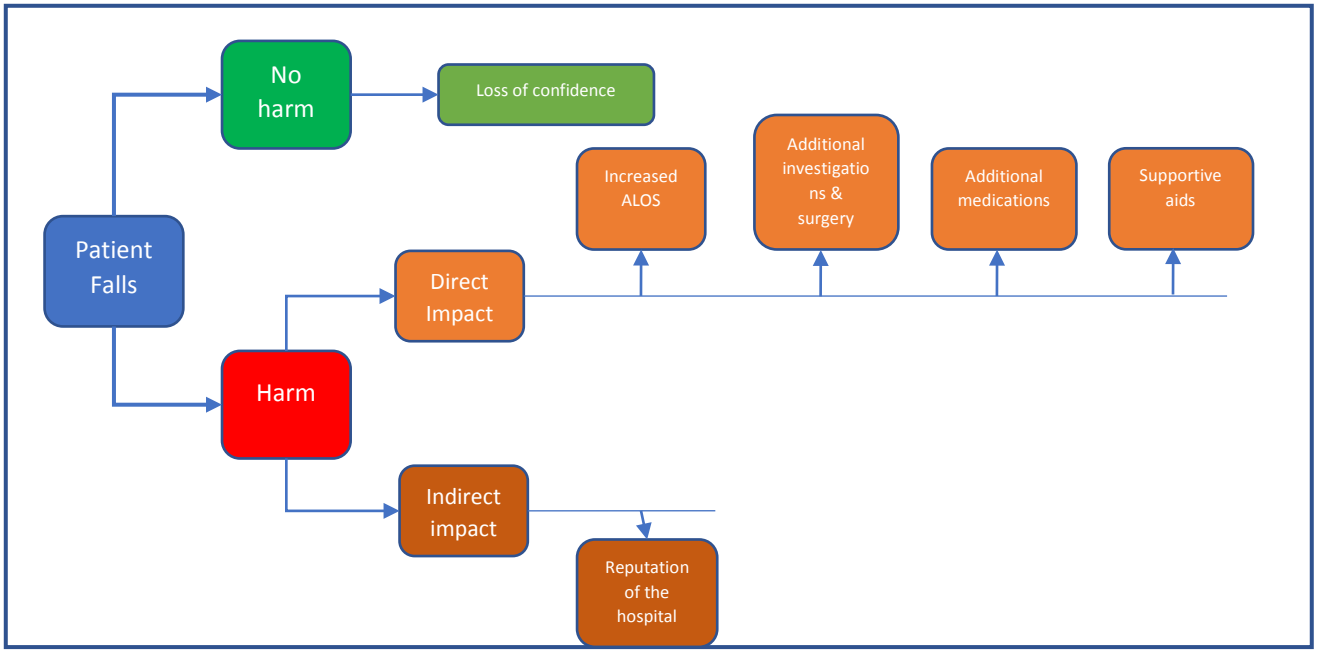

Figure 02: Direct & indirect cost factor of patient falls

Addressing both the direct and indirect impacts of patient falls require a comprehensive approach to fall prevention.

SITUATIONAL/LANDSCAPE ANALYSIS:

In the literature review, several articles highlight the impact of inpatient falls in hospitals, and injuries related to falls lead to longer hospital stays and higher healthcare costs.

Dunne et al. (2014) found that falls in hospitals increased the length of stay regardless of the degree of harm. Attenello et al. (2015) reported that in-patient hospital falls were one of the most frequently reported safety events. These falls generate significant additional costs, as demonstrated in the UK where over 2.7% of the 7.4 million people admitted to acute care hospitals in 2015/2016 experienced a fall incident, resulting in approximately $739 million in annual costs (NHS Improvement, 2017).

If we take an example of a leading hospital chain like **Cleveland Clinic**, in April 2019, the fall rate at Cleveland Clinic Avon Hospital was 5.22 per 1,000 patient days. The hospital launched an A3 initiative to decrease the fall rate and increase patient safety. They joined together with patient care nursing assistants, nurse managers, nursing directors, chief nursing officer, to develop and implement a simple tool to tackle falls. It was termed as S.A.F.E.

It was a standardized hand-off template, which is printed on laminated pocket cards for all caregivers, to guide communication among care givers:

S – Symptoms: The card listed 12 symptoms that can increase risk of fall, including dizziness, confusion, neuropathy, recent fall and vision impairment.

A – Activity: Level of assistance the patient needs and his or her mobility plan.

F – Fall Risk Intervention: The script listed interventions that a nurse might use for patients at risk of fall, such bed/chair alarms, fall wristbands, increased frequency of rounding and targeted toilet scheduling.

E – Effects of Medication: Effects of numerous medications, including diuretics, anesthesia, bowel preps and opiates.

Post-intervention, hospital-wide fall rates at Avon Hospital decreased during the first quarter of 2020, 2.02 falls per 1,000 patient days. *(Refence - https://consultqd.clevelandclinic.org/s-a-f-e-script-to-reduce-falls/)*

As per a report by *Australian Institute of Health Welfare,* falls were reported causing 37% of all injury deaths, and more than 34,000 hospitalisations (3.2 per 1000 hospitalisations) reported a fall over ten-year trend in Australia *(Reference: Australian Institute of Health Welfare, Cat. No. AUS 221: Canberra: AIHW; 2018).* The total hospital cost of inpatient falls in 12 acute medical and surgical wards of six Australian hospitals was $9.8 million, with $6.4 million attributed to non-injurious falls and $3.4 million to injurious falls *(Reference: Morello, R. T. et al. The extra resource burden of in-hospital falls: A cost of falls study).*

All the above scenarios in various healthcare setting further confirms the fact that patient falls remains a concern even in developed countries with the latest technology at hand.

In addition to environmental and technological interventions, behavioural changes directly impact patient safety through human factors. In order to prevent patient falls, behavioural changes are paramount. In behavioural change, nudges can be used to have a predictable impact on decision-making, for both patients and frontline care providers.

PROCESS MAP AND DECISION FLOW

Patient Fall risk assessment and Falls - Process Flow:

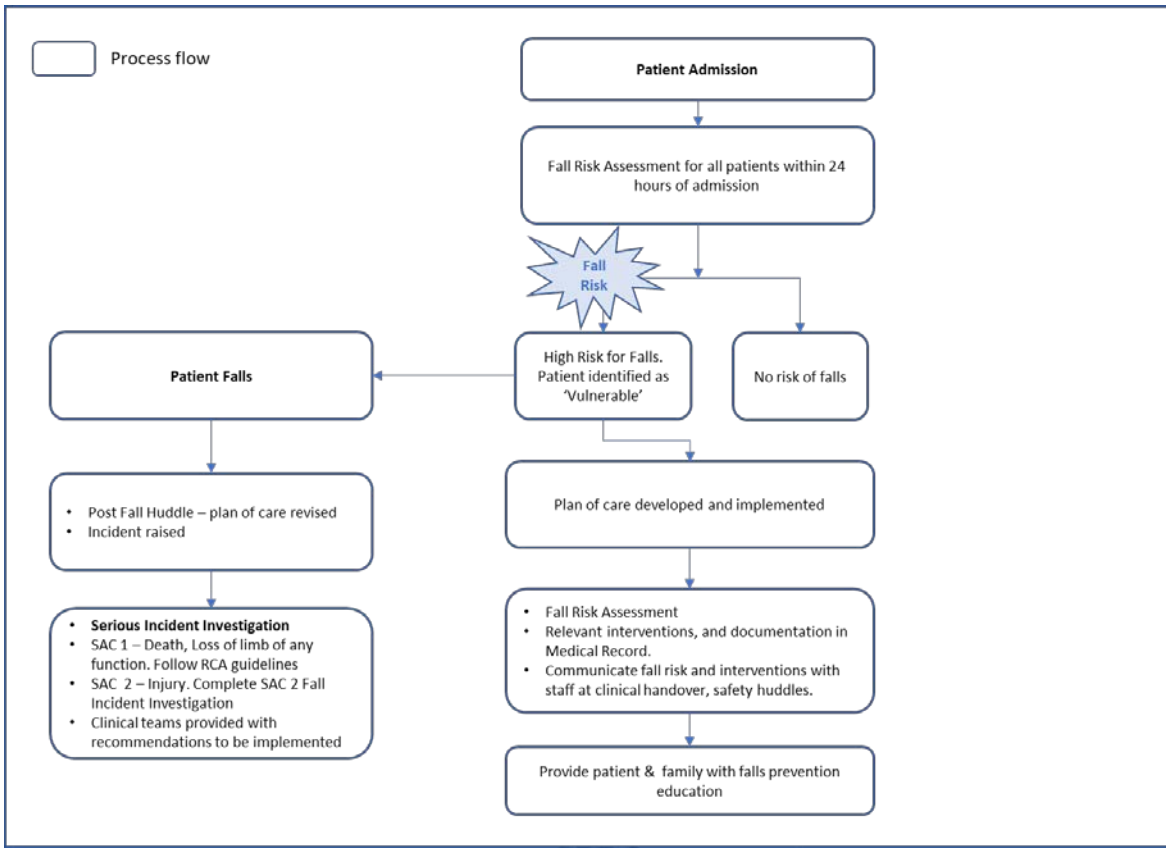

Figure 03: Process Map & Decision Flow

Figure 03, the process map outlines the key stages, starting with fall risk assessment upon admission and implementation of preventive measures as per the identification of high fall risk patients, such as environmental modifications and patient education.

The decision flow is illustrated by the actions taken by healthcare staff when a patient falls. It includes communication among caregivers, response to the fall, documentation of the incident and conducting a post-fall assessment to determine root causes and implement further preventive measures.

FALL RISK FACTORS and BOTTLENECKS

Patient Factors: Individual patient characteristics, such as age, medical conditions, medications, and cognitive impairment, can significantly contribute to fall risk. Tailoring prevention strategies to address specific patient needs is essential.

Fall Risk Assessment: If a staff nurse or doctor fails to conduct a complete patient assessment or overlooks risk factors, it may result in patients not receiving appropriate preventive interventions**.**

Environmental Factors Leading to Falls: The hospital environment present numerous hazards that increase the risk of patient falls. Noise, frequent interruptions, slippery floors, inadequate lighting, cluttered pathways, and busy healthcare environments can divert patients' attention, leading to falls.

Non-compliance to education: Patient & family may not always comply with recommended fall prevention strategies (such as using assistive devices & calling for assistance before moving out of bed) as directed by staff as part of fall prevention education.

It is possible for patients who do not have the awareness to develop a false sense of security, which can make them less cautious and more prone to engaging in risky behaviors.

Communication: If relevant information about a patient's fall risk is not effectively communicated during a handover, it can lead to a risk of falls.

Alarm Fatigue: When patient bedside monitors sound frequent alarms, frontline staff may become desensitized, resulting in a delay in responding to the alerts or turning them off altogether.

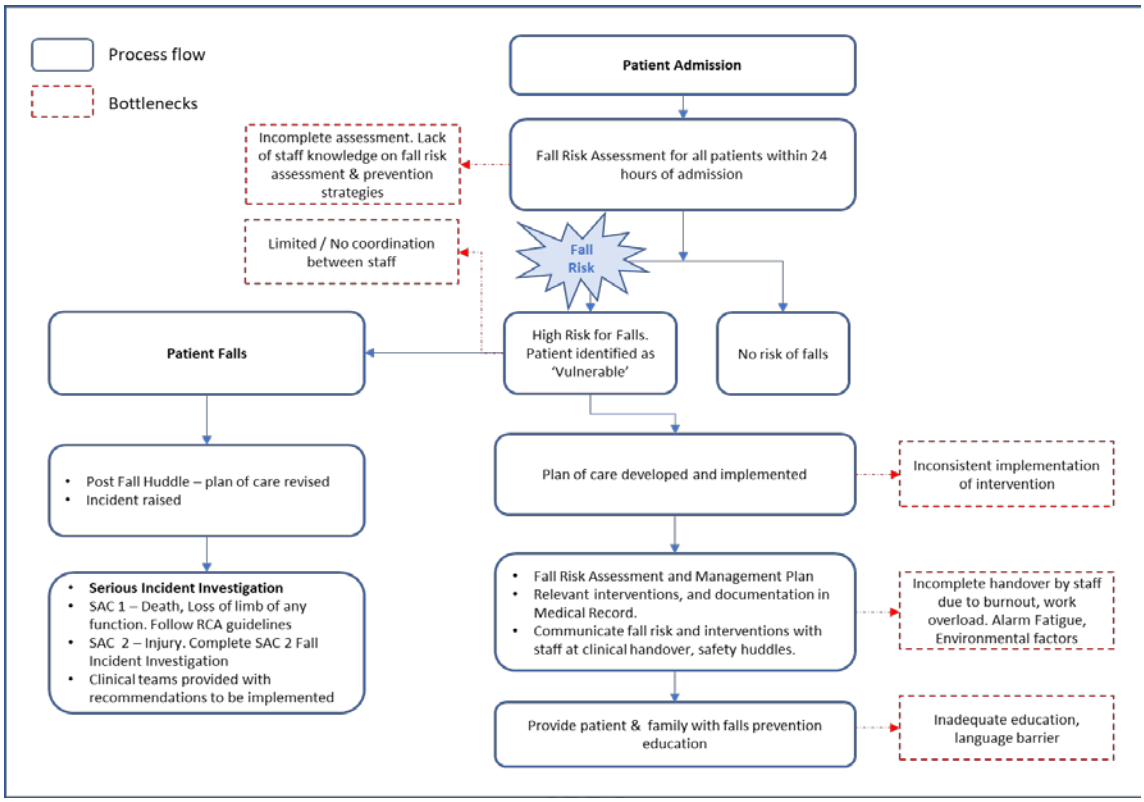

Figure 02: Bottlenecks identified (Red) for falls prevention

DESIGN INTERVENTIONS / NUDGES TO REMOVE THE BOTTLENECKS

Bottlenecks	Type of Nudges	Behavioural changes for Staff through nudges	Behavioural changes for patients & Family through nudges
Patient Factors & Incomplete Fall Risk Assessment	**Loss Aversion**	**Personalized Risk Assessment:** for each patient and provide them with feedback emphasizing the potential loss they may face if they do not take preventive measures during their hospitalization.	**Pledge Boards:** with statements like, "I pledge to protect my independence by following fall prevention guidelines." A family photo on the patient bedside where the patient is in a healthier state and playing with his / her grandchildren. Personalised message from family on that photo for the patient.
Incomplete Fall Risk Assessment	**Simplifying**	**Mandatory Fields in Electronic Health Records (EHRs):** to include mandatory fields for fall risk assessment. pop-up reminders in the EHR system that prompt healthcare providers to conduct fall risk assessments at appropriate intervals, such as during admission, at shift changes, or after significant changes in a patient's condition.	
Environmental Factors Leading to Falls	**Simplifying**	**Visual Marking:** 'Safety First' signage on head end of the patient bed to identify the fall risk patients for staff to identify the them quickly and ensure fall risk interventions are in place. **Daily Safety Tips:** Staff provide quick safety reminders to patients during rounds or medication administration. For example, "Sir, remember to call for assistance before getting out of bed."	Eye-catching posters in strategic locations (corridors or near corners where patients may need to slow down or change direction) such as "Watch Your Step" or "Safety First: Mind Your Surroundings" large fonts and contrasting colours. Re-arranging of furniture to create clear pathways, handrails in corridors and patient rooms. Night lighting bands on the floor level in high-risk areas.
Environmental	**Framing**		**Positive Framing:** Signs and

Factors leading to Falls			posters in patient rooms, emphasizing the benefits of using call bells for assistance instead of using negative warning. For example: 1. "Stay on Your Feet and Thrive!", 2. "Your Safety, Your Freedom!" - Emphasize that fall prevention is about preserving independence and enjoying life to the fullest.
Non-compliance to education	**Loss Aversion**	**Personalized Risk Assessment:** for each patient and provide them with feedback emphasizing the potential loss they may face if they do not take preventive measures during their hospitalization.	**Pledge Boards:** with statements like, "I pledge to protect my independence by following fall prevention guidelines." A family photo on the patient bedside where the patient is in a healthier state and playing with his / her grandchildren. Personalised message from family on that photo for the patient.
Non-compliance to education	**Saliency**	**Vulnerable Zone:** High risk areas like Emergency, ICUs, Paediatric & Neonatal Floors can be categorised as 'Vulnerable Zone'. Any patients posted in these areas would be considered at fall risk. It will be easy for the staff to identify such patients and they do not have to reassess these patients. **Nurse Reminder Badges**: Nurses and staff can wear badges with simple fall prevention reminders or slogans. For example, a badge might say, "Ask me about fall prevention," encouraging patients to engage in conversations about safety.	
Non-compliance to	**Altruism**	**'My Commitment' Pledge Board:** A Pledge board in a	**Patient Stories:** Short videos featuring real-life stories of

education		central area of the hospital where staff & doctors can write a pledge committing to prioritize patient safety and actively participate in the fall prevention program. **Thank You Notes:** Thank-you notes from patient & family to staff members who played a role in their fall prevention care & these can be displayed on a "Gratitude Wall".	patients who have experienced falls during their hospital stay highlighting the emotional and physical impact falls can have on patients and their families. These videos can include a demonstration on how a fall could be prevented through simple measures. Showcasing images of individuals enjoying various activities in a hospital setting (e.g., socializing with other patients, participating in therapy sessions). This reinforces the idea that even in a hospital, life can be fulfilling and joyful.
	Commitment	All frontline staff & doctors can wear badges that say, "We're Committed to Fall Prevention!"	
Staff Communication	**Simplifying**	A standardized handover checklist including questions related to the patient's fall risk, mobility status, and any specific interventions in place. This can ensure that all relevant information is covered during the handover process.	
Alarm Fatigue	**Decision Points**	Designing alarm systems with a prioritization of alerts. Escalation protocols for alarms. If an alarm remains unacknowledged for a certain period, it is escalated to a higher-priority alert, ensuring critical alarms are not missed.	Keeping alarm near to the patient reach so that the patient remembers to raise the alarm whenever moves out of the bed.

Conclusion

Patient falls are a concern ranking as the second leading cause of unintentional injury deaths. It is particularly concerning for adults, over the age of 60 as they experience a number of falls. These falls can result in long-term care needs and institutionalization for those who become disabled as a result. The consequences go beyond injuries and extend to emotional and financial impacts on both patients and caregivers.

The effects of patient falls are significant leading to increased healthcare costs and longer hospital stays. Addressing this issue requires an approach to fall prevention that takes into account contributing factors. Bottlenecks have been identified, including patient-related factors, incomplete fall risk assessments, environmental hazards, non-compliance with education programs, communication challenges, and alarm fatigue. These bottlenecks highlight the complexity of the challenge at hand.

To improve fall prevention in healthcare settings and overcome these bottlenecks it is necessary to implement a combination of nudges and targeted interventions. Personalized risk assessments, processes, positive messaging or framing techniques, and increased commitment from healthcare staff can all contribute to driving changes and reducing the risk of falls among patients. Moreover, engaging patients and their families through pledges, gratitude displays, and sharing stories can help raise awareness about fall prevention while fostering a sense of shared responsibility, among everyone involved.

Healthcare facilities can improve safety, minimize fall-related injuries, and ultimately enhance outcomes by identifying and addressing these obstacles and implementing well-thought interventions. It is clear that taking a comprehensive approach is crucial in reducing the impact of patient falls, on healthcare institutions, patients, and the overall healthcare system.

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