Doing more with less: Using Artificial Intelligence to predict and prevent inpatient falls
CHI Health Lakeside Hospital Omaha, NE

Background

- CHI Health Lakeside: 157 bed acute care hospital located in the Omaha Metro.
- Patient falls in hospitals remains a universal problem and a continued threat to patient safety.
- Partnered with a local technology company to study Artificial Intelligence (AI) in the inpatient setting, regarding fall prevention.
- Previous resources (staff sitting with patients, bed/chair alarms) were limited and unsustainable due to COVID-19 complications.
- 2 inpatient units were used for study
    - PCU (post ICU care)- 28 bed unit
    - Med-Surg/Ortho- 32 bed unit
- Patients eligible for study participation:
    - Morse Fall scale of 45 or greater
    - RN discretion/patient diagnosis
- All patient images anonymized to protect identity (Figure 1).

Figure 2

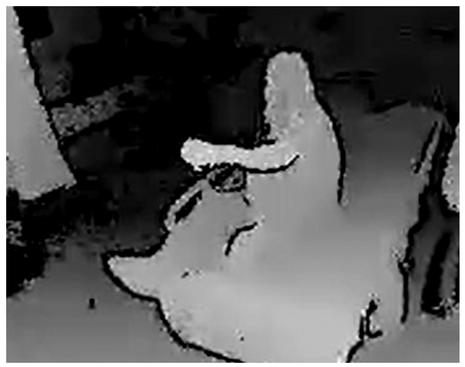


Figure 1

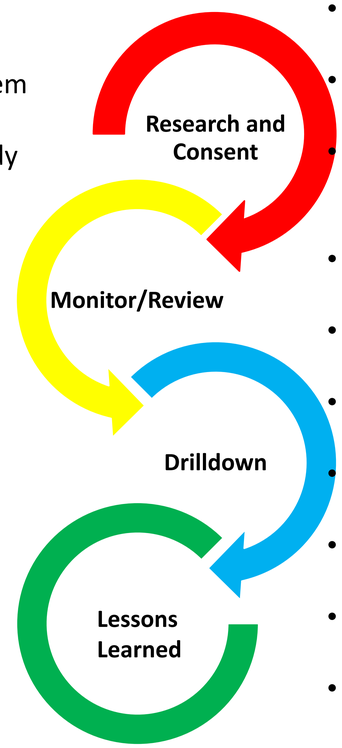
Aims

Reduce inpatient falls and falls with injury without increasing the use of depleted resources

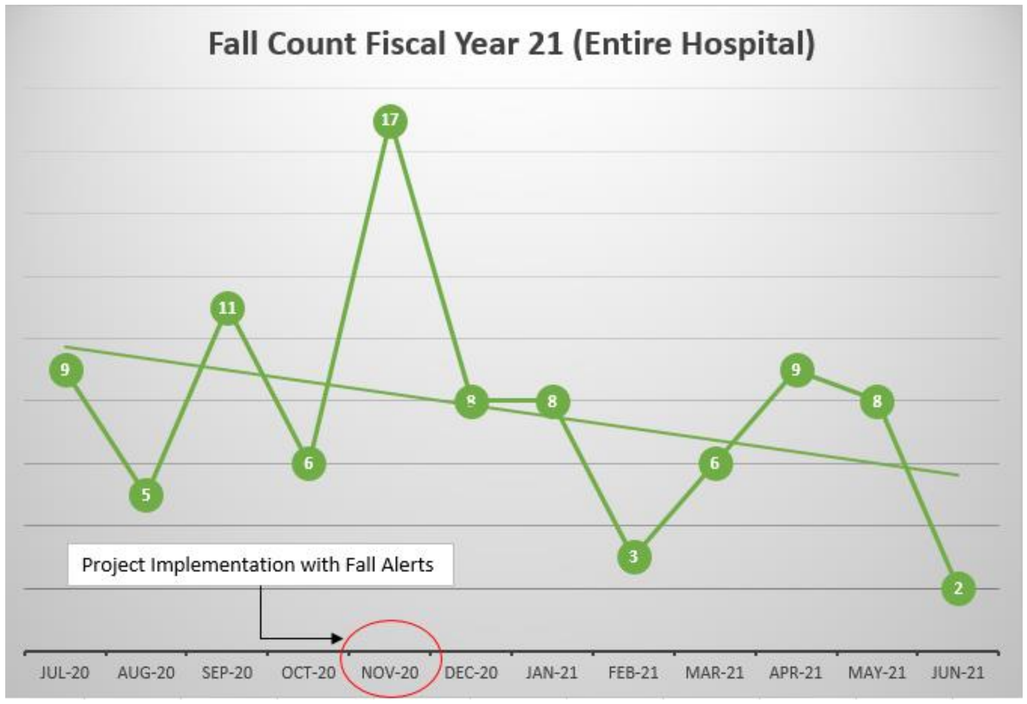
Measure

Measures included: Raw Fall Numbers; Falls per 1,000 patient days, preventable falls and falls originating from the bed

Plan



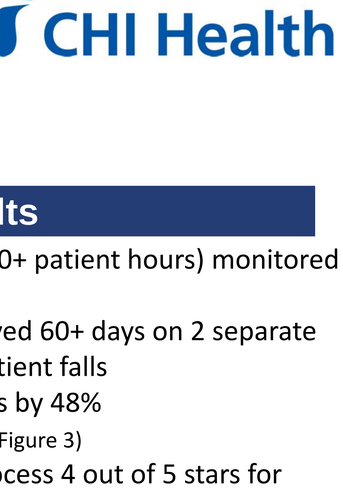
- Reviewed research regarding AI technology for fall reduction/patient safety
- Provided introductory education/timeline to staff at department meetings
- Instillation: AI cameras with patient anonymizing capabilities were installed in all patient rooms in both study units (Figure 2)
- Monitoring – cameras monitored patient movements for 3 months to build baseline algorithms
- Prior to alert implementation further education given to staff at annual skills day.
- Patients consented/informed of study participation prior to camera activation
- List of rooms being monitored and sensor settings reviewed frequently to ensure accuracy
- Excessive alerts reviewed for accuracy/algorithms adjusted as needed
- Any falls- video footage reviewed/drilled down for opportunities
- Camera/sensors allowed for additional safety measures (easier monitoring for COVID isolation patients)
- Fall videos showed at staff meetings as educational opportunities



Results

- Over 1500 patients (10,000+ patient hours) monitored during study
- Med-Surg pilot unit achieved 60+ days on 2 separate occasions without ANY patient falls
- Decrease in bed origin falls by 48%
- 24% decrease in ALL falls (Figure 3)
- Nurses gave AI system/process 4 out of 5 stars for usefulness in fall prevention
- Process rollout and implementation significantly complicated by COVID-19 pandemic.
    - Increase number of patients- especially those with high acuity
    - Increased complexity of staff training
    - Increased number of isolation patients – prevented ability to monitor savings of using AI vs staff to sit at bedside with confused patients.
- Current data shows 13.4 falls prevented and over $291,000 saved in post fall cares

Figure 3



Next Steps

- Data extrapolation allowed for advancement to chair exit alerts- December 2021
- Continued data collection and monitoring post pandemic
- Explore possibility of Intensive Care/Emergency Department implementation
- Project recently expanded to final inpatient unit.

Team

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