North America FFN Regional Congress
Oct 22, 2024

Balance outcomes after a fragility fracture with a 6-week exercise and education intervention in adults 50-65

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Purpose: This study evaluates whether balance improves after a fragility fracture with a 6-week exercise and education intervention.
Methods: People with a distal radius fracture (DRF) between the age of 50-65 were recruited from the community. Participants were randomized into the Hands Up Program, a 6-week, twice weekly exercise and education program, or usual care. Balance was assessed using the Short Physical Performance Battery (SPPB): 4 meter walk, 5 time sit to stand, tandem stand and timed up and go (TUG). The maximum score on the SPPB is 16 points with a higher score better. Statistical significance was determined with ANOVA, $p<0.05$.
Results: There was a total of 66 participants (89%F). The mean age of the participants was 62 with a standard deviation (SD) of 3.5 years. The 4-meter walk at baseline was 3.2 sec (SD 0.7), 6 weeks was 3.0 (SD 0.59, not significant (NS)). The 5 times sit to stand was 12.3 sec (SD 3.7, NS) at baseline, and 11.2 (SD 2.81, NS) at 6 weeks. The TUG test at baseline was 8.1 sec (SD 1.8, NS), and at 6 weeks it was 7.80 (SD 1.82, NS). The tandem stand was 9.7 sec (SD 1.1, NS), and 9.51 (SD 1.6, NS) at 6 weeks. The SPPB was 10.89 (SD 1.0, NS) at baseline, and 11.15 (SD 1.0, NS) at 6 weeks.
Conclusion: Although test scores trended towards improvement, none were significant. Possible reasons are a no real effect, a small sample or that these tests developed for older adults.

Implementation of a Multicomponent Bedside Sign to Reduce Delirium in Orthopedic Inpatients: a Quality Improvement Project

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Aims: Delirium commonly and adversely affects orthopedic inpatients. Multicomponent, non-pharmacological interventions reduce delirium occurrence, but are challenging to implement in routine care. This third phase of a quality improvement (QI) project evaluates a multi-purpose bedside sign designed to prompt staff to implement the six components of the Hospital Elder Life Program (HELP), with the goal of reducing delirium prevalence.
Methods: Signs were installed beside 15 orthopedic beds at a single academic hospital in Hamilton, Ontario, Canada from December 1, 2022 to August 1, 2023. The QI model of PDSA cycles involved audits, surveys, informal interviews, and educational sessions to evaluate and

optimize sign design and utilization by staff. Delirium prevalence was determined through retrospective chart review using a validated tool.

Results: Sign completion rate stabilized at 69.2% over the 8-month study period. Of 141 charts reviewed, there was a non-significant reduction in delirium prevalence from 30.6% to 22.8% (p=0.390) comparing pre- and post-installation. Mean implementation rate of hearing-related prompts was 90.7% (86.2%-95.2%; 95% confidence interval [CI]), and 79.7% (75.2%-84.3%; 95% CI) for vision-related prompts. Staff and care partners were supportive of the sign and reported it was useful for providing care and improving communication. The proportion of staff-reported "excellent" delirium prevention knowledge improved from 19.2% to 29.6% (p=0.016).

Conclusion: We integrated a bedside tool to prompt non-pharmacological delirium prevention strategies. Although reduction in delirium was not significant, the sign is a feasible and well-received tool in the care of orthopedic older adults, with great potential for adaptation across care settings.

Population Health Approaches to Orthopaedic Care: Early Results from a Collaborative Equity-Conscious Fragility Fracture Care Program

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Aims: Orthopaedic care increasingly recognizes the importance of population health and equity-conscious approaches as critical in managing fragility fractures via measures like fall prevention and osteoporosis treatment. This study presents early results from our institution's Fragility Fracture Care Program.

Methods: This retrospective cohort study includes operative hip fracture patients from July 2023 to March 2024. Patients were part of a prospective 6-domain care program comprised of strengthening, bone health counseling, post-operative care coordination and comorbid condition control. Additionally, patients were screened for health-related social needs (HRSNs). Positive screenings were referred to supportive services.

Results: Our study included 162 operative hip fracture patients. Patient's racial/ethnic background was: 77.7% White, 3.1% Asian, 17.3% Black, and 2.5% Hispanic. 20.4% patients had received bisphosphonate treatment prior to their fracture. Of the total participants, 52.5% and 7.4% were referred to endocrinology and the On the Move fall prevention program, respectively. 73.5% of patients were screened for HRSNs, and 5.9%, 4.2%, 3.4%, and 16.8% screened positive for food, transportation, housing, and financial insecurity risk, respectively. Of these, 25.0% of patients were subsequently referred to supportive services via a Medicaid Waive in our state. In this cohort, 11.1% of participants returned to the ED within 30-days post-op.

Conclusion: Early program results demonstrate high referral rates to our bone health clinic, a notable prevalence of social needs, and a high 30-day return to ED rate. Future analysis will assess the program's long-term effects on secondary fracture prevention and the influence of social determinants on hip fracture outcomes.

Outcome Comparison in an Ortho-Geriatric Co-Management Program at an Academic Medical Center

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Aims: To evaluate outcomes of a co-management care model between orthopedics and geriatrics for older adults with hip fractures and compare these to benchmarks from the International Geriatric Fracture Society (IGFS).
Methods: A retrospective chart review was conducted for patients at our institution with operative hip fractures during 2023. Inclusion criteria: age > 65, isolated hip fracture repair, and low energy fractures. 199 patients met the criteria.
Results: Time to Surgery (TTS): MGH patients averaged 17.3 hours, faster than the national average (36 hours) and IGFS benchmark (23.49 hours). Length of Stay (LOS): MGH patients averaged 5.4 days, shorter than the national average (6.4 days) but longer than the IGFS benchmark (4.91 days). 30-day Readmission Rates: MGH had a 14.40% readmission rate, similar to the national average (14.5%) but higher than the IGFS benchmark (11.03%). In-Hospital Mortality: MGH's rate was 1.50%, better than the national average (3.10%) and similar to the IGFS benchmark (1.53%). 30-Day Mortality Rates: MGH's rate was 2.5%, lower than the national average (10%) and close to the IGFS benchmark (2.91%). Osteoporosis Education: 93.5% of MGH patients received education, compared to 15% nationally and 93% within IGFS.
Patient Co-Management: MGH had a 97% co-management rate, surpassing the national average (50%) and aligning with the IGFS benchmark (96.67%).
Discussion: The data show significant improvements compared to national averages and close alignment with IGFS benchmarks, underscoring the effectiveness of our co-management model and identifying areas for further enhancement in geriatric hip fracture care.

Closing the Osteoporosis Care Gap: A Pharmacy-Led Initiative to Increase Anti-Resorptive Therapy Prescribing for Patients Admitted with Fragility Fractures

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Aim: Few patients receive anti-osteoporosis medications following their first fragility fracture. We developed a quality improvement initiative to increase the number of patients admitted with fragility hip fracture (who were not on treatment prior to their admission) that received anti-osteoporosis medications.
Methods: This was a single-centre interrupted time series analysis. The pre-intervention phase was from October 1, 2019 to March 31, 2021; the intervention phase was from October 1, 2022 to November 30, 2023. We developed a medical directive that enabled pharmacists to prescribe zoledronic acid to eligible patients. Pharmacists work through a simple algorithm to determine eligibility. Patients were eligible if admitted with a fragility hip fracture and did not meet any exclusion criteria: palliative; received anti-osteoporosis treatments in the last year; history of atypical femur fracture/osteonecrosis of the jaw; bisphosphonate allergy; chronic kidney disease; or hypocalcemia. The primary outcome was the proportion of eligible patients

that received anti-resorptive therapy before discharge. Change in proportion of treated patients (comparing intervention to pre-intervention) was assessed using a univariate chi-squared test.
Results: The pre-intervention prescribing rate of anti-osteoporosis medications was 12% (23/186 eligible patients). During the intervention phase, 82 patients were identified (43 were eligible). Their median age was 83 years. They were predominantly female (79%; n=34). The rate of anti-resorptive therapy prescribing increased to 37% (n=16, X^2=15.3, p<0.001) after our intervention. No adverse events were documented.
Conclusion: This intervention can increase anti-osteoporosis medication prescribing and may reduce recurrent osteoporotic fractures. Future studies should evaluate if this intervention can be scaled.

Gender Score Development and Treatment Outcomes in Fragility Fracture Patients Screened Through Ontario's Fracture Screening and Prevention Program (FSPP)

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Aim: To create and validate a gender score using FSPP data and to assess its association with treatment outcomes (medication prescription and initiation) in patients at high risk for future fracture.
Methods: A retrospective cohort study was conducted using FSPP data from June 1, 2017, to June 30, 2023. A gender score was derived using propensity scoring, with sex as the dependent variable in a multivariable logistic regression model. The study assessed associations between the gender score and treatment outcomes using multivariable logistic regression.
Results: Of 45,135 patients screened, 19,278 had complete data. Seven of eight gender-related variables showed associations with sex. Higher gender scores (indicating feminine characteristics) were associated with an 8% higher likelihood of receiving a medication prescription.
Conclusion: Considering gender-related variables in secondary fracture prevention programs provides insights for tailored interventions to address diverse patient needs and improve outcomes.

Inpatient Fracture Liaison Service Evaluation Improves Rates of Bone Health Intervention and Outpatient Follow-Up for Operative Fragility Femur Fractures

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Aim: To evaluate the efficacy of an inpatient Fracture Liaison Service (FLS) in improving clinical outcomes, bone health intervention rates, and outpatient follow-up in fragility femur fracture patients.

Methods: A retrospective review was conducted for patients ≥50 years undergoing operative fixation for fragility femur fractures (January 2021–June 2022). Patients with and without FLS consults were compared for interventions, DXA acquisition, and complications within 1 year.
Results: Among 233 patients, FLS consults were associated with higher rates of Vitamin D (94.8% vs. 54.1%), calcium (86% vs. 40%), and protein supplementation (68.7% vs. 38.8%), as well as DXA acquisition (48.7% vs. 14.1%) and outpatient follow-up (54.1% vs. 17.1%) (all *p*<0.001). Complication rates were similar between groups.
Conclusion: FLS evaluation significantly increased bone health interventions and follow-up but did not impact complication rates within one year.

Secondary Prevention Practices of Osteoporosis in Hospitalized Older Adults with Vertebral Compression Fractures: A Missed Opportunity

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Aim: To evaluate secondary prevention practices of osteoporosis in hospitalized older adults with vertebral compression fractures (VCFs).
Methods: Retrospective review of adults aged ≥65 years hospitalized for new osteoporotic VCFs (June–November 2021). Data included demographics, VCF management, and secondary prevention practices during hospitalization and discharge.
Results: Among 100 patients, 75% were female, average age 83.6 years. Interventions included physical therapy (90%), pain management (88%), and TLSO bracing (47%). Only 8.1% and 6.6% were initiated on vitamin D and calcium, respectively. Documentation of osteoporosis and follow-up referrals were rare.
Conclusion: Significant gaps in osteoporosis identification and management during hospitalization highlight a missed opportunity for fracture prevention and care optimization.

Intermediate Intramedullary Nails for Proximal Femoral Fractures Provide Shorter Operative Times with Comparable 90-Day Outcomes to Long Intramedullary Nails

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Aim: To compare clinical outcomes of intermediate (iIMN) vs. long intramedullary nails (lIMN) for hip fractures.
Methods: Retrospective analysis of patients ≥50 years treated with iIMN (200–235mm) or lIMN (>235mm) from January 2018 to March 2024. Outcomes included operative time, mortality, and reoperation within 90 days.

Results: Among 143 patients (107 iIMN, 36 lIMN), operative time was shorter for iIMN (71.1±19.5 min vs. 110±42.3 min, *p*<0.001). No differences in 90-day mortality or reoperation rates were observed.
Conclusion: iIMN fixation achieves shorter operative times with comparable outcomes to lIMN in proximal femoral fractures.

Impact of Early Discharge on Postoperative Outcomes in Elderly Distal Femur Fracture Patients: A Retrospective ACS NSQIP Analysis

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Aim: To evaluate postoperative outcomes associated with early discharge among elderly distal femur fracture patients.
Methods: The ACS NSQIP database was analyzed for elderly patients treated surgically for distal femur fractures (2015–2021). Patients were stratified by actual vs. predicted length of stay (LOS), and outcomes were compared.
Results: Among 3,956 patients, discharge up to 1.5 days earlier than predicted correlated with fewer complications and lower mortality. Excessively early discharge was not associated with improved outcomes.
Conclusion: Tailored discharge planning based on readiness may enhance recovery and resource use in elderly distal femur fracture patients.

Trends in Postoperative Opioid Prescription for Distal Radius Fracture Open Reduction Internal Fixation in Patients Over 60-Years-Old

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Aims: To analyze postoperative opioid prescription trends for distal radius fractures (DRF) treated with open reduction internal fixation (ORIF) from 2011–2024 in patients over 60-years-old.
Methods: Included 217 patients who received at least one opioid prescription post-DRF ORIF. Patients with opioid prescriptions filled within one year preoperatively or under 60 years old were excluded. Opioids were converted to milligram morphine equivalents (MME) for analysis. Statistical methods included descriptive statistics, Chi-squared tests, t-tests, Mann-Whitney, ANOVA, Spearman, and Pearson correlations.
Results: The average discharge prescription was 192.6±136.9 MME, with a median duration of 4 days. Oxycodone was the most common prescription (37.3%). There was no significant difference in sex, age, or discharge MME/day among those obtaining refills. A weak negative correlation was observed between admission year and discharge MME/day (r=-0.15; p=0.025).
Conclusions: Postoperative opioid prescriptions (MME/day) have declined over the past 13 years. However, continued focus on opioid stewardship remains crucial.

Surgical vs. Conservative Management of Frail Older Adults with Osteoporotic Closed Humeral Fractures

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Aims: To compare complication rates, length of stay (LOS), and readmission rates between surgical and conservative management among older adults with osteoporotic closed humeral fractures.
Methods: A retrospective analysis of 5728 patients aged ≥75 admitted with osteoporotic closed humeral fractures (2020–2023). Patients were grouped into surgical management (n=394) or conservative management (n=5334). Exclusions included pathologic or open fractures, severe trauma (ISS >15), and axillary nerve palsy. Variables included frailty (Johns Hopkins ACG score), mobility, BMI, fracture type, race, and payor type.
Results: Surgical management resulted in fewer 30-day readmissions (OR 0.615; CI [0.458–0.826]). Frailty was associated with surgical complications (OR 1.168; p=0.0215). Surgical patients experienced longer LOS (p<0.0001).
Conclusions: Surgical management reduces readmission rates but is linked to longer LOS and higher complication risk for frail patients.

Differences in Nutrition Supplementation Effects on Complications and Muscle Loss After Trauma Based on Injury Type

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Aims: To assess the influence of conditionally essential amino acid (CEAA) supplementation on body composition and complications after orthopedic trauma.
Methods: This was a secondary analysis of RCT data on CEAA supplementation, stratified by injury type: open fractures/polytrauma (OF/PT), fragility fractures (FFx), and isolated fractures (IFx). Fat-free mass (FFM) was measured at baseline, 2, 6, and 12 weeks, with complications tracked for one year.
Results: FFx patients lost more FFM at 12 weeks (-1.68±0.68kg; p=0.015). CEAA supplementation reduced non-union risk in OF/PT patients (RR=0.42; p=0.044) and mortality risk in FFx patients (RR=0.86; p=0.027). Complication rates and muscle loss were highest in FFx and OF/PT patients.
Conclusions: CEAA supplementation benefits high-risk fracture types, reducing mortality and complications in fragility fractures.

Assessing Impact of Gabapentin in Combination with High-Risk Medication on Delirium Rates in Geriatric Trauma Patients

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Aims: To evaluate the impact of gabapentin on delirium rates and hospital length of stay (HLOS) in geriatric trauma patients.
Methods: A retrospective review was conducted on trauma patients >65 years old on gabapentin, with or without other high-risk medications (e.g., benzodiazepines,

tramadol, diphenhydramine). Delirium was measured using the bCAM test, and HLOS was tracked.
Results: Gabapentin combined with high-risk medications increased delirium risk (RR=2.1; p=0.042). Patients on gabapentin had longer HLOS (6.9 vs. 6.2 days; p=0.045).
Conclusions: Gabapentin use in combination with high-risk medications elevates delirium risk and prolongs HLOS in older adults.

Factors Associated with Prolonged Length of Stay After Hip Repair in Patients Who Experienced a Fragility Fracture

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Aims: To identify factors associated with prolonged length of stay (pLOS) after hip fracture surgery in patients with fragility fractures.
Methods: A retrospective analysis of 274 patients who underwent operative management for hip fractures (2021–2025). Patients with LOS >6 days were classified as pLOS. Variables included demographics, insurance, fracture type, delirium, and care team involvement.
Results: pLOS was associated with Black race ($p<0.0001$), age >80, Medicare Advantage insurance, and delirium. Geriatrician involvement reduced LOS in patients >80 (7.8 vs. 12.6 days; $p<0.05$).
Conclusions: Reducing pLOS requires addressing demographic disparities, improving care coordination, and incorporating geriatric care for older patients.

Canadian Inpatient Orthogeriatric Models of Care: A Mixed Methods Survey of Facilitators and Barriers

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Background: Fragility fractures are a significant issue among older adults, often caused by falls. Orthogeriatric models of care (OGPs) have been shown to reduce mortality and morbidity, but these programs are not standardized across Canada. This study aimed to identify the facilitators and barriers to the implementation of OGPs across the country.
Methods: Data was collected through an email survey sent to all Canadian Geriatric Society (CGS) members between April 1 and May 1, 2021. The survey included 15 questions, and data analysis was performed using Qualtrics XM software.
Results: A total of 62 CGS members responded, representing nine provinces and territories. The majority were physicians from academic centers. 77% of respondents reported that their sites had an OGP, often involving automatic or optional geriatrician consults. 23% indicated that no formal OGP existed, but many had alternative services in place, such as internal medicine consultations for older adults with fragility fractures. Clinical leadership was seen as the most important factor for establishing an OGP, while the main barriers identified were lack of hospital prioritization and funding.
Conclusions: The survey found that the success of OGPs depends on clinical leadership, hospital prioritization, and available funding. Limitations of the study

include a lower response rate and a respondent pool that was largely from academic centers in Ontario. Additional data from other specialties, such as orthopedics, and greater representation from community hospitals would be helpful in understanding further barriers and facilitators.

Reducing Future Fracture Risk After High-Trauma Fracture in Older Adults

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Aim: This study aimed to describe the current landscape of fracture risk assessments for older adults who experience high-trauma fractures at a Level 1 Trauma Center in Canada.
Methods: A retrospective chart review was conducted for adults aged 70 and older who were admitted to the hospital with a high-trauma fracture (hip, spine, pelvis, or extremities) between January 1 and December 21, 2022. The study reviewed the identification of bone health assessments, related investigations, and pharmacotherapy.
Results: Out of 77 patients analyzed, 51.9% had their bone health assessment identified, 9.1% completed fracture risk assessments, and 36.4% were recommended for a bone density scan. Despite comprehensive testing (e.g., calcium, phosphate, creatinine), there were lower rates of thyroid stimulating hormone (TSH) and vitamin D testing. Geriatrics consultation was linked to higher identification of bone health needs and lab testing, whereas no fracture risk assessments were conducted in patients without geriatrics consultation.
Conclusions: The study revealed that many older adults with high-trauma fractures do not receive adequate fracture risk assessments or associated work-up during hospitalization. Geriatrics consultation was associated with improved bone health management. However, data was insufficient to fully assess the risk of future fractures.