International Platform of Registered Systematic Review and Meta-analysis Protocols

INPLASY

Orthogeriatric co-management versus usual orthopedic care for elderly patients with hip fracture: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None. Institutional support only.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 May 2026 and was last updated on 27 May 2026.

INTRODUCTION

Review question / Objective To determine whether orthogeriatric co-management, compared with usual orthopedic care alone, reduces 30-day and 1-year mortality and improves postoperative outcomes (length of stay, delirium, complications, functional recovery, discharge to home) in elderly patients aged ≥60 years undergoing surgery for hipfracture.

Rationale Hip fracture is a common and severe injury in the elderly population, with high 1-year mortality (20–30%) and substantial functional decline. Orthogeriatric co-management (OGM) has been widely adopted internationally, yet its impact on hard outcomes remains debated — particularly whether different OGM models (geriatrician-led vs. shared-care) produce different results. Several recent large-scale comparative studies and new RCTs have been published since the last major systematic reviews, warranting an updated quantitative synthesis to inform clinical practice guidelines.

Condition being studied Hip fracture in elderly patients; postoperative outcomes after orthogeriatric co-management.

METHODS

Search strategy - PubMed (searched: 2026-05-24; updated: 2026-05-27)
- Embase (via institutional access)
- Cochrane CENTRAL
- Web of Science Core Collection
- ClinicalTrials.gov
- WHO ICTRP
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PubMed Search Strategy (primary):
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("Hip Fractures"[MeSH] OR "hip fracture"[tiab] OR "hip fractures"[tiab] OR "femoral neck fracture"[tiab] OR "intertrochanteric fracture"[tiab] OR "subtrochanteric fracture"[tiab] OR "pertrochanteric fracture"[tiab]) AND ("Geriatric Assessment"[MeSH] OR "Patient Care

Team"[MeSH] OR orthogeriatric*[tiab] OR "geriatric co-management"[tiab] OR "comprehensive geriatric assessment"[tiab] OR "geriatric consultation"[tiab] OR "multidisciplinary team"[tiab] OR "interdisciplinary team"[tiab] OR "multidisciplinary care"[tiab] OR "shared care"[tiab] OR "integrated care"[tiab] OR "collaborative care"[tiab] OR "orthopaedic geriatric"[tiab] OR "orthopedic geriatric"[tiab]) AND ("randomized controlled trial"[pt] OR "controlled clinical trial"[pt] OR randomized[tiab] OR randomised[tiab] OR trial[tiab] OR groups[tiab]) NOT ("animals"[mh] NOT "humans"[mh])
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Language Restrictions:English and Chinese

Date Restrictions:Database inception to May 2026.

**Participant or population** Adults aged 60 years and older with surgically treated low-energy hip fracture (femoral neck, intertrochanteric, or subtrochanteric fracture). Studies including high-energy trauma, pathological fractures, or non-operative management were excluded unless data for fragility fractures could be separately extracted.

**Intervention** Orthogeriatric co-management (OGM), defined as a structured care model in which a geriatrician routinely participates in the management of hip fracture patients. Acceptable models include: geriatrician-led orthogeriatric units, shared-care models with daily or regular geriatric ward rounds, and routine comprehensive geriatric assessment (CGA) with geriatrician follow-up. Studies evaluating single-component interventions (e.g., nutrition supplementation alone, physiotherapy alone) without an overarching co-management structure were excluded.

**Comparator** Usual orthopedic care, defined as standard management on an orthopedic ward without routine geriatrician involvement.

**Study designs to be included** Randomized controlled trials (RCTs), quasi-randomized trials, and comparative cohort studies (prospective and retrospective) with a contemporaneous control group. Case series, before-after studies without a parallel control group, and cross-sectional studies were excluded.

**Eligibility criteria** Inclusion criteria:
- Adults aged ≥60 years
- Low-energy (fragility) hip fracture (femoral neck, intertrochanteric, subtrochanteric)
- Surgically treated (internal fixation, hemiarthroplasty, total hip arthroplasty)
- Orthogeriatric co-management with routine geriatrician participation
- Comparator: usual orthopedic care without routine geriatrician involvement
- Study designs: RCTs, quasi-randomized trials, comparative cohort studies with contemporaneous control
- Languages: English, Chinese

Exclusion criteria:
- High-energy trauma, pathological fractures, non-operative management
- Single-component interventions without overarching co-management structure
- Case series, before-after studies without parallel control group, cross-sectional studies
- Conference abstracts only, reviews, editorials.

**Information sources** PubMed (MEDLINE), Embase (via Elsevier), Cochrane Central Register of Controlled Trials (CENTRAL), Web of Science Core Collection, ClinicalTrials.gov, and WHO International Clinical Trials Registry Platform (ICTRP). All databases were searched from inception to May 2026. No restrictions on publication date. Languages limited to English and Chinese.

**Main outcome(s)** Primary outcomes: 30-day mortality and 1-year mortality.
Secondary outcomes: in-hospital mortality, length of hospital stay, postoperative delirium, postoperative complications (pneumonia, DVT/PE, pressure ulcer, UTI, cardiac events), osteoporosis treatment initiation rate, 30-day readmission rate, functional recovery (Barthel Index, Parker Mobility Score, or equivalent), and discharge to pre-fracture residence.

**Data management** Two reviewers independently extracted data using a standardized piloted Excel form. Discrepancies were resolved by discussion or by a third reviewer. Extracted data included study characteristics, population characteristics, intervention details, and outcome data. All extracted data are stored in CSV format with version control. Authors were contacted for missing data when feasible.

**Quality assessment / Risk of bias analysis** Two reviewers independently assessed risk of bias. Randomized controlled trials were evaluated using the Cochrane Risk of Bias 2 (RoB 2) tool. Non-randomized studies were assessed using the ROBINS-I tool (Risk of Bias in Non-Randomized Studies of Interventions). Cohort studies were additionally evaluated with the Newcastle-Ottawa Scale (NOS).
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Disagreements were resolved through discussion or by a third reviewer. The GRADE (Grading of Recommendations Assessment, Development and Evaluation) framework was used to rate the certainty of evidence for each outcome.

Strategy of data synthesis Effect measures: Risk ratios (RR) with 95% confidence intervals for binary outcomes; mean differences (MD) or standardized mean differences (SMD) with 95% CI for continuous outcomes.
Meta-analysis model: Random-effects model using restricted maximum likelihood (REML) estimator with Hartung-Knapp-Sidik-Jonkman (HKSJ) adjustment. Mantel-Haenszel method for binary outcomes. Two-sided $P < 0.05$ considered statistically significant. Heterogeneity: I^2 statistic with Cochran's Q test. $I^2 > 50\%$ explored through pre-specified subgroup and sensitivity analyses.
Subgroup analyses (pre-specified): OGM model type (geriatrician-led vs. shared-care vs. consultation-only), study design (RCT vs. observational), patient age (<80 vs. ≥80 years), geographic region (Europe vs. North America vs. Asia), publication era (2015–2020 vs. 2021–2026).
Sensitivity analyses: leave-one-out analysis, restriction to low risk-of-bias studies, restriction to prospective studies only, fixed-effect model, exclusion of small studies (n < 100).
Publication bias: Funnel plot and Egger's test for outcomes with ≥10 studies; trim-and-fill adjustment if asymmetry detected.
Software: R (version 4.6.0) with meta and metafor packages; RevMan 5.4.

Subgroup analysis 1. OGM model type: geriatrician-led vs. shared-care vs. consultation-only 2. Study design: RCTs vs. observational studies 3. Patient age: <80 years vs. ≥80 years 4. Geographic region: Europe vs. North America vs. Asia 5. Publication era: 2015–2020 vs.2021–2026.

Sensitivity analysis
1. Leave-one-out analysis (removing each study one at a time)
2. Restriction to studies with low risk of bias (RoB 2 low concerns / ROBINS-I low/moderate)
3. Restriction to prospective studies only
4. Fixed-effect model as alternative to random-effects
5. Exclusion of small studies (n < 100).

Language restriction English and Chinese.

Country(ies) involved China.

Keywords hip fracture; orthogeriatric co-management; geriatric assessment; multidisciplinary team; comprehensive geriatric assessment; mortality; meta-analysis; systematic review.

Dissemination plans The results of this systematic review and meta-analysis will be submitted for publication in a peer-reviewed orthopaedic or geriatric medicine journal. Findings will also be presented at relevant national and international conferences (e.g., Fragility Fracture Network Global Congress, national orthopaedic association meetings). A plain-language summary will be prepared for dissemination to clinical stakeholders and patient advocacy groups.

Contributions of each author
Author 1 - Xing Lu - Xing Lu (Principal Investigator): Study conception and design, development of search strategy, literature screening, data extraction, risk of bias assessment, statistical analysis, interpretation of results, and manuscript drafting.
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Author 2 - Xin Dong - Independent dual screening of titles, abstracts, and full texts; independent dual data extraction; critical revision of the manuscript.
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