1. **I/A Appropriateness Criteria**

   **Objective:** We used a modified version of validated appropriateness criteria to determine the prevalence rates of total knee arthroplasty (TKA) for surgeries that were classified as appropriate, inconclusive or inappropriate. Based on prior evidence, we hypothesized that the prevalence of TKA surgeries classified as inappropriate would approximate 30%. Methods: The appropriateness classification system was adapted for use on persons undergoing TKA in the Osteoarthritis Initiative (OAI) database. A variety of pre-operative data were used including WOMAC Pain and Physical Function scores, radiographs and knee-motion and body measurements and age. Prevalence rates for classifications of appropriate, inconclusive and inappropriate were calculated. Results: From 205 persons with TKA were examined. The prevalence rate was 64.0% (95% CI = 57, 71) for classifications of appropriate, 21.7% (95% CI = 16, 28) for inconclusive classifications and 34.3% (95% CI = 27, 41) for inappropriate classifications. Conclusion: Approximately a third of TKA surgeries were judged to be inappropriate.

2. **Validation study for short form of HOOS and KOOS**

   **Objective:** The prevalence of total knee replacement on quality of life in people with knee osteoarthritis and to estimate associated differences in lifetime costs and quality adjusted life years (QALYs) according to use by level of symptoms. Design: Marginal structural modeling and cost effectiveness analysis based on lifetime predictions for total knee replacement and death from population based cohort data. Setting: Data from two studies-Osteoarthritis Initiative (OAI) and the Multicenter Osteoarthritis Study (MOST) within the US health care system. Participants: 3946 participants with or at high risk for knee osteoarthritis aged 45-79 from the OAI with no previous knee replacement (confirmed by baseline radiographs) followed up for 7 years. Validation cohort comprised 2007 patients from MOST with two year follow-up Intervention: Surveys ranging from current practice, defined as total knee replacement practice as performed in the OAI (with/without prior total knee replacement) and the KOOS-PS and KOOS-PS specific for the quality of life measured over 6 months. Results: The SRM was 1.5, 1.7 and 1.7 for the HOOS-PS, KOOS-PS, PF and PF-exclusions and hypothesized to be >1. Standardized response means (SRMs) were calculated for the HOOS-PS, KOOS-PS and PF-exclusions and subjects with fatigue, CPG, anxiety and depression and KOOS/KOOS pain scales would differ by magnitudes of <0.1. Based on prior evidence, we hypothesized that the prevalence of TKA surgeries classified as inappropriate would approximate 30%. Study applies appropriateness criteria previously developed by Escobar and colleagues to estimate "appropriate" total knee arthroplasty in US. Study has a population perspective and does not include patient comorbidities in an assessment of appropriateness.
BACKGROUND: Patient-reported outcome measures (PROMs) are increasingly in demand for outcomes evaluation by hospitals, administrators, and policymakers. However, assessing total hip arthroplasty (THA) through such instruments is challenging because most existing measures of hip health are lengthy and/or proprietary.

**QUESTIONS/PURPOSES:** The objective of this study was to derive a patient-relevant short-form survey based on the hip disability and Osteoarthritis Outcome Score (HOOS), focusing specifically on outcomes after THA.

**METHODS:** We retrospectively evaluated patients with hip osteoarthritis who underwent primary unilateral THA and who had completed preoperative and 2-year postoperative PROMs using our hospital's hip replacement registry. The 2-year followup in this population was 85% (938 of 1131 patients). Of these, 2371 completed every item on the HOOS before surgery and at 2 years, making them eligible for the formal item reduction analysis. Through semistructured interviews with 30 patients, we identified items in the HOOS deemed qualitatively most important to patients with hip osteoarthritis. The original HOOS has 40 items, the four quality-of-life items were excluded a priori, five were excluded for being redundant, and one was excluded based on patient-relevance surveys. The remaining 30 items were evaluated using Rasch modeling to yield a final six-item HOOS, Joint Replacement (HOOS, JR), representing a single construct of "hip health." We calculated HOOS, JR scores for the Hospital for Special Surgery (HSS) cohort and validated this new score for internal-consistency, external validity (versus HOOS and WOMAC domains), responsiveness to THA, and floor and ceiling effects. Additional external validation was performed using calculated HOOS, JR scores in collaboration with the Function and Outcomes Research for Comparative Effectiveness in Total Joint Replacement (FORCE-TJR) nationally representative joint replacement registry (n = 910).

**RESULTS:** The resulting six-item PROM (HOOS, JR) retained items only from the pain and activities of daily living as a substitute of the longer 42-question instrument. This study supports the use of a 6 question abbreviated form, HOOS Jr, in a cohort who underwent primary unilateral THA for osteoarthritis at a single medical center. The results of the abbreviated form correlated well with the longer instrument.

This is a retrospective validity study comparing the full HOOS survey with an abbreviated form, HOOS Jr, in a cohort who underwent primary unilateral THA for osteoarthritis at a single medical center. The results of the abbreviated form correlated well with the longer instrument.

**This study supports the use of a 6 question abbreviated version emphasising pain and activities of daily living as a substitute of the longer 40 question survey.**
Invalidation study comparing PROMIS methods to validated, existing measures of self-reported physical, mental, and social health with good reliability. Test cohort reflected demographics proportional to US population, not individual subpopulations.

Validates the PROMIS tool to measure patient-related outcomes.

The Visual Analogue Scale (VAS), Numerical Rating Scale (NRS), Verbal Rating Scale (VRS), and the Faces Pain Scale-Revised (FPS-R) are among the most commonly used measures of pain intensity in clinical and research settings. Although evidence supports their validity as measures of pain intensity, few studies have compared them with respect to the critical validity criteria of responsivity, and no experiment has directly compared all 4 measures in the same study. The current study compared the relative validity of VAS, NRS, VRS, and FPS-R for detecting differences in painful stimulus intensity and differences between men and women in response to experimentally induced pain. One hundred twenty-seven subjects underwent four 20-second cold pressor trials with temperature order counterbalanced across 1°C, 3°C, 5°C, and 7°C and rated pain intensity using all 4 scales. Results showed statistically significant differences in pain intensity between temperatures for each scale, with lower temperatures resulting in higher pain intensity. The order of responsivity was as follows: NRS, VAS, VRS, and FPS-R.

The Numerical Rating Scale was most responsive and sensitive to gender differences. It supports the conclusion that the Numerical Rating Scale was equivalent to other pain intensity rating scales.
OBJECTIVE: To examine the relation of radiographic features of osteoarthritis to knee pain in people with knees observed from before disease onset to diagnosis.

DESIGN: Within-person, knee matched, case-control study.

SETTING AND PARTICIPANTS: Participants in the Multicenter Osteoarthritis Study and Framingham Osteoarthropathy Study who had knee radiographs and assessments of knee pain.

MAIN OUTCOME MEASURES: Association of each pain measure (frequency, consistency, and severity) with radiographic osteoarthritis, as assessed by Kellgren and Lawrence grade (0-4) and osteophyte and joint space narrowing grades (0-3) among matched sets of two knees within individual participants whose knees were discordant for pain status.

RESULTS: 444 people from MOST and 516 people from Framingham were included. Kellgren and Lawrence grades were strongly associated with frequent knee pain for example, for Kellgren and Lawrence grade 4 it is 97% (95% confidence interval 84 to 100) in MOST and 73% (64 to 81) in Framingham (both P<0.001 for trend). Similar results were also seen for the relation of Kellgren and Lawrence scores to consistency and severity of knee pain. Joint space narrowing was more strongly associated with each pain measure than were osteophytes.

CONCLUSIONS: Using a method that minimizes between-person confounding, this study found that radiographic osteoarthritis and individual radiographic features of osteoarthritis were strongly associated with knee pain.

This study compares three radiologic measures of hip osteoarthritis and clinical symptoms.

- Supports the utility of Kellgren-Lawrence grade on x-ray in assessing osteoarthritis of the hip.
- Supports association between KL grade and symptomatic osteoarthritis.
- Supports use of shared decision-making to avoid surgery that the patient may not desire.
- Supports the utility of Kellgren-Lawrence grade on x-ray in assessing osteoarthritis of the knee.

Objects in this study of 55 patients undergoing arthroscopic surgery of the knee for pain refer to the Kellgren-Lawrence grade.

- The study found that patients with KL grade 3 or 4 had significantly worse knee pain than those with KL grade 0 or 1.
- The study concluded that patients with KL grade 3 or 4 were more likely to require knee replacement surgery than those with KL grade 0 or 1.
- The study also found that patients with KL grade 3 or 4 had significantly worse knee function than those with KL grade 0 or 1.

In conclusion, this study suggests that the Kellgren-Lawrence grade on x-ray is a useful measure for assessing the severity of osteoarthritis and can be used to guide treatment decisions.

The study investigated the effect of using a decision aid to make joint replacement surgery at the knee the patient's decision. The study found that using a decision aid led to a significant reduction in the number of patients who underwent joint replacement surgery. This highlights the importance of using decision aids in clinical practice to ensure that patients are well-informed and have the autonomy to make decisions that align with their values and preferences.

This study highlights the importance of using decision aids in clinical practice to ensure that patients are well-informed and have the autonomy to make decisions that align with their values and preferences.
OBJECTIVES: To determine whether land-based therapeutic exercise is beneficial for people with knee OA in terms of reduced joint pain or improved physical function and quality of life.

SEARCH METHODS: Five electronic databases were searched, up until May 2013.

OUTCOME CRITERIA: All randomised controlled trials (RCTs) randomly assigning individuals and comparing groups treated with some form of land-based therapeutic exercise as opposed to exercise conducted in the water with a non-exercise group or a non-treatment control group.

DATA COLLECTION AND ANALYSIS: Three teams of two review authors independently extracted data, assessed risk of bias for each study and assessed the quality of evidence using the GRADE (Grades of Recommendation, Assessment, Development and Evaluation) approach. We conducted analyses on continuous outcomes (pain, physical function and quality of life) immediately after treatment and on dichotomous outcomes (proportion of study withdrawals) at the end of the study; we also conducted analyses on the sustained effects of exercise on pain and function (to six months, and longer than six months).

MAIN RESULTS: In total, we extracted data from 34 studies. Overall, 19 (56%) studies reported adequate random sequence generation and allocation concealment and adequately accounted for incomplete outcome data; we considered these studies to have an overall low risk of bias. Studies were largely free from selection bias, due to adequate randomisation and blinding of outcome assessment, and provided data from 454 patients. Pooled ES for pain and physical disability were 0.20 (95% CI 0 to 0.39) and 0.23 (0.04 to 0.42) at a single time point. Meta-regression analysis indicated that physical disability of patients with knee OA and overweight diminished after a moderate weight reduction regime. The analysis suggested that a weight loss of ≥5% should be achieved within a 20-week period—that is, 0.25% per week.

CONCLUSIONS: Moderate-quality evidence from RCTs indicated that exercise reduced pain by an equivalent of 4 points (95% CI 2 to 5 points). High-quality evidence from 13 studies (1073 participants) revealed that exercise improved quality of life (SMD 0.28, 95% CI 0.15 to 0.40) immediately after treatment. Quality of life was estimated at 43 points on a 0 to 100-point scale (100 indicated best quality of life). In the control group; exercise improved quality of life by an equivalent of 10 points (95% CI 3 to 13 points). Moderate-quality evidence from 35 studies (202 participants) showed that exercise improved physical function (SMD 0.52, 95% CI 0.39 to 0.64) immediately after treatment. Physical function was estimated at 38 points on a 0 to 100-point scale (0 indicated no loss of physical function) in the control group; exercise improved physical function by an equivalent of 10 points (95% CI 5 to 15 points). High-quality evidence from 35 studies (202 participants) showed that exercise improved quality of life (SMD 0.29, 95% CI 0.15 to 0.43) immediately after treatment. Quality of life was estimated at 83 points on a 0 to 100-point scale (100 indicated best quality of life) in the control group; exercise improved quality of life by an equivalent of 8 points (95% CI 2 to 5 points). High-quality evidence from 45 studies (3537 participants) indicates that exercise improved physical function and quality of life (two to six months, and longer than six months).

GRADE DATA: The overall quality of evidence was moderate. GRADE Working Group grades of recommendation are: high, moderate, low and very low. GRADE Working Group grades of evidence are: high, moderate, low and very low. GRADE Working Group grades of evidence were used for all outcomes except exercise training because it is a specialty focused on knee osteoarthritis.
Conservative Therapy; Physical Therapy; Exercise


OBJECTIVES: To determine whether use of a cane to reduce pain and improve exercise performance in patients with knee osteoarthritis. METHODS: The Medline, Psyclinfo, CINAHL, and PEDro databases and the Cochrane controlled trials register were searched for randomised controlled trials (RCTs) of subjects with knee osteoarthritis comparing accidental walking or home based quadriceps strengthening exercise with non-exercise control groups. Methodological quality of included RCTs was assessed. Outcome data were abstracted for pain and self reported disability and the effect size calculated for each outcome. RCTs were grouped according to exercise mode and the data pooled using both fixed and random effects models. RESULTS: 35 RCTs were identified, 13 of which met inclusion criteria for the meta analysis. These included 2,532 participants. There were high risks of bias regarding detection and performance bias as none of the RCTs were able to blind participants to treatment allocation, and most RCTs reported small sample sizes. Moderate-quality evidence from seven trials (715 participants) indicated an increased likelihood of withdrawal from the exercise arm (event rate 6%) compared with the control group (event rate 3%), but this difference was not significant (risk difference 1%; 95% CI -1% to 4%). Of the five studies reporting adverse events, each study reported only one or two events and all were related to increased pain attributable to the exercise programme. The reduction in pain was sustained at least three to six months after completing treatment (frequency 7%; participants per year); pain (SMD -0.38, 95% CI -0.55 to -0.20). For the five studies reporting adverse events, each study reported only one or two events and all were related to increased pain attributable to the exercise programme. The reduction in pain was sustained at least three to six months after completing treatment (frequency 7%; participants per year); pain (SMD -0.38, 95% CI -0.55 to -0.20).

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Inappropriate Nonsurgical Conservative Therapy; Acetaminophen Medications; NSAIDs vs. Placebo controlled trials. BMJ. 2015 Mar 31;350:h1225. PMID: 25828856


OBJECTIVE: To investigate the efficacy and safety of paracetamol (acetaminophen) in the management of spinal pain and osteoarthritis of the hip or knee.

DESIGN: Systematic review and meta-analysis.

DATA SOURCES: Medline, Embase, AMED, CINAHL, Web of Science, LILACS, International Pharmaceutical Abstracts, and Cranbtree Central Register of Controlled Trials from inception to December 2014.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES: Randomised controlled trials comparing the efficacy and safety of paracetamol with placebo for spinal pain (neck or low back pain) and osteoarthritis of the hip or knee.

DATA EXTRACTION: Two independent reviewers extracted data on pain, disability, and quality of life. Secondary outcomes were adverse effects, patient adherence, and use of rescue medication. Pain and disability scores were converted to a scale of 0 (no pain or disability) to 100 (severe pain or disability).

RESULTS: In total 86,081 primary TKA patients were analyzed and 65.8% had at least one treatment in the year prior to TKA. Treatments for spinal pain (neck or low back pain) and osteoarthritis of the hip or knee.

CONCLUSION: In the year prior to TKA, over half of the non-inpatient costs associated with knee OA are from injections, therapy, prosthetics, and prescriptions. Approximately 30% of this is due to TKA injections alone. If these interventions recommended by the CPG are utilized then costs associated with knee OA could be decreased by 45%.

Authors conclude that "If only interventions recommended by the CPG are utilized then costs associated with knee OA could be decreased by 45%."
BACKGROUND: Osteoarthritis (OA) is the most common form of arthritis. Published guidelines and expert opinion are divided over the relative importance of acetaminophen (also called paracetamol or Tylenol) and non-steroidal anti-inflammatory drugs (NSAIDs) as first-line pharmacologic therapy. The comparative safety of acetaminophen and NSAIDs is also important to consider. This update to the original 2003 review includes five additional RCTs. OBJECTIVES: To assess the efficacy and safety of acetaminophen versus placebo and versus NSAIDs (ibuprofen, diclofenac, naproxen, celecoxib, diclofenac, ibuprofen, diclofenac, and naproxen) in patients with OA. EVIDENCE ACQUISITION: We searched the Cochrane Central Register of Controlled Trials (CENTRAL), ACP Journal Club, Cochrane Database of Systematic Reviews (from issue 4/2004 to July 2005). RESULTS: Forty-five RCTs were included in this review. Sjöberg et al. compared acetaminophen to placebo and ten RCTs compared acetaminophen to NSAIDs. In the placebo-controlled RCT acetaminophen was superior to placebo in five of the seven RCTs and had a similar safety profile. Compared to placebo, a pooled analysis of the trials of oral pain using multiple methods demonstrated a modestly significant reduction in pain (MD -0.13, 95% CI -0.22 to -0.04), which is of questionable clinical significance. The relative percent improvement from baseline was 5% with an absolute change of 4 points on a 0 to 100 scale. The NNT to achieve an improvement in pain ranged from 4 to 16. In the comparator-controlled RCT, acetaminophen was less effective overall than NSAIDs in terms of pain reduction, global assessments and in terms of improvements in functional status. No significant difference was found overall between the safety of acetaminophen and NSAIDs, although patients taking traditional NSAIDs were more likely to experience adverse GI events (RR 1.47, 95% CI 1.08 to 1.99). 10% of patients in the traditional NSAID group versus 12% in the acetaminophen group experienced an adverse GI event. However, the median trial duration was only 6 weeks and it is difficult to assess adverse outcomes in a relatively short time period. AUTHORS’ CONCLUSIONS: The evidence to date suggests that NSAIDs are superior to acetaminophen for improving knee and hip pain in people with OA. The size of the treatment effect was modest, and the median trial duration was only six weeks, therefore, additional considerations need to be factored in when making the decision between using acetaminophen or NSAIDs. In on subjects with moderate to severe levels of pain, NSAIDs appear to be more effective than acetaminophen.

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- In on subjects with moderate to severe levels of pain, NSAIDs appear to be more effective than acetaminophen.
BACKGROUND: Non-steroidal anti-inflammatory drugs (NSAIDs) are the backbone of osteoarthritis pain management. We aimed to assess the effectiveness of different preparations and doses of NSAIDs on osteoarthritis pain in a network meta-analysis.

METHODS: For this network meta-analysis, we considered randomised trials comparing any of the following interventions: NSAIDs (paracetamol), or placebo, for the treatment of osteoarthritis pain. We searched the Cochrane Central Register of Controlled Trials (CENTRAL) and the reference lists of relevant articles for trials published between Jan 1, 1980, and Feb 24, 2015, with at least 100 patients per group. The prespecified primary and secondary outcomes were pain and physical function, and were extracted in duplicate for up to seven timepoints after the start of treatment. We used an extension of multivariable linear mixed models for multiple treatment comparisons with a random effect at the level of trials. For the primary analysis, a random walk of first order was used to account for multiple follow-up outcome data within a trial. Preparations that used different total daily dose were considered separately in the analysis. To assess a potential dose-response relation, we used preparation-specific covariates assuming linearity on log relative dose.

RESULTS: We identified 8973 manuscripts from our search, of which 74 randomised trials with a total of 58516 patients were included in this analysis. 23 studies comparing seven different NSAIDs or paracetamol with specific fixed daily doses of administration or placebo were considered. All preparations, irrespective of dose, improved point estimates of pain symptoms when compared with placebo. For six interventions (diclofenac 150 mg/day, etoricoxib 30 mg/day, 60 mg/day, and rofecoxib 25 mg/day and 50 mg/day), the probability that the difference to placebo is 0 or below a prespecified minimum clinically important effect for pain reduction (effect size [ES] ≤ -0·27) was at least 95%. Among maximally approved daily doses, diclofenac 150 mg/day (ES -0·17, 95% credible interval [CrI] -0·40 to 0·06) and etoricoxib 30 mg/day (ES -0·15, 0·07 to -0·33) had the highest probability to be the best intervention, both with 100% probability to reach the minimum clinically important difference. Treatment effects increased as drug dose increased, but corresponding tests for a linear dose-response effect were significant only for celecoxib (p<0.001), diclofenac (p=0.015), and naproxen (p=0.04). We found no evidence that treatment effects varied over the duration of treatment. Model fit was good, and between-trial heterogeneity and inconsistency were low in all analyses. All trials were deemed to have a low risk of bias for blinding of patients. Effect estimates did not change in sensitivity analyses with two additional statistical models and applying a methodological-quality-pair criteria in meta-regression analysis.

INTERPRETATION: On the basis of the available data, we see no role for single-agent paracetamol for the treatment of patients with osteoarthritis irrespective of dose. We provide sound evidence that diclofenac 150 mg/day is the most effective NSAID available at present, in terms of improving both pain and function. Nevertheless, in view of the safety profile of these drugs, physicians need to consider our results together with all known safety information when selecting the preparation and dose for individual patients.

OBJECTIVES: To investigate the cardiovascular safety of non-steroidal anti-inflammatory drugs (NSAIDs) and estimate the risk of hospital admission for heart failure with use of individual NSAIDs.

METHODS: Nested case-control study.

SETTING: Five population-based healthcare databases from four European countries (the Netherlands, Italy, Germany, and the United Kingdom).

PARTICIPANTS: Adults (age ≥18 years) who started NSAID treatment in 2000–10. Overall, 92 163 hospital admissions for heart failure were identified and matched with 8 346 413 controls (matched via risk set sampling according to age, sex, year of cohort entry).

MAIN OUTCOME MEASURE: Association between risk of hospital admission for heart failure and use of 27 individual NSAIDs, including 23 traditional NSAIDs and four selective cyclooxygenase-2 (COX-2) inhibitors. Associations were assessed by multivariable conditional logistic regression models. The dose-response relation between NSAID use and heart failure risk was also assessed.

RESULTS: Current use of any NSAID was associated with a 22% increase of hospital admission for heart failure (adjusted odds ratio [OR] 1.29, 95% confidence interval [CrI] 1.19 to 1.40). Among individual NSAIDs, diclofenac 150 mg/day was found to be associated with a 59% increase of hospital admission for heart failure (adjusted OR 2.95, 95% confidence interval 1.99 to 4.48). The dose-response relation between NSAID use and heart failure risk was also assessed.

CONCLUSIONS: Non-steroidal anti-inflammatory drugs increased the risk of hospital admission for heart failure when used in the treatment of patients with osteoarthritis irrespective of dose. Physicians need to consider our results together with all known safety information when selecting the preparation and dose for individual patients.

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Conservative Therapy, Oral

Conservative Therapy; Intra-articular Corticosteroids: Topical NSAID


The objective of this study was to evaluate the efficacy and safety of topical diclofenac therapy for osteoarthritis (OA). A meta-analysis of randomized controlled trials which adopted the topical diclofenac therapy for OA. A total of nine papers were included in this meta-analysis. Topical diclofenac appears to be effective in both pain relief and function improvement in OA patients. However, the results of this meta-analysis should be interpreted with caution due to the small number of trials included and the potential for publication bias.

Main Results: We identified five new studies for this update, which now has information from 10,631 participants in 39 studies, a 38% increase in participants from the previous update. The primary outcome was clinical success, defined as at least a 50% reduction in pain or an increase in a pain-free interval of at least 1 week in patients with knee OA. The primary end point was the mean difference in pain between groups at 6 months. The mean difference was 0.50 (0.20 to 0.80) (moderate-quality evidence). There was no significant difference between the active treatment and placebo (moderate-quality evidence).

Data Analysis: Network meta-analysis was performed using a Bayesian random-effects model. The results showed that topical diclofenac was significantly more effective than placebo for reducing pain (standard mean difference [SMD] = 0.40; 95% confidence interval [CI] 0.19 to 0.62; P = 0.0003) and function improvement (SMD = 0.40; 95% CI 0.20 to 0.60; P < 0.00001). Topical diclofenac was significantly less effective than oral placebo (SMD = 0.20; 95% CI 0.00 to 0.40; P = 0.042) and also showed a trend towards less efficacy than topical ketoprofen (SMD = 0.19; 95% CI -0.01 to 0.39; P = 0.073). The results for other outcomes, such as adverse events, were not statistically significant.

Adverse Events: The most common adverse events were mild skin reactions, such as rashes, itching, and irritation. There were 11 cases of drug-related adverse events, including 6 cases of dermatologic reactions (3 cases of rash, 1 case of urticaria, and 2 cases of skin discoloration) and 4 cases of gastrointestinal events (2 cases of nausea, 1 case of vomiting, and 1 case of abdominal pain). None of these adverse events were considered to be serious. The most common events were gastrointestinal, dermatologic, and headache.

Discussion: Topical diclofenac appears to be a safe and effective treatment for knee OA, especially in the short term. Further research is needed to explore the long-term effects of topical diclofenac therapy on OA patients. The results of this meta-analysis should be interpreted with caution due to the small number of trials included and the potential for publication bias.

Conclusion: Topical diclofenac therapy for knee OA is a promising treatment option for OA. Further research is needed to explore the long-term effects of topical diclofenac therapy on OA patients. The results of this meta-analysis should be interpreted with caution due to the small number of trials included and the potential for publication bias.

References: We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, and our own in-house database for this update. We also searched the references of included studies and reviews and identified unpublished studies by asking personal contacts and searching clinical trial registers and manufacturers' websites.

Acknowledgments: We thank the authors of the included studies for sharing their data and for their support in the development of this update. The authors declare no conflicts of interest.

Conflict of Interest: None declared.
Intraarticular injections

Background: Therapeutic intraarticular injections are used in the management of hip osteoarthritis (OA). Some studies suggest that their use increases the risk of infection and subsequent revision surgery after primary total hip arthroplasty (THA), while others do not. We undertook this study to clarify the relationship between prior intraarticular injection and the risk of complications in a subsequent primary THA.

Methods: A cohort of patients with hip OA who underwent a primary elective THA between 2002 and 2009, and those who received ≥1 intraarticular injection performed by a radiologist in the 5 years preceding their THA. Multivariate Cox proportional hazards models were used to determine the relationship between receipt of a presurgical injection (no injection, 1-5 years prior to THA, or <1 year prior to THA) and the occurrence of postoperative joint infection and revision THA in the following 2 years, while controlling for confounders.

Results: Of 37,881 eligible THA recipients, 2,448 (6.5%) received an intraarticular injection performed by a radiologist in 5 years preceding their THA. The injection cohort was stratified into 12 subgroups by monthly intervals out to 12 months corresponding to the number of months that had elapsed between injection and THA. Risk of postoperative infection was compared between the injection and no injection cohorts. In total, 24,667 THAs (95%) had an injection in the specified time frame before the THA procedure and 54,081 THAs cases (65%) did not. The PearlDiver database does not currently support line-by-line output of patient data, and so we were unable to perform a multivariate analysis to determine whether other important factors may have varied between the study groups that might have had a differential influence on the risk of infection between those groups. However, the Charlson Comorbidity index was not different between the injection and no injection cohorts (2.9 for both) suggesting similar comorbidity profiles between the groups. Results: The proportion of THAs developing any postoperative infection was higher among THAs that received an injection before THA than those that did not (1.4% versus 1.0%; OR, 1.37; 95% confidence interval [CI], 1.15-1.63; P = 0.001). Likewise, the proportion of THAs developing infection resulting in return to the operating room after THA was also higher among THAs that received an injection before THA than those that did not (1.4% versus 1.0%; OR, 1.37; 95% CI, 1.15-1.63; P = 0.001). Month-by-month analysis of time between injection and THA revealed the odds of any postoperative infection remained higher for the injection cohort out to a duration of 6 months between injection and THA (ORs ranged 1.23 to 1.46 when 1-6 months between injection and THA; p < 0.05 for all) as did the odds of operative intervention for THA infection when injection occurred within 7 months of THA (OR ranged from 1.38 to 1.88 when 1-7 months between injection and THA; p < 0.05 for all). When the duration between injection and THA was longer than 6 or 7 months, the ORs were no longer elevated at these endpoints, respectively. Conclusions: Injection before THA was associated with a higher risk of postoperative infection and appears to be time-dependent, with closer proximity between injection and THA having increased odds of unadjusted retrospective cohort study of patients with unilateral total knee replacement for osteoarthritis or rheumatoid arthritis who did or did not receive intraarticular corticosteroid injections prior to surgery. Corticosteroid injections within 7 months of surgery were associated with an increased risk of postoperative infection.

Suggest: That corticosteroid injections prior to THA are associated with an increased risk of infection after THA in patients with advanced osteoarthritis.
BACKGROUND Knee osteoarthritis is a leading cause of chronic pain, disability, and decreased quality of life. Despite the long-standing use of intra-articular corticosteroids, there is an ongoing debate about their benefits and safety. This is an update of a Cochrane review first published in 2005.

OBJECTIVES: To determine the benefits and harms of intra-articular corticosteroids compared with sham or no intervention in people with knee osteoarthritis in terms of pain, physical function, quality of life, and safety.

SEARCH METHODS: We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, and EMBASE (from inception to 3 February 2015), checked trial registers, conference proceedings, reference lists, and contacted authors.

SELECTION CRITERIA: We included randomised or quasi-randomised controlled trials that compared intra-articular corticosteroids with sham injection or no treatment in people with knee osteoarthritis. We applied no language restrictions.

DATA COLLECTION AND ANALYSIS: We calculated standardised mean differences (SMDs) and 95% confidence intervals (CIs) for pain, function, quality of life, joint space narrowing, and risk ratios (RRs) for safety outcomes. We combined trials using an inverse-variance random-effects meta-analysis.

MAIN RESULTS: We identified 27 trials (31 new studies) with 1757 participants in this update. We graded the quality of the evidence as "low" for all outcomes because treatment effect estimates were inconsistent with great variation across trials, pooled estimates were imprecise and did not rule out relevant or relevant clinical effects, and because most trials had a high or unclear risk of bias. Intra-articular corticosteroids appeared to be more beneficial in pain reduction than control interventions (SMD: -0.40, 95% CI: -0.58 to -0.22), which corresponds to a difference in pain scores of 1.8 on a 10-cm visual analog scale between corticosteroids and sham injection and translates into a number needed to treat for an additional beneficial outcome (NNTB) of 5 (95% CI 4 to 30).

Conclusions and Relevance: Among patients with symptomatic knee osteoarthritis, 2 years of intra-articular triamcinolone, compared with saline, resulted in significantly greater cartilage volume loss and no significant difference in pain. There was no evidence of a sustained benefit in pain that was maintained over time or a benefit in functional outcomes. Patient-reported outcomes were collected using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Knee Injury and Osteoarthritis Outcome Score (KOOS), and the Knee Society Score.

Articles identified in a systematic review and meta-analysis of 14 studies investigating the effects of intra-articular corticosteroid injection on knee osteoarthritis are included in this Cochrane review. The review includes three main approaches: meta-analysis, systematic review, and individual studies. The meta-analysis shows that intra-articular corticosteroids are effective in reducing pain and improving function in knee osteoarthritis. The systematic review is limited by the low quality of evidence and the heterogeneity among studies. The individual studies show variability in their results, but overall, they support the use of intra-articular corticosteroids in the management of knee osteoarthritis.

High-quality systematic review with overall low quality evidence, heterogeneity between trials and "evidence of small study effects.”

"Whether there are clinically important benefits of intra-articular corticosteroids after one to six weeks remains unclear."

Corticosteroids could reduce cartilage damage associated with synovitis but might have adverse effects on cartilage and periarticular bone. Objective: To determine the effects of intra-articular injection of 40 mg of triamcinolone acetonide every 3 months on progression of cartilage loss and knee pain. Design, Setting, and Participants: Two-year, randomized, placebo-controlled, double-blind trial of intra-articular triamcinolone vs saline for symptomatic knee osteoarthritis in 140 patients. Mixed-effects regression models with a random intercept were used to analyze the longitudinal repeated outcome measures. Results: Among 140 randomized patients (mean age, 58 [15]; 75 women [53%]), 119 (85%) completed the study. Intra-articular triamcinolone resulted in significant greater cartilage volume loss than did saline for a mean change in index compartment cartilage thickness of -0.21 mm vs -0.10 mm (between-group difference, 0.11 mm; 95% CI, 0.23 to 0.00 mm; and no significant difference in pain (1.2 vs 1.9; between-group difference, -0.6; 95% CI, -1.4 to 0.3). The saline group had 5 treatment-related adverse events compared with 15 in the triamcinolone group and had a small increase in hemoglobin A1c levels (between-group difference, 0.2%; 95% CI, 0.1% to 0.3%). Conclusions and Relevance: Among patients with symptomatic knee osteoarthritis, 2 years of intra-articular corticosteroids, compared with intra-articular saline, resulted in significantly greater cartilage volume loss and no significant difference in knee pain. These findings do not support this treatment for patients with symptomatic knee osteoarthritis.

Trial Registration: ClinicalTrials.gov identifier: NCT01230424.

Randomized, blinded trial of patients with moderate osteoarthritis and chronic pain who received either intra-articular saline or triamcinolone every 3 months for 2 years with good follow-up. Random receiving triamcinolone had no clear improvement in symptoms versus those treated with saline but did have greater loss of cartilage.

Study did not appear to deal with patients with acute increase in joint inflammation or did it assess short-term effects on pain following intra-articular injection (pain assessments were performed every 2 months, just prior to the next injection). Supports the conclusions that long-term, chronic use of corticosteroids is ineffective for long-term pain relief in osteoarthritis of the knee.

**Corticosteroids**

Intra-articular injection of corticosteroids is a common treatment for knee osteoarthritis. However, the evidence for its effectiveness is limited. A recent study investigated the effects of intra-articular injection of corticosteroids on knee osteoarthritis in people with symptomatic knee osteoarthritis. The study found that intra-articular injection of corticosteroids resulted in a significant reduction in pain and improvement in function compared to placebo. However, the study also found that corticosteroids were associated with a significant increase in cartilage volume loss, which may have implications for long-term outcomes. Further research is needed to clarify the benefits and risks of corticosteroid injections in the management of knee osteoarthritis.

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Body mass index (BMI) is widely recognized as a prognostic factor in multiple operations; however, the relationship between obesity and the outcomes following total hip arthroplasty (THA) is extensively debated. We aimed to evaluate the effect of the BMI at different stages of a patient’s lifetime on the outcomes of primary THA. METHODS: We searched the PubMed, Embase, Web of Science, and the Cochrane Library until July 2014 to identify the eligible prospective cohort studies. Orthop Traumatol Surg Res. 2015 May;101(3):289-304. PMID: 2598722

Background: The increase in the number of patients with unhealthy body weight is particularly relevant in the United States. Obesity (BMI ≥ 30 kg/m²) is commonly regarded as a risk factor for the development of osteoarthritis. Furthermore, an increased prevalence of total knee arthroplasty in obese individuals has been observed in the last decades. The primary aim of this systematic literature review is to determine if obesity has a negative effect on outcomes after primary total knee arthroplasty. METHODS: A search of the literature was performed, and studies comparing the outcome of total knee arthroplasty in different weight groups were included. The methodology of the included studies was scored according to the Cochrane guidelines. Data extraction and pooling were performed. The weighted mean difference for continuous data, mean difference (MD) was calculated; for dichotomous variables, we calculated a weighted relative risk (RR) with its 95% confidence interval. Heterogeneity was evaluated using I² statistics. RESULTS: Fifteen studies were eligible for data extraction, which involved 11,271 total hip arthroplasties. The pooled data of complication rate demonstrated that obese patients suffered higher rates of complication (RR: 1.68, 95% CI 1.23 to 2.30, P = 0.0004), dislocation (RR: 2.08, 95% CI 1.34 to 3.24, P = 0.0013), postoperative infection (RR = 1.3, CI 0.10-9.90) (5 studies, n = 7,500), and venous thromboembolism (OR = 0.56, CI 0.32-0.98) (7 studies, n = 7,716) occurred more often. Concerning sepsis, loosening and intraoperative fracture, no statistically significant differences were found, possibly due to low power. Subjective outcome measurements did not allow pooling because of high heterogeneity (I² > 60%). INTERPRETATION: Obesity appears to have a negative influence on the outcome of total hip replacement.

Conclusion: Obesity, in both men and woman, is associated with a higher risk of complication following THA.

Conclusion: Obesity (body mass index ≥ 30 kg/m²) is a well-documented risk factor for the development of osteoarthritis. Furthermore, an increased prevalence of total knee arthroplasty in obese individuals has been observed in the last decades. The primary aim of this systematic literature review was to determine if obesity has a negative influence on outcomes after primary total knee arthroplasty. METHODS: A search of the literature was performed, and studies comparing the outcome of total knee arthroplasty in different weight groups were included. The methodology of the included studies was scored according to the Cochrane guidelines. Data extraction and pooling were performed. The weighted mean difference for continuous data, mean difference (MD) was calculated; for dichotomous variables, we calculated a weighted relative risk (RR) with its 95% confidence interval. Heterogeneity was evaluated using I² statistics. RESULTS: Twenty-eight articles including a total of 20,988 TKAs were identified. The postoperative Knee Society Score appeared to trend lower in obese (BMI ≥ 30 kg/m²) patients than in non-obese (BMI < 30 kg/m²) patients (MD: -0.16, 95% CI -0.34 to 0.02, P = 0.08). Lower functional scores and developing complications following total knee arthroplasty. Background: The body mass index (BMI) is widely recognized as a prognostic factor in multiple operations; however, the relationship between BMI and outcomes following total knee arthroplasty (TKA) is controversial. We aimed to evaluate the effect of the BMI at different cutoff values on the outcomes following primary TKA.

Methods: Electronic databases (PubMed/Medline, CENTRAL, Embase and Web of Science) were systematically searched for studies investigating the association between BMI and primary TKA outcomes. Two investigators independently reviewed studies for eligibility; assessed the study quality using the Newcastle-Ottawa Scale and extracted the data. A meta-analysis was performed using Review Manager software.

Results: Twenty-eight articles including a total of 20,988 TKAs were identified. The postoperative Knee Society Score appeared to trend lower in obese (BMI ≥ 30 kg/m²) patients than in non-obese (BMI < 30 kg/m²) patients. The meta-analysis showed that revision with follow-up ≥5 years, any infection, superficial infection and deep vein thrombosis occurred more frequently in obese patients, whereas a deep infection occurred statistically more frequently in morbidly obese (BMI ≥ 40 kg/m²) patients than in non-obese patients. No differences in septic loosening and intraoperative fracture were found, possibly due to low power. Subjective outcome measurements did not allow pooling because of high heterogeneity (I² > 60%). Interpretation: Obese patients had a negative influence on outcomes following total knee replacement.

Conclusion: Obesity negatively affects the outcomes of primary total hip arthroplasty (THA) and revision THA. Obesity is an independent risk factor for dislocation, deep infection and mortality. Significant differences were found only for some outcomes, possibly due to low power. Subjective outcome measurements did not allow pooling because of high heterogeneity (I² > 60%). Interpretation: Obesity appears to have a negative influence on the outcome of total hip replacement.

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OBJECTIVE: To determine whether an intervention with smoking cessation starting 4 weeks before general and orthopedic surgery would reduce the frequency of postoperative complications.

METHODS: A randomized controlled trial, conducted between February 2004 and December 2006 at 4 hospitals in Denmark. 238 patients were assigned to a nicotine replacement therapy, and either smoking cessation or at least 50% smoking reduction. An assessor, who was masked to the interventions that resulted in either smoking cessation or at least 50% smoking reduction in a control group of smokers versus patients treated with smoking interventions that resulted in either smoking cessation or at least 50% smoking reduction in the intervention group were excluded from the final analysis because their operations were either postponed or cancelled. Thus, 52 and 56 patients, respectively, were analysed for outcome. The overall complication rate was 18% in the smoking intervention group and 52% in controls (p<0.001). The most significant effects of intervention were seen for wound-related complications (5% vs 13%, p<0.001), cardiovascular complications (1% vs 10%, p<0.001), and secondary surgery (6% vs 13%, p<0.001). The median length of stay was 11 days (range 7-45) in the intervention group and 13 days (6-65) in the control group. INTERPRETATION: An effective smoking intervention programme 6-8 weeks before surgery reduces postoperative morbidity, and we recommend, on the basis of our results, this programme be adopted in all hospital departments.

Perioperative smoking cessation seems to be an effective tool to reduce postoperative complications even if it is introduced as late as 4 weeks prior to surgery. Note: study relates to discontinuation of smoking rather than nicotine replacement.
Nicotine Cessation


BACKGROUND: Smokers have a substantially increased risk of postoperative complications. Preoperative smoking intervention may be effective in decreasing this incidence, and surgery may contribute to a unique opportunity for smoking cessation interventions.

OBJECTIVES: The objectives of this review are to assess the effect of preoperative smoking intervention on smoking cessation at the time of surgery and 12 months postoperatively, and on the incidence of postoperative complications.

SEARCH METHODS: We searched the Cochrane Tobacco Addiction Group Specialized Register in January 2014.

SELECTION CRITERIA: Randomized controlled trials that recruited people who smoked prior to surgery, offered a smoking cessation intervention, and measured preoperative and long-term abstinence from smoking or the incidence of postoperative complications or both outcomes.

DATA COLLECTION AND ANALYSIS: The review authors independently assessed studies to determine eligibility, and discussed the results between them.

MAIN RESULTS: Thirteen trials enrolling 2010 participants met the inclusion criteria. One trial did not report cessation as an outcome. Seven studies were judged to be at low risk of bias, but the overall quality of evidence was moderate due to the small number of studies contributing to each comparison. Ten trials evaluated the effect of behavioural support on cessation at the time of surgery, nicotine replacement therapy (NRT) was offered or recommended to some or all participants in eight of these. Two trials initiated multidisciplinary face-to-face counselling at least four weeks before surgery and were classified as intensive interventions, whilst seven used a brief intervention. One further study provided an intensive intervention to both groups, with the intervention group additionally receiving a computer-based scheduled reduced smoking intervention. One placebo-controlled trial examined the effect of nicotine administration one week postoperatively followed by 11 weeks postoperative treatment, and one placebo-controlled trial examined the effect of nicotine lozenges from the right before surgery as an adjunct to brief counselling at the preoperative evaluation. There was evidence of heterogeneity between the effects of trials using brief interventions and brief interventions, so we pooled these separately. An effect on cessation at the time of surgery was apparent in both subgroups, but the effect was larger for intensive interventions (pooled risk ratio (RR) 10.7; 95% confidence interval (CI) 4.5 to 21.46, 19 trials, 212 participants) than for brief interventions (RR 1.3; 95% CI 0.9 to 1.9, 4 trials, 672 participants) and nicotine administration (RR 2.6; 95% CI 1.0 to 6.5, 7 trials, 1141 participants). A single trial did not show evidence of a benefit of a scheduled reduced smoking intervention. Neither nicotine lozenges nor varenicline were shown to increase cessation at the time of surgery but both had wide confidence intervals (RR 1.34; 95% CI 0.80 to 2.21, 3 trials, 341 participants) and varenicline was the only treatment to show a significant effect on cessation at 12 months (RR 2.96; 95% CI 1.57 to 5.55, 2 trials, 209 participants), whilst there was no evidence of a long-term effect following a brief intervention (RR 1.05; 95% CI 0.62 to 1.76, 7 trials, 446 participants).

CONCLUSIONS: There is no clear evidence that not only tobacco smoking but also involuntary exposure increases cotinine levels. IMPACT: Smoking cessation interventions are effective in increasing long-term abstinence from smoking at the time of surgery, and may be effective in increasing abstinence at 12 months postoperatively. Multisession face-to-face counselling is more effective than brief counselling, and nicotine lozenges are effective in increasing cessation at the time of surgery. There is no clear evidence that varenicline increases cessation at either time point. Smoke-free hospital settings should be implemented and smoking interventions delivered to the preoperative population to reduce postoperative morbidity.

Secondhand smoke

--- Supports the conclusion that second hand smoking increases serum cotinine levels.
--- Supports the conclusion that serum cotinine levels are positively associated with arterial stiffness.
--- Supports the value of smoking interventions to reduce post-operative morbidity.
--- Supports the conclusion that second hand smoking among nonsmokers to serum cotinine levels.
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Unhealthy alcohol use

Background: Unhealthy alcohol use is a prevalent but under-diagnosed primary care setting. OBJECTIVE: To evaluate, in primary care, a single-screening tool for unhealthy alcohol use recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). DESIGN: Cross-sectional study. PARTICIPANTS: Adult English-speaking patients recruited from primary care waiting rooms. MEASUREMENTS: Participants were asked the single screening question: "How many times in the past year have you had 5 or more drinks in 1 day?" where 5 is for men and 4 for women; and a response of 1 or greater (corrected) was considered positive. Unhealthy alcohol use was defined as the presence of an alcohol use disorder, as determined by a standardized diagnostic interview, or risky consumption, as determined using a abbreviated 30-day calendar method. MAIN RESULTS: Of 249 eligible primary care patients, 286 (70%) completed the interview. The single-screening question was 83.8% sensitive (95% confidence interval 72.5% to 88.3%) and 79.5% specific (95% CI 73.2% to 84.4%) for the detection of unhealthy alcohol use. It was slightly more sensitive (87.9% 95% CI 72.7% to 92.9%) but was less specific (66.8%, 95% CI 60.0% to 71.6%) for the detection of a current alcohol disorder. Test characteristics were similar to that of a commonly used three-item screen, and were affected very little by subject demographic characteristics. CONCLUSIONS: The single screening question recommended by the NIAAA accurately identifies unhealthy alcohol use in this sample of primary care patients. These findings support the use of this brief screen in primary care.

Glycemic control

BACKGROUND: As the prevalence of diabetes mellitus in people over the age of sixty years is expected to increase, the number of diabetic patients who undergo total hip and knee arthroplasty should be expected to increase accordingly. In general, patients with diabetes are at an increased risk for adverse events following arthroplasty. The goal of the present study was to determine whether the quality of preoperative glycemic control affects the incidence of complications following total joint arthroplasty.

METHODS: From 1988 to 2005, the Nationwide Inpatient Sample recorded over 1 million patients who underwent joint replacement surgery. This study included all cases of primary total hip and knee arthroplasty in patients with diabetes mellitus. Diabetes was operation length, wound class, and HbA1c levels were significantly associated with postoperative infections. Emergency/urgent cases and dependence in Activities of Daily Living were significant in bivariate analysis but failed to reach statistical significance in the multivariable model. An HbA1c level of less than 7% was significantly associated with decreased infectious complications with an adjusted odds ratio of 2.23 (95% confidence interval, 1.23-3.70) and a P value of .007. CONCLUSION: Good preoperative glycemic control (HbA(1c) levels <7%) is associated with decreased infectious complications across a variety of surgical procedures.


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blood glucose levels, the hemoglobin A1c level, and related comorbidities. RESULTS: Compared with patients with controlled diabetes mellitus, patients with uncontrolled diabetes mellitus had a significantly increased risk of adverse events following arthroplasty. The goal of the present study was to determine whether the quality of preoperative glycemic control affects the incidence of complications following total joint arthroplasty.

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diabetic patients comparing complication rates of patients with hemoglobin A1c levels <7% to those with higher values.

supports use of a single question screen to identify unhealthy alcohol use.
BACKGROUND: Patients with diabetes mellitus are at increased risk of postoperative complications. Data from randomised clinical trials and meta-analyses point to a potential benefit of intensive glycemic control, targeting near-normal blood glucose, in patients with hyperglycaemia (with and without diabetes mellitus) being submitted to surgical procedures. However, there is limited evidence concerning this question in patients with diabetes mellitus undergoing surgery. OBJECTIVES: To assess the effects of perioperative glycemic control for diabetic patients undergoing surgery. METHODS: Trials were obtained from searches of The Cochrane Library, MEDLINE, EMBASE, LILACS and EBM (all up to February 2012). SELECTION CRITERIA: We included randomised controlled clinical trials that prescribed different targets of perioperative glycemic control (intensive versus conventional or standard care). DATA COLLECTION AND ANALYSIS: Two authors independently extracted data and assessed risk of bias. We summarised studies using meta-analysis or descriptive methods. MAIN RESULTS: Twelve trials randomised 694 diabetic participants to intensive control and 706 diabetic participants to conventional glycemic control. The duration of the intervention ranged from just the duration of the surgical procedure up to 90 days. The number of participants ranged from 13 to 642, and the mean age was 64 years. Comparison of intensive with conventional glycemic control demonstrated the following results for our predefined primary outcome: analysis restricted to studies with low or unclear detection or attrition bias for infectious complications showed a risk ratio (RR) of 0.46 (95% confidence interval [CI] 0.18 to 1.18). P = 0.17, 677 participants, 11 trials, high quality of the evidence (GRADE). On the basis of a post hoc analysis, there is the hypothesis that intensive glycemic control may increase the risk of hypoglycemic episodes if longer-term outcome measures are analysed (RR 0.63, 95% CI 0.24 to 1.63; P = 0.002, 729 patients, three trials, low quality of the evidence (GRADE)). Analysis of our predefined secondary outcomes revealed the following findings: cardiovascular events RR of 1.13 (95% CI 0.21 to 5.53), P = 0.97, 682 participants, six trials, moderate quality of the evidence (GRADE); when comparing the two treatment modalities; and renal failure did not show significant differences between intensive and regular glucose control (RR 0.61, 95% CI 0.34 to 1.06), P = 0.06, 643 participants, two trials, moderate quality of the evidence (GRADE). We did not meta-analyse length of hospital stay and intensive care unit (ICU) stay due to substantial unexplained heterogeneity. Mean differences between intensive and regular glucose control groups ranged from -1.7 days to 3.1 days for ICU stay and from -3 to 2.9 days for hospital stay (moderate quality of evidence (GRADE)). Our trial reassessed health related quality of life in 12/37 (32.4%) of participants in the intervention group and 13/44 (29.5%) of participants in the control group, and did not find any differences between intensive and conventional glucose control. CONCLUSIONS: Despite the effectiveness of multimodal postoperative pain protocols, younger patients with preoperative history of narcotic requirement at 3 months postoperatively (OR, 2.48; 95% CI, 1.61-3.82; P < .001). This was associated with an increased length of stay (OR, 1.59; 95% CI, 1.06-2.37; P = .025) and a 2.5-times risk of inhospital complications. These patients developed more inhospital complications (OR, 1.92; 95% CI, 1.34-2.76; P < .001). This was associated with an increased length of stay (OR, 1.59; 95% CI, 1.06-2.37; P = .025) and a 2.5-times risk of inhospital complications. These patients developed more inhospital complications (OR, 1.92; 95% CI, 1.34-2.76; P < .001). This was associated with an increased length of stay (OR, 1.59; 95% CI, 1.06-2.37; P = .025) and a 2.5-times risk of inhospital complications. These patients developed more inhospital complications (OR, 1.92; 95% CI, 1.34-2.76; P < .001). This was associated with an increased length of stay (OR, 1.59; 95% CI, 1.06-2.37; P = .025) and a 2.5-times risk of inhospital complications. These patients developed more inhospital complications (OR, 1.92; 95% CI, 1.34-2.76; P < .001). This was associated with an increased length of stay (OR, 1.59; 95% CI, 1.06-2.37; P = .025) and a 2.5-times risk of inhospital complications. These patients developed more inhospital complications (OR, 1.92; 95% CI, 1.34-2.76; P < .001). 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BACKGROUND: There is growing concern about the use of opioids prior to total knee arthroplasty (TKA), and research has suggested that prophylactic opioid use may lead to worse pain outcomes following surgery. We evaluated the pain relief achieved by TKA in patients who had and those who had not used opioids use before the procedure.

METHODS: We augmented data from a prospective cohort study of TKA outcomes with opioid-use data abstracted from medical records. We included patient-reported outcomes and demographic data before and 6 months after TKA. We used the Pain Catastrophizing Scale and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) to quantify the pain experiences of patients treated with TKA who had a baseline score of ≥20 on the WOMAC pain scale (a 0 to 100-point scale, with 100 being the worst score), who provided follow-up data, and who had not had another surgical procedure within the 2 years prior to TKA. We built a propensity score for preoperative opioid use based on the Pain Catastrophizing Scale score, comorbidities, and baseline pain. We used a general linear model, adjusting for the propensity score and baseline pain, to compare the change in the WOMAC pain scale 6 months after TKA between persons who had and those who had not used opioids before TKA.

RESULTS: The cohort included 106 patients with a mean age of 65.7 years (standard deviation [SD] = 8.2 years) and a mean body mass index (BMI) of 31.1 kg/m^2 ([SD = 5.1 kg/m^2] 72.1% became persistent users. In multivariable analysis, knee arthroplasty vs hip, a longer hospitalization stay, discharge to a rehabilitation facility, preoperative opioid use (e.g., a longer duration and greater dosage and frequency), a higher comorbidity score, back pain, rheumatoid arthritis, osteoarthritis, depression, migraine and smoking, and benzodiazepine use at baseline were strong predictors for persistent opioid use (C-statistic = 0.637). CONCLUSION: Over 7% of patients persistently used opioids in the year after hip or knee arthroplasty. Given the adverse health effects of persistent opioid use, strategies need to be developed to prevent persistent opioid use after this common surgery.

OBJECTIVE: The relationship between arthroplasty and long-term opioid use in patients with knee or hip osteoarthritis is not well studied. We examined the prevalence, patterns and predictions of persistent opioid use after hip or knee arthroplasty.

METHOD: Using claims data (2004-2012) from a US commercial health plan, we identified adults who underwent hip or knee arthroplasty and filled ≥1 opioid prescription within 30 days after the surgery. We defined persistent opioid users as patients who filled ≥1 opioid prescription every month during the 1-year postoperative period based on group-based trajectory models. Multivariable logistic regression was used to determine preoperative predictors of persistent opioid use after surgery.

RESULTS: We identified 57,545 patients who underwent hip or knee arthroplasty. The mean SD age was 61.5 ± 7.8 years and 97.1% had any opioid use preoperatively. Overall, 7.4% persistently used opioids after the surgery. Among patients who used opioids ≥60% of the time for at least 6 months preoperatively (n = 3023), 72.1% became persistent users. In multivariable analysis, knee arthroplasty vs hip, a longer hospitalization stay, discharge to a rehabilitation facility, preoperative opioid use (e.g., a longer duration and greater dosage and frequency), a higher comorbidity score, back pain, rheumatoid arthritis, osteoarthritis, depression, migraine and benzodiazepine use at baseline were strong predictors for persistent opioid use (C-statistic = 0.637).

CONCLUSION: Over 7% of patients persistently used opioids in the year after hip or knee arthroplasty. Given the adverse health effects of persistent opioid use, strategies need to be developed to prevent persistent opioid use after this common surgery.
BACKGROUND: Osteoarthritis is the most common form of joint disease and the leading cause of pain and physical disability in older people. Opioids may be a viable treatment option if people have severe pain or if other analgesics are contraindicated. However, the evidence about their effectiveness and safety is contradictory. This is an update of a Cochrane review first published in 2009. OBJECTIVES: To determine the effects of pain, function, safety, and addiction of oral or transdermal opioids compared with placebo or no intervention in people with knee or hip osteoarthritis. METHODS: We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE and CINAHL, up to 28 July 2013, with an update performed on 15 August 2013. We excluded studies of transdermal opioids. We applied no language restrictions.

DATA COLLECTION AND ANALYSIS: We extracted data in duplicate. We calculated standardized mean differences (SMDs) and 95% confidence intervals (CIs) for pain and function, and risk ratios for safety outcomes. We combined trials using an inverse-variance random-effects meta-analysis. MAIN RESULTS: We identified 12 additional trials and included 23 trials with 8715 participants in this update. Oral oxycodone was better than placebo in terms of pain relief although it had little effect on pain at 24 hours. We found no evidence that adding a coanalgesic improves pain relief. Opioid treatment was associated with a small but significant improvement in function at 24 hours. In elderly patients, opioid treatment was associated with a significant increase in systemic side effects compared to no treatment. CHRONIC PAIN: Opioids should only be used in individuals with chronic pain. Acute pain: Opioids should not be used for acute pain. The Cochrane Back Review Group recommends that opioids should not be used for acute pain. Acute pain: Opioids should not be used for acute pain. The Cochrane Back Review Group recommends that opioids should not be used for acute pain.
Dementia


Dementia patients often present with coexisting medical conditions and potentially face higher risk of complications during hospitalization. Because the general features of postoperative adverse outcomes among surgical patients with dementia are unknown, we conducted a nationwide, retrospective cohort study to characterize surgical complications among dementia patients compared with sex- and age-matched controls. METHODS: Reimbursement claims from the Taiwan National Health Insurance Research Database were studied. A total of 18,023 surgical patients were enrolled with presurgical diagnosis of dementia for 207,693 persons aged 60 years or older who received inpatient major surgeries between 2004 and 2007. Their preoperative comorbidities were adjusted and risks for major surgical complications were analyzed. RESULTS: Dementia patients who underwent surgery had a significantly higher overall postoperative complication rate, adjusted odds ratio (OR) 1.79 (95% confidence interval [CI] 1.71-1.87), with higher medical resource use, and in-hospital expenditures. Compared with controls, dementia patients had a higher incidence of certain postoperative complications that are less likely to be identified in their initial stages, such as: acute renal failure (OR 1.32; 95% CI 1.07-1.67), pneumonia (OR 3.18; 95% CI 3.01-3.37), sepsis (OR 1.8 95% CI 1.60-2.09), stroke, OR 1.31 (95% CI 1.10-1.5); and urinary tract infection, OR 1.62 (95% CI 1.57-1.67). CONCLUSIONS: These findings have specific implications for postoperative care of dementia patients regarding complications that are difficult to diagnose in their initial stages. Acute renal failure, pneumonia, sepsis, stroke, and urinary tract infection are the top priorities for prevention, early recognition, and intervention of postoperative complications among surgical patients with dementia. Further efforts are needed to determine specific protocols for health care teams serving this population.

Dementia


The Montreal Cognitive Assessment (MoCA) is a brief instrument developed for the screening of milder forms of cognitive impairment, having been validated in a multiethnic population-based sample. MoCA compares favorably with other tests for use in screening for cognitive impairment. It is easy to administer, and has administration times of 5 minutes or less. They also have negative predictive validity and misclassification rates, which do not differ significantly from those of the Mini-Mental Status Examination (MMSE). The MoCA identifies about half of patients who are cognitively impaired. Prior evidence of good performance in a multiethnic population-based post hoc examination of the sensitivity and specificity of the Mini-Cog for detecting dementia in an existing data set. The Mini-Cog compares favorably with other tests for use in screening for cognitive impairment. It is easy to administer, and has administration times of 5 minutes or less. They also have negative predictive validity and misclassification rates, which do not differ significantly from those of the Mini-Mental Status Examination (MMSE). The MoCA identifies about half of patients who are cognitively impaired. Prior evidence of good performance in a multiethnic population-based post hoc examination of the sensitivity and specificity of the Mini-Cog for detecting dementia in an existing data set.

Retrospective cohort study measuring complications following major inpatient surgeries in Taiwanese patients with claim-based diagnosis of dementia compared to age and sex matched non-dementia controls. The aim of the present study was to validate the MoCA as a cognitive impairment screen for behavioral variants frontotemporal dementia (bv-FTD) by examining its psychometric properties and diagnostic utility. These matched subgroups of patients were considered to FTD (n = 160), Alzheimer disease (n = 120), and a control group of healthy adults (n = 160). Compared with the MoCA, the MMSE demonstrated consistently superior psychometric properties and diagnostic superiority, providing comprehensive information about the patients’ cognitive profiles. The diagnostic accuracy of MoCA for bv-FTD was extremely high (area under the curve AUC [MoCA] = 0.934, 95% confidence interval [CI] = 0.866-.974; AUC [MMSE] = 0.772, 95% CI = 0.727-0.815). With a cutoff below 17 points, the MoCA results for sensitivity, specificity, positive predictive value, negative predictive value, and classification accuracy were significantly superior to those of the MMSE. The MoCA is a sensitive and accurate instrument for screening the patients with bv-FTD and represents a better option than the MMSE.
Peripheral vascular disease

Surgical risks and perioperative complications of instrumented lumbar surgery


Clinical Orthopaedics & Related Research, 2012 Jan; 470(1):

postoperative mortality and periprosthetic joint infection in medicare patients undergoing TKA. Clinical Orthopaedics & Related Research, 2012 Jan; 470(1):


Background: Patients with liver cirrhosis have high surgical risks due to malnutrition, impaired immunity, coagulopathy, and overwhelming infection. However, there is no information in English literature about the results of liver cirrhosis patients who underwent instrumented lumbar surgery. The purpose of this study is to report the perioperative complications, clinical outcomes and determine the surgical risk factors in cirrhotic patients. Methods: We retrospectively reviewed 29 patients with liver cirrhosis who underwent instrumented lumbar surgery between 1997 and 2009. The hepatic functional reserves of the patients were recorded according to the Child-Turcotte-Pugh scoring system. Two groups according to whether or not perioperative complications developed. Results: Of the 29 patients, 22 (76%) belonged to Child class A and 7 (24%) belonged to Child class B. Twelve patients developed one or more complications. Patients with Child class B carried a much higher risk, and a similar trend was also noted for the presence of ascitesalthough statistical difference was not reached. Conclusion: The Child-Turcotte-Pugh* score of 6 or more supports the conclusion that cirrhosis is associated with poor outcomes.

Retrospective cohort study of 21,000 patients undergoing orthopaedic surgery in a German tertiary hospital. 10,000 (48%) of these patients were screened for HIV, HBV, and HCV. One patient was newly diagnosed positive for HBV and three patients were positive for HCV. We conclude that routine screening for HIV, HBV, and HCV in patients with no other risk factors undergoing orthopaedic surgery is not warranted or cost effective. Does not support routine screening for HIV, HBV, or HCV in patients without other risk factors undergoing orthopaedic surgery.
**Nasal culture**


Preoperative nasal culture screening on the incidence of 90-day postoperative surgical-site infections in joint arthroplasty patients to methicillin-resistant Staphylococcus aureus (MRSA) infection. RESULTS: During the study period, 7019 patients were screened for MRSA. There were 5742 patients in the intention-to-treat analysis, of whom 499 (8.6%) were identified as MRSA carriers. A significantly higher rate of surgical-site infection was observed among MRSA carriers (2.0% of 499 patients) compared with noncarriers (0.45% of 5220 patients) (p = 0.0093). CONCLUSIONS: Implementation of an institution-wide prescreening program for the identification and eradication of methicillin-resistant Staphylococcus aureus carriers may reduce the risk of hospital-associated S. aureus infection. (Current Controlled Trials number, ISRCTN56186788.

Decolonization of nasal and extranasal sites on hospital admission may reduce this risk. METHODS: In a randomized, double-blind, placebo-controlled, multicenter trial, we assessed whether rapid identification of S. aureus nasal carriers by means of a real-time polymerase-chain-reaction (PCR) assay, followed by treatment with mupirocin nasal ointment and chlorhexidine soap, reduces the risk of hospital-associated S. aureus infection. RESULTS: From October 2005 through June 2007, a total of 6771 patients were screened on admission. A total of 1270 nasal swabs from 1251 patients were positive for S. aureus. Among mupirocin nasal ointment recipients, the mean cost of infection was $121.16 (SD, 26.18). There were significant cost savings with no difference in infection rates; therefore, nasal decolonization with mupirocin reduces the risk of hospital-associated S. aureus infection. CONCLUSIONS: The number of surgical-site S. aureus infections acquired in the hospital can be reduced by rapid screening and decolonizing of nasal carriers of S. aureus on admission. (Current Controlled Trials number, ISRCTN56186788.

**Dental screening**

Preoperative treatment of nares with providone iodine appears to be of equal efficacy with substantial reduction in cost. Prospective single-center study using historical controls comparing surgical-site infections before and after universal prescreening and treatment of nasal Staphylococcus found to reduce surgical-site infection. Note: cannot determine drop-out rate in control or experimental group.

**Conclusion**

Surgical-site infection has been identified as one of the most important preventable sources of morbidity and mortality associated with medical treatment. The purpose of this study was to evaluate the feasibility and efficacy of an institutional prescreening program for the prospective detection and eradication of both meticillin-resistant and meticillin-sensitive Staphylococcus aureus in patients undergoing elective orthopaedic surgery. METHODS: Data were collected prospectively during a single-center study. A universal prescreening program, employing rapid polymerase chain reaction analysis of nasal swabs followed by an eradication protocol of intranasal mupirocin and chlorhexidine showed for identified carriers, was used. Surgical site infection rates were calculated and compared with a historical control period immediately preceding the start of the screening program. RESULTS: During the study period, 7019 patients underwent prescreening prior to surgery, for a successful screening rate of 95.7%. One thousand five hundred and eighty-eight (22.6%) of the patients were identified as Staphylococcus aureus carriers, and 499 (8.6%) were identified as meticillin-resistant Staphylococcus aureus carriers. A significantly higher rate of surgical site infection was observed among meticillin-resistant Staphylococcus aureus carriers (0.45%; twenty-four cases of surgical site infection among 5293 patients) compared with noncarriers (0.14%; seven of 3912) (p = 0.0162). Although a higher rate of surgical-site infection was also observed among meticillin-sensitive Staphylococcus aureus carriers (0.16%; three of 1888; p = 0.3311) compared with noncarriers, this difference did not achieve significance (p = 0.797). Overall, thirteen cases of surgical site infection were identified during the study period, for an institutional infection rate of 0.20%. This rate was significantly lower than that observed during the control period (0.45%; twenty-four cases of surgical site infection among 5293 patients) (p = 0.0005). CONCLUSIONS: Implementation of an institution-wide prescreening program for the identification and eradication of meticillin-resistant and meticillin-sensitive Staphylococcus aureus carrier status among patients undergoing elective orthopaedic surgery is feasible and can lead to significant reductions in postoperative rates of surgical-site infection. (Available for EVIDENCE: Therapeutic Level A) See instructions to Authors for a complete description of levels of evidence.
Preoperative physical therapy

OBJECTIVES: The clinical impact of preoperative physiotherapy on recovery after joint replacement remains controversial. This systematic review aimed to assess the clinical impact of prehabilitation before joint replacement. DESIGN: We searched PubMed, Embase and Cinahl CENTRAL up to November 2015 for randomised controlled trials comparing prehabilitation versus no prehabilitation before joint replacement surgery. Prehabilitation pain and function scores were converted to Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain and function subcales (0-100, high scores indicate worse outcome). Random-effects meta-analysis was performed to calculate weighted mean differences (WMD). RESULTS: 22 studies (1492 patients), 18 had high risk of bias. Prehabilitation slightly reduced pain scores within 4 weeks postoperatively (WMD: -0.3 points, 95% CI: -0.6 to -0.1 points, on a scale of 0-100), but differences did not remain beyond 6 weeks. Prehabilitation slightly improved WOMAC function score at 6-12 weeks (WMD: -0.5), and time to climbing stairs (WMD: 0.6 days, 95% CI: -1.0 to 1.8 days, and time to chair use (WMD: 0.6 days, 95% CI: -1.2 to 2.5 days) and time to walk (WMD: 1.2 days, 95% CI: 0.7 to 1.8 days). Effects were similar for knee and hip surgery. Differences were not found for SF-36 scores, length of stay and total cost. Other outcomes of interest were inadequately reported. CONCLUSIONS: Existing evidence suggests that prehabilitation may slightly improve early postoperative pain and function among patients undergoing joint replacement; however, effects remain too small and short-term to be considered clinically important, and did not affect key outcomes of interest (ie, length of stay, quality of life, costs).

Small study supports preoperative training prior to total knee replacement

PURPOSE: The benefits of preoperative training programmes compared with alternative treatments are unclear. The purpose of this study was to evaluate the effectiveness of a high-intensity preoperative resistance training programme in patients waiting for total knee arthroplasty (TKA). METHODS: Forty-four subjects (7 men, 37 women) scheduled for unilateral TKA for osteoarthritis (OA) during 2014 participated in this randomized controlled trial. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), the Physical Functioning Scale of the Short Form-36 questionnaire (SF-36), VAS, WOMAC, ROM extension and flexion and all the functional assessments were greater for the intervention group at T2, T3 and TE, whereas isometric knee extension was greater for this group at T2 and TE compared with control. CONCLUSION: The present study supports the use of preoperative training in hip and knee OA patients to improve early postoperative outcomes. High-intensity strength training during the preoperative period reduces pain and improves lower limb muscle strength, ROM and functional task performance before surgery, resulting in a reduced length of stay at the hospital and a faster physical and functional recovery after TKA. The present training programme can be used by specialists to speed up recovery after TKA.

Preoperative education improves outcomes.

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A meta-analysis of 22 studies (1492 patients) of which 18 were judged to have a high risk of bias. Preoperative physical therapy prior to knee or hip surgery was associated with translation of outcome measures to WOMAC scores was also variable. Authors concluded that preoperative physical therapy showed small effect on improving short term pain and function.

Cycle 3: Surgical Repair of the Osteoarthritic Joint

Small study supports preoperative training prior to total knee replacement
Surgeon/hospital volume

BACKGROUND: Increasing evidence supports the finding that patients undergoing a total knee arthroplasty with high-volume physicians and hospitals fare better compared with those undergoing surgery from lower-volume operators. Unfortunately, the existing definitions for high-volume surgeons and high-volume hospitals are highly variable and entirely arbitrary. The aim of this study was to identify a set of meaningful hospital and surgeon total knee arthroplasty volume thresholds. METHODS: Using 288,146 patients undergoing primary total knee arthroplasty from an administrative database, we applied stratum-specific likelihood ratio (SSLR) analysis of a receiver operator characteristic (ROC) curve to generate sets of volume thresholds most predictive of adverse outcomes. The outcomes considered for surgeon volume included 90-day complication and 90-year mortality. For hospital volume, we considered 90-day complications and 90-day mortality.

RESULTS: SSLR analysis of the ROC curves for 90-day complication and 90-year mortality rates by surgeon volume identified four volume categories: 0 to 12, 13 to 56, 60 to 145, and ≥146 total knee arthroplasties per year. Complication rates decreased significantly (p < 0.001) in progressively higher-volume categories. Complication rates followed a similar pattern, but did not decrease between surgeons performing 40 to 145 arthroplasties per year and those performing ≥146 per year. SSLR analysis of 90-day complication and 90-day mortality rates for hospital volume also identified four volume categories: 0 to 8, 8 to 251, 256 to 644, and ≥645 total knee arthroplasties per year. Complication rates decreased significantly (p < 0.001) in progressively higher-volume categories, but the rates did not decrease between hospitals performing 236 to 644 arthroplasties per year and those performing ≥645 arthroplasties per year. Mortality rates for hospitals with ≥645 total knee arthroplasties per year were significantly lower (p < 0.001) than those below the threshold.

CONCLUSIONS: Our study supports the use of SSLR analysis of ROC curves for surgeon-volume stratification in total knee arthroplasty. Although our study included the largest number of patients, it was nonrandom, retrospective, and the findings need to be confirmed in randomized trials. Overall, the study supports the conclusion that surgeon and hospital volume are associated with lower rates of complications.

Surgeon volume

BACKGROUND: A number of factors have been identified as influencing total knee arthroplasty outcomes, including patient factors such as gender and medical comorbidity, technical factors such as alignment of the prosthesis, and provider factors such as hospital and surgeon experience. Recent, strategies aimed at optimizing provider factors have been proposed, including regionalization of total joint arthroplasty to high volume centers, and adoption of volume standards. To contribute to the existing literature on the association between surgeon volume and total knee arthroplasty outcomes, the current study was designed to answer the following research question: does the volume of total knee arthroplasty procedures performed by surgeons impact patient outcomes? A systematic review was conducted to investigate the association between surgeon volume and patient outcomes.

METHODS: This systematic review involved the search for literature evaluating the role of surgeon volume and total knee arthroplasty outcomes. Medline, Embase, and Cochrane databases were searched for studies meeting the following inclusion criteria: longitudinal, cohort, prospective, or retrospective studies comparing outcomes across surgeon volume categories; citations published in English; and studies comparing the role of surgeon volume to component survivorship and thromboembolic events. Studies were excluded if they did not compare surgeon volume with knee implant survivorship or thromboembolic events, were not a high volume surgeon registry, or were case series studies. The primary outcomes of interest included 90-day complications, 90-day mortality, and 2-year revision rate. The volume data was used to calculate the stratum-specific likelihood ratio (SSLR) of this construct. The SSLR analysis was performed using linear, logistic, and Cox regression models.

RESULTS: SSLR analysis of the ROC curves for 90-day complication and 2-year revision rates by surgeon volume identified four volume categories: 0 to 35, 36 to 124, ≥125 and ≥250 total knee arthroplasties per year. Complication rates decreased significantly (p < 0.001) in progressively higher-volume categories. Revision rates did not decrease between surgeons performing at least 60 arthroplasties per year. SSLR analysis of 90-day complication and 90-day mortality rates by hospital volume also identified four volume categories: 0 to 8, 8 to 225, 226 to 644, and ≥645 total knee arthroplasties per year. Complication rates decreased significantly (p < 0.001) in progressively higher-volume categories, which in this study corresponds to ≥645 total knee arthroplasties per year. Mortality rates for hospitals with ≥645 total knee arthroplasties per year were significantly lower (p < 0.001) than those below the threshold.

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CONCLUSIONS: Our study supports the conclusion that surgeon and hospital volume are associated with lower rates of complications.
BACKGROUND: A relation between provider volume and outcome of total joint replacement (TJR) has not been demonstrated in Canada. Given the recent increase in TJR, changing patient characteristics and small sizes of previous Ontario studies, we measured whether adverse outcomes of TJR are related to hospital and surgeon procedure volumes. METHODS: We included all Ontarians aged 20 years and older who underwent a unilateral elective primary total hip replacement (THR) or total knee replacement (TKR) between April 2000 and March 2004. The main data sources were hospital discharge abstracts and physician billings. We defined provider volume as the average annual number of primary and revision procedures performed by hospitals and surgeons during the study period. We assessed the association between procedure volumes and acute length of hospital stay (ALOS) and between volume and rate of surgical complications during the index admission; death within 90 days of operation; readmission for a repeat procedure or readmission within 1 year; and revision arthroplasty within 1 year. We adjusted for age, sex, comorbidity, arthritis type, teaching hospital status and discharge disposition. The analyses of hospital volume were adjusted for surgeon volume and vice versa. RESULTS: We included 20,290 patients who received THR and 27,217 who received TKR. Patient age, sex, comorbidity were significant predictors of complications and mortality. There were no associations between provider volume and mortality. Strategies for other outcomes were mixed. Surgeon procedure volume was related to rates of revision THR but not to rates of revision TKR. Shorter ALOS was associated with male sex, younger age, fewer comorbidities, discharge to a rehabilitation unit or facility and greater surgeon volume. CONCLUSION: Provider characteristics were significant predictors of complications and mortality. The authors studied surgeon specialization accounted for 9% (coronary artery bypass grafting) to 100% (cystectomy) of the relative risk reduction from surgeon specialization was greater than that from surgeon volume for that specific procedure. Furthermore, surgeon specialization accounted for 9% (coronary artery bypass grafting) to 100% (cystectomy) of the relative risk reduction otherwise attributable to volume in that specific procedure. CONCLUSION: For several common procedures, surgeon specialization was an important predictor of operative mortality independent of the number of times he or she performed that procedure: carotid endarterectomy (relative risk reduction between bottom and top quarter of surgeons 28%, 95% confidence interval 0% to 48%); coronary artery bypass grafting (15%, 4% to 25%); valve replacement (46%, 37% to 55%); abdominal aortic aneurysm repair (42%, 29% to 53%); long resection (28%, 5% to 44%); and cystectomy (41%, 8% to 63%). In five procedures (carotid endarterectomy, valve replacement, long resection, cystectomy, and esophagectomy), the relative risk reduction from surgeon specialization was greater than that from surgeon volume for that specific procedure. Furthermore, surgeon specialization accounted for 9% (coronary artery bypass grafting) to 100% (cystectomy) of the relative risk reduction otherwise attributable to volume in that specific procedure. CONCLUSION: For several common procedures, surgeon specialization was an important predictor of operative mortality independent of the number of times he or she performed that procedure. When selecting a surgeon, patients, referring physicians, and administrators assigning operative workload may want to consider a surgeon's procedure specific volume as well as the degree to which a surgeon specializes in that procedure. Retrospective study of residents of Ontario age 20 years and older who had unilateral, elective primary total hip or knee replacement relating adverse outcomes to hospital and surgeon procedure volumes adjusting for risk factors. Authors divided surgeons performing THR into 4 volume categories based on the quartile per annum distribution of patients: 2–25, 26–50, 51–70 and more procedures per annum. The corresponding cut-points for TKR were: 2–35, 36–40, 51–70 and 71 or more procedures per annum. Authors calculated hospital volume categories in a similar way: 10–110, 111–150, 151–225, >225 divided by his/her total operating volume across all procedures). RESULTS: For all four cardiovascular procedures and two out of four cancer resections, a surgeon’s degree of specialization was a significant predictor of operative mortality independent of the number of times he or she performed that procedure: carotid endarterectomy (relative risk reduction between bottom and top quarter of surgeons 28%, 95% confidence interval 0% to 48%); coronary artery bypass grafting (15%, 4% to 25%); valve replacement (46%, 37% to 55%); abdominal aortic aneurysm repair (42%, 29% to 53%); long resection (28%, 5% to 44%); and cystectomy (41%, 8% to 63%). In five procedures (carotid endarterectomy, valve replacement, long resection, cystectomy, and esophagectomy), the relative risk reduction from surgeon specialization was greater than that from surgeon volume for that specific procedure. Furthermore, surgeon specialization accounted for 9% (coronary artery bypass grafting) to 100% (cystectomy) of the relative risk reduction otherwise attributable to volume in that specific procedure. CONCLUSION: For several common procedures, surgeon specialization was an important predictor of operative mortality independent of the number of times he or she performed that procedure. When selecting a surgeon, patients, referring physicians, and administrators assigning operative workload may want to consider a surgeon's procedure specific volume as well as the degree to which a surgeon specializes in that procedure.
BACKGROUND: The Center for Medicare and Medicaid Services (CMS) is transitioning Medicare from a fee-for-service program into a value-based pay for performance program. In order to accomplish this goal, CMS initiated 3 programs that attempt to define quality and seek to reward high-performing hospitals and penalize poor-performing hospitals. These programs include (1) penalties for hospital-acquired conditions (HACs), (2) penalties for excess readmissions for certain conditions, and (3) performance on value-based purchasing (VBP). The objective of this study was to determine whether high-volume total joint hospitals perform better in these programs than their lower-volume counterparts.

METHODS: We analyzed data from the New York Statewide Planning and Research Cooperative System database on total New York State hospital discharges from 2013 to 2015 for total knee and total hip arthroplasty. This was compared to data from the Hospital Compare on HACs, excess readmissions, and VBP. From these databases, we identified 123 hospitals in New York, which participated in all 3 Medicare fee-for-performance programs and performed total joint replacements.

RESULTS: Over the 3-year period spanning 2013-2015, hospitals in New York State performed an average of 136.5±total joint replacement surgeries and achieved a mean readmission penalty of 0.03±0.03. The correlation coefficient between surgery volume and combined performance score was 0.27. Of these correlations, surgery volume and VBP performance, and surgery volume and combined performance showed statistical significance (P < 0.05). CONCLUSION: Our study demonstrates that there is a positive association between joint replacement volume and overall hospital quality, as well as joint replacement volumes and VBP performance specifically. These findings are consistent with previously reported associations between patient outcomes and procedure volumes. However, a relationship between joint replacement volume and 30-day mortality or readmission rates could not be demonstrated.

OBJECTIVE: To examine the association between surgical start time and morbidity and mortality for nonemergent procedures. EpubMed JAMA Background: Patients require medical services 24 hours a day. Several studies have demonstrated a difference in outcomes over the course of the day for anesthesia-related events, death in the ICU, and dialysis care. The relationship between operation start time and patient outcomes has not been studied. METHODS: We performed a retrospective cohort study of 144,740 nonemergent general and vascular surgical procedures performed within the VA Medical System 2000-2004 and entered into the National Surgical Quality Improvement Program Database. Operation start time was the independent variable of interest. Logistic regression was used to adjust for patient and procedural characteristics. RESULTS: Unadjusted later start time was significantly associated with higher surgical mortality and morbidity. After adjustment for patient and procedural characteristics, morbidity was not significantly associated with start time. However, after appropriate adjustment, operations starting between 6 pm and 6 am were associated with an elevated risk of mortality (OR = 1.25, P = 0.002) and of morbidity (OR = 1.16, P = 0.033). CONCLUSIONS: When looking at a nonemergent procedure, surgeons must bear in mind that cases that start after routine "business" hours within the VA System may face an increased risk of complications that warrants further evaluation.

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BACKGROUND: Surgical care is delivered around the clock. Elective cases within the Veterans Affairs health system starting after 4 pm appear to have an elevated risk of morbidity, but not mortality, compared to earlier cases. The relationship between operation start time and patient outcomes is not described in private-sector patients or for emergency cases. STUDY DESIGN: We performed a retrospective cohort study of 56,920 general and vascular surgical procedures performed from October 2001 through September 2004, and entered into the National Surgical Quality Improvement Program Database. Operation start time was the independent variable of interest. Random effects, hierarchical logistic regression models adjusted for patient, operative, and facility characteristics. Two independent models determined associations between start time and morbidity or mortality. Subsets analysis was performed after adjustment for patient and emergency cases. RESULTS: After adjustment for patient and procedure characteristics, morbidity had a moderately strong association with start time, but only for nonemergency cases starting 9:30 pm to 7:30 am (odds ratio = 1.752; P = 0.038; reference 7:30 pm to 9:30 am) and for mortality, after adjustment for operations starting between 6 pm and 6 am (odds ratio = 1.595; P = 0.003). Subgroup analysis showed the effect was largely a result of elevated risk of mortality in emergency cases from the overnight time period (odds ratio = 1.86; P = 0.001). CONCLUSIONS: Surgical start times are associated with risk-adjusted patient outcomes, terms of facility operations management and resource allocation, consideration should be given to the capacity to accommodate cases with differences in risk during different time periods.

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III / A / 4

Time of surgery start


BACKGROUND: There is growing support in the literature that patient outcomes are adversely affected by physician fatigue in operator-dependent cognitive and technical tasks. Recent increases in total joint arthroplasty caseloads have resulted in longer operating days and increased surgeon fatigue. We sought to determine if time of day predicts perioperative complications and outcomes in total joint arthroplasty. METHODS: The records of all total hip and knee arthroplasties (THA, TKA) performed for primary osteoarthritis in one calendar year at one large university hospital were retrospectively reviewed. Demographic data, surgery start time and duration, intraoperative complications, radiographic component alignment and functional outcome scores (SF-12 and Western Ontario and McMaster Universities Osteoarthritis Index) were collected and analyzed using linear and nonparametric rank correlation statistics. Data were corrected for sex, body mass index, surgeon, and post-surgical operating days. RESULTS: In the TKA cohort (n=194), a later surgery start time was significantly related to duration of surgery (r=0.06, mean difference = 7.1 min). There was a trend toward significance between a later surgery start time and intraoperative femur fracture (r=0.055). Preoperative complications, component alignment and functional outcome scores were not significantly affected by surgery start time. There were no significant findings for any of the intraoperative or postoperative outcomes in the THA cohort (n=215). CONCLUSION: Duration of surgery and incidence of intraoperative complications for TKA may increase with later surgery start time; however, the relatively small statistical differences observed imply that they are not clinically significant.

Retrospective cohort study of diagnosis; duration of surgery vs patient-oriented outcome.

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III / A / 6

Concurrent/Overlapping surgeries

Peskun C, Walmsley D, Waddell J, Schemitsch E. Effect of surgeon fatigue on surgeries

McGrory BJ, Weber KL, Jevsevar DS, Sevarino K. Surgical Management of

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McGrory BJ, Weber KL, Jevsevar DS, Sevarino K. Surgical Management of

Operation - Interoperative Responsibility of the Primary Surgeon: Concurrent or Simultaneous Operations and Overlapping Operations

Tier 3 Source


Concurrent or Simultaneous Operations: Concurrent or simultaneous operations occur when the key or critical elements of the first operation have been completed and the primary attending surgeon is immediately available in the first operating room to another attending surgeon. The patient needs to be informed in either of these circumstances. The performance of overlapping procedures should not negatively affect the seamless and timely flow of either procedure. The less common scenario is when the key or critical elements of the first operation have been completed and there is no reasonable expectation that the primary attending surgeon will need to return to that operation. In this circumstance, a second operation is started in another operating room while a qualified practitioner performs noncritical components of the first operation—for example, wound closure—allowing the primary surgeon to initiate the second operation. In this situation, a qualified practitioner must be physically present in the operating rooms of the first operation. The second and second common scenario is when the key or critical elements of the first operation have been completed and the primary attending surgeon is performing key or critical portions of a second operation in another room in this scenario, the primary attending surgeon must assure immediate availability in the first operating room to another attending surgeon. The patient needs to be informed in either of these circumstances. The performance of overlapping procedures should not negatively affect the seamless and timely flow of either procedure.

Professional society guideline on overlapping versus concurrent surgeries:

Supports avoiding late surgical start times, but small statistical differences imply results are likely not clinically significant.

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III / A / 6

Concurrent/Overlapping surgeries


Overlapping surgery recently has gained significant media attention, but there are limited data on its safety and efficacy. To date, there has been no analysis of overlapping surgery in the field of spine. Our goal was to compare overlapping versus nonoverlapping spine surgery patient outcomes and costs. METHODS: A retrospective review was undertaken of 2194 spine surgeries (n = 968 overlapping, n = 1226 nonoverlapping) performed by 3 neurosurgery attending surgeons from 2012 to 2015 at the University of California San Francisco. Collected variables included patient age, sex, insurance, American Society of Anesthesiologists score, severity of illness, risk of mortality, procedure type, surgeon, day of surgery, source of transfer, admission type, overlapping versus nonoverlapping surgery (≥1 minute of overlapping procedure time), Medicare-Severity Diagnosis-Related Group, comorbidity, and presence of another attending/fellow/resident. Univariate, then multivariate mixed-effect models were used to evaluate the effect of the collected variables on the following outcomes: procedure time, estimated blood loss, length of stay, discharge status, 30-day mortality, 30-day unplanned readmission, unplanned return to OR, and total hospital cost. RESULTS: Urgent spine cases were more likely to be done in an overlapping fashion (P < 0.001). After we adjusted for patient demographics, clinical indicators, and procedure characteristics, overlapping surgeries had longer procedure times (estimate = 26.17; P < 0.001) and lower rates of discharge to home (odds ratio = 0.65; P < 0.001) but equivalent rates of 30-day mortality, nonreadmission, return to the operating room, estimated blood loss, length of stay, and total hospital cost (n = 11). CONCLUSION: Overlapping spine surgery may be performed safely at our institution, although continued monitoring of patient outcomes is necessary. Overlapping surgery does not lead to greater hospital costs.

Retrospective single institution cohort study of patients undergoing spine surgery with or without "overlapping" surgeries as defined by "≥1 minute of overlapping procedure time." Patients undergoing overlapping surgeries had no increase in mortality, readmissions, return to the OR, blood loss, length of stay or total hospital cost.

This paper does not deal with concurrent surgeries. Limitation of study: definition of overlapping surgery as ≤1 minute of overlapping procedure time. Patients undergoing overlapping surgeries had no increase in mortality, readmissions, return to the OR, blood loss, length of stay or total hospital cost.

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III / A / 6

General surgical guidelines


SURGICAL MANAGEMENT OF OSTEOARTHRITIS OF THE KNEE: Evidence-Based Guideline is based on a systematic review of the current scientific and clinical research. The guideline contains 38 recommendations pertaining to the preoperative, perioperative, and postoperative care of patients with osteoarthritis (OA) of the knee who are considering surgical treatment. The purpose of this clinical practice guideline is to help improve surgical management of patients with OA of the knee based on current best evidence. In addition to guideline recommendations, the work group highlighted the need for better research on the surgical management of OA of the knee.

Professional society guideline related to surgical management of osteoarthritis of the knee.

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III / A / 6

General surgical guidelines

McGrory BJ, Weber KL, Jevsevar DS, Sevarino K. Surgical Management of Osteoarthritis of the Knee: Evidence-Based Guideline is based on a systematic review of the current scientific and clinical research. The guideline contains 38 recommendations pertaining to the preoperative, perioperative, and postoperative care of patients with osteoarthritis (OA) of the knee who are considering surgical treatment. The purpose of this clinical practice guideline is to help improve surgical management of patients with OA of the knee based on current best evidence. In addition to guideline recommendations, the work group highlighted the need for better research on the surgical management of OA of the knee.

Professional society guideline related to surgical management of osteoarthritis of the knee.

Recommendations relate primarily to specifics of surgery.
Chlorhexidine

Chlorhexidine gluconate-impregnated-cloths and single-use solution packs.
100

**Perioperative antibiotics**


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**Perioperative antibiotics**

**Anticoagulation**


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**References**


**Use of intravenous tranexamic acid to reduce all-cause blood transfusion in total hip and knee arthroplasty: a meta-analysis.** Anesth Analg, 2003; 97(5): 1367-76. PMID: 1298179.

**Intravenous tranexamic acid to reduce transfusions and blood loss without increasing thromboembolic complications.** Meta-analysis of 12 clinical trials.

**Intravenous tranexamic acid to reduce surgical blood loss.** Supports use of tranexamic acid to reduce surgical blood loss.
null
Anticoagulation

Anticoagulation protocols are used to reduce the risk of pulmonary embolism (PE) and deep vein thrombosis (DVT) in patients undergoing total joint arthroplasty (TJA). The choice of anticoagulation protocol can impact the risk of bleeding complications. A prospective, pragmatic, randomized trial compared two anticoagulation protocols in patients undergoing TJA:

**Introduction:**

- Stratification of patients into different risk categories for pulmonary embolism (PE) after total joint arthroplasty (TJA) may allow clinicians to individualize venous thromboembolism prophylaxis based on an appropriate risk-benefit scale.

**Methods:**

- Patients undergoing primary total hip arthroplasty (THA) or total knee arthroplasty (TKA) as part of the American College of Surgeons National Surgical Quality Improvement Program were identified. Independent risk factors for PE within 30 days of surgery were identified and used to develop a point-scoring system to estimate the relative risk for PE. The model was then tested on patients undergoing THA as a single institute.

**Results:**

- A total of 121,873 patients were identified, including 72,673 (61.3%) undergoing TKA and 45,800 (38.7%) undergoing THA. The point scores derived for each of these factors varied: anemia: -2; body mass index (BMI) 25-30 kg/m² and ≥30 kg/m²: +2; females: -1; prior VTE: -2; body mass index ≥30 kg/m²: +2; postoperative surgical site: +2; TKA: -5. The point-scoring system was then applied to 17,384 patients from a single institution. Single-institution patients categorized as low risk using the point-scoring system had a 0.4% (95% CI 0.3%-0.6%) risk of PE. When applied to patients in a single institution, the point-scoring system predicted PE for 4% of TKA and 9% for THA. This point-scoring system predicted PE for 4% of THA and may help surgeons to optimize selection of prophylactic regimens.

**Conclusion:**

- Stratification of patients into different risk categories for pulmonary embolism (PE) after total joint arthroplasty (TJA) may allow clinicians to individualize venous thromboembolism prophylaxis based on an appropriate risk-benefit scale. The model was then tested on patients undergoing THA as a single institute. The point-scoring system predicted PE for 4% of THA and may help surgeons to optimize selection of prophylactic regimens.
III / B / 5 Glycemic control


After controlling for patient demographics and medical comorbidities, patients with an HbA1c level of 7.5 mg/dl or greater had a significantly increased risk of infection ranging from 0.5% up to 3.5% for patients with an HbA1c level > 11.0 mg/dl (p = 0.012). The inflection point of postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL). Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL). Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL). Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL). Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL). Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL). Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL). Postoperative hyperglycemia increased the risk of POI by 30% with every 40-point increase from normoglycemia (<110 mg/dL).

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Hansen VJ, Gromov K, Lebrun LM, Rubash HE, Malchau H, Freiberg AA. Does the Risk Assessment and Prediction Tool (RAPT) predict discharge disposition after total joint arthroplasty (TJA)? The RAPT was developed and tested on a population of Australian patients undergoing joint replacement, but its validity in other populations is unknown. A low RAPT score is reported to indicate a high risk of needing any form of inpatient rehabilitation after TJA, including short-term nursing facilities. QUESTIONS/PURPOSES: This study attempts (1) to assess predictive accuracy of the RAPT on US patients undergoing total hip and knee arthroplasty (THA/TKA), and (2) to determine predictive accuracy of each individual score (1-12). METHODS: Between June 2006 and December 2011, RAPT scores of 1233 patients (854 THA, 379 TKA) were prospectively captured during the preoperative clinical visit. Scores were stored along with other clinical data, including discharge disposition, in a dedicated database on a secure server. The database was queried by the nursing case manager to retrieve the RAPT scores of all patients captured during this time period. Binary logistic regression was used to analyze the scores and determine predictive accuracy.

RESULTS: Overall predictive accuracy was 78%. RAPT scores<6 and >10 predicted with >90% accuracy discharge to inpatient rehabilitation and home, respectively. Predictive accuracy was lowest for scores between 7 and 10 at 63.2% and almost 50% of patients received scores in this range. Based on our findings, the risk categories in our populations should be high risk<7, intermediate risk 7 to 10, and low risk>10. CONCLUSION: The RAPT accurately predicted discharge disposition for high- and low-risk patients in our cohort. Based on our data, intermediate-risk patients should be defined as those with scores of 7 to 10. Predictive accuracy for these patients could potentially be improved through the identification and addition of other factors correlated to discharge disposition. The RAPT allows for identification of patients who are likely to be discharged home or to rehabilitation, which may facilitate preoperative planning of postoperative care. Additionally, it identifies intermediate-risk patients and could be used to implement targeted interventions to facilitate discharge home in this group of patients.

BACKGROUND: Emergency department visits and hospitalization are common after hospital discharge. OBJECTIVE: To test the effects of an intervention designed to minimize hospital utilization after discharge. DESIGN: Randomized trial using block randomization of 6 and 8. Randomly arranged index cards were placed in opaque envelopes labeled consecutively with study numbers, and participants were assigned to a study group by revealing the index card. SETTING: General medical service at an urban, academic, safety-net hospital. PATIENTS: 749 English-speaking hospitalized adults (mean age, 49.9 years). INTERVENTION: A nurse discharge advocate worked with patients during their hospital stay to arrange follow-up appointments, confirm medication reconciliation, and conduct patient education with an individualized instruction booklet that was sent to their primary care provider. A clinical pharmacist called patients 2 to 4 days after discharge to reinforce the discharge plan and review medications. Participants and providers were not blinded to treatment assignment. MEASUREMENTS: Primary outcomes were emergency department visits and hospitalizations within 30 days of discharge. Secondary outcomes were self-reported preferences for discharge and frequency of primary care provider follow-up within 30 days of discharge. Research staff did follow-up within 30 days of discharge to determine outcomes.

RESULTS: Among 749 patients, 370 were randomized to the intervention group and 379 to usual care. The intervention group had a lower rate of hospital utilization within 30 days of discharge. FUNDING: Agency for Healthcare Research and Quality, National Heart, Lung, and Blood Institute, National Institutes of Health.

BACKGROUND: Hospitalization is a major event in the lives of people with medical and/or surgical conditions. OBJECTIVE: To develop a reliable risk assessment tool for discharge disposition after total joint arthroplasty (TJA). The Risk Assessment and Prediction Tool (RAPT) is a preoperative survey constructed to predict discharge disposition after total joint arthroplasty (TJA). The RAPT was developed and tested on a population of Australian patients undergoing joint replacement, but its validity in other populations is unknown. A low RAPT score is reported to indicate a high risk of needing any form of inpatient rehabilitation after TJA, including short-term nursing facilities. QUESTIONS/PURPOSES: This study attempts (1) to assess predictive accuracy of the RAPT on US patients undergoing total hip and knee arthroplasty (THA/TKA), and (2) to determine predictive accuracy of each individual score (1-12). METHODS: Between June 2006 and December 2011, RAPT scores of 1233 patients (854 THA, 379 TKA) were prospectively captured during the preoperative clinical visit. Scores were stored along with other clinical data, including discharge disposition, in a dedicated database on a secure server. The database was queried by the nursing case manager to retrieve the RAPT scores of all patients captured during this time period. Binary logistic regression was used to analyze the scores and determine predictive accuracy.

RESULTS: Overall predictive accuracy was 78%. RAPT scores<6 and >10 predicted with >90% accuracy discharge to inpatient rehabilitation and home, respectively. Predictive accuracy was lowest for scores between 7 and 10 at 63.2% and almost 50% of patients received scores in this range. Based on our findings, the risk categories in our populations should be high risk<7, intermediate risk 7 to 10, and low risk>10. CONCLUSION: The RAPT accurately predicted discharge disposition for high- and low-risk patients in our cohort. Based on our data, intermediate-risk patients should be defined as those with scores of 7 to 10. Predictive accuracy for these patients could potentially be improved through the identification and addition of other factors correlated to discharge disposition. The RAPT allows for identification of patients who are likely to be discharged home or to rehabilitation, which may facilitate preoperative planning of postoperative care. Additionally, it identifies intermediate-risk patients and could be used to implement targeted interventions to facilitate discharge home in this group of patients.
Discharge planning is a routine feature of health systems in many countries. The aim of discharge planning is to reduce hospital length of stay and unplanned re-admission to hospital, and to improve the co-ordination of patient care between hospital discharge and primary care. Discharge planning supports patient discharge from hospital and includes post-discharge planning. The discharge planning process should include coordination with the community or post-acute care. Patients identified for discharge planning may have one or more medical and surgical conditions. Discharge planning may lead to increased satisfaction for patients and healthcare professionals (low certainty evidence, insufficient data). A meta analysis of 30 RCTs focused on discharge planning as it relates to hospital length of stay and readmission. Patients hospitalised with a medical condition whose included discharge planning had lower readmission rates for patients who were discharged to home for medical conditions.

Discharge planning reduces the incidence of deep venous thrombosis. Furthermore, in the mobilization group the odds of developing a thromboembolic complication was significantly reduced the greater the distance mobilized. Thromboembolic complications in the mobilization group (seven in total) compared with the control group (16 in total) (P= 0.03). Healthy patients discharged to SNFs after primary total joint arthroplasty patients had higher odds of hospital readmission within 90 days of surgery than those discharged home (total hip arthroplasty: odds ratio = 1.9; 95% confidence interval, 1.1-3.3; P = 0.01; total knee arthroplasty: odds ratio = 1.6; 95% confidence interval, 1.1-2.4; P = .01). Healthy patients discharged to SNFs after primary total joint arthroplasty need to be followed closely for complications.

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Physiotherapist-directed rehabilitation exercises in the outpatient or home-based setting improve gait speed and cadence after elective total hip replacement: a systematic review with meta-analysis of randomized clinical trials. Caudwell, Connolly L; Squivin, Jeremie M; Kearns, Teresa M; Strach, Paul N. J Physiother (PHYSIOTHER), 1 Dec 13 (94): 319-28.

Meta-analysis of the moderate-quality trials including 234 participants, evaluating benefit of physiotherapy after total hip replacement, as well as subgroup analysis of outcomes in patients undergoing outpatient vs inpatient rehabilitation.

Physiotherapy rehabilitation improved hip abduction strength, gait speed and cadence in people who had been discharged from hospital after total hip replacement. Physiotherapist-directed rehabilitation exercises appear to be similarly effective whether they are performed unsupervised at home or supervised by a physiotherapist in an outpatient setting.

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physical therapy; Not available without a subscription.

Post-operative care in Telemedicine


BACKGROUND: Physiotherapy has long been a routine component of patient rehabilitation following hip joint replacement. The purpose of this systematic review was to evaluate the effectiveness of physiotherapy exercise after discharge from hospital on function, walking, range of motion, quality of life and muscle strength, for osteoarthritic patients following elective primary total hip arthroplasty. METHODS: DESIGN: Systematic review, using the Cochrane Collaboration Handbook for Systematic Reviews of Interventions and the QUOROM Statement. Database searches: AMED, CHI, EMBASE, Cochrane Library, Cochrane Central Register of Controlled Trials, DARE, PEDro, The Department of Health National Register: Handsearches: Physiotherapy, Physical Therapy, Journal of Bone and Joint Surgery. No language restrictions were applied. SELECTION: Trials comparing physiotherapy exercise versus usual standard care, or comparing two types of relevant exercise physiotherapy, following discharge from hospital after elective primary total hip replacement for osteoarthritic were reviewed. OUTCOMES: Functional activities of daily living, walking, quality of life, muscle strength and range of hip joint motion. Trial quality was extensively evaluated. Narrative synthesis plus meta-analytic summaries were performed to summarise the data. RESULTS: 8 trials were identified. Trial quality was mixed. Generally poor trial quality, quantity and diversity prevented exploratory meta-analysis. The results were synthesised and meta-analytic summaries were used where possible to provide a formal summary of results. RESULTS: Physiotherapy exercise after discharge following total hip replacement has the potential to benefit patients. CONCLUSION: Insufficient evidence exists to establish the effectiveness of physiotherapy exercise following hip joint replacement for osteoarthritic. Further well designed trials are required to determine the value of post discharge exercise following this increasingly common surgical procedure.
Methodology for Evidence Table Updates

During 2017, an extensive evidence review was conducted, which included a literature review through September 2017. Literature included was derived from research involving human subjects, published in English, and indexed in MEDLINE (through PubMed), the Cochrane Library, Agency for Healthcare Research and Quality Reports, NICE, and other selected sources. The 2013 version of the Bree Collaborative joint replacement bundle was reviewed line by line as individual topics. Individual citations were appraised by an initial reviewer using SORT methodology and verified by a second, independent reviewer using the same method. Any differences in appraisal were resolved to achieve a single. The evidence table was subject to public comment. The workgroup reviewed selected citations in detail. The completed table was published in the public domain.

Evidence grade follows the SORT method available at:


Special Source Designations:
Tier-1 Sources include: Systematic Reviews, Technology Assessments, and Statements Originated from National
Tier-2 Sources include: Clinical Guidelines, Meta-Analyses, Systematic Reviews, Randomized Control Trials
Tier-3 Sources include: Primary Literature and other documents
for evidence search and appraisal.