Perioperative Optimization in Hip and Knee Arthroplasty

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Joint Reconstruction Specialist
Kansas City Orthopaedic Alliance
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ORIGINAL ARTICLE

Total Hip Replacement or Resistance Training for Severe Hip Osteoarthritis

Authors: Thomas Frydendal, Ph.D., Robin Christensen, Ph.D., Inger Mechlenburg, D.M.Sc., Lone R. Mikkelsen, Ph.D., Claus Varnum, Ph.D., Anders E. Graversen, M.D., Per Kjærsgaard-Andersen, M.D., +3, and Søren Overgaard, D.M.Sc. Author Info & Affiliations

Published October 30, 2024 | N Engl J Med 2024;391:1610-1620 | DOI: 10.1056/NEJMoa2400141
VOL. 391 NO. 17 | Copyright © 2024

- THA resulted in a clinically important, superior reduction in hip pain and improved hip function, as reported by patients, at 6 months as compared with resistance training.
- (Funded by the Danish Rheumatism Association and others; PROHIP ClinicalTrials.gov number, NCT04070027.)

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ORIGINAL ARTICLE

A Randomized, Controlled Trial of Total Knee Replacement

This article has been corrected. VIEW THE CORRECTION

Authors: Søren T. Skou, P.T., Ph.D., Ewa M. Roos, P.T., Ph.D., Mogens B. Laursen, M.D., Ph.D., Michael S. Rathleff, P.T., Ph.D., Lars Arendt-Nielsen, Ph.D., D.M.Sc., Ole Simonsen, M.D., D.M.Sc., and Sten Rasmussen, M.D., Ph.D. Author Info & Affiliations

Published October 22, 2015 | N Engl J Med 2015;373:1597-1606 | DOI: 10.1056/NEJMoa1505467
VOL. 373 NO. 17 | Copyright © 2015

- Treatment with TKA resulted in greater pain relief and functional improvement after 12 months than did nonsurgical treatment alone.
- Associated with a higher number of serious adverse events
- (Funded by the Obel Family Foundation and others; MEDIC ClinicalTrials.gov number, NCT01410409.)

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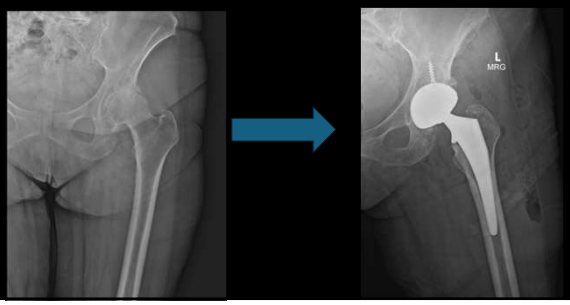
Safely Accomplish This



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Safely Accomplish TJA in Patients with significant symptoms and Grade 3-4 OA

- INFECTION AVOIDANCE!!!!

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Clin Orthop Relat Res (2021) 479:2203-2213
DOI 10.1097/CORR.0000000000001838
Clinical Orthopaedics and Related Research®
Selected Papers from the 9th International Congress of Arthroplasty Registries
Guest Editor: Ola Rolfson MD, PhD
OPEN

What Are the Long-term Outcomes of Mortality, Quality of Life, and Hip Function after Prosthetic Joint Infection of the Hip? A 10-year Follow-up from Sweden

Peter Wildeman MD[1], Ola Rolfson MD, PhD[1], Bo Söderquist MD, PhD[2], Per Wretenberg MD, PhD[1], Viktor Lindgren MD, PhD[1]

Conclusion In this study, we found that PJI after THA has a negative impact on mortality, long-term health-related quality of life, and hip function. Furthermore, the subgroup analysis showed that modifiable factors such as the number of reoperations and surgical approach are associated with poorer hip function. This emphasizes the importance of prompt, proper initial treatment to reduce repeated surgery to minimize the negative long-term effects of hip PJI.

Level of Evidence Level III, therapeutic study.

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The burden of prosthetic joint infection (PJI)

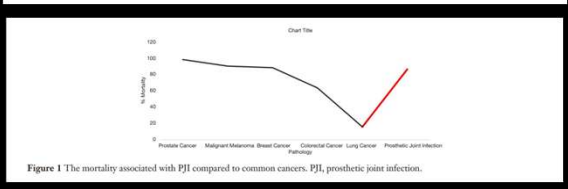

Figure 1 The mortality associated with PJI compared to common cancers. PJI, prosthetic joint infection.

- The mortality rates for PJI is comparable to breast cancer and higher than that for colorectal and lung cancer (20) (Figure 1).
- Giving a patient a PJI is as bad as giving them cancer.

7

Factors I look for

- Cardiac health, Stroke History, anticoagulant use (not covered in this talk)
- BMI
- Hemoglobin
- Glucose Control
- Nicotine or Drug use
- Nutritional Status
- Liver disease (Hepatitis C)
- Renal Failure (dialysis)
- MRSA Colonization
- Decreasing Opiates
- Managing biologics and immunosuppressants.
- Dental Prophylaxis

8

BMI < 40

Complications of Morbid Obesity in Total Joint Arthroplasty: Risk Stratification Based on BMI

Derek T. Ward, MD [a], Lionel N. Metz, MD [a], Patrick K. Horst, MD [a], Hubert T. Kim, MD, PhD [b], Alfred C. Kuo, MD, PhD [b]

[a] University of California, San Francisco, Department of Orthopaedic Surgery, San Francisco, California
[b] San Francisco Department of Veterans Affairs, Veterans Affairs Medical Center, San Francisco, California

- Infection OR 2.11
- Reoperation OR 2.36
- But → 2.36 vs 3.37 %

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Primary Knee

Is Morbid Obesity a Modifiable Risk Factor in Patients Who Have Severe Knee Osteoarthritis and do Not Have a Formal Perioperative Optimization Program?

Mina Botros, MD [a], Paul Guirguis, MD [a], Rishi Balkissoon, MD, MPH [a], Thomas G. Myers, MD [a], Caroline P. Thirukumaran, MBBS, MHA, PhD [a, b], Benjamin F. Ricciardi, MD [a, b, *]

[a] Department of Orthopaedics and Rehabilitation, University of Rochester Medical Center, Rochester, New York
[b] Center for Musculoskeletal Research, University of Rochester Medical Center, Rochester, New York

- BMI drop > 10
  - Bariatric surgery 23.8%
  - Weight loss program 8.6%
  - No intervention 1%
- BMI drop < 5
  - Surgery 53%
  - Program 67%
  - No intervention 75%

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On going debate (AAOS 2023)

- Look at body habitus
- Avoid Wound issues and use alternative wound strategies
- Have a goal and a date to move forward
- Engage family and support system

SUMMARY OF OPTIONS

Options are formed when there is little or no evidence on a topic. This is defined as low quality evidence or a single moderate quality study (i.e., a limited strength option), no evidence or only conflicting evidence (i.e., a consensus option), or statements resulting in a limited or consensus strength following Evidence to Decision Framework upgrading and/or downgrading.

BMI: ADVERSE EVENTS

Limited evidence suggests that elevated BMI may increase the risk of adverse events in patients undergoing total hip arthroplasty for symptomatic hip osteoarthritis.

Quality of Evidence: Low
Strength of Option: Limited

Evidence from two or more "Low" quality studies with consistent findings or evidence from a single "Moderate" quality study recommending for or against the intervention. Also, higher strength evidence can be downgraded to limited due to major concerns addressed in the EtD Framework.

BMI: CLINICAL OUTCOMES

Limited evidence supports that patients with elevated BMI and symptomatic osteoarthritis of the hip may achieve lower absolute patient reported outcome scores but a similar degree of improvement in patient satisfaction, pain, function, and quality of life after total hip arthroplasty.

Quality of Evidence: Low
Strength of Option: Limited

Evidence from two or more "Low" quality studies with consistent findings or evidence from a single "Moderate" quality study recommending for or against the intervention. Also, higher strength evidence can be downgraded to limited due to major concerns addressed in the EtD Framework.

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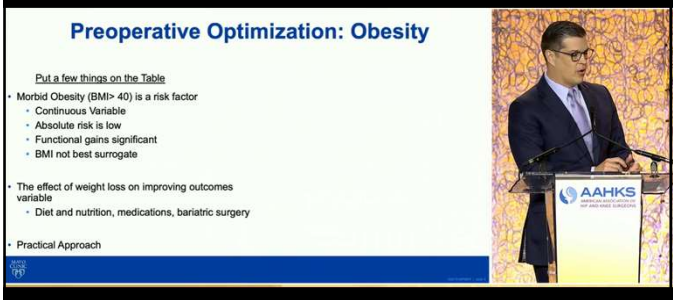
Brian Springer AAKHS 2024



Preoperative Optimization: Obesity

Put a few things on the Table

- Morbid Obesity (BMI> 40) is a risk factor
  - Continuous Variable
  - Absolute risk is low
  - Functional gains significant
  - BMI not best surrogate
- The effect of weight loss on improving outcomes variable
  - Diet and nutrition, medications, bariatric surgery
- Practical Approach

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2013

Obesity and Total Joint Arthroplasty
A Literature Based Review

A Workgroup of the American Association of Hip and Knee Surgeons (AAHKS) Evidence Based Committee*

OrthoCarolina Hip and Knee Center, Charlotte, North Carolina

It is our consensus opinion that consideration should be given to delaying total joint arthroplasty in a patient with a BMI > 40, especially when associated with other co-morbid conditions, such as poorly controlled diabetes or malnutrition

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Updated guidelines on Obesity?

- Coming soon – AAKHS and AAOS 2025.
- No free lunch
  - Gastric emptying?
  - Malnutrition?

GLP-1 Agonist: *Science* 2023 Breakthrough of the Year

- Glycemic control << Weight-loss
  - Increased insulin
  - Decreased gastric emptying
  - Suppress brain's hunger center
- Secondary benefits ↓↓ obesity: OSA, HTN, Cardiac, CVAs, More?
- Optimize vs Delay TJA?
- Impact of utilization of Bariatric Surgery ?

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Hemoglobin

The Journal of Arthroplasty 32 (2017) 320–325

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The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

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Review

Allogeneic Blood Transfusion Is a Significant Risk Factor for Surgical-Site Infection Following Total Hip and Knee Arthroplasty: A Meta-Analysis

Jeong Lae Kim, MD, Jong-Hoon Park, MD, PhD, Seung-Beom Han, MD, PhD, Il Youp Cho, MD, Ki-Mo Jang, MD, PhD *

Department of Orthopaedic Surgery, Anam Hospital, Korea University College of Medicine, Seoul, South Korea

- SSI risk 2.88% versus 1.74%

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Primary Hip and Knee Arthroplasty

Acute Postoperative Anemia After Unilateral Primary Total Joint Arthroplasty: Restrictive Transfusion Thresholds are Safe for Discharge Regardless of Delta Hemoglobin

Irfan A. Khan, ATC [a, *], Sundeep Kahlon, BS [b], Edwin Theosmy, DO [c], Kerri-Anne Ciesielka, MPH [a], Javad Parvizi, MD [a], Yale A. Fillingham, MD [a]

[a] Rothman Orthopaedic Institute at Thomas Jefferson University, Philadelphia, Pennsylvania
[b] Geisinger Commonwealth School of Medicine, Scranton, Pennsylvania
[c] Department of Orthopaedic Surgery, Rowan University School of Osteopathic Medicine, Stratford, New Jersey

- Drop from Surgery can be 2 - 4 units
- I like to start at 12 when possible

Table 2
Overall Cohort Hemoglobin and Readmission Data

Variables	Hemoglobin Unilateral Cohort (N = 6,791)
Preoperative High	13.8 [12.9; 14.7]
Post-Op High	10.9 [10.0; 11.9]
Delta High	2.80 [2.20; 3.50]
Preoperative Anemia	
No	5,051 (74.4%)
Yes	1,740 (25.6%)
Postoperative Anemia	
No	533 (7.85%)
Yes	6,258 (92.2%)
TXA Used	
No	1,317 (19.4%)
Yes	5,474 (80.6%)
Postoperative Readmission	
No	6,523 (96.1%)
Yes	268 (3.95%)
Readmission (Anemia-Related)	
No	6,756 (99.48%)
Yes	35 (0.52%)
Readmit Timeline	
No Readmit	6,523 (96.1%)
Within 30 d	185 (2.73%)
Within 90 d	183 (2.69%)
Transfusion During Readmission	
No	6,789 (99.97%)
Yes	2 (0.03%)

Parametric data are presented as means and standard deviations (SD), whereas nonparametric data are presented as median and quartiles [first quartile; third quartile].
TXA, tranexamic acid.

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A1c

- My cutoff 7.5%

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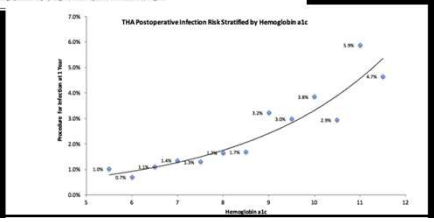
journal homepage: www.arthroplastyjournal.org

Complications - Infection

Is There a Threshold Value of Hemoglobin A1c That Predicts Risk of Infection Following Primary Total Hip Arthroplasty?

Jourdan M. Cancienne, MD, Brian C. Werner, MD, James A. Browne, MD *
Department of Orthopaedic Surgery, University of Virginia Health System, Charlottesville, Virginia



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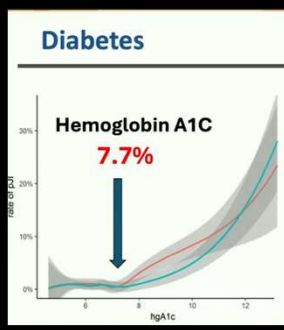
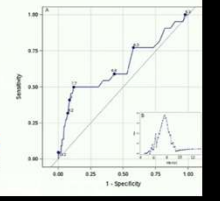
Diabetes

Determining the Threshold for HbA1c as a Predictor for Adverse Outcomes After Total Joint Arthroplasty: A Multicenter, Retrospective Study

Majd Tarabichi, MD [2], Noam Shohat, MD [2, 3], Michael M. Kheir, MD [3], Muyibat Adelani, MD [2], David Brigati, MD [2], Sean M. Kearns, MD [2], Pankajkumar Patel, MD [2], John C. Clohisy, MD [2], Carlos A. Higuera, MD [2], Brett R. Levine, MD [2], Ran Schwarzkopf, MD [2], Javad Parvizi, MD, FRCS [4, *], William A. Jiranek, MD [2]

The Journal of Arthroplasty 32 (2017) S263–S267





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If 7.5 – 8 %

- Fructosamine

2019 John Insall Award: Fructosamine is a better glycaemic marker compared with glycated haemoglobin (HbA1C) in predicting adverse outcomes following total knee arthroplasty: a prospective multicentre study

N Shohat [1, 2], M Tarabichi [3], T L Tan [3], K Goswami [3], M Kheir [3], A L Malkani [3], R P Shah [4], Ran Schwarzkopf [5], J Parvizi [3]

Affiliations + expand

PMID: 31256656 DOI: 10.1302/0301-620X.101B7.BJJ-2018-1418.R1

Free article

- < 293
- Fructosamine is a valid and an excellent predictor of complications following TKA. It better reflects the glycaemic control, has greater predictive power for adverse events, and responds quicker to treatment compared with HbA1c.

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Complications - Infection

Is There an Association Between Smoking Status and Prosthetic Joint Infection After Primary Total Joint Arthroplasty?

Check for updates

Amanda I. Gonzalez, MD, MSc [a, *], Jolanda J. Luime, PhD [b], Ilker Uçkay, MD [a], Didier Hannouche, MD [a], Pierre Hoffmeyer, MD [a], Anne Lübbeke, MD, DSc [a]

[a] Division of Orthopaedics and Trauma Surgery, Geneva University Hospitals, Geneva, Switzerland
[b] Department of Rheumatology, Erasmus Medical Center Rotterdam, Rotterdam, The Netherlands

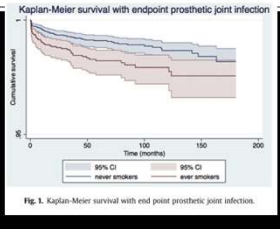

Fig. 1. Kaplan-Meier survival with end point prosthetic joint infection.

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Health Policy & Economics

The Effect of Smoking on Thirty-Day Postoperative Complications After Total Joint Arthroplasty: A Propensity Score-Matched Analysis

Shawn Sahota, MD, Francis Lovecchio, MD, Ryan E. Harold, MD *, Matthew D. Beal, MD, David W. Manning, MD

Department of Orthopaedic Surgery, Northwestern University Feinberg School of Medicine, Chicago, Illinois

- More likely to be readmitted
- More likely to have surgical complications

Table 4
Association of Smoking With Complications (N = 1251).

	Propensity Score-Adjusted Odds Ratios Without 95% CI
Overall complications	0.84 (0.69-1.02)
Surgical complication	1.84 (1.21-2.80)
Readmission	3.29 (1.40-7.73)

CI, confidence interval.

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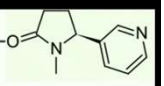
Primary Arthroplasty

Cotinine Testing Improves Smoking Cessation Before Total Joint Arthroplasty

Adam Hart, MASc, MD, William G. Rainer, DO, Michael J. Taunton, MD, Tad M. Mabry, MD, Daniel J. Berry, MD, Matthew P. Abdel, MD *
Department of Orthopedic Surgery, Mayo Clinic, Rochester, MN

- 15% of patients reporting quitting were still using prior to surgery.
- I cotinine test 6 weeks after the reported time of abstinence and again at the time of the preoperative visit.

Smoking



- Serum **Cotinine** Levels
  - Metabolite of **Nicotine**
  - Serum, blood, saliva
- Half life = 20 hours
  - Predicts smoking within **last week**
  - Levels **<10ng/mL** consistent with smoking cessation
- **Smoking cessation 4-6 weeks prior**
  - Immune and metabolic function normalize
  - Decreased complications

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> Int Orthop. 2018 Jan;42(1):101-107. doi: 10.1007/s00264-017-3655-3. Epub 2017 Oct 14.

Total knee arthroplasty in patients with a history of illicit intravenous drug abuse

David E Bauer [1], Andreas Hingsammer [2], Lukas Ernstbrunner [2, 3], Alexander Aichmair [2], Andrea B Rosskopf [4], Franziska Eckers [2], Karl Wieser [2], Sandro F Fucentese [2]
Affiliations + expand
PMID: 29032478 DOI: 10.1007/s00264-017-3655-3

- Elevated risk of PJI, above knee amputation, and arthrodesis
- Around 50% risk of major surgical complications as above.

- UDS at the time of reporting quitting
- UDS 3 months following
- UDS at preoperative appointment and day of surgery.

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Malnutrition

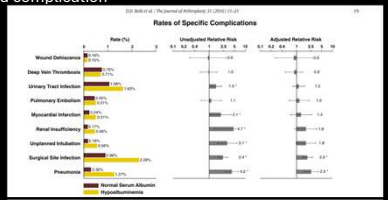
Review

Preoperative Malnutrition Negatively Correlates With Postoperative Wound Complications and Infection After Total Joint Arthroplasty: A Systematic Review and Meta-Analysis

Alex Gu, BS, Michael-Alexander Malahias, MD, PhD, Vanni Strigelli, MD, Allina A. Nocon, PhD, Thomas P. Sculco, MD, Peter K. Sculco, MD *
Complex Joint Reconstruction Center, Hospital for Special Surgery, New York, NY

- Patients with an albumin < 3.5 dg/L
  - OR 2.176 wound complication

- Bohl et al →
  - SSI higher



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Review > J Orthop. 2024 Apr 29:56:12-17. doi: 10.1016/j.jor.2024.04.021. eCollection 2024 Oct.

Improved outcomes with perioperative dietitian-led interventions in patients undergoing total joint arthroplasty: A systematic review

Steven L Yee [1], R Cole Schmidt [2], James Satalich [3], John Krumme [3], Gregory J Golladay [2], Nirav K Patel [4]

Affiliations + expand

PMID: 38737733 PMCID: PMC11081787 (available on 2025-10-01) DOI: 10.1016/j.jor.2024.04.021

- Utilized a protein-dominant diet, with or without a carbohydrate solution accompanied by dietitian assessment or education.
- After intervention – decreased
  - Length of stay
  - Less wound drainage
  - Improved time out of bed
  - Decreased Costs

Treatment

Hypoalbumenemia: < 3.5mg/dL

1g/kg/d of Protein Supplementation
100g/day (Schoer et al)

10-14 days

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Hep C

Primary Knee

A Missed Opportunity: The Impact of Hepatitis C Treatment Prior to Total Knee Arthroplasty on Postoperative Complications

Austin J. Ross, BS [a], Bailey J. Ross, BA [a], Olivia C. Lee, MD [a,b], John M. Weldy, MD [a], William F. Sherman, MD, MBA [a,*], Fernando L. Sanchez, MD [a]

[a] Department of Orthopaedic Surgery, Tulane University School of Medicine, New Orleans, LA
[b] Department of Orthopaedic Surgery & Southeast Louisiana Veterans Health Care System, Louisiana State University School of Medicine, New Orleans, LA

- Revision OR 1.4
- PJI OR 1.58
- Improves to near normal with treatment that is available
  - ledipasvir and sofosbuvir.
- Risk factors?
  - Blood before 1992
  - Illegal drugs
  - Dialysis
  - Tattoos?

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Renal disease

Total Joint Arthroplasty in Patients with Chronic Renal Disease: Is It Worth the Risk?

Lucian C. Warth, MD, Andrew J. Pugely, MD, Christopher T. Martin, MD, Yubo Gao, PhD, John J. Callaghan, MD

University of Iowa, Iowa City, Iowa

ABSTRACT

26-27% of patients with end stage hip and knee arthritis requiring TJR have chronic renal disease. A multi-center, prospective clinical registry was queried for TJA's from 2006 to 2012, and 74,300 cases were analyzed. Renal impairment was quantified using estimated glomerular filtration rate (eGFR) to stratify each patient by stage of CRD (1–5). There was a significantly greater rate of overall complications in patients with moderate to severe CRD (6.1% vs. 7.6%, $P < 0.001$). In those with CRD (Stage 3–5), mortality was twice as high (0.26% vs. 0.48%, $P < 0.001$). Patients with Stage 4 and 5 CRD had a 213% increased risk of any complication (OR 2.13, 95% CI: 1.73–2.62). Surgeons may use these findings to discuss the risk–benefit ratio of elective TJR in patients with CRD.

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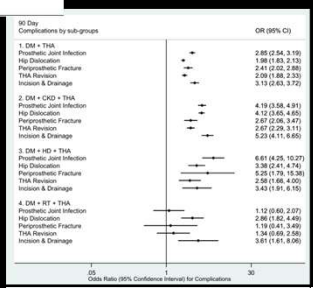
Health Policy and Economics

Postoperative Impact of Diabetes, Chronic Kidney Disease, Hemodialysis, and Renal Transplant After Total Hip Arthroplasty

Beau J. Kildow, MD *, Perez Agaba, BS, Brian F. Moore, MD, Rhett K. Hallows, MD, Michael P. Bolognesi, MD, Thorsten M. Seyler, MD, PhD

Department of Orthopaedic Surgery, Duke University Medical Center, Durham, North Carolina

- Some evidence to suggest transplant even with immunosuppression may decrease complications
- Renal transplant patients lower odds of surgical complications
- Similar odds wound issues.



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MRSA – Decolonize everyone, I don't test nares anymore

Health Policy and Economics

Decreased Hospital Costs and Surgical Site Infection Incidence With a Universal Decolonization Protocol in Primary Total Joint Arthroplasty

Jeffrey B. Stambough, MD [a, *], Denis Nam, MD, MSc [a], David K. Warren, MD, MPH [b], James A. Keeney, MD [c], John C. Clohisy, MD [a], Robert L. Barrack, MD [a], Ryan M. Nunley, MD [a]

[a] Department of Orthopaedic Surgery, Washington University School of Medicine, St. Louis, Missouri
[b] Division of Infectious Diseases, John T. Milliken Department of Internal Medicine, Washington University School of Medicine, St. Louis, Missouri
[c] Department of Orthopaedic Surgery, University of Missouri, Columbia, Missouri

- Generally, betadyne or mupirocin in the nares and chlorhexidine wipes 5 days prior.
- SSI decreased 0.2% vs 0.8%
- S aureus infections 0.09% versus 0.5%

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Opiates

Complications - Infection

Preoperative Opioids Increase the Risk of Periprosthetic Joint Infection After Total Joint Arthroplasty

Kerri L. Bell, BA [a], Noam Shohat, MD [a, b], Karan Goswami, MD [a], Timothy L. Tan, MD [a], Irene Kalbian, BA [a], Javad Parvizi, MD, FRCS [a, *]

[a] The Rothman Institute at Thomas Jefferson University, Philadelphia, Pennsylvania
[b] Sackler Faculty of Medicine, Tel Aviv University, Ramat Aviv, Israel

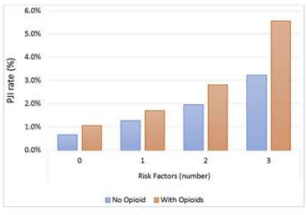

Fig. 3. Summed risk factors and PJI rate.

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Clinical Practice Guideline

Opioids in Total Joint Arthroplasty
March 2020

Guideline Question 2:

For patients undergoing primary TJA who consume opioids preoperatively, does reducing opioid consumption prior to surgery affect patient reported outcomes and/or opioid consumption after surgery?

Response/Recommendation:

Reduction of opioid use prior to TJA may lead to improved patient reported outcomes after TJA compared to patients who do not reduce opioid consumption prior to surgery.

Strength of Recommendation: Limited

- Weak evidence
- Single study
- Reduction of opiates by 50%
- Better PROMs.

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Inflammatory arthritis, Collagen Vascular diseases

- Avoid Flares
- Stop certain meds

MEDICATIONS TO CONTINUE THROUGH SURGERY		
DMARDs: CONTINUE these medications through surgery. (All patients)	**Dosing Interval**	**Recommended timing of surgery since last medication dose**
Methotrexate	Weekly	Anytime
Sulfasalazine	Once or twice daily	Anytime
Hydroxychloroquine	Once or twice daily	Anytime
Leflunomide (Arava)	Daily	Anytime
Doxycycline	Daily	Anytime
Apremilast (Otezla)	**Twice daily**	**Anytime**
SEVERE SLE-SPECIFIC MEDICATIONS†† : CONTINUE these medications in the perioperative period in consultation with the treating rheumatologist.	**Dosing Interval**	**Recommended timing of surgery since last medication dose**
Mycophenolate mofetil	Twice daily	Anytime
Azathioprine	Daily or twice daily	Anytime
Cyclosporine	Twice daily	Anytime
Tacrolimus	Twice daily (IV and PO)	Anytime
Rituximab (Rituxan)	**IV Every 4-6 months**	**Month 4-6**
Belimumab (Benlysta)	**Weekly SQ**	**Anytime**
Belimumab (Benlysta)	**Monthly IV**	**Week 4**
Anifrolumab (Saphnelo)†	IV Every 4 weeks	**Week 4**
Voclosporin (Lupkynis)†	Twice daily	**Continue**

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MEDICATIONS TO WITHHOLD PRIOR TO SURGERY***		
BIOLOGICS: WITHHOLD these medications through surgery		**Recommended timing of surgery since last medication dose**
Infliximab (Remicade)	Every 4, 6, or 8 weeks	Week 5, 7, or 9
Adalimumab (Humira)	Every 2 weeks	Week 3
Etanercept (Enbrel)	Every week	Week 2
Abatacept (Orencia)	Monthly (IV) or weekly (SQ)	Week 5 Week 2
Certolizumab (Cimzia)	Every 2 or 4 weeks	Week 3 or 5
Rituximab (Rituxan)	2 doses 2 weeks apart every 4-6 months	Month 7
Tocilizumab (Actemra)	Every week (SQ) or every 4 weeks (IV)	Week 2 Week 5
Anakinra (Kineret)	Daily	Day 2
IL-17-Secukinumab (Cosentyx)	Every 4 weeks	Week 5
Ustekinumab (Stelara)	Every 12 weeks	Week 13
Ixekizumab (Taltz)†	**Every 4 weeks**	**Week 5**
IL-23 Guselkumab (Tremfya)†	**Every 8 weeks**	**Week 9**
JAK inhibitors WITHHOLD this medication 3 days prior to surgery**		
Tofacitinib (Xeljanz):	**Daily or twice daily**	**Day 4**
Baricitinib (Olumiant)†	**Daily**	**Day 4**
Upadacitinib (Rinvoq)†	**Daily**	**Day 4**

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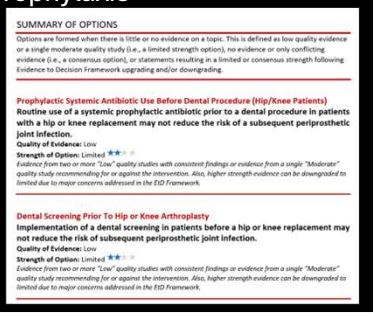
Dental Screening / prophylaxis

- No strong evidence



SUMMARY OF OPTIONS

Options are formed when there is little or no evidence on a topic. This is defined as low quality evidence or a single moderate quality study (i.e., a limited strength option), no evidence or only conflicting evidence (i.e., a consensus option), or statements resulting in a limited or consensus strength following Evidence to Decision Framework upgrading and/or downgrading.

Prophylactic Systemic Antibiotic Use Before Dental Procedure (Hip/Knee Patients)

Routine use of a systemic prophylactic antibiotic prior to a dental procedure in patients with a hip or knee replacement may not reduce the risk of a subsequent periprosthetic joint infection.

Quality of Evidence: Low

Strength of Option: Limited ★★☆☆

Evidence from two or more "Low" quality studies with consistent findings or evidence from a single "Moderate" quality study recommending for or against the intervention. Also, higher strength evidence can be downgraded to limited due to major concerns addressed in the EtD Framework.

Dental Screening Prior To Hip or Knee Arthroplasty

Implementation of a dental screening in patients before a hip or knee replacement may not reduce the risk of subsequent periprosthetic joint infection.

Quality of Evidence: Low

Strength of Option: Limited ★★☆☆

Evidence from two or more "Low" quality studies with consistent findings or evidence from a single "Moderate" quality study recommending for or against the intervention. Also, higher strength evidence can be downgraded to limited due to major concerns addressed in the EtD Framework.

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Diagnosis and Prevention of Periprosthetic Joint Infections

Evidence-Based Clinical Practice Guideline

Adopted by:
The American Academy of Orthopaedic Surgeons Board of Directors
March 11, 2019

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Strength of Recommendation: Moderate ★★★☆

Description: Evidence from two or more "Moderate" quality studies with consistent findings, or evidence from a single "High" quality study for recommending for or against the intervention.

B. Limited strength evidence supports that patients in which one or more of the following criteria are present are at an increased risk of periprosthetic joint infection (PJI) after hip and knee arthroplasty:

- **Cardiac disease (arrhythmia, CAD, congestive heart failure, other)**
- **Immunocompromised status (other than HIV), including transplant, cancer**
- **Peripheral vascular disease**
- **Inflammatory arthritis**
- **Prior joint infection**
- **Renal disease**
- **Liver disease (hepatitis, cirrhosis, other)**
- **Mental health disorders (including depression)**
- **Alcohol use**
- **Anemia**
- **Tobacco use**
- **Malnutrition**
- **Diabetes**
- **Uncontrolled diabetes**

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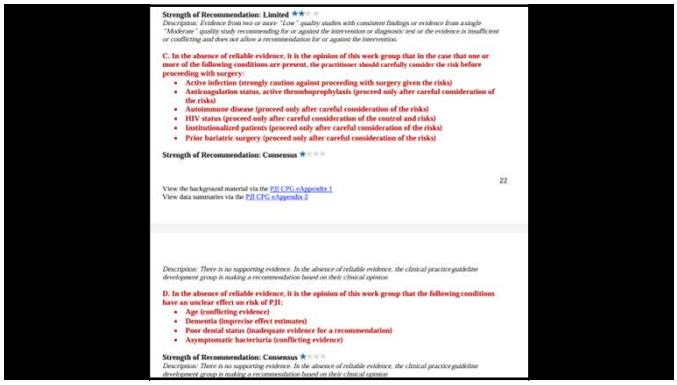

Strength of Recommendation: Limited ★★☆☆

Description: Evidence from two or more "Low" quality studies with consistent findings or evidence from a single "Moderate" quality study recommending for or against the intervention or diagnostic test or the evidence is insufficient or conflicting and does not allow a recommendation for or against the intervention.

C. In the absence of reliable evidence, it is the opinion of this work group that in the case that one or more of the following conditions are present, the practitioner should carefully consider the risk before proceeding with surgery:

- **Active infection (strongly caution against proceeding with surgery given the risks)**
- **Anticoagulation status, active thromboprophylaxis (proceed only after careful consideration of the risks)**
- **Autoimmune disease (proceed only after careful consideration of the risks)**
- **HIV status (proceed only after careful consideration of the control and risks)**
- **Institutionalized patients (proceed only after careful consideration of the risks)**
- **Prior bariatric surgery (proceed only after careful consideration of the risks)**

Strength of Recommendation: Consensus ★☆☆☆

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View the background material via the PJI CPG eAppendix 1
View data summaries via the PJI CPG eAppendix 2

Description: There is no supporting evidence. In the absence of reliable evidence, the clinical practice guideline development group is making a recommendation based on their clinical opinion

D. In the absence of reliable evidence, it is the opinion of this work group that the following conditions have an unclear effect on risk of PJI:

- **Age (conflicting evidence)**
- **Dementia (imprecise effect estimates)**
- **Poor dental status (inadequate evidence for a recommendation)**
- **Asymptomatic bacteriuria (conflicting evidence)**

Strength of Recommendation: Consensus ★☆☆☆

Description: There is no supporting evidence. In the absence of reliable evidence, the clinical practice guideline development group is making a recommendation based on their clinical opinion

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Role of the Orthopaedic Surgeon

Orthopaedic surgeons: as strong as an ox and almost twice as clever? Multicentre prospective comparative study

OPEN ACCESS

BMJ 2011;343:d7506 doi: 10.1136/bmj.d7506

P Subramanian *trauma and orthopaedic specialist registrar*[1], S Kantharuban *core surgical trainee, Oxford Deanery*[2], V Subramanian *foundation year trainee, Mersey Deanery*[3], S A G Willis-Owen *postdoctoral research scientist*[4], C A Willis-Owen *consultant trauma and orthopaedic surgeon*[1]

- Set expectations
- Set guidelines
- Work closely with individuals providing clearance
- Follow up on clearances (or other members of the orthopaedic team)

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Optimization team

- My Nurse and PA work together to collect labs and get opinions from medical teams
- Hannah has ½ day dedicated to perioperative review
  - Sees all patients 2 weeks pre surgery
- Cardiac evaluations
- Rheumatology
- Occasionally neuro / pulm

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UMKC
Thank You
Questions?
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