Yale SCHOOL OF MEDICINE
Department of Orthopaedics & Rehabilitation

Yale Medicine | Yale NewHaven Health

Prosthetic Joint Infections: Strategies for Prevention and Management

Symposium at PeriOp Connect Conference
Friday, October 25, 2024
5-5:45pm

Lee E. Rubin, MD, FAAOS, FAAHKS, FAOA
Associate Professor of Orthopaedic Surgery
Chief, YNHH Total Joint Replacement Program
Chief, Division of Adult Reconstruction
Program Director, Yale Arthroplasty Fellowship

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Yale University School of Medicine, New Haven, CT

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AORN Connecticut 0701

Symposium Overview

5-5:45 PM

Prosthetic Joint Infections: Strategies for Prevention and Management

The audience will hear about current, evidence-based strategies to prevent infections in the OR environment in order to better understand why surgical teams are adopting certain interventions as standards of practice for total joint replacement cases. In addition, the symposium will also address the current treatment strategies on how best to manage PJIs, including debridement and implant retention (DAIR), 1-stage, 1.5-stage, and 2-stage surgeries.

Dr. Rubin 15 Minutes: PJI Prevention
Dr. Molloy 20 Minutes: PJI Treatment
10 Minutes: Audience Q&A

Lee E. Rubin

M.D., FAAOS, FAAHKS, FAOA. Associate Professor, Yale Orthopaedics. Chief, YNHH Total Joint Replacement Program

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AAOS Disclosures

2nd Edition: PUBLISHED May 2024!

Dr. Rubin:

Current Disclosure Summary

Submitted on: 09/08/2024
Arthroplasty Today: Editorial or governing board
DePuy, A Johnson & Johnson Company: Paid consultant
Innovative Medical Products, Inc.: Paid consultant
Johns Hopkins University Press: Publishing royalties, financial or material support
Journal of Arthroplasty: Editorial or governing board
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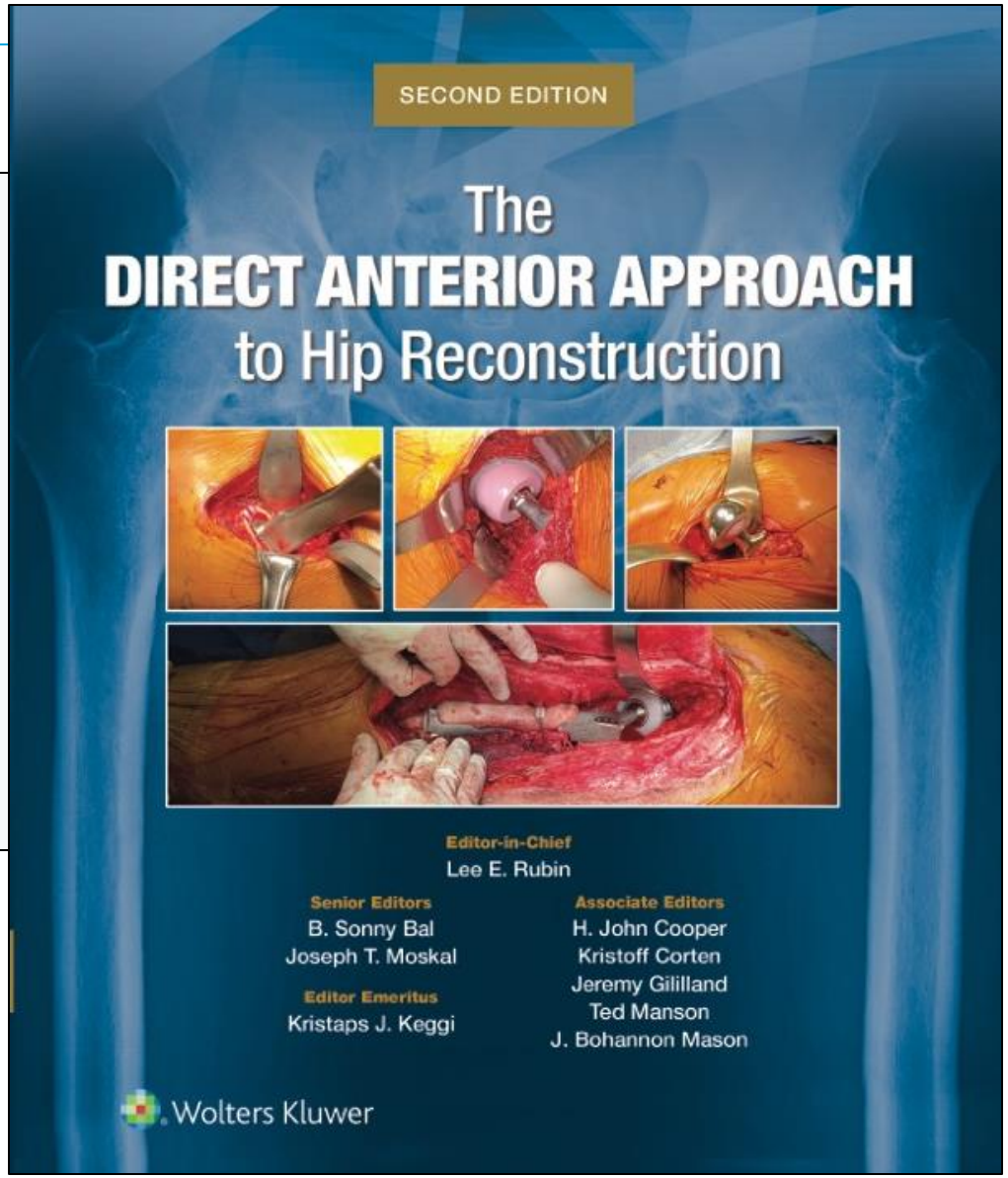

Dr. Molloy:
Consultant for Smith & Nephew

No Relevant Disclosures Related to this Presentation.

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Strategies for Prevention of Prosthetic Joint Infection

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Associate Professor of Orthopaedic Surgery
Chief, YNHH Total Joint Replacement Program
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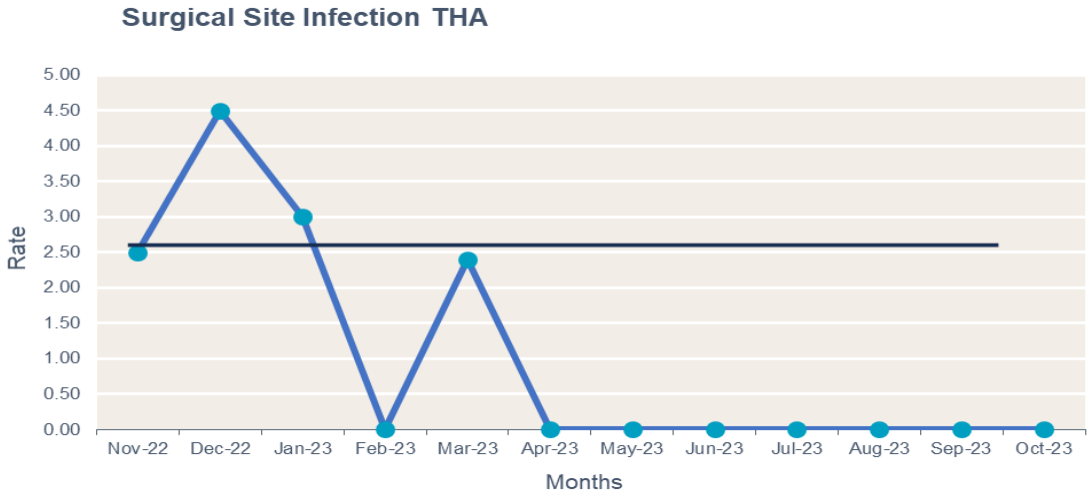
THA SSI Project

Chris Borzillo & Roberto Cardenas:
FIRST Outpatient TKA at McGivney, 10-2018



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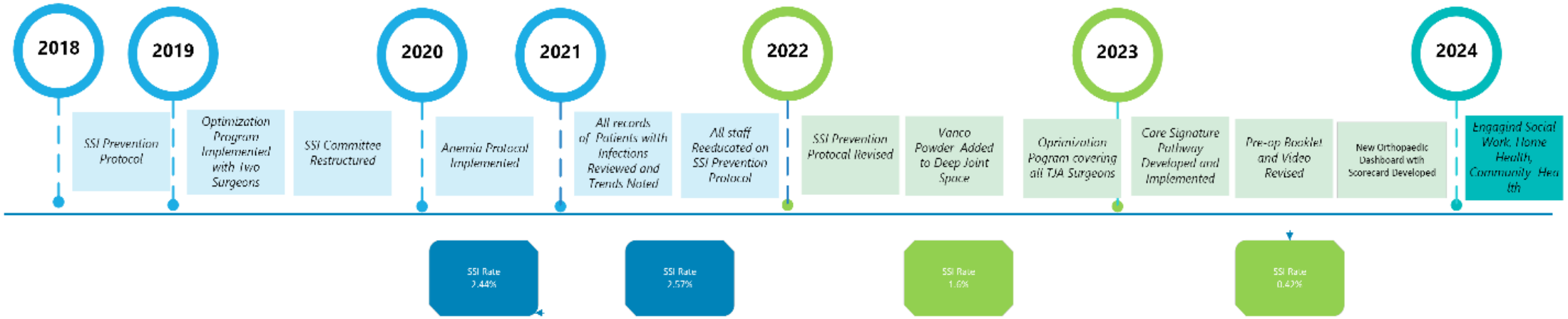
Where are we with SSI for TJA in 2024?

- YNHH SRC SSI DATA:
  - ***Primary TKA 0.5% &***
  - ***Primary THA 0.22% over last 12 months***
- YNHHS SSI DATA:
  - ***Primary TKA 0.35% &***
  - ***Primary THA 0.47% over last 12 months***

A timeline of the interventions follows. (Chart 2)



Protocol: Updated October 2024

YNHH MSK Antibiotic Administration Protocol

	Standard Abx Protocol:	MRSA (+) Abx Protocol:
Hip Surgery: **THA,** **Hip Fx ORIF,** **Hemi** **Knee Surgery:** **UKA & TKA** **Spine Surgery:** **Discectomy, Laminectomy, & Fusions**	**Cefazolin**: < 120 kg = 2g, ≥ 120kg = 3g **For Shoulder Arthroplasty:** Consider adding **Clindamycin** per Care Signature Guideline Surgeon Can Consider: (1) Adding Gentamicin OR Tobramycin per YNHHS protocol as a single pre-op dose (2) Adding 1 Gram Topical Vancomycin Powder	**If PreOp Nasal Swab is MRSA (+), then, give Cefazolin and ADD:** **Vancomycin Dose:** ≤ 80kg = 1g, 81-120kg =1.5g, ≥ 121kg = 2g **NOTE**: ***NO Repeat POSTOP Dosing of Gentamicin, Tobramycin, or Vancomycin is needed.***

PCN Allergy Scenarios:

IF: *Unknown, PCN Rash, or Anaphylaxis*, then: Administer Cefazolin (no test dosing needed)

IF: *SJS, TEN, or DRESS*, then: use Vancomycin as the preferred agent (not Clindamycin)

IF: *VANCO allergy*: use Daptomycin per current YNHH SCIP Protocols.

Notes:

- INTRA-OP: -- If unsure about patient allergies, please contact pharmacy at least 24h prior to case.
- INTRA-OP: -- Cefazolin re-dosing at 3 hours OR if EBL > 1,500mL.
- POST-OP: -- Cefazolin re-dosing: Outpatient: 1 more 1G IV dose, 23h & Inpatient: 2 more 1G IV doses.

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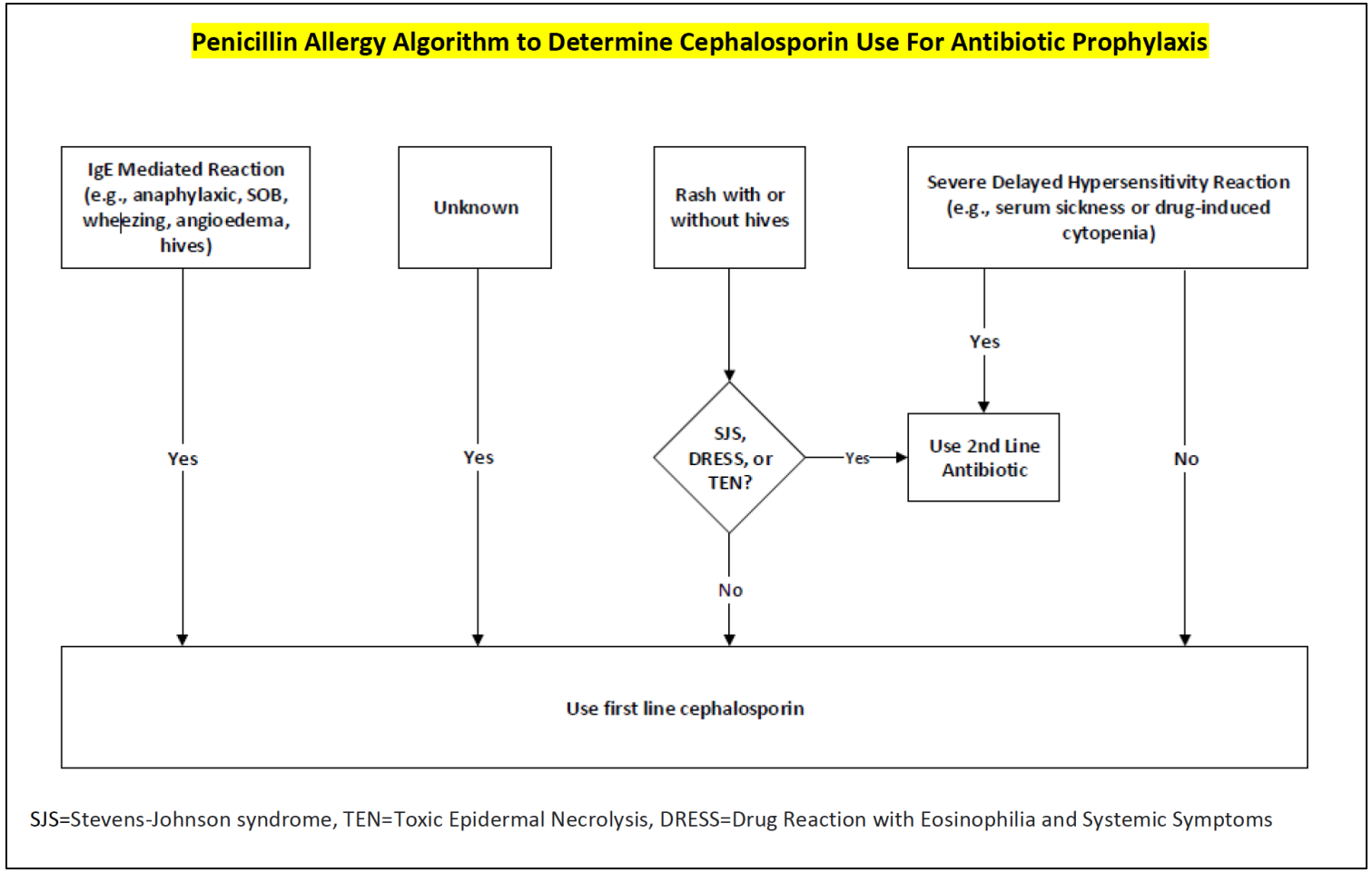
Protocol: Updated October 2024

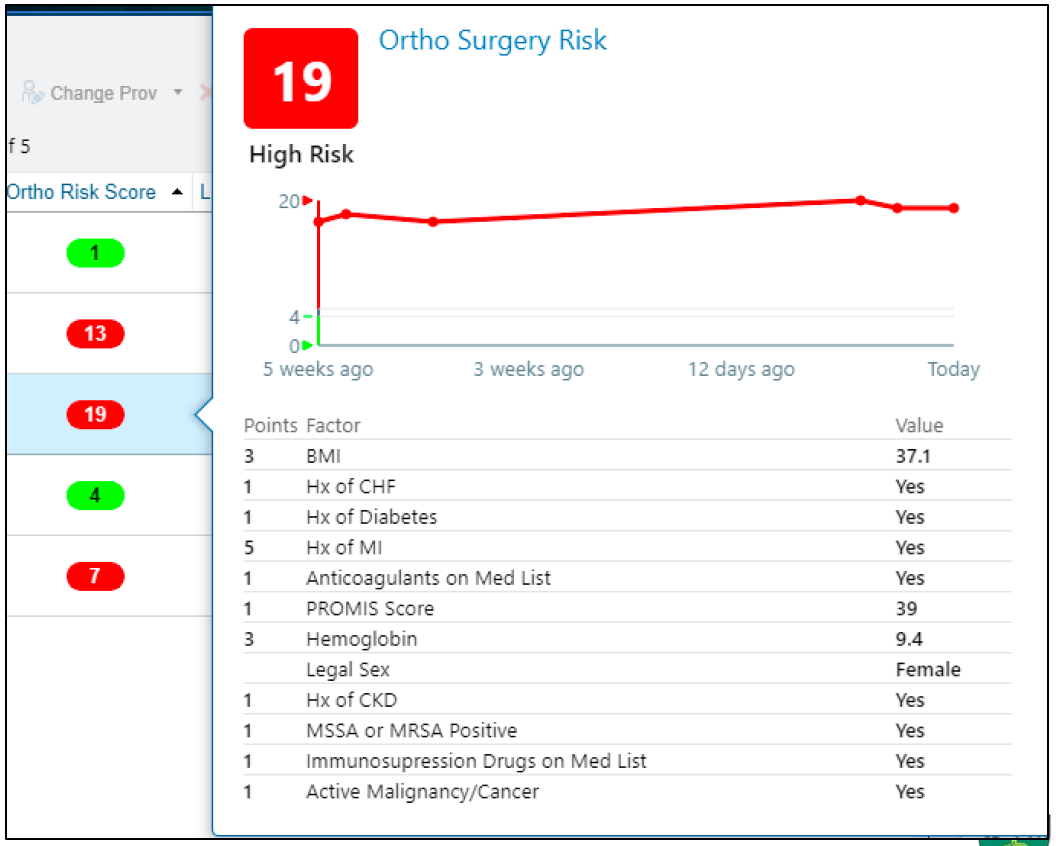
YNHH PCN Allergy Workflow Diagram



Host Risk Factor Optimization

- YNHH Uses Nurse Navigation for Pre-Op Risk Assessment and Patient Optimization
- We developed the “Ortho Risk Score”, a Dynamic EPIC risk assessment tool

Ortho Risk Score	Last BMI	Visit Type
1	28.70 kg/m²	Surgery
13	33.45 kg/m²	Surgery
19	37.10 kg/m²	Surgery
4	27.44 kg/m²	Surgery
7	37.97 kg/m²	Surgery



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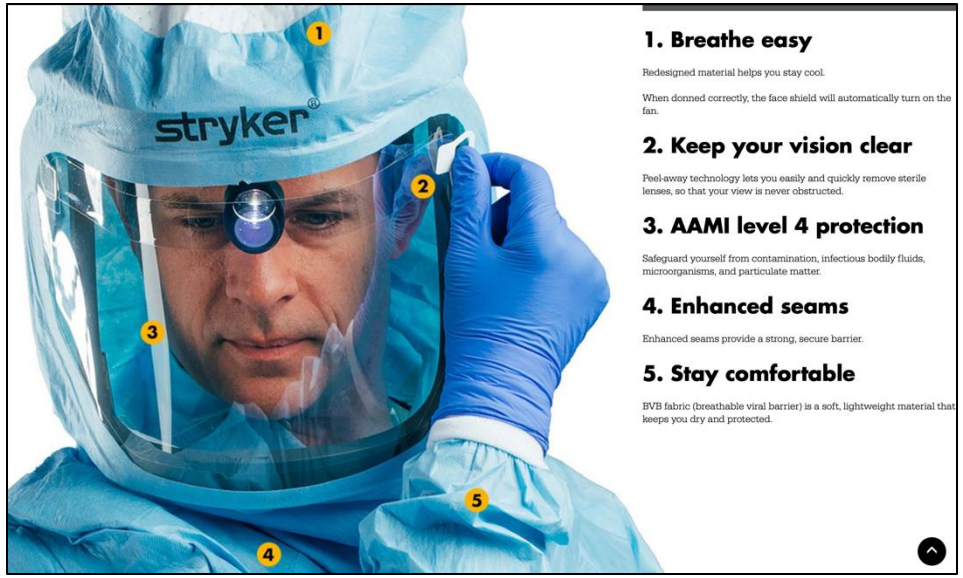
Surgical Helmets: Proper Use

- **<u>Helmet Batteries:</u>**
  - Don’t Walk around OR with helmet and battery “on” blowing air
  - Clip in the T6 Battery immediately at time scrubbing in
  - *Note: Newest Stryker T7: Only Turns on when Shield is placed!*

- **<u>Once Helmet is Donned:</u>**
  - Shield should be the only site touched during a case
  - Do Not reach under chin to scratch nose
  - Do Not touch top or rear of helmets



Surgical Gowns

- **Ideal use:**
  - Unfurl Gown completely before it is donned.
  - Cover cuffs and bottom gloves with top gloves at all times.
  - Tie gown tightly to minimize rear opening / exposure.

- **Current Perspective:**
  - "**Vests**" in use to cover back opening.
  - "**Togas**" from Stryker or other companies with complete rear coverage.

Surgical Field

Surgical Tables:

- Minimize Contamination from any passers-by: Students, Observers, Reps, etc
- If a surgical case is delayed after set-up:
  - Cover open kits with blue towel or large sheet to cover table
  - Minimizes risk of passive contamination
- Draping the case is likely a major source of contamination.

Surgical Basins:

- OR ”Wet Basins” with Sterile Water can become contaminated.
- “Dry Basin” used at YNHH to minimize contamination risk.
- If Wet basin to be used, suggest BETADINE packet placed into sterile water: Study has shown lower contamination risks with betadine!

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Post-Op Occlusive Dressing Outcomes

- Cai J, Karam JA Parvizi J, Smith EB, Sharkey PF, JOA 2014
  - Single Institution Retrospective Chart Review
  - 903 Aquacel (PJI Rate 0.44%)
  - 875 Gauze Dressings (PJI Rate 1.7%) p=0.005
  - Aquacel was independent risk factor for reduction of PJI
    - Odds Ratio 0.165, (95% CI 0.051-0.533)

- Grosso MJ, Berg A, LaRussa, Murtaugh T, Trofa DP, Geller JA, JOA 2017
  - 1173 Patients, Retrospective Review, Single Surgeon Series.
  - PJI 0.33% with Aquacel, versus 1.53% with Xeroform/Gauze Dressing.

Negative Pressure Wound Therapy

- Application of controlled negative pressure accelerates debridement
- Optimum level of negative pressures is around -125 mmHg

- Proposed Effects:
  - Removal of interstital fluid
  - Decreased localized edema
  - Increased blood flow

- Initial foam dressings for deep wound closure have evolved to now include an option for "Closed Incisional NPWT."

Incisional Negative Pressure Dressings in THA

ciNPT for Revision TJA,
Cooper & Bas, J Arthroplasty 2016

A retrospective analysis of 138 consecutive revision hip and knee operations performed by a single surgeon over a 34-month period was performed.

Patients treated with ciNPT developed fewer overall wound complications (6.7% vs 26.9%, P = .024) and fewer total SSIs (3.3% vs 18.5%, P = .045) than patients treated with antimicrobial dressings. In addition, there were trends toward a lower rate of superficial wound dehiscence (6.7% vs 19.4%, P = .163), fewer deep periprosthetic joint infections (0.0% vs 9.3%, P = .118), and fewer reoperations (3.3% vs 13.0%, P = .191) among patients treated with ciNPT.

ciNPT for Peri-Prosthetic Fracture,
Cooper et. al. Injury 2018:

- Retrospective review of 69 consecutive patients who underwent surgery to address lower extremity periprosthetic fractures around hip or knee implants performed over a 6.5-year period.
- Patients treated with ciNPT developed fewer wound complications (4% vs. 35%; p=0.002), fewer deep infections (0% vs. 25%; p=0.004), and underwent fewer reoperations related to the surgical site (4% vs. 25%; p=0.021) compared to patients treated with standard of care.

Dilute Betadine Lavage in Deep Joint Space: Primary TJA

- Surgeons at Rush Medical Center in Chicago first published on large series for Total Joints:
  - 3 Minute Soak (17mL of 10% solution in 500mL Normal Saline, 0.35% Dilution)
  - Incision wiped with 10% betadine solution at End of Case

  - 1,862 consecutive cases, which included 630 hips and 1,232 knees, before the protocol was initiated and compared the results with 688 consecutive cases of 274 hips and 414 knees that were performed after the infection protocol was adopted.

  - 0.97% infection rate prior to the use of betadine
  - **0.15%** infection rate after the onset of betadine usage

Dilute Betadine Lavage in Deep Joint Space: Revision TJA

- Rush Group: Prospective RCT of 478 patients undergoing aseptic revision TKA and THA were randomized to receive a 3-minute dilute betadine lavage (0.35%) or normal saline lavage before surgical wound closure.

- 234 patients (153 knees, 81 hips) received normal saline lavage and 223 (144 knees, 79 hips) received dilute betadine lavage.

- 8 infections in the saline group and 1 in the betadine group (3.4% vs **0.4%,** *P* = .038).

- JOA, VOLUME 35, ISSUE 2, P538-543.E1, FEBRUARY 01, 2020

Rothman Institute Experience

Dilute Povidone-Iodine Irrigation Prior to Closure Reduces Rate of PJI Following TJA

Single Institution

- 31,331 Primary TJAs
- Dilute Povidone-Iodine introduced in 2012 and increasingly adopted
- Minimum 1-year follow-up

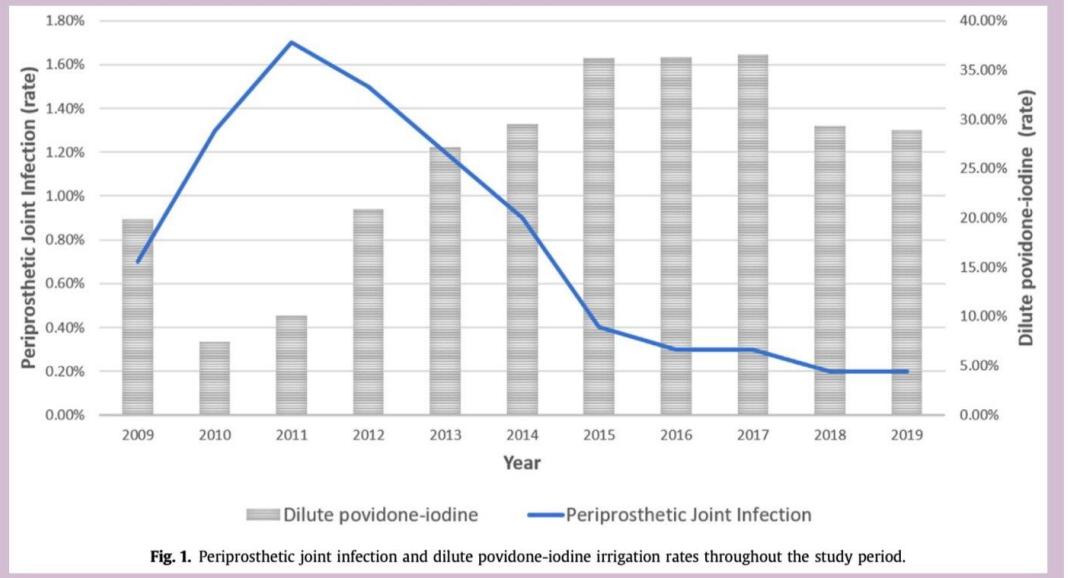

Fig. 1. Periprosthetic joint infection and dilute povidone-iodine irrigation rates throughout the study period.

*Use of Povidone-Iodine associated with **2.4 times lower rates** of PJI (0.6% vs 1.3%, p<0.001)*

*Number Needed to Treat: 137 Patients (**Cost Effective**)*

Shohat et al. J Arthroplasty. February 2022.
https://doi.org/10.1016/j.art.2021.10.026
Visual Abstract by: @FreddyYangMD

@JArthroplasty

THE JOURNAL OF ARTHROPLASTY

Cost of Sterile Betadine Packet at YNHH in 2022: $1.10

Mix: 22.5mL Sterile Betadine in 500ml Normal Saline

DILUTE BETADINE LAVAGE WORKS!!!

New standard of care to wash joint and skin closure at end of EVERY Joint Case

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Alternative Antiseptic Irrigation Solutions

- Historical: **Bacitracin** In NS
  - Dr. Parvizi Studies suggest minimial in vivo fluid efficacy
  - Potential risk for allergic reaction for patients

- **Chlorhexidine** (CHG): Brand Name "**Irrisept**"

- **Benzalkonium Chloride** and Acetic Acid: Brand Name "**Bactisure**"

LIMITED DATA ON Irrisept and Bactisure.

Other Current Topics

- **SSI Risk after COVID**
  - Data from 2020 is clear that there were 3-5x complication risk for COVID+ cases nationally treated for Hip Fracture, Tibia Fracture, Ankle Fracture
  - Risk from Omicron (minimal symptom but positive test) unclear if within 7 weeks
  - New Study shows risks are elevated in first week following COVID Diagnosis for Hip Fx patients

- **OR Traffic:**
  - Door Openings: Air turbulence
  - Number of people in OR Room: More dander

- **Avaguard:**
  - We placed Avaguard dispensers inside the OR to limit door openings

Other Current Topics

- **Normothermia**:
  - Underbody fluid warmers are now our standard for Orthopaedic Cases.
  - Bair Hugger has been a controversial topic, Possible Room Contamination?
  - **Mixed Data on Normothermia** for Orthopaedic Total Joints.
  - Better data for Ortho Trauma, Spine Cases, Hip Fracture Care.

- **OR Room Environment:**
  - Ultra HEPA Air Filtration Options
  - Establishing the Terminal Room Cleaning Protocol
  - Dirty/Infection cases should ideally be scheduled at end of the day

Other Current Topics

- **Barbed Sutures** for Fascial Closure
  - Decreased Drainage
  - Delphi Consensus Study favors use for TKA (Chen AF 2024)

- **Topical Vancomycin Powder:**
  - Mixed Data in Total Joint, largely cohorts not RCT's
  - Recent Spine Meta-Analysis showed no differences in SSI rates

- **Extended Oral Antibiotic Prophylaxis:**
  - Significant decrease in SSI/PJI Rates, for "high risk" total joint patients
    - Obese, Smokers, RA, Immunosuppressed, Prior PJI
  - Decreased rate of SSI also seen for Aseptic Revision Cases.

Extended PO Antibiotic Prophylaxis

Current evidence — based practice is to consider using 1 week of “extended PO prophylaxis” for TJA patients who are considered “high-risk” for PJI.

<u>This list includes any one or more of the following:</u>

- Immunocompromised Status, as defined by NIH / CDC.
- DM with A1C >7.
- Known Active Smoker.
- BMI >35.
- Aseptic Revision.

<u>Since YNHH does not have Duricef (cefadroxil) 500mg on formulary:</u>

- Complete standard 23h of IV Abx, then:
- Transition the patient to Keflex (cefazolin) 500mg PO Q6h, then:
- At DC: order Duricef (cefadroxil) 500mg BID for the balance of 7 days.

OR Staff Members must “Speak Up” for Sterility!

Everyone is hereby
<u>EMPOWERED</u>

To “Speak Up for Sterility”

Take Home Messages

- YNHH SSI Rates have improved dramatically but more work is still needed.

- Dilute Betadine Lavage is inexpensive and incredibly effective.

- “Speak up for Sterility”:
  - Good OR Habits enable us to pursue excellence.
  - Every OR Staff member is part of the mission towards ZERO SSI

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Management of Hip and Knee Prosthetic Joint Infection

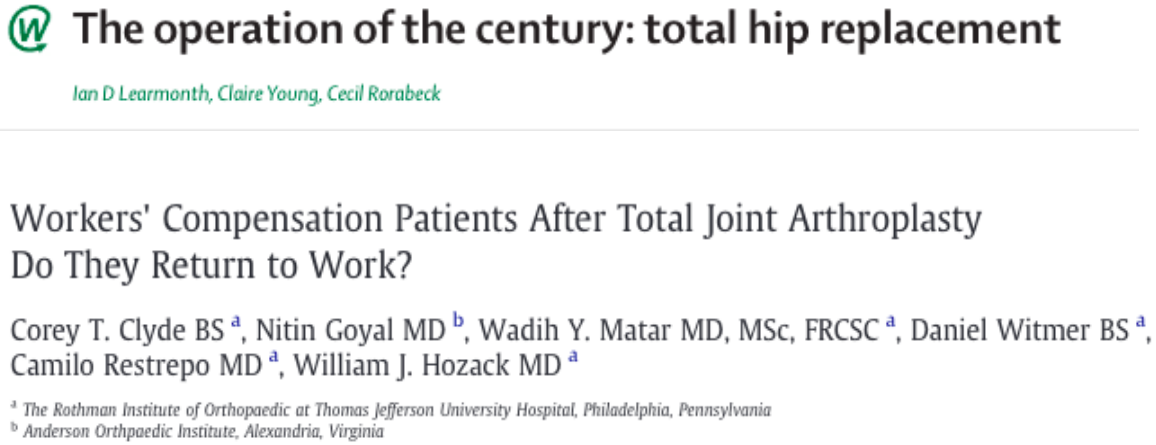
Ilda Molloy, MD MS

Assistant Professor of Orthopaedic Surgery
Yale University School of Medicine, New Haven, CT

Total joint arthroplasty – The Good

- TJA has been shown to improve:
  - Physical health, depression, pain, patient-reported quality of life

- Long-term survivorship >90% at 10 years



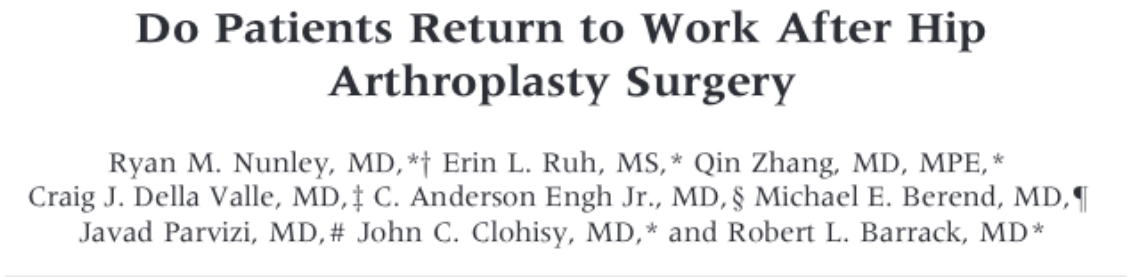
The operation of the century: total hip replacement

Ian D Learmonth, Claire Young, Cecil Rorabeck

Workers' Compensation Patients After Total Joint Arthroplasty
Do They Return to Work?

Corey T. Clyde BS [a], Nitin Goyal MD [b], Wadih Y. Matar MD, MSc, FRCSC [a], Daniel Witmer BS [a], Camilo Restrepo MD [a], William J. Hozack MD [a]

[a] The Rothman Institute of Orthopaedic at Thomas Jefferson University Hospital, Philadelphia, Pennsylvania
[b] Anderson Orthpaedic Institute, Alexandria, Virginia



Do Patients Return to Work After Hip Arthroplasty Surgery

Ryan M. Nunley, MD,*† Erin L. Ruh, MS,* Qin Zhang, MD, MPE,*
Craig J. Della Valle, MD,‡ C. Anderson Engh Jr., MD,§ Michael E. Berend, MD,¶
Javad Parvizi, MD,# John C. Clohisy, MD,* and Robert L. Barrack, MD*

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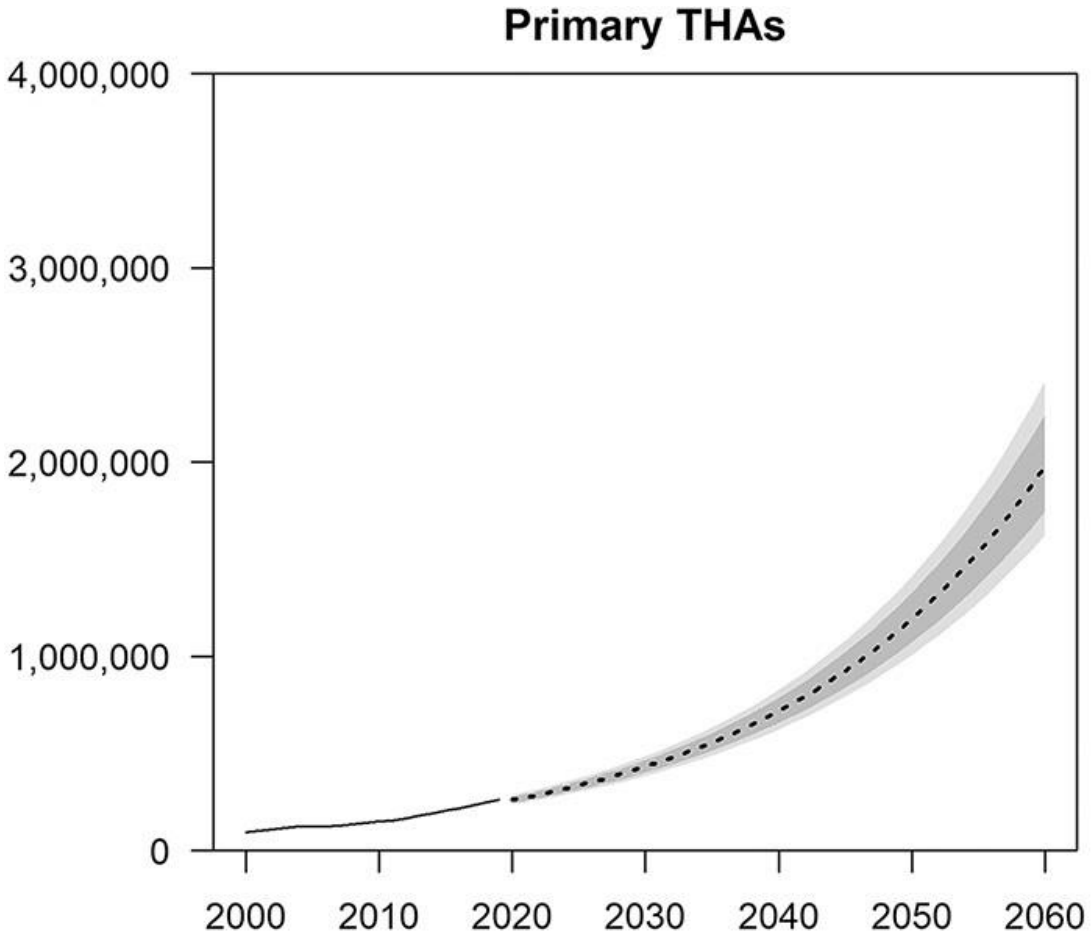
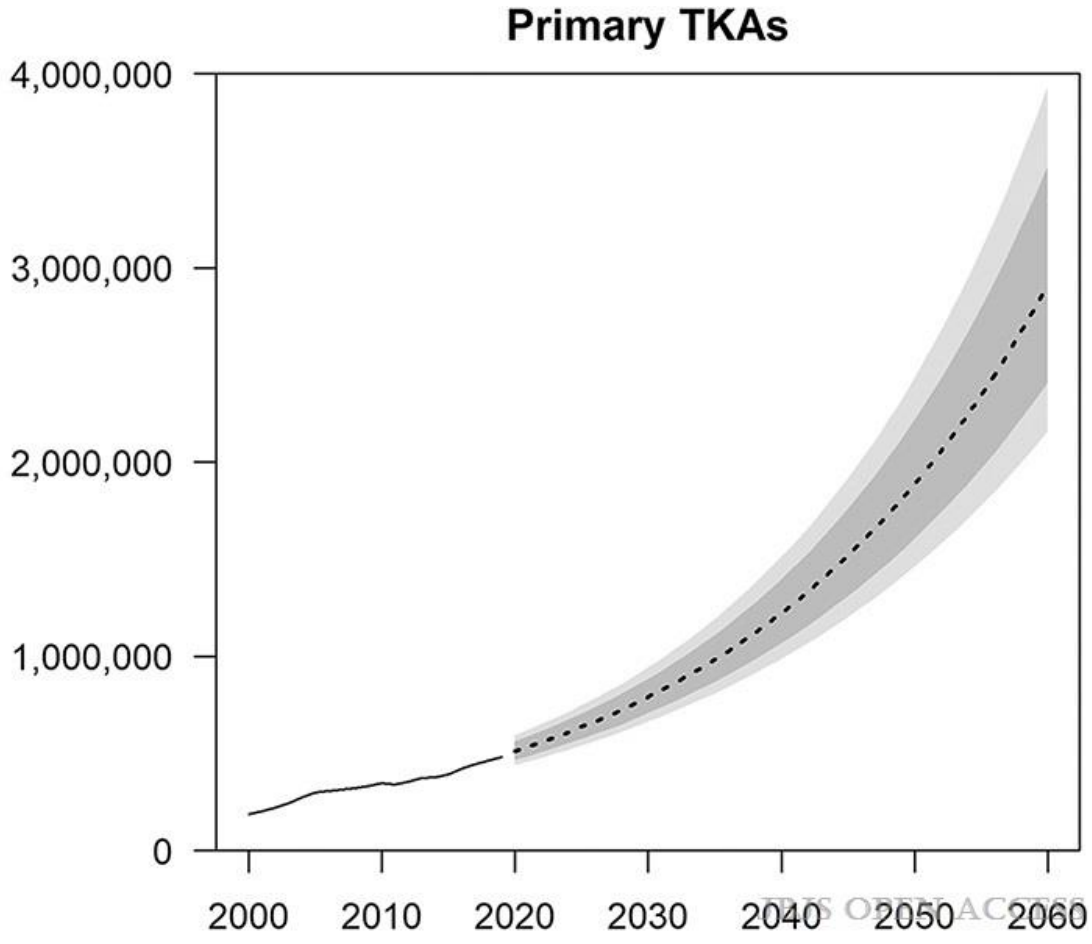
TJA and PJI Trends



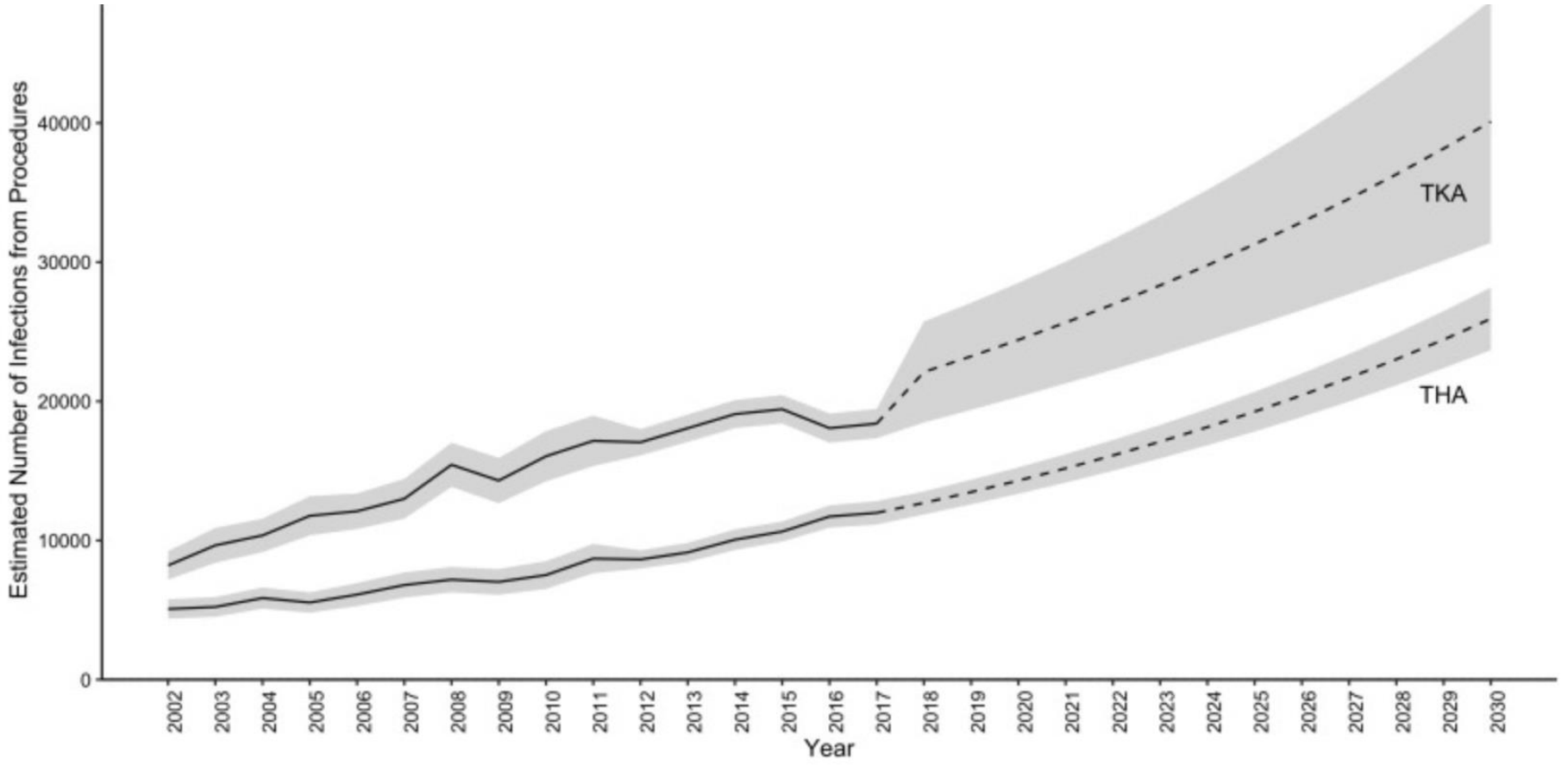


2040

THA~ 720K; TKA ~ 1.2million

Schwarzkopf et al., JBJS 2023

TJA and PJI Trends - PJIs



Sculco et al., 2021 JOA

Why Study PJI? The numbers

- **0.5-1.5%** of all primary total hip and knee arthroplasties
- **3-10%** for revision surgeries
- 5-year mortality of > 20%
- Economic burden of hip and knee PJI alone is expected to be $1.85 billion in 2030

PJI: Pathogenesis

- Proposed mechanisms:
  1. Direct seeding
  2. Hematogenous spread
  3. Recurrent infection

Defining Chronic vs Acute

- Prior studies >3-4 weeks after primary TJA
- CDC definition > 90 days
- Duration of symptoms >3-4 weeks

QUESTION 1: What is the recommended time interval that would divide acute and chronic periprosthetic joint infection (PJI) (4 weeks, 90 days, etc.)?

RECOMMENDATION #1: There is no evidence-based time interval that divides acute from chronic PJI. The natural history of infection is a continuum from initiation to chronicity. Surgical treatment for patients with infection should not solely be based on the duration of symptoms or the time from implantation of the prosthesis. Other factors should also be considered such as implant stability, presence of sinus tract, virulence of the infective organism and the general health of the patient. It is important to note that the efficacy of surgical intervention, involving retention of the prosthesis, is more likely to fail as one moves past four weeks from the index arthroplasty and/or duration of symptoms of infection.

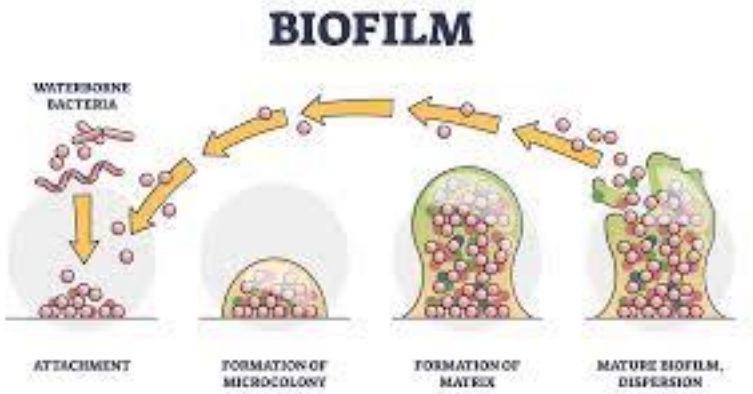
LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 84%, Disagree: 15%, Abstain: 1% (Super Majority, Strong Consensus)

Biofilm

2018 International Consensus Meeting on Musculoskeletal Infection: Summary from the Biofilm Workgroup and Consensus on Biofilm Related Musculoskeletal Infections

Kordo Saeed,[1] Alex C. McLaren,[2] Edward M. Schwarz,[3] Valentin Antoci,[4] William V. Arnold,[5] Antonia F. Chen,[6] Martin Clauss,[7] Jaime Esteban,[8] Vanya Gant,[9] Edward Hendershot,[10] Noreen Hickok,[11] Carlos A. Higuera,[12] Débora C. Coraça-Huber,[13] Hyonmin Choe,[14] Jessica A. Jennings,[15] Manjari Joshi,[16] William T. Li,[17] Philip C. Noble,[18,19] K. Scott Phillips,[20] Paul S. Pottinger,[21] Camilo Restrepo,[5] Holger Rohde,[22] Thomas P. Schaer,[23] Hao Shen,[24] Mark Smeltzer,[25] Paul Stoodley,[26,27,28] Jason C. J. Webb,[29] Eivind Witsø[30]



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Diagnosis

The 2018 Definition of Periprosthetic Hip and Knee Infection: An Evidence-Based and Validated Criteria

Javad Parvizi, MD [a,*], Timothy L. Tan, MD [a], Karan Goswami, MD [a], Carlos Higuera, MD [b], Craig Della Valle, MD [c], Antonia F. Chen, MD, MBA [a], Noam Shohat, MD [a,d]

[a] Rothman Institute, Thomas Jefferson University, Philadelphia, PA
[b] Cleveland Clinic, Cleveland, OH
[c] Rush University Medical Center, Chicago, IL
[d] Sackler Faculty of Medicine, Tel Aviv University, Ramat Aviv, Israel

Major criteria (at least one of the following)	Decision
Two positive cultures of the same organism	Infected
Sinus tract with evidence of communication to the joint or visualization of the prosthesis	

Preoperative Diagnosis		Minor Criteria	Score	Decision
	Serum	Elevated CRP *or* D-Dimer	2	≥6 Infected
		Elevated ESR	1	
	Synovial	Elevated synovial *WBC count or LE*	3	2-5 Possibly Infected [a]
		Positive alpha-defensin	3	
		Elevated synovial PMN (%)	2	0-1 Not Infected
		Elevated synovial CRP	1	

Intraoperative Diagnosis	Inconclusive pre-op score *or* dry tap [a]	Score	Decision
	Preoperative score	-	≥6 Infected
	Positive histology	3	4-5 Inconclusive [b]
	Positive purulence	3	
	Single positive culture	2	≤3 Not Infected

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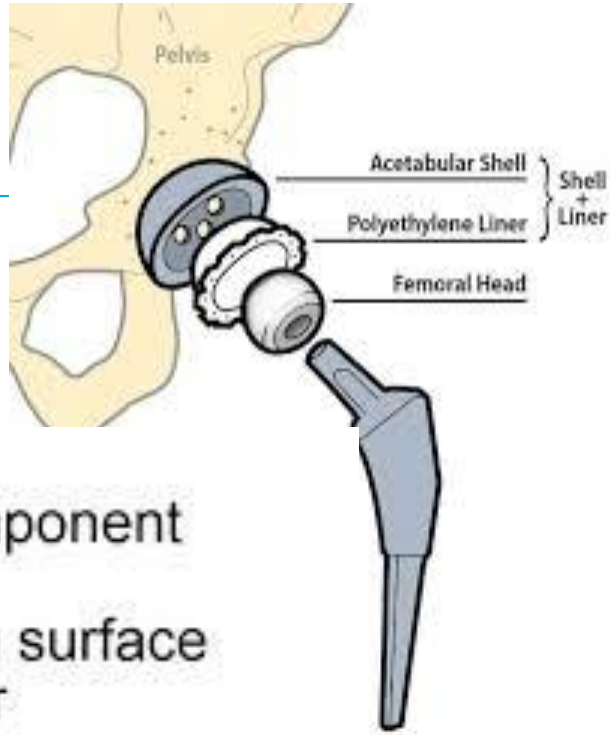
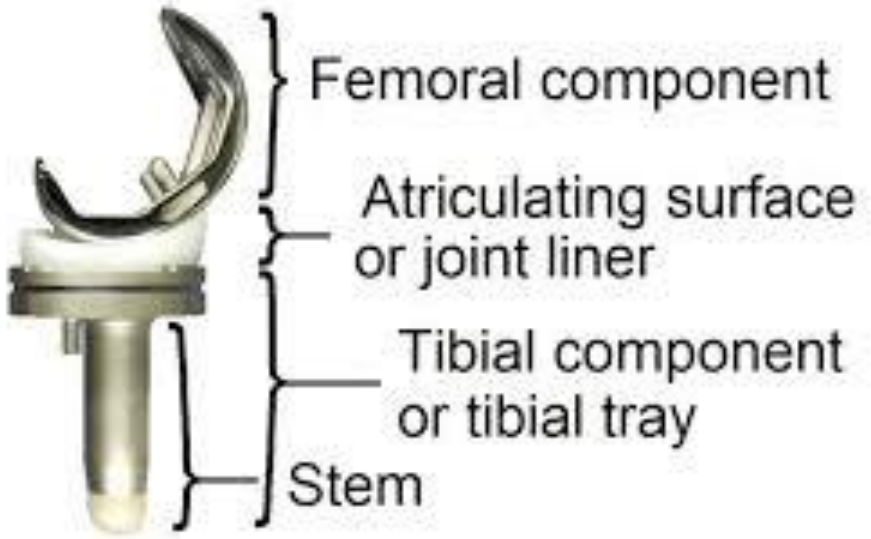
Acute infection– DAIR technique

- Irrigate and debride the joint
- Remove any modular parts
- +/- antibiotic powder / beads





Variable success rates (30-90%)

Indications and Guidelines for Debridement and Implant Retention for Periprosthetic Hip and Knee Infection

Douglas A. Zaruta[1] · Bowen Qiu[1] · Andrew Y. Liu[1] · Benjamin F. Ricciardi[1]

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Double DAIR?

Stage	Steps
1	Extensive debridement, removal and sterilization of modular parts, and insertion of high-dose antibiotic beads into the joint
2	Performed 5–7 days later, this stage involves a second debridement, removal of the antibiotic beads, and implantation of new modular components

Two-Stage Debridement With Prosthesis Retention for Acute Periprosthetic Joint Infections

Andrew S. Chung, DO, Matthew C. Niesen, MD, Taylor J. Graber, MD, Adam J. Schwartz, MD, Christopher P. Beauchamp, MD, Henry D. Clarke, MD, Mark J. Spangehl, MD *

Department of Orthopaedic Surgery, Mayo Clinic, Phoenix, AZ

With an average follow-up of 3.5 years, reported overall infection-control rates of 87% and 90%

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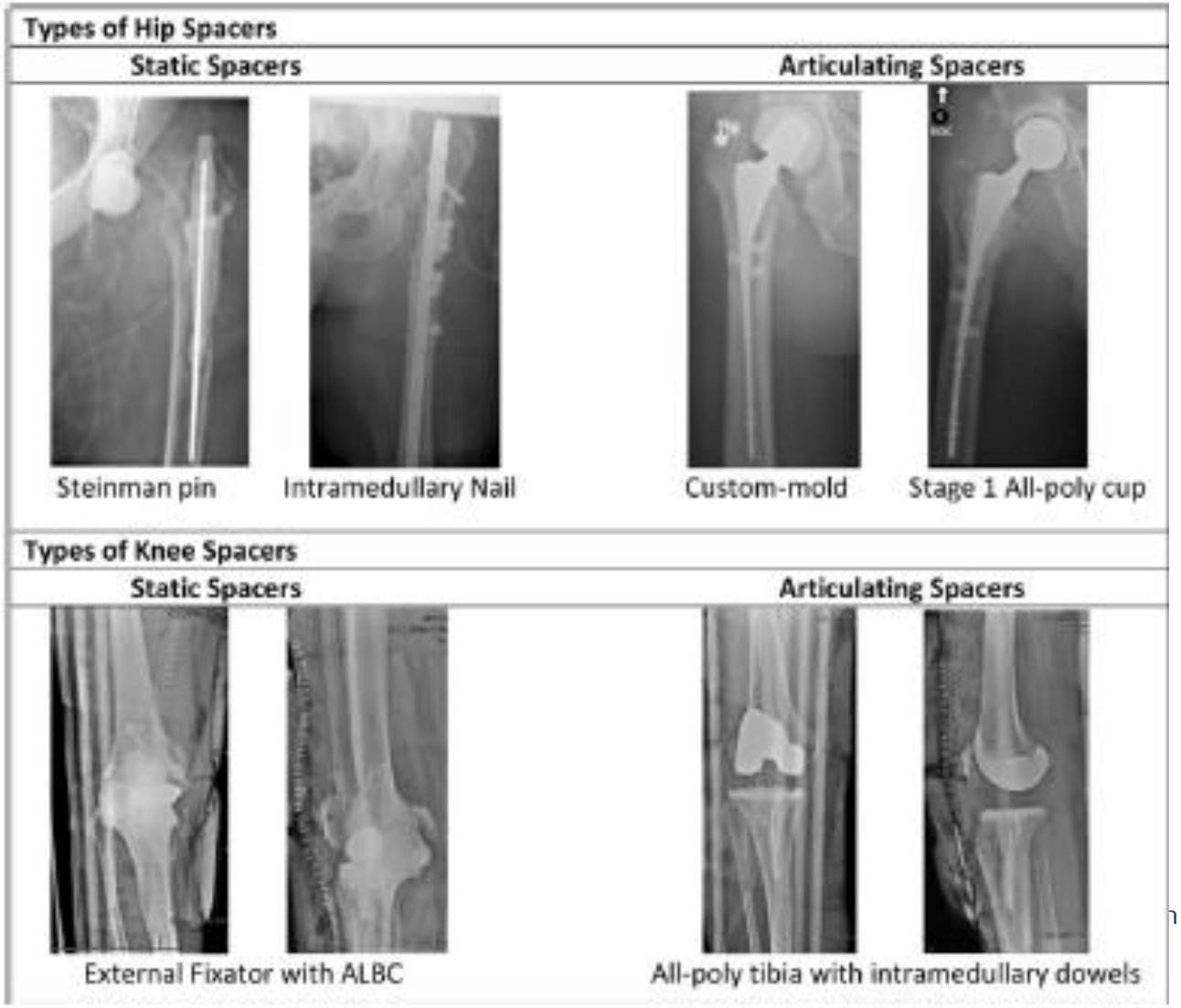
Articulating Spacers

Antibiotic Loaded Cement Spacers

Antibiotic choice

- Heat stable, low serum binding properties
- Tobramycin, gentamycin, and vancomycin



2-Stage Resection Arthroplasty

Pros:

- Extended local antibiotic period
- Two surgical debridements

Cons:

- Two operations, two anesthetic events
- Morbidity/quality of life/immobilization in interval with spacer
- Potential for mechanical spacer failure
- Cost

2-Stage Resection Arthroplasty: Technique

1. Removal of Prosthesis
   - ➢ ... And all cement, foreign bodies, associated soft tissue
2. Placement of an antibiotic-loaded bone cement spacer
3. Course of Antibiotics- usually IV, ~6 weeks
4. Reimplantation

Six weeks of antibiotic treatment is sufficient following surgery for septic arthroplasty☆

Louis Bernard [a,d], Laurence Legout [a], Line Zürcher-Pfund [a], Richard Stern [a], Peter Rohner [b], Robin Peter [a], Mathieu Assal [a], Daniel Lew [c], Pierre Hoffmeyer [a], Ilker Uçkay [a,c,*]

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2-Stage Resection Arthroplasty: Outcomes

- **91% success at 2 years, 84% at 5 years**
- BMI >30 kg/m2, surgical time >4 hours, gout, and certain bacterial species are associated with increased in failure
- 17% of patients who are planning to undergo second stage end up needing additional spacer
- 20% never undergo final replantation (which may lower true success rate)

Single Stage: Technique

1. Surgical debridement
   - Meticulous attention to removal of all cement, soft tissue, hardware
   - Obtain multiple cultures (5)

2. Irrigation
3. Re-drape, new gowns, gloves, and instruments
4. Irrigation

5. Reconstruction/Replantation

Post-operative Care

- IV antibiotics
  - Varies from: days to 6 weeks depending on institution, bacteria, patient factors, etc

- Oral antibiotics
  - Varies from 2 weeks to 3 months

Inclusion/Exclusion Criteria

Table 1
Criteria for Single-Stage Exchange Arthroplasty.

International Consensus Meeting [35]	Infectious Diseases Society of America [36]	University College of London Hospital [37]	ENDO-Klinik [38]
Organism identified preoperatively Organism susceptible to antibiotics	Organism identified preoperatively Organism susceptible to antibiotics with oral bioavailability Good soft tissue Good bone stock Bone grafting not required Antibiotic-loaded bone cement used for fixation	Organism identified preoperatively Organism susceptible to antibiotics Good soft tissue	Organism identified preoperatively Organism susceptible to antibiotics

Good bone stock, appropriate soft tissue envelope, and organism identified pre-op

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Single Stage: Proposed Advantages

- One surgical procedure
- Decreased overall:
  - Perioperative risk
  - Functional impairment
  - Length of stay
  - Systemic antibiotic administration
  - Cost

Single Stage: Outcomes

Outcomes of 1-Stage Versus 2-Stage Revisions After Hip Prosthetic Joint Infection

A Systematic Review and Meta-Analysis Based on Comparison Studies

Results: Fifteen articles and 1,017 patients were included in the meta-analysis. One-stage revision procedures (320 patients) were found to have greater success rates (i.e., lower rates of reinfection) than 2-stage revisions (697 patients) ($p = 0.04$). One-stage revisions (184 patients) had shorter durations of operation and less blood loss than 2-stage revisions (90 patients) ($p < 0.05$).

Conclusion: One-stage revision procedures are associated with lower reinfection rates, blood loss, and durations of operation compared with 2-stage revisions.

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Patel et al., JBJS 2023

The Debate

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Clinical Faceoff

Clinical Faceoff: One- Versus Two-Stage Exchange Arthroplasty for Prosthetic Joint Infections

Montri D. Wongworawat MD

A Compromise? 1.5 stage

Single-stage Acetabular Revision During Two-stage THA Revision for Infection is Effective in Selected Patients

Bernd Fink MD, Michael Schlumberger MD, Damian Oremek MD

Partial Two-stage Exchange for Infected Total Hip Arthroplasty: A Preliminary Report

Timothy E. Ekpo DO, Keith R. Berend MD, Michael J. Morris MD, Joanne B. Adams BFA, Adolph V. Lombardi Jr MD

Preservation of the original femoral cement mantle during the management of infected cemented total hip replacement by two-stage revision

J. R. Morley, S. M. Blake, M. J. W. Hubble, A. J. Timperley, G. A. Gie, J. R. Howell

Published Online: 1 Mar 2012 | https://doi.org/10.1302/0301-620X.94B3.28256

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Conclusion

- Managing PJI in orthopedic practice involves addressing prevalent pathogens and an accurate diagnosis.

- While there is a large amount of research devoted to the subject, the principles of patient selection and sterile technique continue to be the cornerstones of infection prevention.

Thank You !!!

Dr. Lee Rubin

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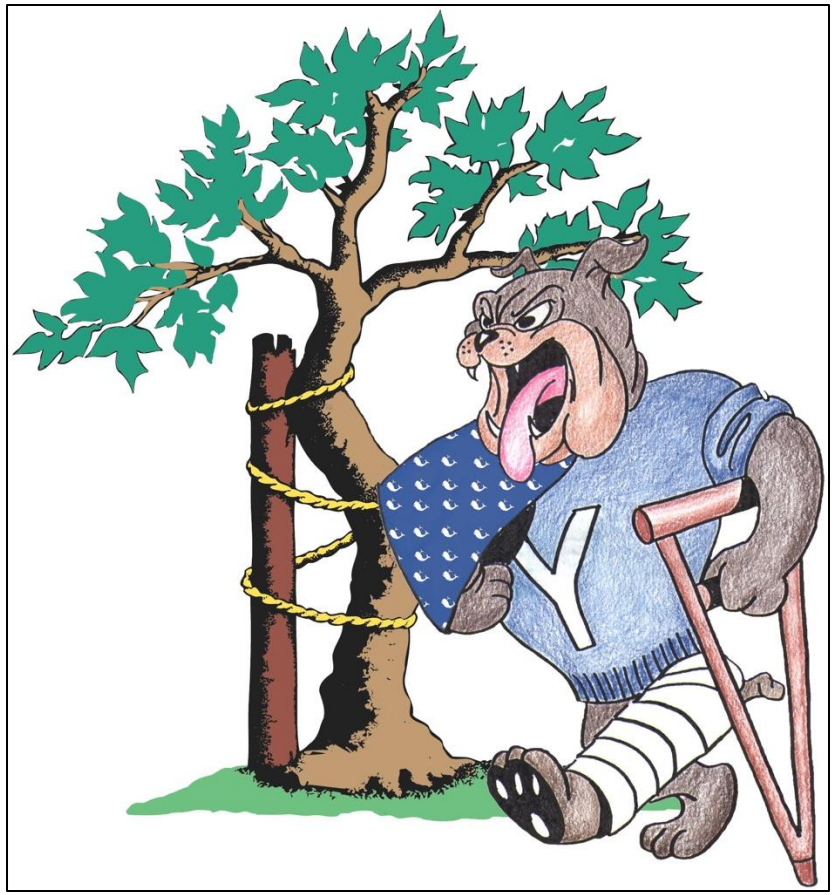

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