





Number of Delegates Involved	1205
Delegates Attended	857
Observers Attended	105
Industry Attendance	112
Local Academic Institutions	20





ICM is a non-profit organization whose mission is to engage experts from around the world to create compendiums of up-to-date recommendations, related to various fields of orthopedics, that will improve patient care



























THE JOURNAL OF





Chairs: Javad Parvizi, MD, FRCS Thorsten Gehrke, MD











((()))

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CURRENT CONCEPTS REVIEW

Resuming Elective Orthopaedic Surgery During the COVID-19 Pandemic

Guidelines Developed by the International Consensus Group (ICM)

J. Parvizi, MD, FRCS, T. Gehrke, MD, C.A. Krueger, MD, E. Chisari, MD, M. Citak, MD, PhD, S. Van Onsem, MD, PhD, W.L. Walter, MBBS, PhD, the International Consensus Group (ICM) and Research Committee of the American Association of Hip and Knee Surgeons (AAHKS)*

- > As we resume elective surgical procedures, it is important to understand what practices and protocols should be altered or implemented in order to minimize the risk of pathogen transfer during the severe acute respiratory syndrome (SARS)-CoV-2 pandemic.
- > Each hospital and health system should consider their unique situation in terms of SARS-CoV-2 prevalence, staffing capabilities, personal protection equipment supply, and so on when determining how and when to implement these recommendations.
- > All patients should be screened for SARS-CoV-2 by means of a thorough history and physical examination, as well as reverse transcription-polymerase chain reaction (RT-PCR) testing whenever possible, prior to undergoing elective surgery.
- > Patients who are currently infected with coronavirus disease 2019 (COVID-19) should not undergo elective surgery.
- > These guidelines are based on the available scientific evidence, albeit scant. The recommendations have been reviewed and voted on by the expert delegates who produced this document.

As the coronavirus disease 2019 (COVID-19) pandemic begins | SARS-CoV-2 infection, because of the complexities involved in to loosen its initial grip on the globe and we contemplate starting the long road back toward normalcy, the medical community will be facing many challenges, none more paramount than preventing the further spread of COVID-19 and limiting the possibility and the extent of a potential "second wave."

The purpose of the present report is to provide a list of recommendations aimed at reducing pathogen transfer during the reintroduction of elective orthopaedic surgical procedures, with a specific focus on preventing the spread of severe acute respiratory syndrome (SARS)-CoV-2 infection. Although we are assuming that we will be operating on patients without | COVID-19 in the affected areas and the ability to implement

accurate diagnosis of SARS-CoV-2 infection, including up to 40% false-negative results for reverse transcription-polymerase chain reaction (RT-PCR) tests1, we believe that precautions need to be in place to minimize the chance of infection transmission by potentially infected patients.

We realize that the situation is evolving on a daily basis and that some of the recommendations in the present report may need to be altered as new evidence emerges. In addition, we are aware that the infection-prevention measures described in the present report will highly depend on the prevalence of

*A list of the International Consensus Group (ICM) and Research Committee of the American Association of Hip and Knee Surgeons (AAHKS) members is

Disclosure: The authors indicated that no external funding was received for any aspect of this work. On the Disclosure of Potential Conflicts of Interest forms, which are provided with the online version of the article, one or more of the authors checked "yes" to indicate that the author had a relevant financial relationship in the biomedical arena outside the submitted work and "yes" to indicate that the author had a patent and/or copyright, planned, pending, or issued, broadly relevant to this work (http://links.lww.com/JBJS/F892)

Hospital Universitario Infanta Leonar (Madrid-Spair

Communication (ICE) and Print Interests on Binary and Enter Associate, Emiliation

CURRENT CONCEPTS REVIEW

Resuming Elective Orthopaedic Surgery During the COVID-19 Pandemic

Pandemia de COVID-19: protocolos para reanudar la cirugía ortopédica electiva

Parvizi, J., Gehrke, T., Krueger, CA., Chisari, E., Citak, M., Van Onsem, S., Walter WL.

Y otros miembros del Grupo de Consenso Internacional de Infecciones Musculoesqueléticas (ICM) y del Comité de Investigación de la Sociedad Americana de Cirujanos de Cadera y Rodilla (AAHKS)

Abdelaziz, H., Abolghasemian, MN., Aboltins, C., Al Maskari, SM., Baldini, A., Barnes, CL., Basso T., Belden, K., Benazzo, F., Bhandari, M., Bolognesi, MP., Bosco, JA3rd., Bozkurt, NM., Brown, TS., Buttaro, M., Carli, AV., Catani, F., Chen, J., Cao, L., Choe, H., Clohisy, JC., de Beaubien, B., Della Valle, CJ., Diaz-Ledezma, C., Dietz, MJ., Drago, L., Ehrlich, GD., Fleischman, AN., Ghanem, ES., Ghert, M., Gomes, LSM., Goswami, K., Guerra-Farfan, E., Higuera, CA., Iorio, R., Jennings, JM., Kim, KI., Kjærsgaard-Andersen, P., Kunutsor, SK., Kyte, R., Lee, MS., Levine, BR., Linke, P., Malizos, KN., Marcelescu, CE., Marin-Peña, OM., Mears, SC., Mihalko, WM., Memtsoudis, SG., Miller, AO., Mont, MA., Mullaji, A., Munhoz Lima, AL., Nandi, S., Ohlmeier, M., Otero, JE., Padgett, DE., Reed, M., Rossi, R., Sancheti, P., Sandiford, NA., Schwaber, MJ., Schwarz, EM., Schwarzkpof, R., Seyler, TM., Spangehl, MJ., Sporer, SM., Springer, BD., Sousa, R.,., Tornetta, P. 3rd., Witso, E., Wouthuyzen-Bakker, M., Zhou, Y.

COPYRIGHT © BY THE JOURNAL OF BONE AND JOINT SURGERY, INCORPORATED PARVIZI ET AL. RESUMING ELECTIVE ORTHOPAEDIC SURGERY DURING THE COVID-19 PANDEMIC: GUIDELINES DEVELOPED BY THE http://dx.doi.org/10.2106/JBJS.20.00844









Excellence Through Peer Review SUPPLEMENT TO THE JOURNAL OF SOME & JOINT SURGERY

RECOMMENDATIONS OF THE INTERNATIONAL CONSENSUS GROUP ON VENOUS THROMBOEMBOLISM AFTER ORTHOPAEDIC PROCEDURES



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VTE 2022

CONSENSO INTERNAZIONALE SUL TROMBOEMBOLISMO VENOSO IN CHIRURGIA ORTOPEDICA E TRAUMATOLOGIA (ICM-VTE)



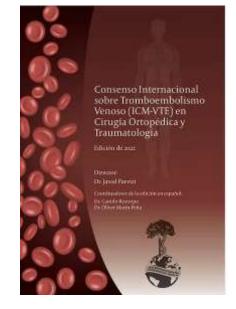
整形外科領域の 静脈血栓塞栓症(VIE)に おける 国際コンセンサス

Recommendations of the International Consensus Group on Venous Thromboembolism After Orthopaedic Procedures Davier Josef Parist Mt. FECS.

ICMMRTプロジェテトナーム



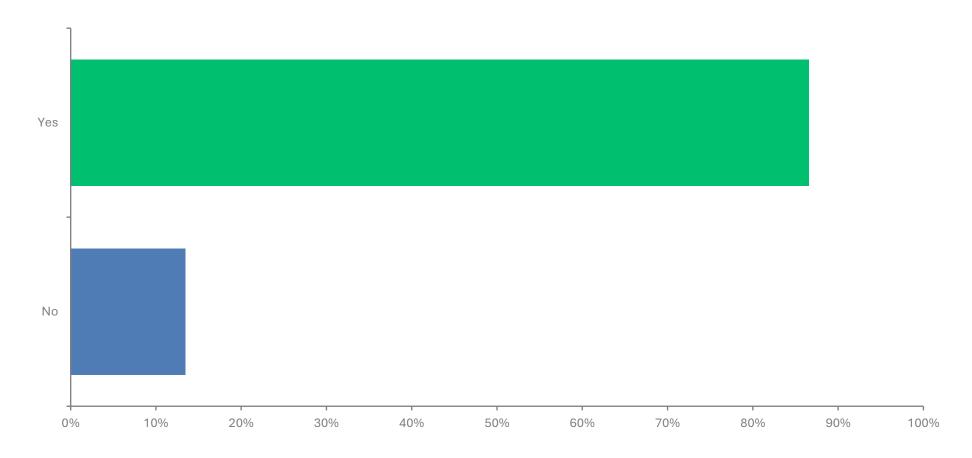






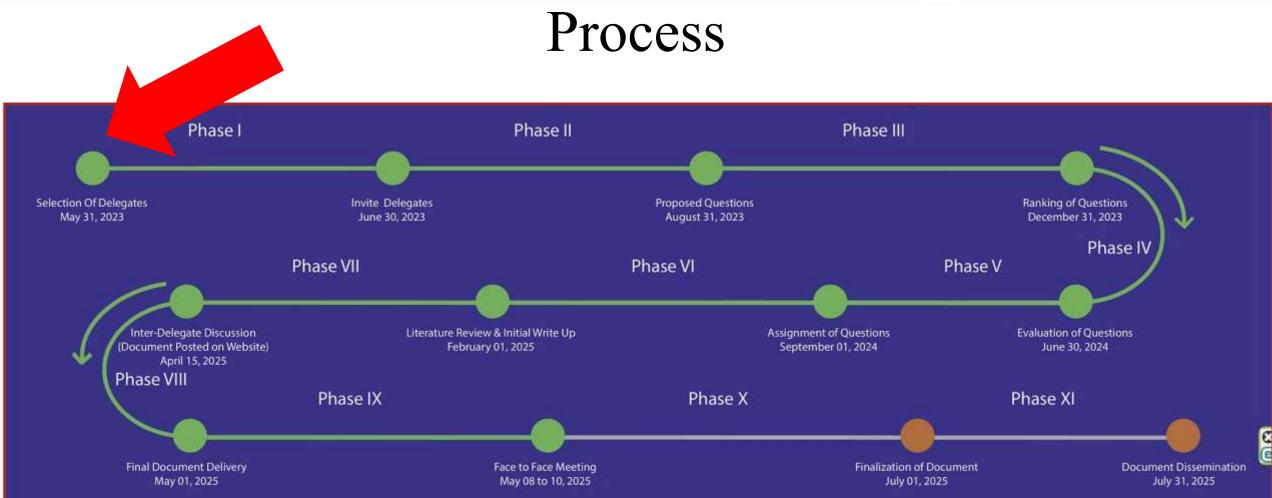


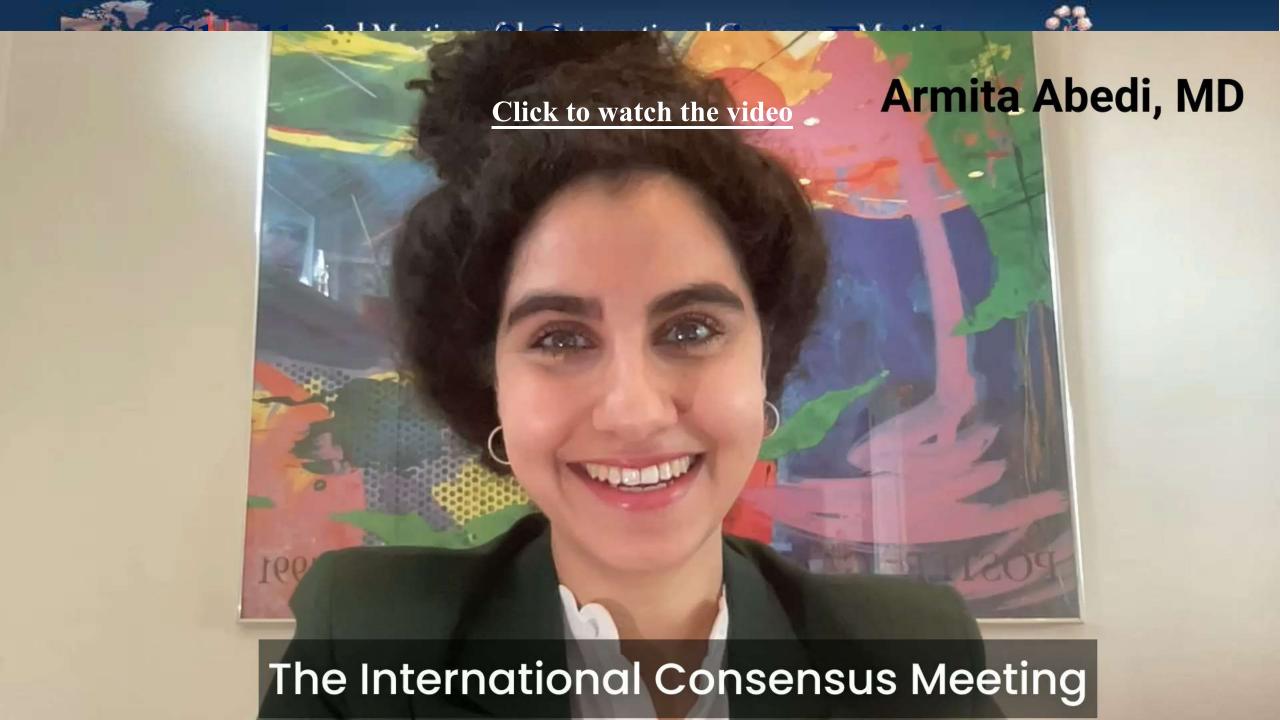
Q1: Do you see a need for a 3rd Infectious ICM?













Process

- Systematic review/Meta-analysis (whenever possible)
- •8-10 delegates assigned to each question
- Document was created by the delegates
- Reviewed/edited prior to meeting
- Presented by one of the delegates







Consensus Process Agreeing on what we know; on what we don't know; and, on what we need to do to know more.







Why bother?







Literature is not definitive on many issues







Much of what we have is based on thin science, if any

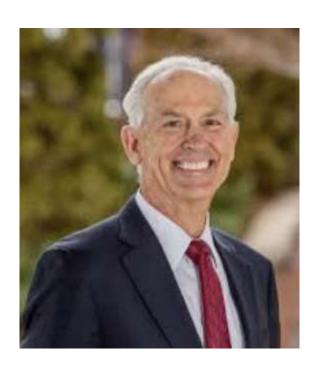


- To do studies on infection
 large sample sizes are needed
- = n=5,000, n= 22,000, n= 36,000





One Stage Exchange US Trial



Surgical Treatment of Chronic Periprosthetic Joint Infection: One-Stage versus Twostage

Thomas Fehring MD	OrthoCarolina	Principal Investigator
Javad Parvizi MD, FRCS	Rothman Institute at Thomas Jefferson University	Co-Principal Investigator
Antonia Chen MD, MBA	Rothman Institute at Thomas Jefferson University	Other Investigator
Michael Cross MD	The Hospital for Special Surgery	Other Investigator
Craig Della Valle	Rush University Medical Center	Other Investigator
Carlos Higuera MD	The Cleveland Clinic	Other Investigator
Bryan Springer MD	OrthoCarolina	Other Investigator







MUSCULOSKELETAL

INFECTON SOCIETY

Oral vs IV Abx

The NEW ENGLAND JOURNAL of MEDICINE





Oral versus Intravenous Antibiotics for Bone and Joint Infection

H.-K. Li, I. Rombach, R. Zambellas, A.S. Walker, M.A. McNally, B.L. Atkins, B.A. Lipsky, H.C. Hughes, D. Bose, M. Kümin, C. Scarborough, P.C. Matthews, A.J. Brent, J. Lomas, R. Gundle, M. Rogers, A. Taylor, B. Angus, I. Byren, A.R. Berendt, S. Warren, F.E. Fitzgerald, D.J.F. Mack, S. Hopkins, J. Folb, H.E. Reynolds, E. Moore, J. Marshall, N. Jenkins, C.E. Moran, A.F. Woodhouse, S. Stafford, R.A. Seaton, C. Vallance, C.J. Hemsley, K. Bisnauthsing, J.A.T. Sandoe, I. Aggarwal, S.C. Ellis, D.J. Bunn, R.K. Sutherland, G. Barlow, C. Cooper, C. Geue, N. McMeekin, A.H. Briggs, P. Sendi, E. Khatamzas, T. Wangrangsimakul, T.H.N. Wong, L.K. Barrett, A. Alvand, C.F. Old, J. Bostock, J. Paul, G. Cooke, G.E. Thwaites, P. Bejon, and M. Scarborough, for the OVIVA Trial Collaborators



- Multicenter study
- •90 patients (350 needed)







One vs Three ABX

- Multicenter study
- Duke Team (>3000 patients)
- Need 6000 patients





Not everything we do needs
 "randomized, prospective studies"





Glove during surgery

Hand washing- sterile techniques

Antibiotics







Equipose

Vol. 317 No. 3

EQUIPOISE AND THE ETHICS OF CLINICAL RESEARCH — FREEDMAN

141

SPECIAL ARTICLE

EQUIPOISE AND THE ETHICS OF CLINICAL RESEARCH

BENJAMIN FREEDMAN, PH.D.

Abstract The ethics of clinical research requires equipolse — a state of genuine uncertainty on the part of the clinical investigator regarding the comparative therapeutic merits of each arm in a trial. Should the investigator discover that one treatment is of superior therapeutic merit, he or she is ethically obliged to offer that treatment. The current understanding of this requirement, which entails that the investigator have no "treatment preference" throughout the course of the trial, presents nearly insuperable obstacles to the ethical commencement or completion of a controlled trial and may also con-

THERE is widespread agreement that ethics requires that each clinical trial begin with an honest null hypothesis. ^{1,2} In the simplest model, testing a new treatment B on a defined patient population P for which the current accepted treatment is A, it is necessary that the clinical investigator be in a state of genuine uncertainty regarding the comparative merits of treatments A and B for population P. If a physician knows that these treatments are not equivalent, ethics requires that the superior treatment be recommended. Following Fried, I call this state of uncertainty about the relative merits of A and B "equipoise."

Equipoise is an ethically necessary condition in all cases of clinical research. In trials with several arms, equipoise must exist between all arms of the trial; otherwise the trial design should be modified to exclude the inferior treatment. If equipoise is disturbed during the course of a trial, the trial may need to be terminated and all subjects previously enrolled (as well as other patients within the relevant population) may have to be offered the superior treatment. It has been rigorously argued that a trial with a placebo is ethical only in investigating conditions for which there is no known treatment? this argument reflects a special application of the requirement for equipoise. Although equipoise has commonly been discussed in the special context of the ethics of randomized clinical trials, 4.5 it is important to recognize it as an ethical condition of all controlled clinical trials, whether or not they are randomized, placeboeontrolled, or blinded.

The recent increase in attention to the ethics of research with human subjects has highlighted problems associated with equipoise. Yer, as I shall attempt to show, contemporary literature, if anything, minimizes those difficulties. Moreover, there is evidence that concern on the part of investigators about failure to satisfy the requirements for equipoise can doom a trial

From the McGill Centre for Medicine, Ethics and Law, McGill University, Lady Meredith Bldg., 1110 Pline Ave. W., Montreal, PQ H3A 1A3, Canada, where reprint requests should be addressed to Dr. Freedman. Supported in part by a research grant from the Social Sciences and Humanities Research Council of Canada.

tribute to the termination of trials because of the failure to enroll enough patients.

I suggest an alternative concept of equipoise, which would be based on present or imminent controversy in the clinical community over the preferred treatment. According to this concept of "clinical equipoise," the requirement is satisfied if there is genuine uncertainty within the expert medical community — not necessarily on the part of the individual investigator — about the preferred treatment. (N Engl J Med 1987; 317: 141-5.)

as a result of the consequent failure to enroll a sufficient number of subjects.

The solutions that have been offered to date fail to resolve these problems in a way that would permit clinical trials to proceed. This paper argues that these problems are predicated on a faulty concept of equipoise itself. An alternative understanding of equipoise as an ethical requirement of clinical trials is proposed, and its implications are explored.

Many of the problems raised by the requirement for equipoise are familiar. Shaw and Chalmers have written that a clinician who "knows, or has good reason to believe," that one arm of the trial is superior may not ethically participate. But the reasoning or preliminary results that prompt the trial (and that may themselves be ethically mandatory)⁷ may jolt the investigator (if not his or her colleagues) out of equipoise before the trial begins. Even if the investigator is undecided between A and B in terms of gross measures such as mortality and morbidity, equipoise may be disturbed because evident differences in the quality of life (as in the case of two surgical approaches) tip the balance.^{3-5,8} In either case, in saying we do not know" whether A or B is better, the investigator may create a false impression in prospective subjects, who hear him or her as saying "no evidence lcans cither way," when the investigator means "no controlled study has yet had results that reach statistical significance.

Late in the study — when P values are between 0.05 and 0.06 — the moral issue of equipoise is most readily apparent, 100 but the same problem arises when the carliest comparative results are analyzed. Within the closed statistical universe of the clinical trial, each result that demonstrates a difference between the arms of the trial contributes exactly as much to the statistical conclusion that a difference exists as does any other. The contribution of the last pair of cases in the trial is no greater than that of the first. If, therefore, equipoise is a condition that reflects equivalent evidence for alternative hypotheses, it is jeopardized by the first pair of cases as much as by the last. The investigator who is concerned about the ethics of recruitment after



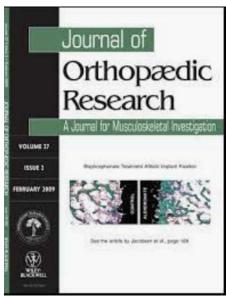


- ❖ 102 General
- ❖ 102 Hip and Knee
- * 86 Shoulder
- * 72 Spine
- 23 Biofilm













- Selected from over 2000 questions submitted by delegates
- Ranked by executive committee (36 member)





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Koji Yamada









G9: What is the Optimal Antibiotic Prophylaxis for Patients with Penicillin Allergy?

Jason M. Jennings, Hitoshi Honda, Michael Yayac, Meeri Honkanen, Christopher E. Pelt, Piret Mitt, Nicholas J. Giori, Daniel Schweitzer, & Kristen I. Barton





Jason M. Jennings, MD, DPT, AdventHealth Colorado Joint Replacement, United States







Hitoshi Honda, Japan



Michael Yayac, United States



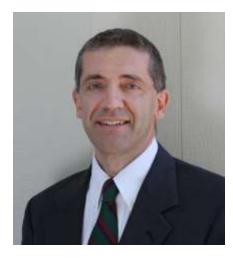
Meeri Honkanen, Finland



Christopher E. Pelt, United States



Piret Mitt, Estonia



Nicholas J. Giori, United States



Daniel Schweitzer, Chile

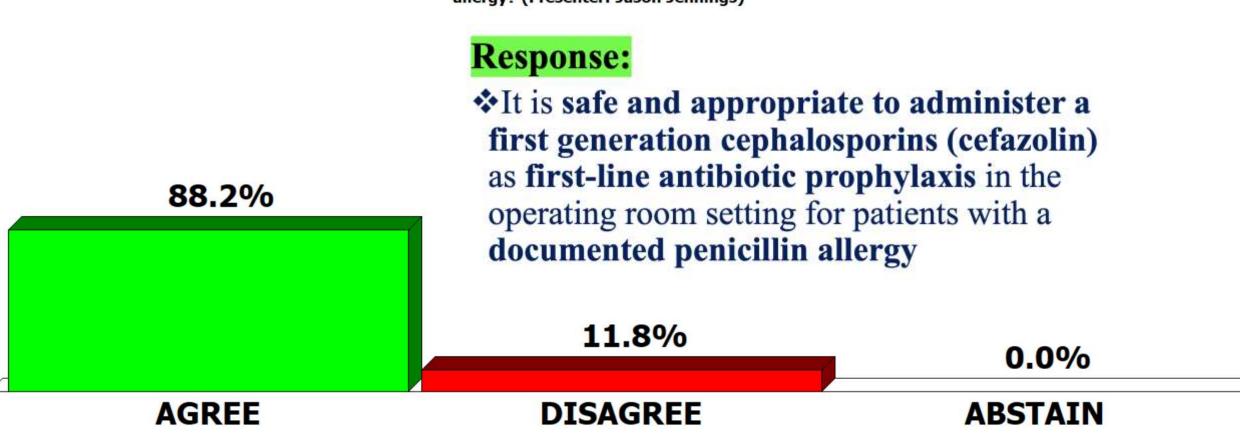


Kristen I. Barton, Canada





G9: What is the optimal antibiotic prophylaxis for patients with penicillin allergy? (Presenter: Jason Jennings)







Is there a role for skin testing in patients reporting penicillin allergy, who are undergoing major orthopedic procedures?



Laura E. Daimoli, MD

Associate Professor
Director of Orthopedic Infectious
Disease
University of Colorado



3rd Meeting of the International Consensus Meeting

3rd Meeting of the International Consensus Meeting 8-10 of May, 2025 Istanbul



G10: Is there a role for skin testing in patients reporting penicillin allergy, who are undergoing major orthogodic procedures? (Presenter Laura Damioli)

*Response:

Routine skin testing for patients reporting penicillin allergy is not required as the majority of these patients can safely receive cephalosporins.

13.5%

4.0%

AGREE

82.5%

DISAGREE

ABSTAIN



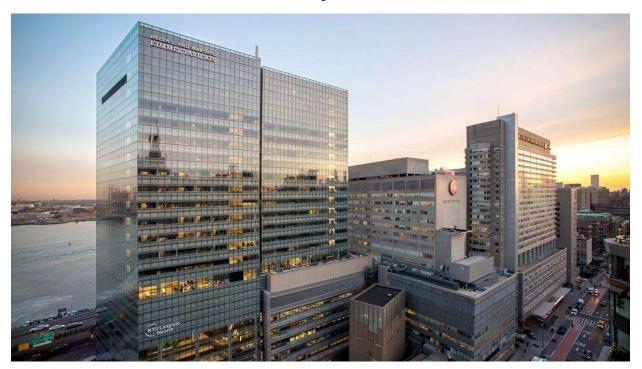






Is Vitamin D deficiency a risk factor for SSI/PJI in patients undergoing major orthopedic surgery?

Arshi A., Cordero J., Novikov D., Fujie A., Gahramanov A., Solomon L.B., Saldana A.E., Piuzzi N.S., Ramasamy B., Kigera J.





Armin Arshi MD, NYU Langone, New York, NY







John K. Cordero USA



David Novikov USA



Atsuhiro Fujie Japan



Aydin Gahramanov Azerbaijan



Lucian Bogdan Solomon Australia



Ariel E Saldana Panama



Nicolas S. Piuzzi USA



Boopalan Ramasamy Australia



James Kigera Kenya



85.3%

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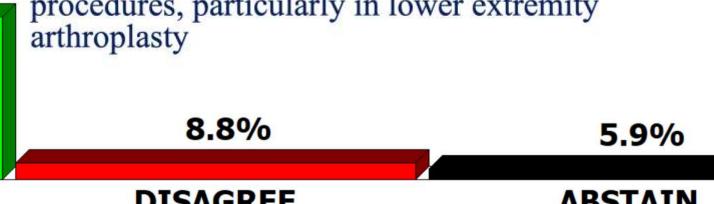


G21: Does the level of preoperative vitamin D have an influence on the incidence of SSI/PJI in patients undergoing major orthopedic surgery?

(Presenter: Armin Arshi)



Yes. There is consistent evidence demonstrating that VDD is associated with increased risk of subsequent SSIs and/or PJIs in patients undergoing orthopaedic procedures, particularly in lower extremity arthroplasty



AGREE DISAGREE ABSTAIN









G25

Does gut microbiome have a role in the development of Surgical Site Infection (SSI) and/or Periprosthetic Joint Infection (PJI)

Atipiboonsin V, Chisari E, Megaloikonomos P, Huddlestone J, Budhiparama N, Ozden VE, Drago L, Enayatollahi M, Longo UG, Parvizi J





Vorawit Atipiboonsin MD
Orthopaedic Surgery Department
Khonkaen University, Thailand



Emanuele Chisari MD, PhD ICM fellow







Nicolaas C. Budhiparama



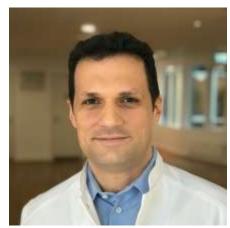
Umile Giuseppe Longo



Mohammadali Enayatollahi



Lorenzo Drago



Panayiotis Megaloikonomos



James Huddlestone



Vahit Emre Ozden



Javad Parvizi



81.8%

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G25: Does gut microbiome have a role in the development of SSI/PJI in patients undergoing major orthopedic surgery?

(Presenter: Atipiboonsin Vorawit)



The gut microbiome contributes to the development of surgical site infections (SSI) and periprosthetic joint infections (PJI), particularly in patients with known gut dysbiosis (e.g. inflammatory bowel disease [IBD] or prior Clostridium difficile infection).

12.1% 6.1%

AGREE DISAGREE ABSTAIN









G32: What is the optimal irrigation solution for the patients undergoing major orthopedic procedures?

Ernesto Guerra-Farfán, Simon Garceau, Pablo Slulittel, Osamu Kimura, Karan Goswami, Volker Alt, Jie Xie, Marcelo Lizarraga, Seper Ekhtiari









Ernesto Guerra-Farfán



Simon Garceau



Pablo Slullitel



Karan Goswami



Seper Ekhtiari



Marcelo Lizarraga



74.5%

3rd Meeting of the International Consensus Meeting 8-10 of May, 2025 Istanbul



G32: What is the optimal irrigation solution for the patients undergoing major orthopedic procedures? (Presenter: Seper Ekhtiari)



In total hip and knee arthroplasty and spine surgery, there is substantial evidence supporting the use of dilute povidone-iodine over saline as an irrigation solution to reduce infection rates.

13.9% 11.6%

AGREE DISAGREE ABSTAIN









G 42 - Is there a role for the use of personal protection systems (surgical helmets/spacesuits) in prevention of SSI/PJI after major orthopedic procedures?

David Milligan, Benjamin F Ricciardi, Atul F. Kamath, Mark J Spangehl, P. Maxwell Courtney, Tina S. Wik, Simon Young



Gary Hooper University of Otago Christchurch New Zealand









David Milligan Christchurch NZ



P Maxwell Courtney Philadelphia USA



Benjamin Ricciardi, Rochester USA



Tina Strømdal Wik Norway



Atul Kamath Cleveland USA



Simon Young Auckland NZ



Mark Spangehl Mayo USA



92.5%

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G42: Is there a role for the use of personal protection systems (surgical helmets/spacesuits) in prevention of SSI/PJI after major orthopedic procedures? (Presenter: Gary Hooper)

*Response:

There is no high-level evidence that personal protection systems (PPS) reduce the incidence of SSI/PJI.

Inappropriate use may increase wound contamination.

PPSs have the potential benefit of protecting the surgical team from splatter and aerosolized particles.

5.6% 1.9%

AGREE DISAGREE ABSTAIN



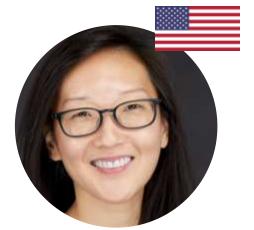












Gina A. Suh



Cecile Batailler



Laura E. Damioli



James B. Doub



Karan Goswami



Antonia Scobie



Roshan P. Shah



Kenneth Urish



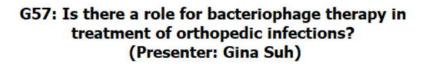
Tristan Ferry



76.5%

3rd Meeting of the International Consensus Meeting 8-10 of May, 2025 Istanbul





Response:

Yes. Phage therapy demonstrates a favorable safety profile and is a reasonable therapeutic consideration for patients with refractory bone and joint infections.



AGREE DISAGREE ABSTAIN









How Can we Distinguish Pathogenic Microbes from Normal Microbiota in the Musculoskeletal System?

Chong Bum Chang, Kee Soo Kang, Bo Söderquist, Nathanael Heckmann, Javad Parvizi, Emanuele Chisari, Wenming Zhang, Mohammad Ali Enayatollahi, Fernando A Lopreite, Goksel Dikmen



Chong Bum Chang, M.D., Ph.D.

Professor, Dept. of Orthopaedic Surgery, Seoul National University College of Medicine, Seoul National University Bundang Hospital, South Korea



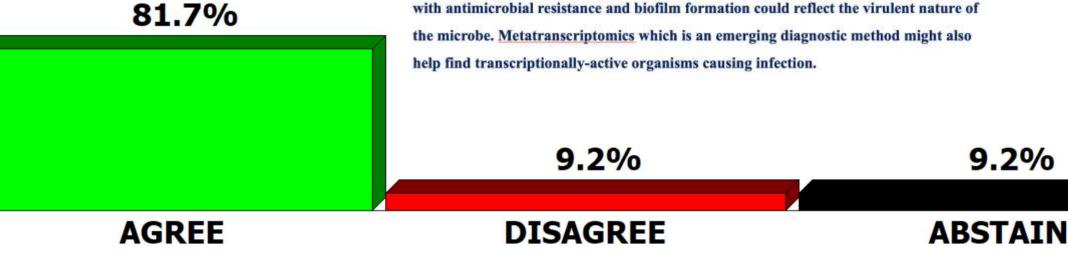


9.2%

G73: How can we distinguish pathogenic microbes from normal microbiota in the musculoskeletal system? (Presenter: Nate Heckman)

*Response:

We recommend that the clinicians refer to the inflammatory status at first to decide whether the situation itself is infection or not with the guidance of the ICM criteria. Low diverse microbial community composed of high virulence organisms might suggest the detected microbes to be pathogens rather than commensals. Specific genes associated with antimicrobial resistance and biofilm formation could reflect the virulent nature of the microbe. Metatranscriptomics which is an emerging diagnostic method might also











G78: Can oral antimicrobials be used for the treatment of implant-associated infection?



José Francisco Reyes
Copello, MD
Orthopaedic Surgeon
Knee reconstruction
Clinica Universitaria Colombia,
Unisanitas University

Laura Certain, MD, PhD University of Utah Salt Lake City, Utah, USA









Armita A Abedi, Denmark



Abdelhak Adjel, Algeria



Laura Certain, USA



Jose Francisco Reyes Copello, Columbia



Nicolas Cortes-Penfield, USA



Ana Lucia Munhoz Lima, Brazil



Pēteris Studers, Latvia

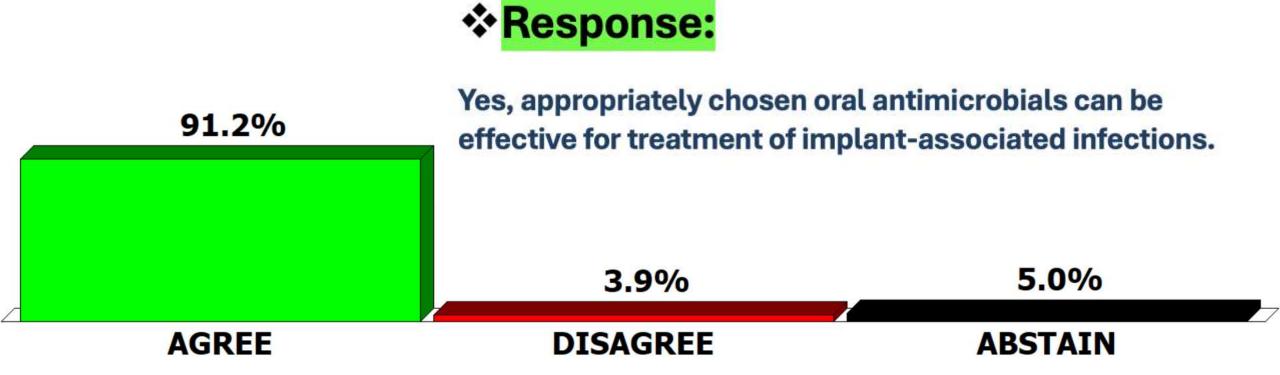


Laila Woc-Colburn, USA





G78: Can oral antimicrobials be used for the treatment of implant associated infections? (Presenter: Jose Francisco Reyes)

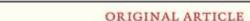


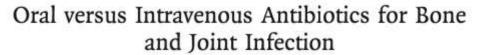
Oral vs IV Abx



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INFECTON SOCIETY





The NEW ENGLAND JOURNAL of MEDICINE

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T.H.N. Wong, L.K. Barrett, A. Alvand, C.F. Old, J. Bostock, J. Paul, G. Cooke,
G.E. Thwaites, P. Bejon, and M. Scarborough, for the OVIVA Trial Collaborators







- Multicenter study
- Rothman (90 patients)













G79: Is there a role for administration of rifampicin for patients undergoing surgical treatment for implant-associated infections?

Kayahan Karaytug, Camelia Marculescu, Katherine Belden, Onur Tunalı, Elie Berbari, Marjan Wouthuyzen-Bakker, Tiziana Ascione, Willem-Jan Metsemakers, Javad Parvizi, Jose Francisco Reyes Copello, Meredith Schade, Laurens Manning, Henk Scheper



Kayahan Karaytug, MD

Acibadem University Maslak Acibadem Hospital International Joint Center (IJC)







Kayahan Karaytug



Marjan Wouthuyzen-Bakker

Camelia Marculescu



Katherine Belden



Onur Tunalı



Tiziana Ascione



Willem-Jan Metsemakers



Javad Parvizi

Jose Francisco Reyes Copello

Meredith Schade



Henk Scheper





G79: Is there a role for administration of rifampicin for patients undergoing surgical treatment for implant associated infections?

(Presenter: Kayahan Karaytug)

Response:

Unknown. Despite supportive animal data, clinical studies examining the efficacy of rifampicin for patients undergoing surgical treatment of implant-associated infections remain conflicting. Well designed randomized trials are needed before a clear recommendation can be given.

8.5%

1.1%

AGREE

90.4%

DISAGREE

ABSTAIN









G-96 Should implant associated orthopedic infections be treated in specialized centers?

Juan D Lizcano, Efrain Diaz-Borjon, Ruben Alejandro Morales, Jesse Wolfstadt, Phillippe Boisrenault, Panayiotis Papagelopoulos, Tulio Campos, Angela Hewlett





Dr. Carlos A. Higuera, Cleveland Clinic Florida, USA.







Juan D Lizcano Cleveland Clinic Florida



Jesse Wolfstadt Mount Sinai Hospital



Ruben A Morales Hospital Angeles Lomas



Efrain Diaz-Borjon Hospital Angeles Lomas



Angela Hewlett
University of Nebraska Medical Center



Phillippe Boisrenault



Panayiotis Papagelopoulos



Tulio Campos Instituto Orizonti

Nation and Kapodistrian University of Athens



3rd Meeting of the International Consensus Meeting

3rd Meeting of the International Consensus Meeting 8-10 of May, 2025 Istanbul



G96: Should implant associated orthopedic infections be treated in specialized centers? (Presenter: Carlos Higuera Rueda)

*Response:

Treating implant-associated orthopedic infections in specialized centers with a dedicated multidisciplinary services could potentially lead to improved clinical outcomes, antibiotic therapy compliance and lower reinfection rates.

4.8%

2.4%

AGREE

92.9%

DISAGREE

ABSTAIN









Is there a role for employing Artificial intelligence and/or machine learning in management of orthopedic infections?

André Grenho, Chingiz Alizadeh, Erlangga Yusuf, Fouad Sadek, Gérard Giordano, Pedro Dantas, Sérgio Gonçalves





André Grenho, MD, MSc – ULS São José, Hospital de Curry Cabral, Lisbon, Portugal







Chingiz Alizadeh Azerbaijan Scientific Research Institute of Traumatology and Orthopedics



Erlangga Yusuf Erasmus MC



Fouad Sadek Kasralainy School of Medicine



Gérard Giordano Joseph Ducuing Hospital



Pedro Dantas ULS São José



Sérgio Gonçalves ULS São José



85.3%

3rd Meeting of the International Consensus Meeting 8-10 of May, 2025 Istanbul



G98: Is there a role for employing Artificial intelligence and/or machine learning in management of orthopedic infections? (Presenter: Andre Grenho)



AI may soon be used to manage orthopedic infections. Its main advantages are data mining and systematic information collection, which allows the creation of predictive, diagnostic, or treatment modules. Alas, it still struggles with external validation and generalizability issues.

7.4%

AGREE DISAGREE ABSTAIN









HK6: Does the use of antibiotic-impregnated polymethyl methacrylate cement reduce the incidence of infection in patients undergoing primary joint arthroplasty?

Ernesto Guerra-Farfan, Thiago Sampaio Busato, Brett R. Levine, Jean-Yves Jenny, Levent Bayam, Elysia Masters, Ron E. Delanois, Michael I Solomon, David S Choon, Seper Ekhtiari (Liaison)







Ernesto Guerra-Farfán MD, PhD. Hospital Universitario Vall d'Hebron. Centro Médico Teknon. Barcelona-Spain







Seper Ekhtiari (Liaison)



Thiago Sampaio Busato



Brett R. Levine



Ron E. Delanois



Levent Bayam



Michael I Solomon

David S Choon

Jean-Yves Jenny





HK6: Does the use of antibiotic impregnated PMMA cement reduce the incidence of infection in patients undergoing primary joint arthroplasty?

(Presenter: Ernesto Guerra Farfan)

The evidence among <u>lower-level comparative</u> studies is mixed, with some studies suggesting antibiotic-impregnated cement reduces the risk of infection in patients undergoing primary joint arthroplasty. However, pooling of the available <u>Level 1 evidence</u>, as well as pooled registry data, does not support a reduction in infection risk in primary total joint arthroplasty.

75.5%

18.5%

6.0%













Unified PJI definition



Unified Criteria for Periprosthetic Joint Infections (PJI)

Standalone criteria

Clinical features

A sinus tract communicating from the joint to the outside environment that develops or persists after the incision has or should have healed

Microbiology

- Two positive cultures with a phenotypically indistinguishable organism from periprosthetic tissue
- One positive culture from synovial fluid or sonicate fluid PLUS one positive culture from periprosthetic tissue with a phenotypically indistinguishable organism

Inflammatory markers and histology

- Synovial leucocyte count >3000 cells/µL
- Synovial polymorphonuclear cells >75%
- Positive histology: 5 or more neutrophils in each of 5 or more high power fields (400x)

All without any alternative explanation1

Supportive criteria

Microbiology

- A single positive synovial fluid, sonicate fluid or periprosthetic tissue culture
- A positive molecular test of any organism in synovial fluid, tissue or sonication fluid

Imaging

- A positive WBC-scintigraphy3
- A positive [18F]-FDG-PET/CT when performed more than 6 months after the index arthroplasty4

Inflammatory markers

- Synovial leucocyte count 1500 2999 cells/µL
- Synovial polymorphonuclear cells 65 74%
- Any alternative positive synovial fluid biomarker5

All without any alternative explanation1

Specificity >80%

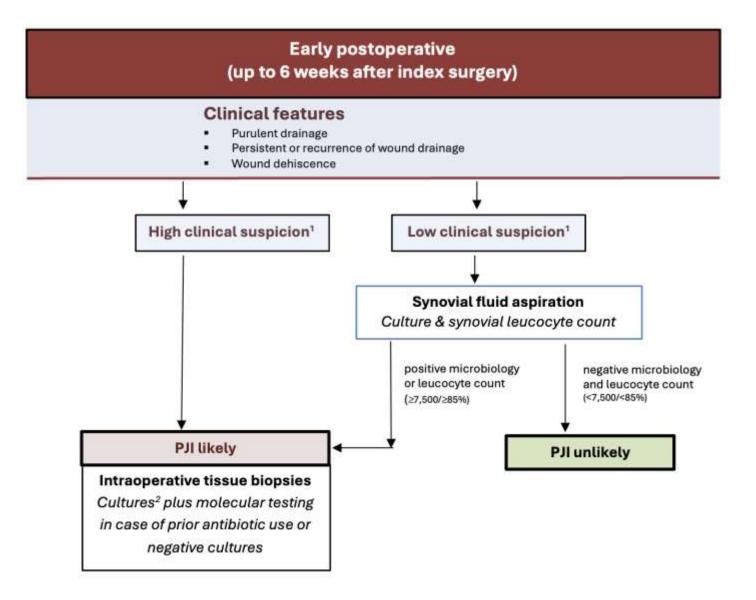
Confirmed PJI

One standalone criterion in any category

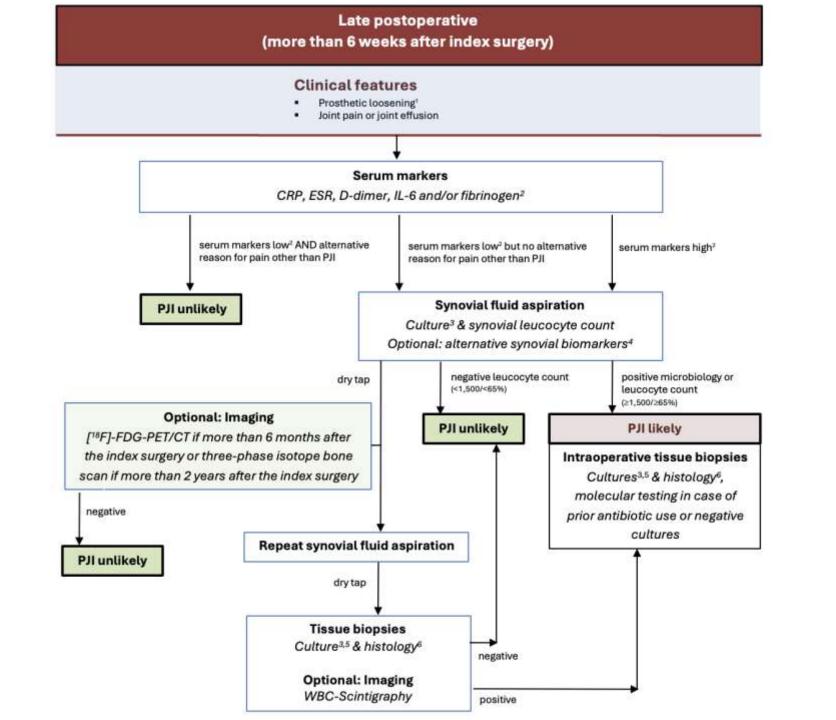
Probable PJI

One supportive microbiology criterion PLUS one supportive inflammatory criterion or imaging criterion

Specificity >95%



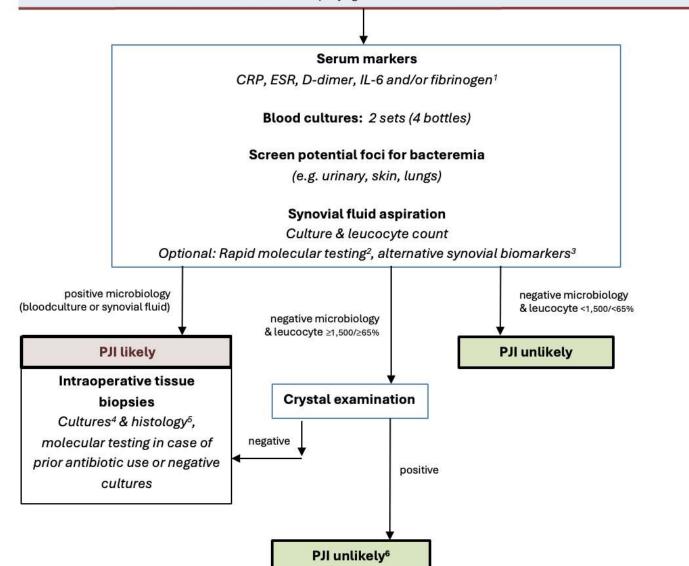
¹High clinical suspicion: purulent drainage or any drainage from day 8 post-operatively, especially when drainage is increasing or reocçurs



Late acute (hematogenous)

Clinical features

- Sudden onset of joint pain and/or joint effusion in a previously asymptomatic joint
- With or without accompanying fever and/or chills











HK20: In patients with a prosthetic joint infection of one joint, is there a role for aspiration of other joints that have prostheses in place?

<u>George A. Komnos,</u> Nifon K. Gkekas, Trifon Totlis, Federico Llobet, João Maurício Barretto, Ibrahim M G







George A. Komnos, Assistant Professor of Orthopaedics University Hospital of Larisa, Greece School of Health Sciences, Department of Medicine, University of Thessaly, Greece







Nifon K. Gkekas



Trifon Totlis



Federico Llobet



João Maurício Barretto



Ibrahim M Gado





HK20: In patients with PJI of one joint, is there a role for aspiration of other joints that have prostheses in place? (Presenter: George Komnos)

We recommend that when a patient develops a prosthetic joint infection (PJI) in one joint, all other artificial joints should be examined clinically, and if clinical suspicion for PJI exists, then other joints should be aspirated.

71.8%

25.5%

2.7%









HK26: What is the Optimal Duration for Holding Cultures in Patients with Periprosthetic joint Infection?



Mayo Clinic Arizona

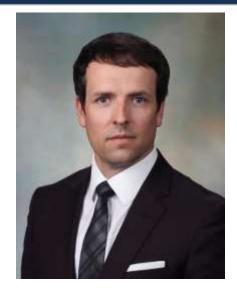


Saad Tarabichi, MD





























HK26: What is the optimal duration for holding cultures in patients with PJI? (Presenter: Saad Tarabichi)

In light of recent data to suggest that certain slow-growing microorganisms, such as *Cutibacterium acnes*, require prolonged incubation times in order to be isolated on culture, we recommend routine holding of cultures for a duration of 14 days in patients with an established diagnosis of PJI. If fungal or mycobacterial PJI is suspected, samples should be inoculated on special media and held for at least 4 to 6 weeks.

86.89%

11.48%

1.64%







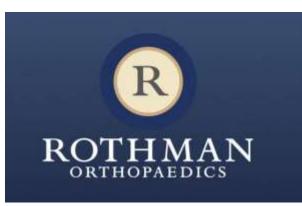




Is there a role for the use of molecular techniques in isolation of infective organism(s) causing periprosthetic joint infection (PJI)?



Brandon J. Martinazzi, Pier Francesco Indelli, Hyuk-Soo Han, Maria Eugenia Portillo, Barend C Mitton, Ana Lucia Munhoz Lima, Massimo Franceschini, Ibrahim Azboy, George Babis, Karan Goswami





















Brandon J. Martinazzi, USA



Ana Lucia Munhoz Lima, Brazil



Barend Mitton, South Africa



George C. Babis, Greece



Maria Eugenia Portillo, Spain



Ibrahim Azboy, Turkey



Hyuk-Soo Han, Korea



Massimo Franceschini, Italy



Karan Goswami, USA





HK35: Is there a role for the use of molecular techniques in isolation of infective organism(s) causing PJI? (Presenter: Pier Indelli)

92.5%

Yes. Molecular techniques are promising adjuncts to conventional methods for diagnosing PJI and isolating infective organisms. These techniques may be of particular benefit in culture-negative cases, when rapid pathogen identification is critical, when rare pathogens are suspected, or in high-risk patients, such as those with a history of recurrent PJI.

3.8%

3.8%











Is there a role for the use of bone scans in the diagnosis of periprosthetic joint infections?

Armita A Abedi, Ahmad Abbaszadeh, Dernando Da Rin de Lorenzo, Jose I Fregeiro, Paul Jutte, Michael T Hirchmann, Umile G. Longo, Jeroen Neyt





Armita A Abedi, ICM fellow 2024
Department of Orthopedic Surgery and Traumatology, Copenhagen University Hospital Bispebjerg, Denmark







Ahmad Abbaszadeh, Iran



Humaid Al Farii, Oman



Fernando Da Rin de Lorenzo, Italy



Jose I Fregeiro, Uruguay



Paul Jutte, The Netherlands



Michael T. Hirchman, Switzerland



Umile G Longo, Italy



Jeroen Neyt, Belgium





HK42: Is there a role for bone scan in diagnosis of PJI? (Presenter: Armita Abedi)

In rare circumstances, when despite performing serological and synovial tests, a diagnosis of PJI cannot be refuted or confirmed, a bone scan with the combined use of white blood cell tracers (with or without bone marrow scintigraphy) may be ordered.

75.0%

16.8%

8.2%









HK 48: What patients are candidates for DAIR?

James Cashman, Paul McCarroll, Peter Choong, Pedro Ivo Carvalho, Nicolaas Budhiparama, Ewout S Veltman, David Dewar, Mehmet Kursat Yilmaz





James Cashman, National Orthopaedic Hospital, Cappagh, Ireland

















Ewout Veltman Netherlands

David Dewar Australia

I Mehmet Kürşat Yılmaz Türkiye

Nicolaas Budhiparama Indonesia

Paul McCarroll Ireland

Peter Choong Australia





HK48: What patients are candidates for DAIR? (Presenter: Wout Veltman)

76.5%

In general, all patients with acute onset of infection and with a stable prosthesis are candidates for DAIR. However, the expected infection eradication rate greatly depends on several patient- and infection characteristics. The following patients are considered good candidates for DAIR:

- Infection within 6 weeks of the index arthroplasty
- Infection with onset symptom of <7 days
- Well-fixed and stable implants.
- Exceptions may apply

11.7%

11.7%









HK59: Are there any absolute contraindications to performing one stage exchange arthroplasty for patients with chronic periprosthetic joint infection (PJI)?

Baochao Ji MD, PHD





Department of Orthopedic surgery,



First affiliate Hospital of Xinjiang Medical University, Urumqi, Xinjiang, China





Li Cao China



Ewout S Veltman Netherlands



Ayman Ebied Egypt



Ireland



James Cashman Luiz Sérgio Marcelino Gomes **Brazil**



Scot A Brown USA



Baochao Ji China



Carl L Herndon **USA**



Andrew Fraval Australia



Yicheng Li China



Yanguo Qin China







HK59: Are there absolute contraindications to performing one stage exchange arthroplasty? (Presenter: Baochao Ji)

90.1%

No. We do not feel that there are any absolute contraindications to one stage exchange arthroplasty. However, relative contraindications may include signs of systemic sepsis, severely immunocompromised status, and extensive soft tissue defects that compromise primary wound closure.

7.6%

2.4%











Is there a role for 1.5 stage exchange arthroplasty?

Falotico, Guilherme; Baron, Gabriel; Bagaria, Vaibhav; Yates, Piers; Balato, Giovanni; Nace, James; Deckey, David; Jones, Christopher.





Prof. Dr. med. Guilherme Falotico, Escola Paulista de Medicina/UNIFESP, Brazil







Gabriel Baron, Chile



Vaibhav Bagaria, India



Piers Yates, Australia



Giovanni Balato, Italy



James Nace, USA



David Deckey, USA



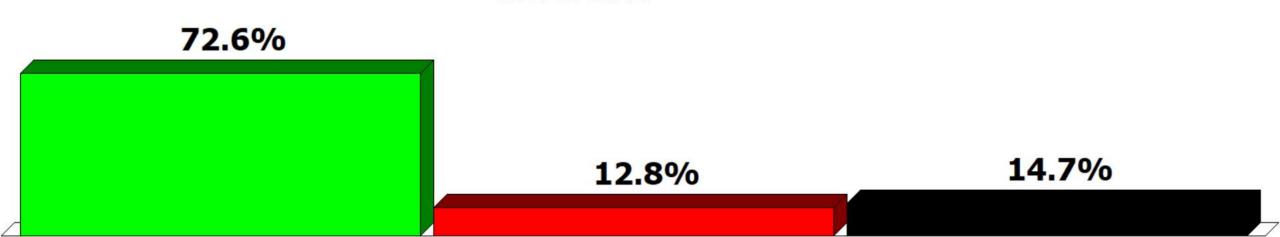
Christopher Jones, Australia





HK75: Is there a role for 1.5 stage exchange arthroplasty? (Presenter: James Nace)

The 1.5-stage revision does not show inferior results compared to the two-stage technique, with the advantage of reducing the number of additional surgical procedures.













HK81: What is the optimal prophylactic antibiotic for patients undergoing primary arthroplasty?

Ana Lucia Munhoz Lima, Jose Luque ,Koji Yamada, Aydin Gahramanov, Abdelhak Adjel, Mansour Sadeqi, Jorge Villafuerte, Ashok Rajgopal





Ana Lucia Munhoz Lima, MD PhD Head of Infection Unit at Orthopaedic and Traumatology Institute -University of São Paulo-BR







José G Luque
Orthopaedic Surgeon
Adult Reconstructive Surgery
Hospital Rebagliati and Clínica Internacional,
Lima Perú



Koji YamadaDirector, Nakanoshima Orthopaedics
Japan



Dr Abdelhak Adjel,Consultant Arthroplasty and Sport Surgery,
Orthopedic Department Eldjazayer Clinic
Oran Algeria



Aydin Gahramanov
Professor of orthopedics
Azerbaijan Scientific Research Institute of Traumatology and Orthopedics





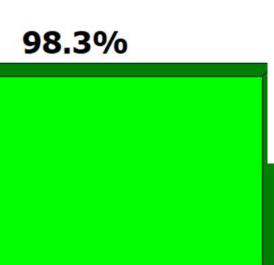
Ashok Rajgopal

Jorge A. Villafuerte
Clinical Instructor in Orthopedic Surgery
Harvard Medical School
Assistant Professor in Orthopedic Surgery
Boston University Medical School
Chief of Orthopedic Surgery
VA Boston HealthCare System





HK81: What is the optimal prophylactic antibiotic for patients undergoing primary arthroplasty? (Presenter: Ana Lucia Munhoz Lima)



AGREE

Cephalosporins, particularly cefazolin, are strongly recommended as first-line prophylaxis in primary arthroplasty based on consistent high-quality evidence, significant infection risk reduction, and minimal adverse effects.

0.0% 1.7%

DISAGREE ABSTAIN











What is the recommended duration of prophylactic antibiotics for patients undergoing outpatient arthroplasty? Luo TD, Yamada K, Sekar P, Moucha C, Lustig S, Schade M, Riaz T, Poultsides L, Hoveidaei AH





T. David Luo, Indiana Orthopedic Institute, USA







Koji Yamada, Japan



Poorani Sekar, USA



Calin Moucha, USA



Sébastien Lustig, France



Meredith Schade, USA



Talha Riaz, USA



Lazaros Poultsides, Greece



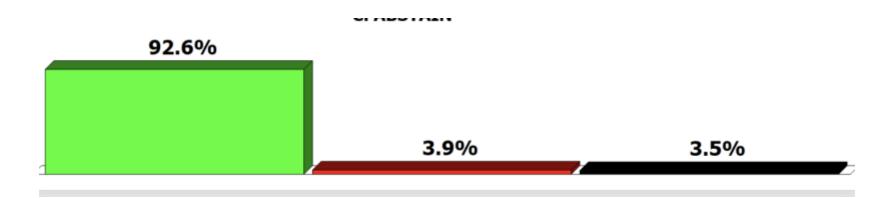
Amir Human Hoveidaei, USA





Response:

Our systematic review found no clear consensus on the optimal duration or method of prophylactic antibiotic use in outpatient arthroplasty. From the studies reviewed, one to two doses of oral antibiotic may be sufficient for patients undergoing outpatient arthroplasty.













Is there a role for extended oral antibiotic prophylaxis for patients at high risk of infection after primary total joint arthroplasty?

Arshi A., Novikov D. Cordero J., Lastinger A., Ahadi K., Molloy I., Buterin A., García-Bógalo R., Heller S., Kigera J., Cao L.





Armin Arshi MD, NYU Langone, New York, NY







David Novikov USA



John K. Cordero USA



Allison Lastinger USA



Keyvan Ahadi Iran



Ilda Molloy USA



Antea Buterin Croatia



Raúl García-Bógalo Spain



Snir Heller Israel



James Kigera Kenya



Li Cao China





HK83: Is there a role for extended oral antibiotic prophylaxis for patients at high risk of infection after primary total joint arthroplasty?

(Presenter: Armin Arshi)

94.8%

No. There is insufficient evidence to recommend the routine use of EOAP in high-risk patients following primary TJA.

2.8% 2.4%









HK94: What is the optimal antimicrobial treatment for patients with culture-negative PJI?

Mahmoud Abdel Karim, Abdullah Hammad, Bryan Hess, Keivan Ahadi, Mohamed Gobba, Murat Birinci, Rajeev Sharma,

Toshibumi Taniguchi, Ahmed S. Younis





Prof. Mahmoud Abdel Karim

Professor Trauma & Orthopedic Surgery, Cairo University, Egypt



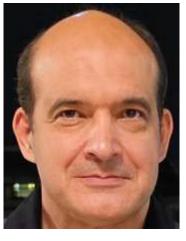




Abdullah Hammad, Egypt



Bryan Hess, USA



Keivan Ahadi, Iran



Mohamed Gobba, Egypt



Murat Birinci, Turkey



Rajeev Sharma, India



Toshibumi Taniguchi, USA



Ahmed S. Younis, Egypt





HK94: What is the optimal antimicrobial treatment for patients with culture negative PJI? (Presenter: Mahmoud Abdel Karim)

For treatment of CN PJI, the antibiotics should be selected to have a broad-spectrum activity against both gram-positive and gram-negative organisms.

Consideration should be given to a combination or multiple drug regimens including a glycopeptide e.g. vancomycin.

The regimen choice should be individualized based on risk factors, previous history, knowledge of the local epidemiology and discussed in an MDT.

88.5%

7.6%

3.8%









HK99: Is there a role for two-week antibiotic holiday in patients undergoing two-stage exchange arthroplasty for prosthetic joint infection (PJI)?

Andrew Fraval

Melbourne Orthopaedic Group and St Vincent's Hospital Melbourne, Australia









Anders Odgaard





Tiziana Ascione



Bülent Atilla



Jose L Del Pozo



Andrew Fraval



Elizabeth Gancher



Daniel Gould



Jakrapun Pupaibool

Xianlong Zhang



AGREE

3rd Meeting of the International Consensus Meeting 8-10 of May, 2025 Istanbul

DISAGREE



HK99: Is there a role for two-week antibiotic holiday in patients undergoing two stage exchange arthroplasty for PJI? (Presenter: Andrew Fraval)

90.70% immunocompromised patients. 6.98%

There is no conclusive evidence that two-week antibiotic holiday improves the outcome of two-stage exchange in patients with PJI. On the other hand, continuous therapy may result in better outcomes for some such as

ABSTAIN

2.33%



Did you like the new format of the ICM?

- 1. YES
- 2. NO

88.5%

11.5%

Yes

No





Did you enjoy ICM 2025 and glad you attended?

1. YES

2 NO

95.5%

4.6%

Yes

No





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