IMPLEMENTING OPAT: CLINICAL PEARLS, PITFALLS AND PRACTICAL STRATEGIES

Caroline Hamilton, MPAS, MPH, PA-C

LEARNING OBJECTIVES

1. **Define OPAT** and **identify appropriate patient candidates** based on clinical, logistical, and safety criteria.
2. **Describe the clinical responsibilities** in initiating, coordinating, and monitoring OPAT, including antimicrobial selection, lab surveillance, and recognition of complications.
3. **Evaluate common barriers** to successful OPAT implementation and propose strategies to enhance care coordination, patient adherence, and clinical outcomes.

LEARNING OBJECTIVES

Define OPAT and **identify appropriate patient candidates** based on clinical, logistical, and safety criteria.

WHAT IS OPAT?

- **O**utpatient **P**arenteral **A**ntimicrobial **T**herapy
- **Definition**: Administration of parenteral antimicrobial therapy in at least 2 doses on different days without intervening hospitalization
- **Common settings:**
  - Home infusion
  - Outpatient infusion centers
  - Skilled nursing facilities

GOALS OF OPAT

Shorten hospital length of stay

- Decrease potential hospital associated morbidities

Reduce healthcare costs

- To institution and to patient

Improve patient comfort

- Resume activities of daily life, work/school

Antibiotic stewardship

THE OPAT PROCESS

APPROPRIATE CANDIDATES FOR OPAT

Clinical criteria

Logistical criteria

Safety criteria

CLINICAL CRITERIA

Stable clinical status

Infection amenable to parenteral therapy

Assess for high-risk clinical scenarios

EXCLUSION/HIGH RISK CLINICAL SCENARIOS

- Unstable vital signs or active infection source not controlled
- Poor adherence history
- Inadequate monitoring or lack of follow-up capacity
- Unsafe home or lack of refrigeration/equipment support
- Persons who inject drugs (PWID)?

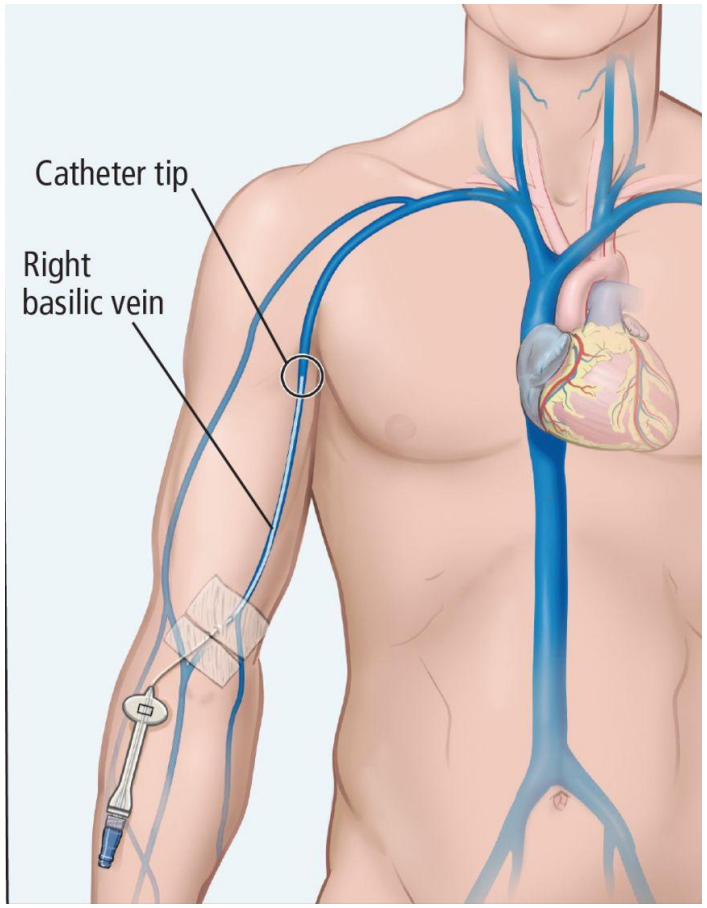
LOGISTICAL CRITERIA

- Reliable venous access
- Adequate home environment
- Adequate support

VASCULAR ACCESS

Midline

- If duration is < 14 days of therapy

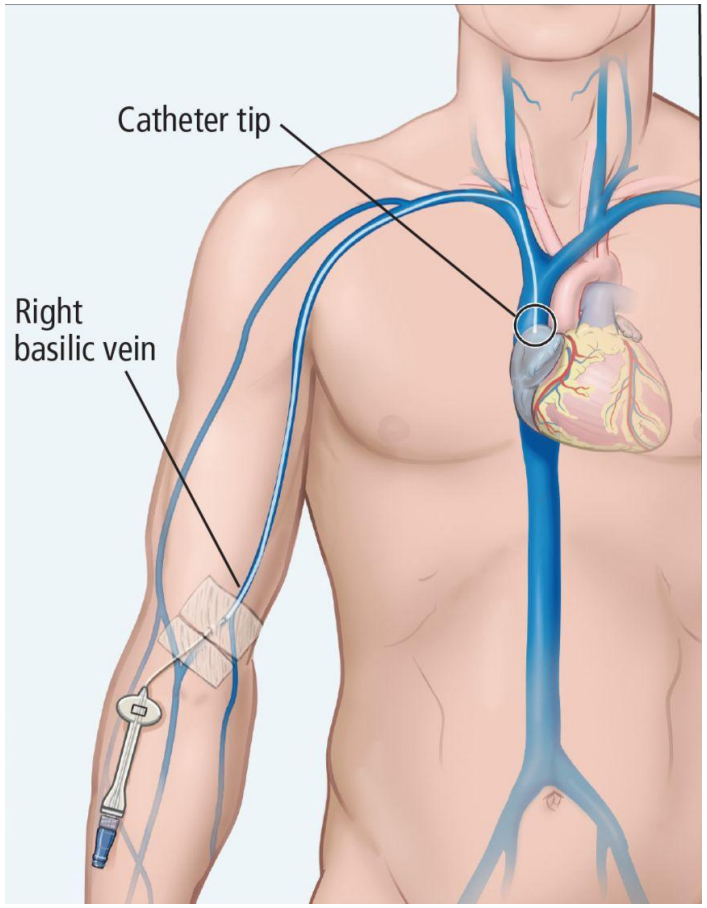


VASCULAR ACCESS

Peripherally Inserted Central Catheter

(PICC line)

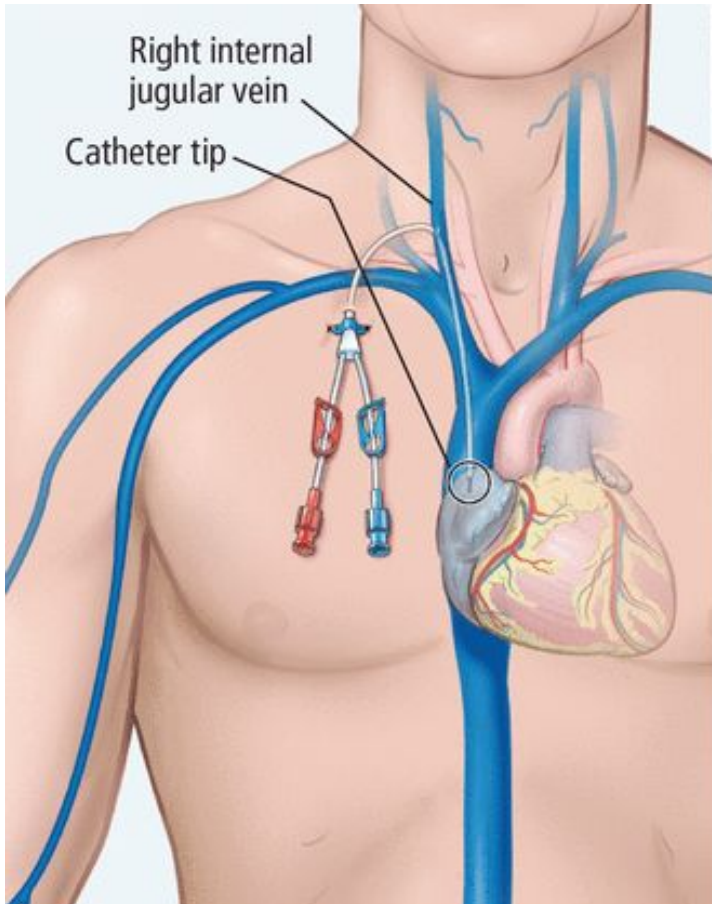
- If duration > 14 days of therapy
- Antibiotic is too caustic for a midline



VASCULAR ACCESS

Tunneled central venous catheter

- For patients with advanced CKD
- Unless antibiotic can be given with hemodialysis



SAFETY CRITERIA

Plan for lab monitoring

Reliable follow-up plan

LEARNING OBJECTIVES

Describe the clinical responsibilities in initiating, coordinating, and monitoring OPAT, including antimicrobial selection, lab surveillance, and recognition of complications.

CLINICAL RESPONSIBILITIES IN OPAT

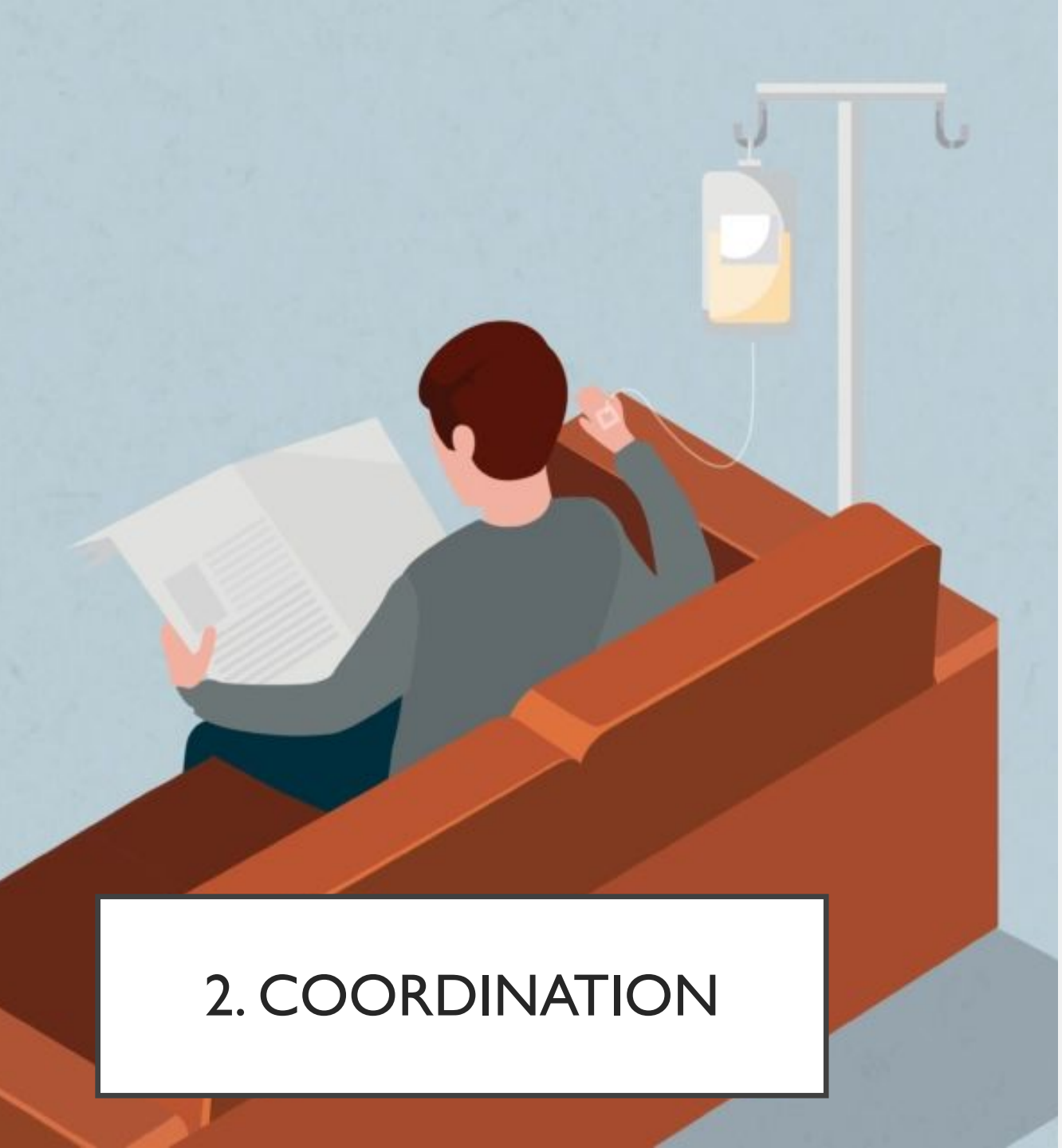
1. INITIATION

2. COORDINATION

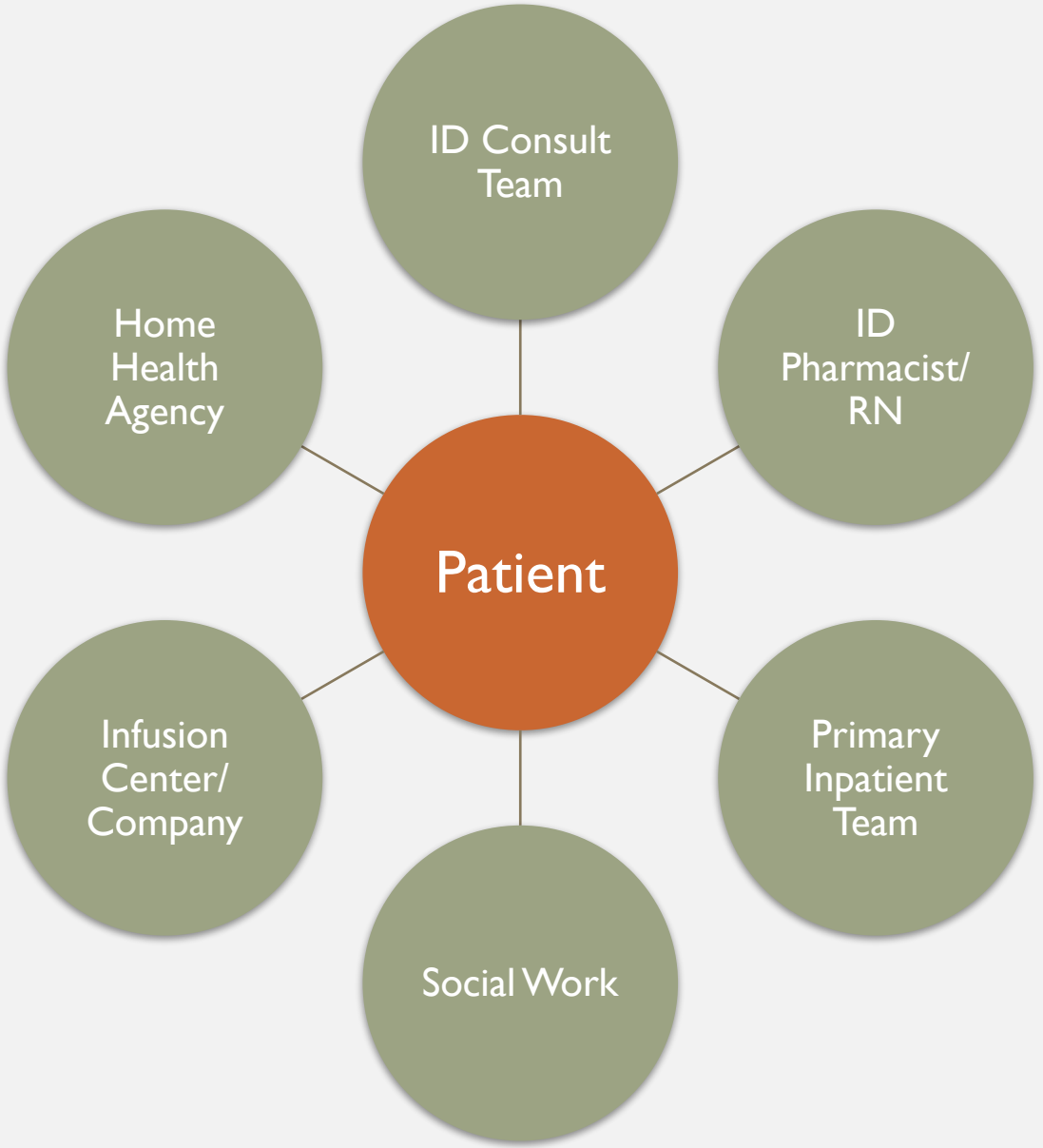
3. MONITORING

1. INITIATION

- Selecting the appropriate antimicrobial
  - Culture susceptibility, PK/PD, dosing frequency
  - Stability and compatibility for outpatient delivery
  - Supervised first dose!
- Recommendations should be documented clearly in ID Consult Note
  - **Meds:** drug, dose, route, duration (start/stop dates)
  - **Labs**: which labs, frequency, where to fax results
  - **Access**: IV access recommendations/approval



2. COORDINATION



INTERDISCIPLINARY TEAM APPROACH

- IDSA guidelines recommend a multidisciplinary team approach, but every team may look a little different.

- **Physician/PA/NP**: Clinical oversight and prescription
- **Pharmacist**: Dosing, drug stability, compatibility checks
- **Nursing**: Line care and patient education
- **Case Manager/Social Worker**: Referrals and insurance coordination

2. COORDINATION

Transition of care

- Ensure patients have a clear follow up plan at the time of discharge
- Ensure each patient receives outpatient monitoring at the time of discharge

3. MONITORING

REGULAR LABS

ASSESS FOR COMPLICATIONS AND DRUG TOXICITY

EVALUATE FOR CLINICAL IMPROVEMENT

LAB MONITORING

- CBC
- CMP
- ESR/CRP

- Special cases
  - CK if on Daptomycin
  - Vancomycin trough

RECOGNIZING COMPLICATIONS

- Discharge related
- Device-related
- Drug-related
- Clinical failure

EVALUATE FOR CLINICAL IMPROVEMENT

- To ensure safe and appropriate therapy
- To address any adverse effects in a timely manner

- Ideally prevent ID Clinic visit from being first point of monitoring post discharge. These appointments are typically weeks after discharge!

LEARNING OBJECTIVES

Evaluate common barriers to successful OPAT implementation and propose strategies to enhance care coordination, patient adherence, and clinical outcomes.

COMMON BARRIERS TO SUCCESSFUL OPAT

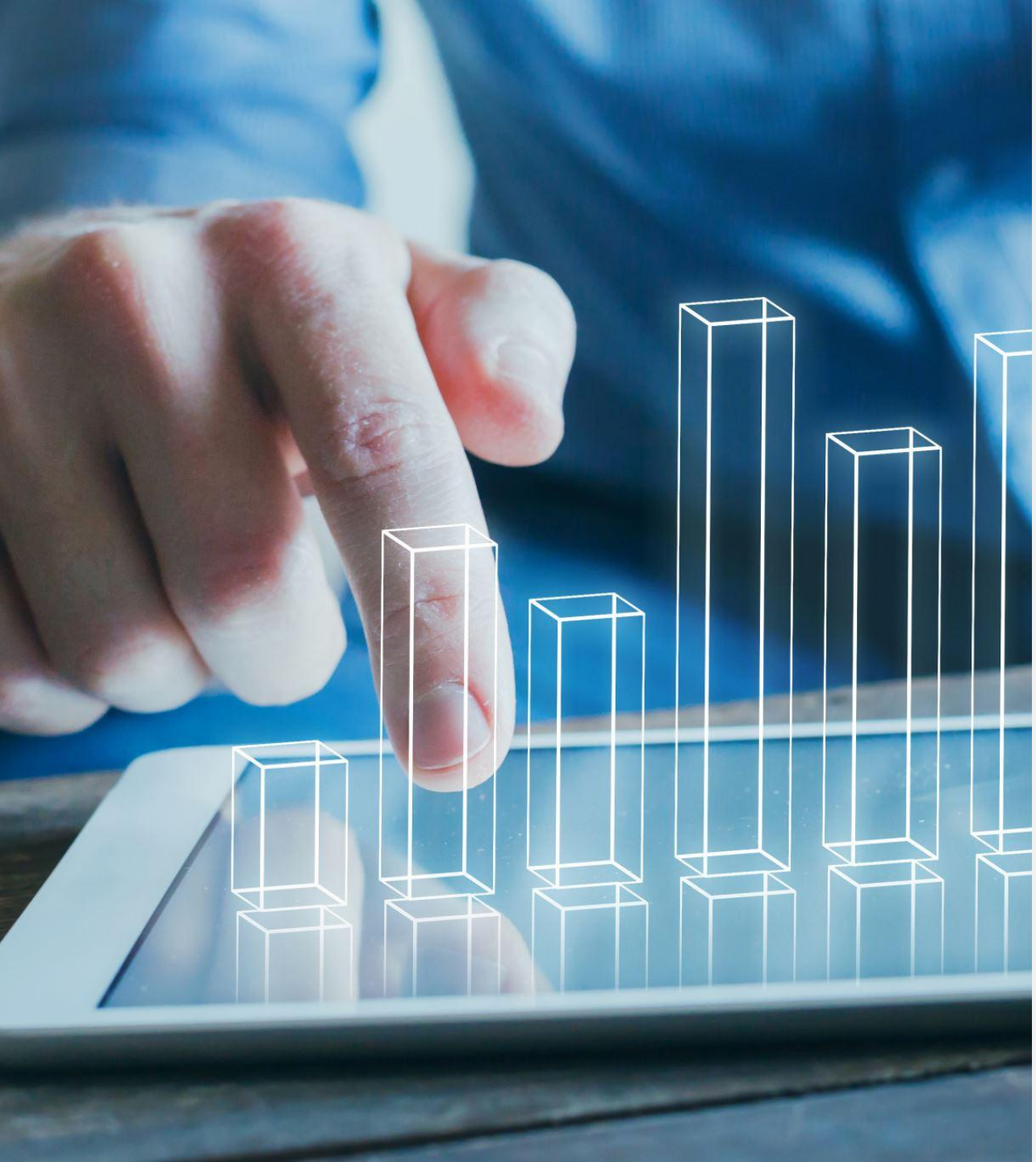
Limited outpatient access or coverage

Poor patient understanding or adherence

Communication gaps between inpatient and outpatient teams

Inconsistent monitoring or follow-up

Social barriers



STRATEGIES TO ENHANCE OPAT SUCCESS

- **Care coordination**
- **Patient Education**
- **Technology**
- **Follow-up**

INSTITUTIONAL PERSPECTIVES

BENEFITS

- Creates additional healthcare capacity with early discharge and/or admission avoidance
- Reduces cost of care associated with complex infections
- Reduces hospital-acquired infections and exposure to multiple drug-resistant organisms

CHALLENGES

- Interdisciplinary communication
- Patient satisfaction and cost-effectiveness
- Readmission rates and infection recurrence

PATIENT PERSPECTIVES

BENEFITS

- Out of the hospital early
- Higher quality of life
- Almost all patients would choose OPAT again (98.28%)

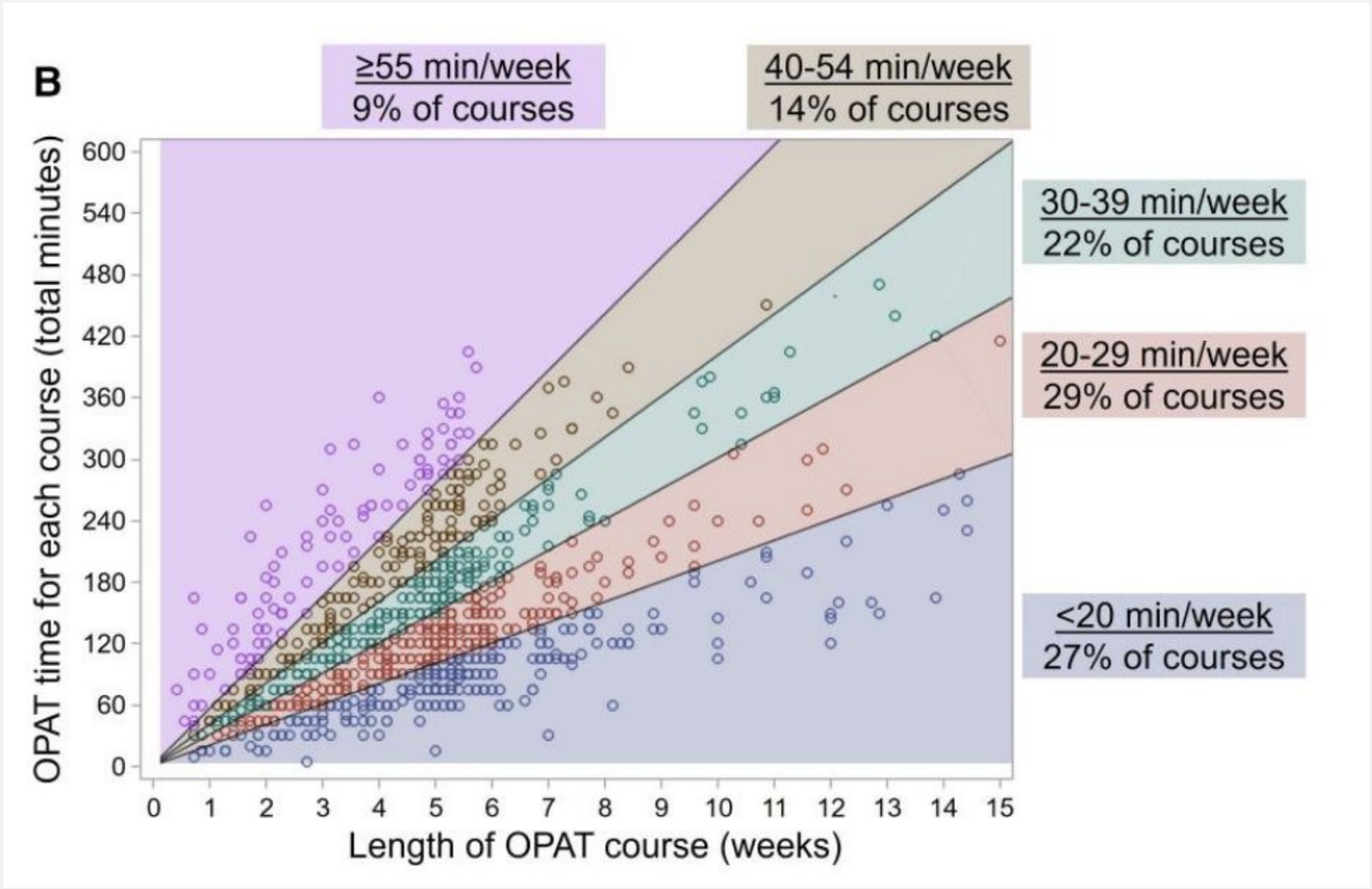
CHALLENGES

- Information overload before discharge
- Financial
- Suspected side effects
- Lack of OPAT awareness with healthcare providers

PROVIDER CHALLENGES

Workload

- Large amount of (uncompensated) time!
  - Median time: 27 min/week
    - 40 min/week if they were receiving Vancomycin
- Often led by an ID physician, +/-pharmacist, +/- RN, +/- APP



Schranz et. al 2024

PROVIDER CHALLENGES

Billing

- 17,475 HER encounters for 1645 OPAT episodes
  - 15,163 (87%) non-billable encounters
    - **30-35 min/week:**
      - Acquisition of and data entry for laboratory results from external facilities
    - **120-135 min/week:**
      - Laboratory results review and assessment
    - **40-48 min/week:**
      - Triage/patient management interventions via telephone and patient portal messages

PRACTICAL TIPS

Mechanism for organizing upcoming, current and past OPAT patients

Clear escalation plans for fever, adverse effects, or line complications

Backup plan for IV access failure or readmission

CASE EXAMPLE #1

57-year-old male with diabetic foot osteomyelitis status post transmetatarsal amputation. The surgical bone biopsy returns with positive margins. The intraoperative cultures are growing MRSA.

- ID recommends 5 more weeks of IV Vancomycin via PICC line (for a total of 6 weeks).
- He lives 20 minutes from the hospital with his wife. They have a history of being compliant with appointments.
- Home Infusion and Home Health companies arranged
- Weekly CBC, CMP, CRP, ESR, Vancomycin trough ordered

CASE EXAMPLE #1

- Unfortunately, the labs from week 2 were not faxed to your office.
- On week 3, the home health nurse calls the office with critical lab:
  - Vancomycin trough: 26 mg/L
  - SCr: 2.8 mg/dL
- What is the next step?

CASE EXAMPLE #1

- The patient still has 3 more weeks of IV antibiotics.
- What is the next best plan?
  - Switch to another IV alternative?
  - Switch to an oral antibiotic?

WHAT IS NEW IN OPAT?

- Oral Antibiotics… just the same?
- Long–Acting Injectable Antibiotics
- Complex Outpatient Antimicrobial Therapy (COpAT)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

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*

INVITED ARTICLE CLINICAL PRACTICE

Ellie J. C. Goldstein, Section Editor

Systemic Antibiotic Therapy for Chronic Osteomyelitis in Adults

Brad Spellberg[1,2] and Benjamin A. Lipsky[3,4]

[1]Division of General Internal Medicine, Los Angeles Biomedical Research Institute at Harbor-UCLA, Torrance, and [2]David Geffen School of Medicine at UCLA, Los Angeles, California; [3]VA Puget Sound Health Care System, and [4]University of Washington, Seattle

ELSEVIER

The American Journal of Medicine

Volume 135, Issue 3, March 2022, Pages 369-379.e1

Clinical Research Study

Oral Is the New IV. Challenging Decades of Blood and Bone Infection Dogma: A Systematic Review

Noah Wald-Dickler MD [a b c], Paul D. Holtom MD [a b], Matthew C. Phillips MD [a], Robert M. Centor MD [d e], Rachael. A. Lee MD [d e], Rachel Baden MD [a], Brad Spellberg MD [a]

Open Forum Infectious Diseases

MAJOR ARTICLE

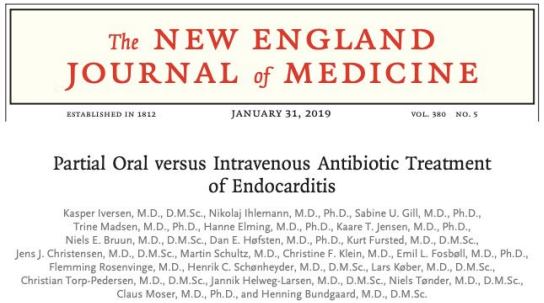
IDSA Infectious Diseases Society of America | hivma hiv medicine association | OXFORD

Implementing Oral Antibiotics for Bone and Joint Infections: Lessons Learned and Opportunities for Improvement

Marten R. Hawkins,[1] Elizabeth Thottacherry,[1,2] Prerak Juthani,[2] Jenny Aronson,[1] Amy Chang,[1] Derek F. Amanatullah,[3] Jessie Markovits,[2] Su Shen,[4] Marisa Holubar,[1,2] Jason R. Andrews,[1] Julie Parsonnet,[1,5,2] and Daisuke Furukawa[1,2]

[1]Division of Infectious Diseases and Geographic Medicine, Stanford University School of Medicine, Stanford, California, USA, [2]Department of Internal Medicine, Stanford University School of Medicine, Stanford, California, USA, [3]Department of Orthopaedic Surgery, Stanford University School of Medicine, Stanford, California, USA, [4]Quantitative Sciences Unit, Stanford University, Stanford, California, USA, and [5]Department of Epidemiology and Population Health, Stanford University, Stanford, California, USA

ORAL ANTIBIOTICS



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JANUARY 31, 2019 VOL. 380 NO. 5

Partial Oral versus Intravenous Antibiotic Treatment of Endocarditis

Kasper Iversen, M.D., D.M.Sc., Nikolaj Ihlemann, M.D., Ph.D., Sabine U. Gill, M.D., Ph.D., Trine Madsen, M.D., Ph.D., Hanne Elming, M.D., Ph.D., Kaare T. Jensen, M.D., Ph.D., Niels E. Bruun, M.D., D.M.Sc., Dan E. Høfsten, M.D., Ph.D., Kurt Fursted, M.D., D.M.Sc., Jens J. Christensen, M.D., D.M.Sc., Martin Schultz, M.D., Christine F. Klein, M.D., Emil L. Fosbøll, M.D., Ph.D., Flemming Rosenvinge, M.D., Henrik C. Schønheyder, M.D., D.M.Sc., Lars Køber, M.D., D.M.Sc., Christian Torp-Pedersen, M.D., D.M.Sc., Jannik Helweg-Larsen, M.D., D.M.Sc., Niels Tønder, M.D., D.M.Sc., Claus Moser, M.D., Ph.D., and Henning Bundgaard, M.D., D.M.Sc.

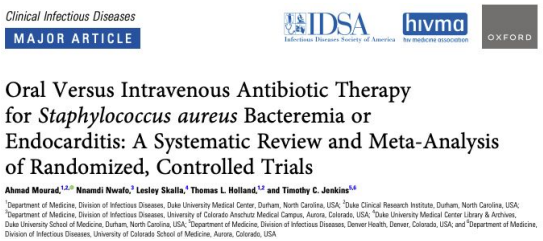
Randomized Controlled Trial > N Engl J Med. 2022 Feb 10;386(6):601-602.
doi: 10.1056/NEJMc2114046.

Five-Year Outcomes of the Partial Oral Treatment of Endocarditis (POET) Trial

Mia M Pries-Heje [1], Christoffer Wiingaard [1], Nikolaj Ihlemann [1], Sabine U Gill [2], Niels E Bruun [3], Hanne Elming [3], Jonas A Povlsen [4], Trine Madsen [5], Kaare T Jensen [4], Kurt Fursted [6], Martin Schultz [7], Lauge Østergaard [1], Jens J Christensen [8], Ulrik Christiansen [5], Flemming Rosenvinge [2], Jannik Helweg-Larsen [1], Emil L Fosbøl [1], Lars Køber [1], Christian Torp-Pedersen [9], Niels Tønder [9], Claus Moser [1], Kasper Iversen [7], Henning Bundgaard [10]

Affiliations + expand

PMID: 35139280 DOI: 10.1056/NEJMc2114046



Clinical Infectious Diseases

MAJOR ARTICLE

IDSA Infectious Diseases Society of America hivma hiv medicine association OXFORD

Oral Versus Intravenous Antibiotic Therapy for *Staphylococcus aureus* Bacteremia or Endocarditis: A Systematic Review and Meta-Analysis of Randomized, Controlled Trials

Ahmad Mourad,[1,2,0] Nnamdi Nwafo,[3] Lesley Skalla,[4] Thomas L. Holland,[1,2] and Timothy C. Jenkins[5,6]

[1]Department of Medicine, Division of Infectious Diseases, Duke University Medical Center, Durham, North Carolina, USA; [2]Duke Clinical Research Institute, Durham, North Carolina, USA; [3]Department of Medicine, Division of Infectious Diseases, University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA; [4]Duke University Medical Center Library & Archives, Duke University School of Medicine, Durham, North Carolina, USA; [5]Department of Medicine, Division of Infectious Diseases, Denver Health, Denver, Colorado, USA; and [6]Department of Medicine, Division of Infectious Diseases, University of Colorado School of Medicine, Aurora, Colorado, USA

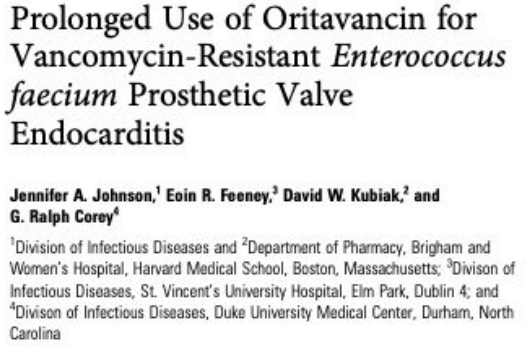
Clinical Review & Education

JAMA Internal Medicine | Review

Evaluation of a Paradigm Shift From Intravenous Antibiotics to Oral Step-Down Therapy for the Treatment of Infective Endocarditis
A Narrative Review

Brad Spellberg, MD; Henry F. Chambers, MD; Daniel M. Musher, MD; Thomas L. Walsh, MD; Arnold S. Bayer, MD

ORAL ANTIBIOTICS



Prolonged Use of Oritavancin for Vancomycin-Resistant *Enterococcus faecium* Prosthetic Valve Endocarditis

Jennifer A. Johnson,[1] Eoin R. Feeney,[3] David W. Kubiak,[2] and G. Ralph Corey[4]

[1]Division of Infectious Diseases and [2]Department of Pharmacy, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts; [3]Divison of Infectious Diseases, St. Vincent's University Hospital, Elm Park, Dublin 4; and [4]Divison of Infectious Diseases, Duke University Medical Center, Durham, North Carolina

Diagnostic Microbiology and Infectious Disease 93 (2019) 213–218

Contents lists available at ScienceDirect

Diagnostic Microbiology and Infectious Disease

journal homepage: www.elsevier.com/locate/diagmicrobio

Clinical Studies

Dalbavancin for the management of gram-positive osteomyelitis: Effectiveness and potential utility☆

Thamer A. Almangour [a,b,*], Gregory K. Perry [c], Colleen M. Terriff [d,1], Abdullah A. Alhifany [e,f,2], Keith S. Kaye [g,3]

[a] Department of Pharmacotherapy and Experimental Therapeutics, University of North Carolina at Chapel Hill Eshelman School of Pharmacy, 3202 Kerr Hall, Chapel Hill, NC 27599
[b] Department of Clinical Pharmacy, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia
[c] Hendrick Medical Center, 1900 Pine Street, Abilene, TX, 79601
[d] Deaconess Hospital, MultiCare Inland NW, Pharmacy Department, 800 West 5th Ave, Spokane, WA 99204
[e] Department of Pharmacy Practice and Science, University of Arizona College of Pharmacy, 1295 N Martin Ave, Tucson, AZ, 85721
[f] Department of Clinical Pharmacy, College of Pharmacy, Umm Al-Qura University Makkah, Saudi Arabia
[g] University of Michigan Medical School, 5510A MSRB I, SPC 5680, 1150 W. Medical Center Drive, Ann Arbor, MI 48109-5680

Open Forum Infectious Diseases

MAJOR ARTICLE

Effectiveness of Dalbavancin Compared With Standard of Care for the Treatment of Osteomyelitis: A Real-world Analysis

Alexander R. Cain, Derek N. Bremmer, Dustin R. Carr, Carley Buchanan, Max Jacobs, Thomas L. Walsh, Matthew A. Moffa, Nathan R. Shively, and Tamara L. Trienski

Allegheny Health Network, Pittsburgh, Pennsylvania, USA

pharmaceuticals

MDPI

Systematic Review

Dalbavancin in Bone and Joint Infections: A Systematic Review

Sofia Lovatti [1], Giorgio Tiecco [1], Alice Mulé [1], Luca Rossi [1], Anita Sforza [1], Martina Salvi [1], Liana Signorini [2], Francesco Castelli [1] and Eugenia Quiros-Roldan [1,*]

Infect Dis Ther (2024) 13:535–547
https://doi.org/10.1007/s40121-024-00925-2

ORIGINAL RESEARCH

Oritavancin Versus Daptomycin for Osteomyelitis Treatment After Surgical Debridement

Nicholas W. Van Hise · Russell M. Petrak · Kairav Shah · Melina Diaz · Vishnu Chundi · Mark Redell

Infect Dis Ther (2017) 6:277–289
DOI 10.1007/s40121-017-0156-z

CASE SERIES

Real-World Experience with Oritavancin Therapy in Invasive Gram-Positive Infections

Cassie L. Stewart · Michelle S. Turner · Jeremy J. Frens · Cynthia B. Snider · Jordan R. Smith

Infection (2025) 53:15–23
https://doi.org/10.1007/s15010-024-02393-9

REVIEW

A systematic review of dalbavancin efficacy as a sequential therapy for infective endocarditis

Gabriele Maria Leanza[1] · Emanuele Rando[1] · Federico Frondizi[1] · Eleonora Taddei[2] · Francesca Giovannenze[2] · Juan P. Horcajada[3] · Giancarlo Scoppettuolo[2] · Carlo Torti[1,2]

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Open Forum Infectious Diseases

MAJOR ARTICLE

Dalbavancin for the Treatment of Osteomyelitis in Adult Patients: A Randomized Clinical Trial of Efficacy and Safety

Urania Rappo,[1,*] Sailaja Puttagunta,[1,*] Vadym Shevchenko,[2] Alena Shevchenko,[2] Alena Jandourek,[1,3] Pedro L. Gonzalez,[1] Amy Suen,[1] Veronica Mas Casullo,[1] David Melnick,[1,4] Rosa Miceli,[1] Milan Kovacevic,[1] Gertjan De Bock,[1,4] and Michael W. Dunne[1,5]

[1]Clinical Development, Allergan plc, Madison, New Jersey; [2]Orthopedic and Trauma Department, Cherkasy Regional Hospital, Cherkasy, Ukraine; [3]Medical Affairs, Allergan plc, Jersey City, New Jersey

LONG – ACTING ANTIBIOTICS

COMPLEX OUTPATIENT ANTIMICROBIAL THERAPY (COPAT)

- Includes non-IV routes
- Recognizes the emerging literature in that antimicrobial management doesn't always mean "IV therapy"

SUMMARY

OPAT is safe and effective with careful patient selection

Success relies on collaboration, monitoring, and patient engagement

Strong coordination and education improve outcomes and reduce complications

QUESTIONS?