April 19, 2022

Agenda

- OPAT part 1: OPAT as Stewardship
- Case Discussions
- Open Discussion

OPAT part 1: Best practices

1. Define OPAT and its benefits
2. Review the ideal OPAT team makeup
3. Review the work of an OPAT team
4. Recommendations for monitoring and follow up

- OPAT part 2: OPAT in PWID to be presented by Alison Beieler, PA-C MPAS, on 5/17/22

OPAT: Outpatient parenteral antimicrobial therapy

- "The administration of parenteral antimicrobial therapy in at least 2 doses on different days without intervening hospitalization."
- Infection types: bone and joints, bloodstream, endocarditis, intra-abdominal, CNS, SSTI and more
- Benefits of OPAT well-established:
  - Shorter hospital stays
  - Fewer hospital-associated conditions
  - Major cost savings
  - For patients, ability to return to work/school/life faster[1]

OPAT: Stewardship benefits

Heintz et al, 2011 article in The Annals of Pharmacotherapy[3]

- Developed OPAT team at UC Davis – ID pharmacists, case managers and ID physicians
- Observational study tracking the team's interventions over 1 year (2009-2010)
- Reviewed 569 cases
- Primary objective: evaluate impact on regimen safety, efficacy and complexity
- Secondary objectives: calculate economic benefits in terms of hospital days and CVC's avoided

OPAT: Stewardship benefits

Heintz et al, 2011 article in The Annals of Pharmacotherapy[3]

- Pharmacists intervened for safety (56%), regimen complexity (41%) and efficacy (29%)
- Discharge delays avoided for 35 cases = 228 hospital days avoided and $366,000 in hospital bed cost savings
- OPAT avoided in 75 cases (13.2%)
  - 25 antibiotics stopped altogether
  - 50 switched to oral antibiotics
- CVC placement prevented in 48 (8.4%) = $58,080 cost savings
- $424,080 saved on direct inpatient costs (avg $658.60 per referral)

OPAT: The ideal team

- Physician (ID-trained if available)
- Clinical pharmacist knowledgeable in antibiotic prescribing
- RN(s) with training in infusion therapy
- Someone familiar with financial issues related to OPAT[2]

The work of the OPAT team

- Reviewing OPAT plans - need to consider many factors about the patient, their social situation, their infection, the drugs you can use and the options for how to administer them

Reviewing an OPAT plan

1. Does the patient require IV antibiotics?

- Can antibiotics be stopped? (duration too long)
- Can they be switched to orals?
  - Highly bioavailable: linezolid, TMP-SMX, doxy, fluoroquinolones, metronidazole
- Can they receive dalbavancin/oritavancin?[2]

Reviewing an OPAT plan

2. Does the patient meet OPAT criteria?

- Patient factors: assess the capability of the patient and/or their caregiver to adhere to the plan
  - Visual or dexterity impairments
  - Cognitive impairment
  - Medical literacy
  - Uncontrolled mental illness
  - Substance use disorder (more in OPAT Part 2)
  - Will they call if something goes wrong?[2]

Reviewing an OPAT plan

2. Does the patient meet OPAT criteria?

- Insurance factors:
  - Do they have coverage for home infusion?
  - How high is copay?
  - Do they have home health coverage for line care and labs? If not, do they have transportation to clinic?[2]

Reviewing an OPAT plan

2. Does the patient meet OPAT criteria?

- Environmental factors:
  - Must have a fixed address with a refrigerator, electricity and running water
  - Telephone service is critical[2]

Reviewing an OPAT plan

3. Is the antibiotic choice appropriate?

- Dose frequency:
  - Less frequent is better for convenience and complications
  - Nothing more frequent than q8 hours
  - Consider continuous infusion for nafcillin, penicillin, pip-tazo (not ampicillin)
  - Always talk to pharmacy about whether alternative dosing strategies exist[2]

Reviewing an OPAT plan

3. Antibiotic selection

- Access issues:
  - Is PO an option?
  - Long-acting agents: dalbavancin or oritavancin
  - IM agents: ceftriaxone, ertapenem
  - Dosed with HD: vancomycin, ertapenem, cefazolin, ceftazidime, cefepime*[2]

Reviewing an OPAT plan

3. Antibiotic selection

- Exceptions to the stewardship rules:
  - Narrower is better
    - We frequently use ceftriaxone instead of penicillin for Strep infections due to once-daily, IVPB dosing
  - Don’t use FQ’s when an alternative exists
    - Except when that alternative requires a PICC line and lab monitoring

Reviewing an OPAT plan

4. Access and infusion method

- Access:
  - The best line is no line
  - Single lumen PICC is the gold standard
  - Tunneled line if not a PICC candidate or CKD stage 3 or greater
  - Midline – IDSA says OK for <14 days, OK with vancomycin, no recommendation for other vesicants[1]
  - Don’t forget HD![2]

Reviewing an OPAT plan

4. Access and infusion method

- Infusion method:
  - Options include gravity drip, IV push, syringe pump, elastomeric balloon pump, ambulatory electronic infusion devices
  - IV push often most convenient/cheapest
  - Work out best option with pharmacy/home infusion company based on cost/patient ability and pharmacologic properties of the antibiotic[2]

OPAT teaching

- Studies support the use of the ”teach-back” method as an effective tool[4]
- Teach patient and caregiver while in the hospital[2]
- Use online resources

[2]

- Instruct patients to call with even minor concerns[2]

OPAT monitoring

- Monitoring is critical
  - ≥25% of patients will experience adverse events[2]
  - One study found a 2.5-fold increased risk of readmission when lab results were not available[2]
- See UW-specific guidelines we'll post on website
- All OPAT patients need weekly CBC w/ diff and BMP
  - CMP for any agents with potential hepatotoxicity
- Weekly vancomycin troughs[1]
- Weekly CK on daptomycin

OPAT follow up

- Previously IDSA recommended weekly visits, now no recommendation[1]
- Try to coordinate with other (i.e. surgical) visits to increase adherence
- Need a tracking system to ensure patients are not lost to follow up and CVC's are removed[1]

OPAT conclusions

- Only 36% of ID physicians surveyed reported having a formal OPAT program at their institution[5] – you're not alone if you don't have one
- OPAT programs can have major impacts in terms of stewardship and cost-saving measures
- Don't reinvent the wheel – use publicly available resources and guidelines to improve OPAT stewardship at your institution

OPAT Resources

- IDSA OPAT Guidelines: https://www.idsociety.org/practice-guideline/outpatient-antimicrobial-parenteral-therapy/
- IDSA OPAT Handbook: https://www.idsociety.org/opat-ehandbook/
- Hopkins OPAT patient education materials: https://www.hopkinsmedicine.org/antimicrobial-stewardship/opat-education-materials/
- National Home Infusion Association (nhia.org) has a searchable database of providers and suppliers
- UW monitoring guidelines will be posted on TASP website (uwtasp.org)

References

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2. Shah AB, Norris AE. Handbook of outpatient parenteral antimicrobial therapy for infectious diseases. Available at: https://www.idsociety.org/opat-ehandbook/. Accessed April 18, 2022.
3. Heintz BH, Halilovic J, Christensen CL. Impact of a multidisciplinary team review of potential outpatient parenteral antimicrobial therapy prior to discharge from an academic medical center. Ann Pharmacother. 2011 Nov;45(11):1329-37. doi: 10.1345/aph.1Q240. Epub 2011 Oct 11. PMID: 21990938.
4. Kornburger C, Gibson C, Sadowski S, Maletta K, Klingbeil C. Using "teach-back" to promote a safe transition from hospital to home: an evidence-based approach to improving the discharge process. J Pediatr Nurs. 2013 May-Jun;28(3):282-91. doi: 10.1016/j.pedn.2012.10.007. Epub 2012 Dec 5. PMID: 23220377.
5. Hamad Y, Lane MA, Beekmann SE, Polgreen PM, Keller SC. Perspectives of United States-based Infectious Diseases Physicians on Outpatient Parenteral Antimicrobial Therapy Practice. Open Forum Infect Dis. 2019 Oct 1;6(10):ofz363. doi: 10.1093/ofid/ofz363. PMID: 31429872; PMCID: PMC6765349.

Image credits

1. https://www.psychologytoday.com/us/basics/teamwork
2. https://www.hopkinsmedicine.org/antimicrobial-stewardship/opat-education-materials/