Characteristics and Outcomes of Outpatient Parenteral Antibiotic Therapy at Lehigh Valley Children's Hospital.

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Background

- Outpatient parenteral antibiotic therapy (OPAT) is commonly used in pediatric patients as an alternative to prolonged hospitalization for long term intravenous therapy. This strategy was first used for management of lower respiratory tract infections in patients with cystic fibrosis (CF) in 1974.[1]
- Common infections treated with OPAT include CF-associated pulmonary bacterial exacerbations, bone and joint infections, endocarditis, antibiotic-resistant genitourinary infections, intra-abdominal infections, and meningitis.
- The current percentage of pediatric patients who are discharged on OPAT is unknown nationwide and is likely dependent on institution.[2] One study at a children's hospital reported 2.5% of all discharges received OPAT.[1]
- The percentage of complications for patients receiving OPAT also has great variability. A study of pediatric patients enrolled in Medicaid with a PICC line reported an emergency room visit rate of 38% while on OPAT. Of these visits, 68% were related to complications from OPAT.[3] A ten year retrospective study described a complication rate of 8% in pediatric patients with peripherally inserted central catheters (PICCs) that led to removal of the PICC.[4] Within this same group, 32% of the patients who had adverse events may not have required intravenous antibiotics at the time of discharge.[4]
- Better understanding of OPAT and its complications is necessary in order to properly make decisions regarding antibiotic therapy for common systemic infections in the pediatric population.

Methodology

- The pediatric OPAT program at Lehigh Valley Health Network is primarily monitored by the pediatric infectious diseases division.
- Patients ages 18 years and younger at time of PICC placement who were discharged with parenteral antimicrobial therapy via PICC line between the dates of January 1, 2013 and July 31, 2016 were included in this retrospective study. Oncology patients and patients who were transferred to an outside facility at discharge were excluded from the study.
- A total of 126 patients met inclusion criteria and were analyzed for demographic data, admission diagnosis, indication for OPAT, and length of OPAT. Medical records were reviewed for complications, emergency room (ER) visits, and readmissions occurring during OPAT. This protocol was submitted to the institutional review board of Lehigh Valley Hospital.

Results

Demographic Data

- The average age of the included patient population was 9.4 years (1-17) with a gender ratio of 1.7 males for every 1 female. The most common indication for OPAT was bone/joint infection representing 38.1% of all records analyzed (Figure 1).
- The average of outpatient therapy was 21 days (4-61). Thirty-six patients (28.6%) experienced at least one complication.

Complications

- The most common complication reported was an adverse reaction to the antibiotic administered, representing 30% of complications overall (Figure 2).
- Aside from adverse drug reactions 16.7% of patients (21 patients) experienced another type of complication. Of the patients experiencing complications, 33% (12 patients) visited the ER and 8.3% were readmitted for complications due to their PICC line or their primary diagnosis.
- The average length of PICC line days prior to a complication were 11.6 days (1-42). The average length of OPAT was approximately 9 days longer in patients with complications.

Figure 1. OPAT Indications

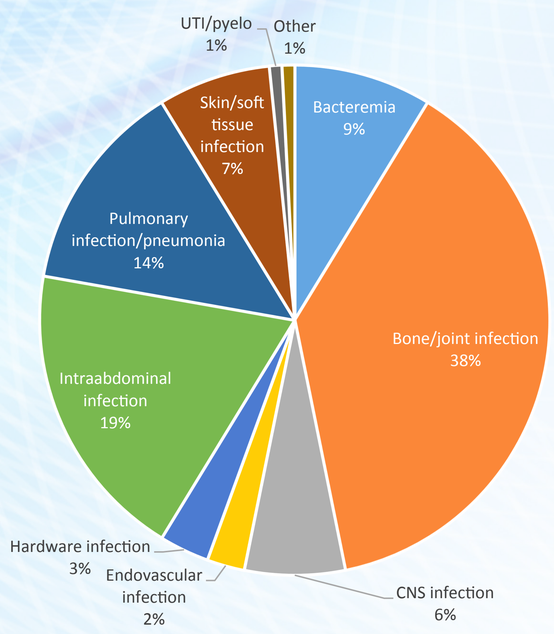
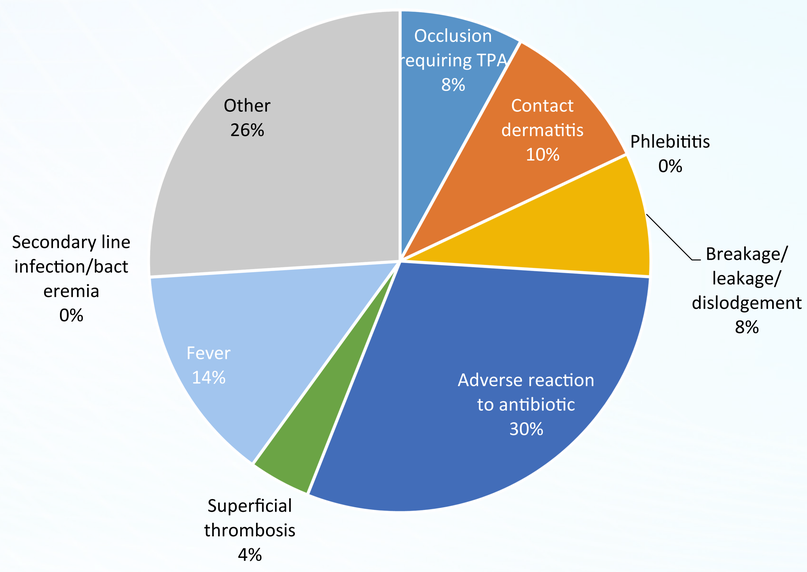


Figure 2. Patient Complications During OPAT



Conclusions and Future Implications

- OPAT is a safe and cost effective way to administer intravenous antibiotics, but complications are not uncommon.
- The majority of complications reported in this study did not require immediate care and were able to be managed in the outpatient care setting. Not unexpectedly, patients who experienced complications had a longer average duration of OPAT.
- Based on the study findings, different options to decrease the duration of OPAT need to be considered. These findings will help to properly monitor pediatric patients on OPAT through an antibiotic stewardship program.

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