Parenteral Antimicrobial Therapy Initiated in the Infectious Disease (ID) Physician Office: What and Why? Kimberly A. Couch, PharmD, MA, FIDSA¹, Lucinda J. Van Anglen, PharmD¹, Alfred E. Bacon III, MD²

Abstract

Background: It is a long-standing tradition that intravenous antibiotics (IVABX) are initiated during inpatient hospitalization. However, some patients who are good candidates for OPAT can have IVABX initiated without hospitalization. OPAT has been demonstrated to be a costeffective alternative to inpatient hospitalization

Methods: A retrospective review was conducted of all patients receiving OPAT during 2008 in an ID office. The cohort of patients was narrowed to those who were directly admitted to the physician operated infusion center (POIC). Data was collected regarding demographics, indication, drug regimen, and costs. OPAT costs were calculated as average wholesale price (AWP) and were compared to local hospitalization costs for the average length of stay (aLOS) based on indication. aLOS was determined using the Delaware Hospital Discharge Report from the Division of Public Health.

Results: 412 patients received OPAT through the POIC. Of those, 216 patients were directly admitted to the POIC. The most common indications included complicated skin and skin structure infections (cSSSI) (38%), osteomyelitis (18%), Lyme disease (14%), and urinary tract infections (10%). The median age was 54 years and 59% were female. The most common antimicrobials used in POIC initiated OPAT were ceftriaxone (26%), vancomycin (20%), piperacillin/tazobactam (11%) and daptomycin (10%). Total costs for OPAT cohort were \$96,645.83 and costs for inpatient were \$785,536.92. OPAT costs were significantly lower (p < 0.05) than inpatient hospitalization.

Conclusions: OPAT can be initiated at a POIC in the ID physician office for a variety of infectious diseases. OPAT leads to significantly reduced healthcare costs.

Introduction

It is a long-standing tradition that intravenous antibiotics (IVABX) are initiated during inpatient hospitalization. Patients may eventually be transitioned to an extended care facility (ECF) or to home to complete their course of IVABX. However, some patients who are good candidates for OPAT can have IVABX initiated without hospitalization, in a physician's office that is serviced by an office infusion center. This allows the patient to receive IVABX without the risk of hospital acquired infections. OPAT has been demonstrated to be a cost-effective alternative to inpatient hospitalization. The driving factors which have popularized OPAT include the stress for cost-containment, development of devices (vascular access and infusion types) and medications which lend themselves to OPAT, and increased availability of skilled and knowledgeable practitioners. This has resulted in an increased confidence and acceptance of OPAT by health care providers which has resulted in increased patient acceptance. The ideal candidate for OPAT is a patient who requires IVABX, does not require more care than can be provided at the POIC, the patient's home situation is safe and conducive to OPAT, the patient or caregiver is engaged and able to adhere to the OPAT regimen, an emergency service is available, the patient is willing and able to accept the financial responsibility (if any) of OPAT, and the patient and caregiver are willing to accept the risks along with the benefits of OPAT. For many patients, OPAT is a better utilization of health care resources if the patient is qualified. Direct admission to a POIC for a well-matched candidate is an even better utilization of health care resources.

Methods

A retrospective review was conducted of all patients receiving OPAT during 2008 in an ID office. The cohort of patients was narrowed to those who were directly admitted to the POIC. Data was collected regarding demographics, IVABX indication, drug regimen, and costs. The number and percentage for each indication for therapy as well as each medication used were calculated. The median patient age was calculated. OPAT costs were calculated as average wholesale price (AWP) and were compared to local hospitalization costs (medication costs and per diem costs for medical floor) for the average length of stay (aLOS) based on indication. aLOS was determined using the Delaware Hospital Discharge Report from the Division of Public Health. Comparisons were made using Chi Square for the differences in costs between POIC and local hospitalization.

Results

Table 1. Populatio Patients in POIC (N)

Patients with IVABX init

Age, median

Female gender (n, %)





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n Characteristics				
	412			
iated in POIC (n, %)	216 (52%)			
	54 years			
	127 (59%)			

Table 2.	Incidence
Diagnasia	Coftri

Diagnosis	Ceftriaxone	Vancomycin	Cefepime	Piperacillin/ Tazobactam	Daptomycin	Other
SSTI	10	24	10	12	16	8
OSTEO	6	13	6	6	4	6
Lyme	31	0	0	0	0	0
UTI	2	0	9	3	0	8
Other	5	9	7	4	2	15

Table 3. Average Length of Stay (aLOS) per Diagnosis in Delaware Hospitals				
DIAGNOSIS	DAYS			
Abscess	4.4			
Bacteremia	9.9			
Bronchitis	3.4			
Cellulitis	4.4			
Cellulitis with abscess	4.4			
Cholangitis	4.5			
Diverticulitis	5.7			
Endocarditis	6.8			
Enterovaginal fistula	5.7			
Herpes	7			
Lyme disease	6.6			
Lymphadenitis	3.3			
MAI pneumonia	10.8			
Mastoiditis	4.4			
Neurosyphilis	7			
Osteomyelitis	9.4			
Panniculitis	4.4			
Pneumonia	5.7			
Prophylaxis, endocarditis	1			
Prosthetic device infection	9.4			
Pyelonephritis	4.8			
Sepsis	9.9			
Septic arthritis	9.4			
Sialoadenitis	4.4			
Sinusitis	2.5			
Surgical site infection	4.4			
Tracheobronchitis	3.4			
Upper respiratory infection	6.2			
Urinary tract infection	4.8			
Wound infection	9.8			

e of IVABX per Diagnosis

In addition, the purpose of this study was to examine the costs of treatment in two different settings, therefore the actual reimbursement from patients, insurance companies and other third parties were not evaluated. While IVABX initiated in a POIC may be cost effective for insurers and for patients as compared with hospitalization, it may not be financially effective for the POIC. Further study assessing the reimbursement to a POIC versus the reimbursement for hospitalization is warranted.



Discussion

This study provided a good baseline comparison for costs of antimicrobial therapy initiated in a POIC versus treatment in the hospital. One drawback to this study was that every cost was not accounted including the costs of inpatient laboratory studies.

Conclusions

- OPAT can be initiated at a POIC in the ID physician office for a variety of infectious diseases.
- The most common diseases included cSSSI, osteomyelitis, Lyme disease, and UTI.
- IVABX initiated in a POIC included drugs with once daily or multiple daily doses.
- The most common IVABX used were vancomycin, daptomycin, ceftriaxone, cefepime, and piperacillin/tazobactam.
- OPAT leads to significantly reduced healthcare costs.

Acknowledgements

The authors are grateful for the assistance and contributions of: David M. Cohen, MD Stephanie Lee, MD Anand Panwalker, MD John P. Piper, MD