

Emergency Department Utilization during Self-administered Outpatient Parenteral Antimicrobial Therapy

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Abstract

Background: Self-administered outpatient antimicrobial treatment (S-OPAT) program teaches patients to administer intravenous antibiotics themselves at their own home. Prior studies have shown that patients successfully complete S-OPAT, with a high satisfaction rate and substantial cost savings for the health system. The question remains if transition of care from hospital to home and from health care provider to self-care, results in increased utilization of emergency department (ED) services due to unmet needs. This is especially pertinent as interest in adopting S-OPAT is growing, especially in resource poor settings and countries. **Objective:** Determine usage of emergency care by patients who self-administered intravenous antibiotics at home. **Methods:** The study was conducted at Parkland Hospital, a large safety-net hospital serving Dallas County, Texas that has operated an S-OPAT clinic since 2009. We conducted a retrospective review of electronic medical records of 944 S-OPAT patients from our previous study between fiscal years 2009-2013, and determined emergency department (ED) visits and hospital admissions due to OPAT-related causes. **Results:** 944 patients were treated with S-OPAT. Patients were more likely to be male (62%), non-English-speaking (37%), lack insurance (61%), and have diabetes (21%). Of the 944 patients on S-OPAT, 99 patients (10.5% of the total cohort) presented at least once to the ED for S-OPAT-related causes. Fifty-one patients (5.4% of the total cohort) were admitted to the hospital, with a mean length of stay of 8 days. **Conclusions:** Our analysis confirms that transferring patients from hospital to home for self-administration of intravenous antibiotics is not associated with a compensatory increase in ED visits related to antimicrobial treatment.

Keywords: Emergency department; Outpatient; Utilization

Introduction

Self-care programs are increasingly being recognized as effective models of patient-centered care. An example of self-care is self-administered outpatient parenteral antimicrobial therapy (S-OPAT), whereby patients requiring extended courses of intravenous antimicrobial treatment for complex infections are trained to administer antibiotics themselves at home via a peripherally inserted central catheter (PICC) without the use of expensive infusion equipment.^[1-3] Standard forms of health-care associated outpatient parenteral antimicrobial therapy (H-OPAT) include administration at home with home health nursing assistance, at a skilled nursing facility or an infusion center. These options are, however, not available to uninsured patients due to high costs.

S-OPAT was introduced at Parkland, a safety-net hospital in Dallas County, Texas, for uninsured medically stable patients to transition care from hospital to home. We previously published data demonstrating that S-OPAT resulted in substantial cost savings to the health care system, improved clinical outcomes and had high patient satisfaction rates.^[4] The question remains if programs such as S-OPAT, which shift care from hospital to home and from health care provider to self-care, result in increased utilization of emergency department (ED) services

due to unmet needs. This question is especially pertinent as interest in adopting S-OPAT is growing, especially in resource poor settings and countries.

Methods

We conducted a retrospective review of electronic medical records of 944 S-OPAT patients from our previous study between fiscal years 2009-2013.^[4] This time frame was chosen since data was collected for an internal quality improvement initiative to monitor the S-OPAT program in its early stage. Since 2013, S-OPAT has been the standard of care for eligible patients at Parkland.^[3] Data analyzed included patient demographics and number of ED visits and hospital admissions within 60 days of starting OPAT. This time frame was chosen to capture the longest interval in which our patients are engaged in the S-OPAT program (typically up to 6 weeks but not more than

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Table 1: Patients treated with S-OPAT.

Variables	60 days after starting S-OPAT, per patient
All-cause ED visits N=441 patients	2.9 ± 2.5
S-OPAT-related ED visits N=99 patients	1.3 ± 0.6
S-OPAT-related ED visits resulting in hospital admission N=51 patients	1.4 ± 0.7
S-OPAT-related hospital admission inpatient days N=51 patients	8.1 ± 7.9

60 days). The reasons for visits and admissions were designated as S-OPAT-related if they were due to PICC dysfunction or infection, lack of response to antibiotics, or antibiotic-related adverse events.

Results

944 patients were treated with S-OPAT. Patients were more likely to be male (62%), non-English-speaking (37%), lack insurance (61%), and have diabetes (21%). Of the 944 patients on S-OPAT, 99 patients (10.5% of the total cohort) presented at least once to the ED for S-OPAT-related causes. Fifty-one patients (5.4% of the total cohort) were admitted to the hospital, with a mean length of stay of 8 days [Table 1].

Discussion

The ED utilization by patients engaged in S-OPAT did not increase, and was much lower compared to published rates of ED utilization associated with H-OPAT settings. In a single center, retrospective study, of the 104 patients in an H-OPAT program, 43% visited the ED, while 26% were readmitted. The vast majority of these were infection or OPAT related.^[4] In another single center retrospective study, 207/782 (26%) patients in H-OPAT were readmitted within 30 days and 76% admissions were infection or OPAT related.^[5] The low rates of ED visits and hospital admissions, in our study, are particularly pertinent given the complex social determinants of our uninsured patient population.

Our study has a few limitations. There is the possibility of misclassification bias for subjects who did not use our ED. However, the probability of this is low since the majorities of patients are uninsured and usually receive care at our county hospital. Secondly, we did not analyze how many ED visits

were truly urgent or emergent in nature versus those which could have been safely evaluated in a clinic setting.

Conclusion

Our analysis of ED utilization confirms that transferring patients from hospital to home for self-administration of intravenous antibiotics is not associated with a compensatory increase in ED visits related to antimicrobial treatment. Future research is necessary to identify predictors for ED utilization among S-OPAT patients.

Conflict of Interest

All authors disclose that there was no conflict of interest.

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