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## An Overview of OPAT

(Petrak + Allison)





This handbook is intended to serve as a practical resource for infectious diseases specialists, spanning the continuum of those starting an outpatient parenteral antimicrobial therapy (OPAT) program, to those who have an interest in improving the outcomes and efficiency of their current OPAT practice. This handbook demonstrates how infectious disease specialists have an opportunity to lead efforts to employ OPAT within accountable care organizations and clinically integrated networks, given the recent changes related to health care reform here in the United States.

OPAT, defined as the administration of parenteral antimicrobial therapy in at least 2 doses on different days without intervening hospitalization, has been shown to be clinically efficient and cost effective.<sup>1-5</sup> First described in the United States in 1974,<sup>1</sup> OPAT has continued to grow over the past four decades with approximately 250,000 patients treated per year in the US.<sup>2, 3</sup> The primary goal of an OPAT program is to allow patients to complete treatment safely and effectively in the comfort of their home or another outpatient site. Secondary goals include reducing inconvenience, avoiding potential exposure to nosocomial pathogens, and decreasing the expense of hospitalization to complete a prescribed intravenous (IV) antibiotic course.<sup>4-6</sup>

With the rapid rise in healthcare expenditures and the enactment of the Affordable Care Act (ACA), OPAT is well positioned as an alternative mechanism by which to treat serious infections. An organized and efficiently managed OPAT program is a valuable asset to physicians, hospitals, payers, and, most importantly, patients.<sup>4, 5</sup>

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## EFFICACY

The first study to show the efficacy of home IV antibiotic administration was published in the pediatric literature in 1974, demonstrating safe and effective treatment of chronic broncho-pulmonary infection associated with cystic fibrosis.<sup>1</sup> Since that time numerous studies have detailed the benefits of utilizing OPAT for various infections including cellulitis, osteomyelitis, septic arthritis, bacteremia, infected prosthetic joints, and pyelonephritis.<sup>3, 7-13</sup> OPAT has also been found to be effective in virtually all segments of the population, from children to the elderly.<sup>1, 14, 15</sup>

Efficacy has also been demonstrated in multiple practice settings including private practice, traditional academic programs, and the Veteran's Affairs medical centers.<sup>6, 15, 16</sup>

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## PATIENT BENEFITS

Patients treated outside the hospital, whether in a physician's office, a hospital outpatient facility, or at home, avoid problems inherent in the hospital system. These include unfamiliar, sometimes frightening surroundings, isolation from friends and family, lack of privacy, and increased risk of nosocomial infections. Children are at a particular disadvantage when it comes to hospitalization. Children are less adaptable to unfamiliar surroundings than most adults, have little understanding of their illness, and can easily feel threatened by

the hospital environment and the painful procedures involved in treatment (see [Chapter 8](#)).<sup>17</sup>

When patients are allowed to recover in the comfort of their own homes, many can return to work or school. Avoiding the hospital setting also may facilitate the transition from the role of sick "patient" back to the familiar, functioning self, thus speeding both adaptation and recovery.<sup>18-20</sup>

With multiple options for OPAT delivery (see [Chapter 6](#)), treatment may be adjusted to each patient's lifestyle, functional status, family structure, and financial resources. Successful OPAT requires patients' participation as well as some level of responsibility for their own treatment program. To this end, patients and caregivers must be informed about their disease or infection; the therapeutic intervention, including handling and maintenance of the delivery system; and the problems to anticipate. The resulting knowledge and sense of control can facilitate recovery and, for some patients, can decrease pain and side effects. The fact that most people prefer being treated at home rather than in the hospital has been repeatedly demonstrated.<sup>21-24</sup>

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## OPPORTUNITY

The implementation, management, and supervision of an OPAT program provides infectious disease physicians with an opportunity to define their value. Regardless of the eventual healthcare structure, the ability to treat patients successfully in

an outpatient setting is a tangible benefit to patients, hospitals, and payers. The cost containment benefits of OPAT have been amply demonstrated<sup>11, 13, 16, 19</sup>, and the freeing up of hospital beds provides additional revenue generating opportunities. More recently, the potential to decrease hospital readmissions by way of adverse drug event avoidance, and the consequent financial penalties, has been clearly demonstrated.<sup>28</sup>

Infectious disease specialists are ideally trained to direct a course of OPAT care by selecting the correct patient, the appropriate antimicrobial agent, define the duration of therapy, and quickly identify and address adverse reactions or secondary infections.<sup>25, 26</sup>

More recently, a significant percentage of patients have been primarily diagnosed and treated in an OPAT program without initial hospitalization,<sup>13, 15, 16, 24</sup> further reducing the likelihood of a secondary infection from a nosocomial source. This demonstration of value must include data that objectively defines a physician's or group's capabilities. Clinical outcomes, line infection rates, patient satisfaction, and hospital admissions (or readmissions if infusions begun as an inpatient) must be tracked and easily produced for review (see [Chapter 9](#)).

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## THE PHYSICIAN'S ROLE

Regardless of the model of OPAT (see [Chapter 6](#)), the infectious diseases physician needs to function as the pivotal clinician managing the patient's care. All medical decisions should be addressed by this physician including the indication for OPAT, the

type of antimicrobial, duration of therapy, site of administration, the type of intravenous catheter, management of any possible complications. The rest of the OPAT team should consist of a clinical pharmacist knowledgeable in antimicrobial prescribing, nurses with specific training in infusion therapy, and an individual familiar with the financial issues concerning OPAT.

An algorithm for OPAT decision making allows the infectious disease physician to systematically address the key issues ([Figure 1.1](#) and [Figure 2.1](#)).<sup>27</sup> Once the decision has been made to enroll the patient into an OPAT program, the infectious disease physician must also ensure that other providers, including the patient's attending physician, are informed and agree. The patient should be made aware of the collaboration and that his or her medical team is working synchronously and collegially. If the patient is being transferred from an inpatient setting to an OPAT program, it is necessary to document the plan in the medical record, write an order directing other support services, such as home health or PICC line team, and discuss the patient's wishes with a case manager. Local practice will dictate whether it is the primary team or the infectious diseases consultant who is responsible for writing orders.

The infectious disease physician, as an integral component of an OPAT program team, must be cognizant of the transition-of-care models available. This will allow for early detection of clinical issues, such as adverse drug reactions, and also non-clinical issues, such as transportation problems, that may translate into less than optimal outcomes, and possibly readmission to the hospital.



# THE FUTURE



Future trends will likely include the regular and systematic collection of quality measures and outcomes as part of reimbursement models, including bundled-payment programs. OPAT providers who are able to demonstrate improved patient outcomes, decreased cost, and appropriate shifting of care from inpatient to outpatient settings are more likely to be successful in the current medical climate.