Identification of Patient Characteristics Influencing Setting of Care Decisions for Patients With Acute Bacterial Skin and Skin Structure Infections: Results of a Discrete Choice Experiment

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ABSTRACT

Purpose: Rates of acute bacterial skin and skin structure infections (ABSSSI) have sharply increased since 2000. Treatment may be administered in the inpatient or outpatient setting; clinical decision-making regarding hospitalization is inconsistent, often leading to hospitalization of some patients with ABSSSI who qualify for outpatient parenteral antimicrobial therapy, which leads to increased overall care costs. New antibiotics such as oritavancin are hypothesized to be a cost-effective option improving accessibility to ambulatory treatment of ABSSSI. The goal of this study was to understand the patient attributes that affect clinical decision-making regarding the setting of care for ABSSSI treatment.

Methods: An observational, cross-sectional study was conducted that surveyed clinicians of various specialties from the United States and the United Kingdom. The survey collected quantitative responses and used a series of choice-based experimental designs to evaluate patient attributes influencing clinical treatment decisions.

Findings: Infection severity, severe comorbidities, and age $\geq$75 years were observed to have the greatest impact on treatment location decisions (odds ratio [OR], 0.000–0.004 [95% CI, 0.000–0.011], vs mild ABSSSI; OR, 0.246–0.484 [95% CI, 0.154–0.788], vs no active comorbidities; OR, 0.136–0.523 [95% CI, 0.070–0.888], vs $\leq$18 years, respectively). The majority of respondents indicated they would consider oritavancin to avoid postdischarge outpatient parenteral antimicrobial therapy or oral therapy, regardless of the pathogen (63.5%–83.5%).

Implications: Key factors influencing ABSSSI treatment setting were severity of infection, severity of comorbidities, and age. Clinicians surveyed identified patient profiles in which single-dose oritavancin might enable wholly outpatient or shortened inpatient management. Additional studies to elucidate the ABSSSI care pathways that include oritavancin and other novel antibiotics are needed. (*Clin Ther.* 2016;▮:▮▮▮–▮▮▮) © 2016 Elsevier HS Journals, Inc. All rights reserved.

Key words: ABSSSI, attributes, decision-making, outpatient.

INTRODUCTION

Since 2000, rates of acute bacterial skin and skin structure infections (ABSSSI), a subset of skin and soft tissue infections (SSTIs), have increased significantly, emerging as 1 of the most common infections seen in clinical practice.[1,2] In the United States and the United Kingdom, the annual incidence rate of ABSSSI is estimated to be 49.6 per 1000 persons[3] and 16.4 per 1000 persons,[4,5] respectively. The burden of these infections continues to rise; for example, from 1989–1990 to 2003–2004, a 3-fold increase in hospitalizations for staphylococcal SSTIs was observed in England[6] (from 23,884 to 74,447). Similarly in the United States, hospitalizations for *Staphylococcus*

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aureus–associated SSTIs increased 123%, from 160,811 in 2001 to 358,212 in 2009.[7] As a result of their increasing incidence, ABSSSI represent a considerable health resource and economic burden to the health care system. In the United States, the aggregate annual estimated mean cost to hospitals is more than $6 billion (2012 US dollars).[8,9]

A variety of treatment options for ABSSSI exist, both in terms of treatment settings and drug choices, and guidelines allow for most of them.[9–11] Either oral or intravenous (IV) antibiotics may be used, depending on patient characteristics. The parenteral treatment of ABSSSI may be either inpatient or outpatient, with the choice determined on a case-by-case basis depending on a myriad of issues, including patient-related (eg, age, comorbidities, social or caregiver support, insurance status), pathogen-related (eg, presence of methicillin-resistant *S aureus* [MRSA], gram-negative pathogens), treatment-related (eg, antibiotic allergy, treatment response, drug monitoring), and hospital facility–related (eg, availability of outpatient parenteral antimicrobial therapy [OPAT]) factors that may influence treatment decisions, particularly decisions regarding whether to treat a patient in the inpatient or outpatient setting. In the hospital, treatment may take place in the emergency department (ED), observation, inpatient ward, or intensive care unit; outpatient treatment may include hospital outpatient department, physician-owned center, or home infusion.

Recent research has shown that OPAT for ABSSSI is associated with substantial cost savings, high rates of treatment success, and high levels of patient satisfaction,[12–14] compared with inpatient IV therapy. However, the criteria used to identify patients who are eligible for OPAT are unclear.[15–18] Several attempts have been made to develop treatment algorithms incorporating disease severity, treatment options, and setting of care, but none has been prospectively validated or universally accepted.[16,17,19] As a consequence, treatment decisions are heavily influenced by clinical judgment rather than by validated clinical treatment algorithms.

Most IV antibiotics require multiday dosing, which may precipitate a hospital admission to facilitate ongoing treatment. Long-acting parenteral antibiotics are a new treatment option for ABSSSI that enable 1-time or long-interval dosing. Oritavancin* is a recently approved IV semi-synthetic lipoglycopeptide antibiotic indicated for the treatment of adult patients with ABSSSI caused by certain gram-positive pathogens, including both methicillin-sensitive *S aureus* (MSSA) and MRSA.[20] A single 1200-mg IV dose of oritavancin has been shown to be noninferior to vancomycin BID for 7 to 10 days in patients with ABSSSI caused or suspected to be caused by gram-positive pathogens. It has been hypothesized that single-dose treatment may facilitate greater use of outpatient treatment in patients requiring IV therapy and therefore reduce total costs of treatment.[21] Other recently approved antibiotics indicated for the treatment of ABSSSI, including dalbavancin and tedizolid, may similarly encourage greater use of outpatient treatment for these infections.

To better understand how single-dose treatment might influence current treatment patterns, it is important to evaluate what factors are most influential to treatment decisions. However, little is known regarding factors most important to health care providers (HCPs) when treating ABSSSI, especially with respect to the introduction of novel, single-dose parenteral antibiotics. The aim of the present study was to quantify the relative importance of key factors in clinical treatment decisions for ABSSSI and to identify clinical scenarios in which the use of single-dose treatment may be both clinically appropriate and economically efficient. This analysis will help build understanding of how new treatments for ABSSSI may be used in the current health care setting and will help refine clinical guidelines.

MATERIALS AND METHODS

An observational, cross-sectional study was conducted by administering a 3-part online survey to HCPs in the United States and the United Kingdom to determine treatment preferences for selected patient and disease attributes associated with ABSSSI.

Recruitment of Providers

HCPs were chosen from the United States and the United Kingdom because both countries have well-established, well-utilized OPAT infrastructures. The sample per country consisted of 50 emergency medicine specialists, 50 infectious disease specialists, 50 hospitalists or internists who practiced solely in a hospital

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