

JACC FOCUS SEMINAR: INFECTIVE ENDOCARDITIS

INTRODUCTION

Today's Infective Endocarditis Not What You Learned in Medical School



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The epidemiology of infective endocarditis (IE) is pivotal in today's presentation. While a decline in rheumatic carditis has been recognized for decades, other factors including different types of cardiac devices and injection drug use have changed the landscape of IE. Coupled with this is the variation in IE microbiology; *Staphylococcus aureus* has taken over the role of predominant pathogen. This is unfortunate as we recognize the virulence of this organism. Moreover, there have been only a limited number of randomized controlled trials conducted in recent years to optimize management strategies for this life-threatening infection.

The current *JACC Focus Seminar* addresses 4 aspects of IE including: 1) IE complicating cardiovascular implantable electronic device (CIED) infection; 2) IE in people who inject drugs; 3) prosthetic valve IE; and 4) native valve IE. One of the core tenets of these 4 syndromes is that despite an early response to antimicrobial therapy, devastating complications can still occur, either due to IE itself or due to interventions required to manage IE complications. Thus, it is a balancing act of intervention and its timing. We take this opportunity to thank all of our authors for their academic dedication in producing this focus seminar to improve outcomes of patient care.

In contrast to the recent publications sponsored by the European Society of Cardiology¹ and the

American Heart Association,² which provided broad coverage of CIED infection, Chesdachai et al³ used 6 clinical cases to focus on key aspects of CIED-IE prevention, diagnosis, and management to introduce the current series. The strengths and weaknesses of current diagnostic tools including transesophageal echocardiography and [¹⁸F]-fluorodeoxyglucose positron emission tomography-computed tomography are discussed as they relate to patients with underlying CIED and bloodstream infection with no generator pocket site changes. The importance of microbiology as a cause of bloodstream infection in this setting is also highlighted as diagnostic and management strategies broadly differ depending on the blood culture isolate and its susceptibility testing results.

Wurcel et al⁴ took a different approach to drug use-associated IE. Prior reviews have focused on the need of addiction medicine involvement early in an IE-related hospitalization.^{5,6} In addition to drug use disorder treatment, antimicrobial therapy, and surgical intervention, when indicated, more is needed to reduce treatment failure rates among patients with drug use-associated IE during the transition from hospital to outpatient care. This *JACC Focus Seminar* review addresses the strengths and weaknesses of the current level of transitional care and outlines strategies to enhance transitional care.

Cuervo et al⁷ focus on transcatheter valves, which have become more prevalent as the use has expanded from those who are not candidates for an open surgical approach to those who are at moderate or low risk for surgery. Diagnostic approaches are reviewed. Prevention strategies have been controversial and prompt the question of whether cefazolin as surgical site prophylaxis is optimal for transcatheter aortic valve replacement, recognizing that placement is via the groin in the bulk of patients and enterococci have become prevalent as causes of prosthetic valve endocarditis.^{8,9}

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Dayer et al¹⁰ close the review series by focusing on native valve IE, which accounts for up to 90% of IE cases. They included an extensive evaluation of the 2023 Duke-ISCVID criteria¹¹ used to diagnose IE, which detailed recent advances in microbiologic techniques, echocardiography, and nuclear medicine. In addition, a review of transitional therapy with intravenous to oral treatment was a landmark clinical trial¹² that has continued to impact patient care. Finally, 2023 European Society of Cardiology IE guidelines¹ highlight recent work in prevention and strengthen their support for antibiotic prophylaxis use in the setting of invasive dental procedures among patients at high risk for IE complications.^{13,14}

IE will continue to evolve in response to changes in its epidemiology. Increasing utilization of an escalating variety of cardiac devices, an aging population in some parts of the World, and high-risk behavioral factors ensure the likelihood that IE will increase in

prevalence. Prevention measures and management strategies must be responsive to these changes to improve patient outcomes. Much more is needed regarding the generation of clinical trial data to base decision making for the individual patient.

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