

# Characteristics of 96 Healthcare-associated Infective Endocarditis Patients

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## Introduction

Despite recent advances in diagnosis and treatment, infective endocarditis (IE) remains an incompletely understood disease with high morbidity and mortality. Healthcare-associated infective endocarditis (HAIE) accounts for 25%–30% of contemporary cohorts and data regarding clinical characteristics and outcome remain rare. In this study, we described a population diagnosed and treated for a HAIE at the Bordeaux University Hospital.

## Methods

All records for patients admitted to the tertiary care referral center between January 2013 and April 2015 (16 months) with IE were analyzed retrospectively by the multidisciplinary **Endocarditis Team** of the teaching hospital. IE was defined as HAIE according to the following criteria: onset of IE > 48 hours after hospitalization or within 6 months after hospital discharge, or diagnostic or therapeutic manipulations. We included all HAIE cases that were referred to our center during the study period. We extracted detailed demographic, diagnostic, treatment, and follow-up (in-hospital mortality) data from patients' charts and medical records and compared them with community-acquired infective endocarditis (CAIE) patients admitted in the same time period. Categorical variables are presented as percentages and were compared using the chi-squared test or Fisher's exact test, as appropriate.

## Results

During the study, the endocarditis team identified **96 patients with HAIE** and 134 patients with CAIE (Table 1). There were 127 patients who had native-valve endocarditis and 103 who had prosthetic-valve endocarditis involving the aortic valve, the mitral valve, or both in 59%, 25%, and 8% of patients, respectively. Among the microbiological-documented HAIE patients (n=88 [91.7%]), the most common pathogens were staphylococci (39%) and 46% of these were methicillin-resistant (Figure 1). **The in-hospital mortality rate of HAIE patients was 15.6%** (10.8% with surgery and 18.6% without surgery). In the same time period, the in-hospital mortality rate of CAIE patients was 12.7% (5.1% with surgery and 23.2% without surgery). In the presence of heart failure, the in-hospital mortality rate of CAIEs was 18.5%, and the rate of HAIE patients was 46.7% ( $p = 0.04$ ).

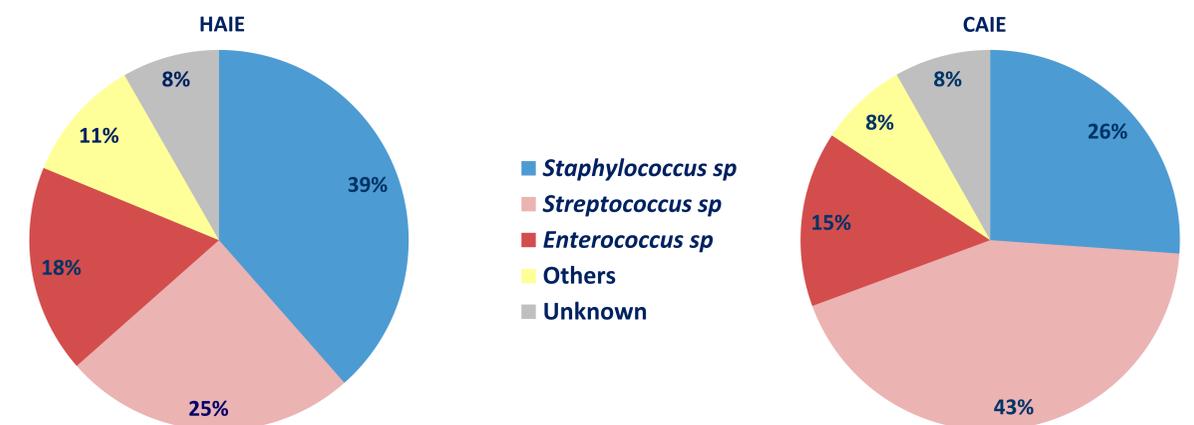
## Conclusion

Our study illustrates the change in IE epidemiology: older patients, more prosthetic valves, and increased prevalence of staphylococci, which was likely due in part to an increase in HAIE. Nevertheless, in this study, the mortality rate of HAIE was quite similar to the mortality rate of CAIE, despite less surgical treatment, except in the case of heart failure. In accordance with European guidelines, we suggest that this result can be due in part to the presence of an endocarditis team for five years in our hospital.

**Table 1. Epidemiology**

		HAIE n=96	CAIE n=134	<i>p</i>
<b>Demographic characteristics</b>	Male, n (%)	66 (68.7%)	101 (75%)	NS
	Mean age (years, SD)	66.5 (16.2)	64.1 (14.1)	NS
	Electronic device, n (%)	14 (14.5%)	9 (6.7%)	NS
<b>Echocardiographic findings, n (%)</b>	Native valve	36 (37.5%)	91 (67.9%)	< 0.001
	Prosthetic valve	60 (62.5%)	43 (32.1%)	< 0.001
	Aortic valve	58 (60.4%)	78 (58.2%)	NS
	Mitral valve	20 (20.8%)	38 (28.4%)	NS
<b>Microbiology, n (%)</b>	Staphylococci	37 (38.5%)	35 (26.1%)	0.09
	Streptococci	24 (25.0%)	58 (43.2%)	0.01
<b>Outcome, n (%)</b>	Surgical treatment	37 (38.5%)	78 (58.2%)	0.01
	Acute left heart failure	15 (15.6%)	27 (20.1%)	NS
	In-hospital mortality	15 (15.6%)	17 (12.7%)	NS

**Figure 1. Microbiology**



### Abstract (revised)

#### Background

Despite recent changes in the epidemiology of infective endocarditis (IE) in industrialized countries over the past decades, data about healthcare-associated infective endocarditis (HAIE) remain rare. In this study, we described a population diagnosed and treated for a HAIE at the Bordeaux University Hospital.

#### Methods

Between 2013 and 2015, we conducted a retrospective observational study in the three teaching hospitals of our center. A multidisciplinary endocarditis team reviewed all patients' medical charts. IE was defined as HAIE according to the following criteria: onset of IE > 48h after hospitalization or within 6 months after hospital discharge or diagnostic or therapeutic manipulations. We included all HAIE cases that were referred to our center during the study period. We extracted detailed demographic, diagnostic, treatment, and follow-up (in-hospital mortality) data from patients' charts and medical records and compared them with community-acquired IE (CAIE) patients admitted in the same period.

#### Results

During the study period, 96 patients were included and compared with 134 CAIE patients (mean age of patients: 66 years). Thirty-six patients (37%) had native-valve endocarditis and 60 (63%) had prosthetic-valve endocarditis. Fourteen patients (15%) had implantable heart devices. The aortic (60%) and mitral (21%) valves were most commonly infected; in 6% of patients both valves were infected. The most common pathogens were staphylococci (39%; methicillin-resistant in 46% of strains), *Streptococcus* (25%), and *Enterococcus* (18%); in 8% of IE patients the pathogens were not documented. Thirty-seven (39%) and 78 (58%) patients underwent surgical treatment respectively for HAIE and CAIE ( $p = 0.01$ ). The hospital mortality rate of the HAIE patients was 15.6% (10.8% with surgery and 18.6% without surgery) and reached 47% in the presence of heart failure ( $p = 0.002$ ). In the same period, the in-hospital mortality rate of the 134 CAIE patients was 12.7% ( $p = 0.5$ ).

#### Conclusions

The epidemiology of IE has changed significantly: older patients, more prosthetic valves and increased prevalence of staphylococci, probably in part due by an increase in HAIE. Nevertheless, in this study, the mortality rate of HAIE was quite similar to the mortality rate of CAIE, despite less surgical treatment.