

Multimorbidity in Older Adults with Aortic Stenosis



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KEYWORDS

- Aortic stenosis • Multimorbidity • Comorbidity • Geriatrics • Frailty
- Cardiovascular disease • Transcatheter aortic valve replacement • Cardiac surgery

KEY POINTS

- Medical and aging-related comorbidities are very common in older patients with calcific aortic stenosis.
- Clinicians increasingly face challenging scenarios that result from the intersection of aortic stenosis and multiple comorbidities.
- Medical and aging-related comorbidities influence health status, interpretation of the presence and etiology of symptoms, estimates of procedural risk, and anticipated benefit from valve replacement.
- The number, type, and severity of comorbidities substantially influence the evaluation, management, and treatment of patients with aortic stenosis.
- Awareness and incorporation of the influence of comorbidities on outcomes after valve replacement is critical to treating the patient and not just fixing the valve.

INTRODUCTION

Calcific aortic stenosis (AS) is generally a disease of older adults. A recent metaanalysis of 7 population-based studies from Europe and North America found that the prevalence of AS in persons greater than 75 years of age was 12.4% and the prevalence of severe AS was 3.4%.¹ As the population ages, the absolute number of patients with significant AS will increase substantially.

Within the aortic valve leaflets, an active biological process occurs to cause fibrosis and calcification, leading to restricted leaflet motion.² As the aortic valve becomes progressively obstructed, maintenance of cardiac output imposes a chronic increase in left ventricular pressure that leads to hypertrophic ventricular remodeling and

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eventually diastolic and systolic dysfunction.^{3,4} Symptoms such as shortness of breath and chest pain can be disabling, markedly reduce quality of life, and are associated with an average life expectancy of 2 to 3 years.^{5–7} The only effective treatment for symptomatic severe AS is valve replacement.^{3,8} However, surgery has significant risks, including stroke and death, and at least one-third of patients do not undergo surgery owing largely to advanced age, left ventricular dysfunction, or associated comorbidities.^{5,9,10}

Recently, a less invasive approach to valve replacement using balloons and catheters—transcatheter aortic valve replacement (TAVR)—has been introduced as a viable alternative for patients at high or prohibitive risk for surgery.^{11–14} TAVR has been a transformative innovation, allowing for the treatment of many patients who previously did not have a therapeutic option. Based on current regulatory approval indications, recent estimates indicate that there are approximately 300,000 TAVR candidates in Europe and North America and almost 30,000 new TAVR candidates annually.¹ As indications for TAVR (based mostly on estimates of operative risk) are lowered, this number will increase substantially.

Primarily because of 2 forces—the aging of the population and the emergence of TAVR as a therapeutic option—clinicians increasingly face challenging scenarios that result from the intersection of AS and multiple comorbidities. These include multiple medical comorbidities as well as numerous aging-related, or geriatric, comorbidities. AS is often conceptualized as a mechanical problem (valve obstruction) requiring a mechanical solution (valve replacement). There can be a myopic focus on the valve as the singular cause of the patient's impairments (eg, shortness of breath); accordingly, it is often assumed that once the valve is fixed, the patient's symptoms will resolve and quality of life improve. The frequent occurrence of multiple, often severe, comorbidities influences—sometimes dramatically—this linear, simple diagnostic and treatment framework. Indeed, among patients with AS, medical and aging-related comorbidities influence health status, the determination of whether symptoms related to AS are present, estimates of procedural risk, and anticipated benefit from valve replacement. In short, these comorbidities are common and introduce a significant degree of complexity into the evaluation, management, and treatment of patients with AS.

Herein, we review the aging-related and medical comorbidities commonly coexistent in patients with AS ([Table 1](#)). Their prevalence and impact on clinical outcomes

Condition	Prevalence (%)^a
Disability	5–76
Frailty	20–84
Cognitive impairment	28–45
Chronic obstructive pulmonary disease	8–59
Pulmonary hypertension	47–65
Chronic kidney disease	3–57
End-stage renal disease	2–4
Chronic liver disease	2–3
Anemia	49–64
Diabetes	20–42

^a Prevalence is highly dependent on the population examined and the definition used for the condition, particularly for disability and frailty.

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