

## Prof. David S. Bach: heart valve disease

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Prof. David S. Bach (*Figure 1*) is a professor in the Department of Medicine, Division of Cardiovascular Medicine, at University of Michigan and serves as the Associate Director of the University of Michigan Echocardiography Laboratory. He has published numerous articles and gave numerous lectures on topics related to the evaluation and management of heart valve disease, the developments in prosthetic heart valves, intra-operative echocardiography, and stress echocardiography.

*Cardiovascular Diagnosis and Therapy (CDT)* editor met Prof. Bach in the 17<sup>th</sup> South China International Congress of Cardiology where he gave an excellent lecture on “Patient benefit from early diagnosis and treatment for heart valve disease”. We are honored to have an interview with Prof. Bach to share his opinion on heart valve disease with our readers.

**CDT:** *Heart valve disease is difficult to detect for its long-term asymptomatic period. What could we do to improve the prognosis of the heart valve disease?*

**Prof. Bach:** This is a very challenging problem. The best way to improve the prognosis of patients with heart valve disease is to detect the disease early, during its asymptomatic phase. To do this, providers on the front line of patient care—the primary care team—need to both listen carefully for a heart murmur and refer the patient with a murmur for additional evaluation. The additional evaluation could be an echocardiogram and referral to a cardiologist if the echocardiogram supports the presence of significant valve disease. It can be a challenge to ask a patient to accept additional testing, sometimes involving travel to a larger medical center, when the patient feels entirely well. However, even if the patient has no symptoms at first, that patient’s future well-being will depend on the detection and appropriate treatment of the valve disease. In that way, the early detection of valve disease can be thought of as being somewhat similar to the early detection and treatment of high blood pressure; although there are no symptoms at first, the risks of stroke, heart attack, kidney disease, and



**Figure 1** Professor David S. Bach.

death all can be reduced by early treatment.

Not everything rests on the primary care provider, though. Data from many places around the world suggest that, even after echocardiography and referral to a cardiologist, many patients with severe valve disease and an indication for surgery do not get referred for intervention. Education is needed in the cardiology community, too, stressing the insidious nature of many types of heart valve disease.

So the real key to improving patient prognosis is education: education for the primary care team, education for cardiologists seeing the patients, and education for patients, so that they can understand why testing and therapy might be a good idea even though there are no symptoms.

**CDT:** *Exercise testing plays a significant role in the evaluation and management of patients with heart valve disease. Could you share with us your comments on exercise testing, such as its advantages and disadvantages?*

**Prof. Bach:** The heart is a dynamic organ: it normally increases its work in order to accommodate physical activity and other stresses in life. Because of the insidious nature of many types of heart valve disease, early changes in heart

function can be hard to detect. Even symptoms can be subtle and difficult for both patient and doctor to distinguish from normal aging. Exercise testing can be very useful in helping to distinguish a compensated phase of heart valve disease, in which continued observation can be reasonable, from early stages of decompensation, when intervention is needed to improve survival. Exercise testing also provides an objective measure from year to year of a patient's functional ability. Exercise testing can be a very useful part of the evaluation and long-term management of asymptomatic patients with chronic, severe mitral regurgitation; or asymptomatic patients with severe aortic stenosis.

The caveat with exercise testing relates to patients with severe aortic stenosis (or with severe un-diagnosed coronary artery disease). Exercise testing should not be performed in patients with severe aortic stenosis and symptoms of angina, heart failure, or syncope. Those patients already have an indication for intervention; not only does exercise testing not add anything in those patients, but it can be dangerous. As an absolute rule, any patient with severe heart disease (including asymptomatic severe valve disease) should be closely monitored by an experienced cardiologist who is familiar with valve disease and familiar with exercise testing in patients with valve disease. Testing should be stopped in the event of symptoms or hypotension (usually defined as a decrease in blood pressure of 20 or even 10 mmHg).

**CDT:** *Beside the exercise testing, what measures are common used to evaluate the heart valve disease?*

**Prof. Bach:** Echocardiography is a very useful tool for the evaluation of both valve disease and the compensatory changes made by the heart in response to valve disease. There's also a role for cardiac magnetic resonance (CMR) imaging and cardiac computed tomography (CT). But perhaps the most useful thing is a cardiologist with experience in managing patients with heart valve disease. That clinician can help integrate all of the clinical data, and is in the best position to help determine optimal timing for intervention.

**CDT:** *What do you think is the most important development for the treatment of heart valve disease?*

**Prof. Bach:** The field of medicine usually moves ahead in small increments; it's unusual for there to be big jumps. In one sense, transcatheter therapies are a big jump in how heart valve disease is being managed. But I actually prefer to

think that the big jump is a new interest in the recognition of patients with heart valve disease; and the collaborative approach being taken, with constructive interaction between cardiologists and surgeons aimed at optimizing patient outcomes.

**CDT:** *What we could expect for the future development of the evaluated measure of heart valve disease?*

**Prof. Bach:** More and more, the optimal management of patients with heart valve disease relies on a multi-disciplinary team of providers to determine the best timing of intervention, and which intervention should be performed when the time comes. This is being driven now by trans-catheter therapies for aortic stenosis [transcatheter aortic valve replacement (TAVR)], but the same model applies for other types of heart valve disease. A multi-disciplinary team should include a non-interventional cardiologist, an interventional cardiologist, and a heart surgeon, all of whom have expertise in therapies for heart valve disease. In addition, imaging specialists and others can be integral to optimal decision-making.

From a technical standpoint, less and less invasive interventions are the wave of the future, from minimally invasive surgery to transcatheter therapies.

**CDT:** *Surgical valve replacement is conventionally used in the patients with severe heart valve disease. What is your opinion on surgical valve replacement?*

**Prof. Bach:** Surgical aortic valve replacement remains the best option for patients at low or intermediate risk associated with valve replacement. It is proven to improve symptoms and save lives, and there are available excellent heart valve devices in terms of hemodynamics and durability. TAVR provides an option for intervention among inoperable patients with severe aortic stenosis, and is an attractive alternative to surgery among some patients at high (but not prohibitive) risk for surgery. As these techniques continue to develop, there will be on-going evolution of which patients might be best served by surgical valve replacement and which by transcatheter therapies. A multi-disciplinary heart valve team can be a key in these types of decisions.

For the mitral valve, repair remains a desirable intervention if it can be done with good success. This is particularly pertinent to patients with degenerative disease like mitral valve prolapse, but less so for patients with

rheumatic mitral valve disease.

**CDT: What is the status of surgical valve replacement in USA?**

**Prof. Bach:** Many patients with severe aortic stenosis are undergoing TAVR; some of these are patients who are inoperable, and could not undergo surgical valve replacement. Others are high-risk patients, after a multi-disciplinary team evaluation led to a recommendation for TAVR. But TAVR has definitely led to an increase in the overall number of patients who are undergoing intervention for AS, more so than just shifting patients from surgical to transcatheter therapy.

For mitral regurgitation, there is a definite move toward more mitral repair rather than mitral replacement. But we

still have a lot of work to do in optimizing this.

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**Footnote**

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