ISSN 1443-850X

Bioshares

9 September 2022
Edition 924

Delivering independent investment research to investors on Australian biotech, pharma and healthcare companies

Companies covered: **AVR, CUV, PAB, PXS**

	Bioshares Portfolio
Year 1 (May '01 - May '02)	21.2%
Year 2 (May '02 - May '03)	-9.4%
Year 3 (May '03 - May '04)	70.6%
Year 4 (May '04 - May '05)	-16.3%
Year 5 (May '05 - May '06)	77.8%
Year 6 (May '06 - May '07)	17.4%
Year 7 (May '07 - May '08)	-35.8%
Year 8 (May '08 - May '09)	-7.4%
Year 9 (May '09 - May '10)	50.2%
Year 10 (May '10 - May'11)	45.4%
Year 11 (May '11 - May '12)	-18.0%
Year 12 (May '12 - May '13)	3.1%
Year 13 (May '13 - May '14)	26.6%
Year 14 (May '14 - May '15)	23.0%
Year 15 (May '15 - May '16)	33.0%
Year 16 (May '16 - May '17)	16.8%
Year 17 (May '17 - May '18)	-7.1%
Year 18 (May '18 - May '19)	-2.3%
Year 19 (May '19 - May '20)	39.5%
Year 20 (May '20 - May '21)	86.8%
Year 21 (May '21 - May '22)	-15.6%
Year 22 (May '22 - Current)	-2.1%
Cumulative Gain	1581%
Av. Annual gain (21 yrs)	19.0%

Bioshares is published by Blake Industry & Market Analysis Pty Ltd.
ACN 085 334 292
PO Box 447
Flinders Lane Vic 8009
AFS Licence No. 258032

Mark Pachacz - Editor/Analyst
Email: mark{at}bioshares.com.au
Ph: 0403 850 425

Edition Number 924 (9 September 2022)

Anteris Technologies to Present Key Data at TCT this Month

Anteris Technologies (AVR: $21.50) presented at the inaugural E&P Healthcare conference this week.

CEO Wayne Paterson believes that the technical risk for the company's novel aortic valve, the DurAVR 3D, has been significantly diminished, down to only 5%-10% following successful implantation into 13 patients. The remaining risk for the company relates primarily to execution.

Anteris is developing a single piece aortic valve that is implanted via catheter, rather than open-chest surgery.

Market Size and Dynamics

There has been a move to implant aortic valves via a less invasive procedure via a catheter (TAVR) compared to open chest surgery (SAVR). In 2019 there were 72,991 TAVR procedures in the US, which for the first time exceed the number of aortic valves implanted by open chest surgery (57,626) (*source: Diagnostic and Interventional Cardiology, November 2020*). At a price of US$35,000 per device in the US (around US$20,000 outside of the US), this places the market at US$2.6 billion in the US, or US$4.6 billion including valves implanted using either procedure.

Anteris anticipates that the market for TAVR delivered aortic valves to grow to US$9 billion in the US in 2028 and US$5 billion outside the US. The TAVR market is dominated by two products, the Sapien 3 and the CoreValve from Edwards Lifesciences (64% market share) and Medtronic (31% market share) respectively.

Paterson believes the Anteris device can achieve a market penetration of between 30%-40% that could generate annual sales of between US$3 -5 billion.

Competitive Advantages

Anteris' valve has several advantages over the incumbent products. The effective orifice area it achieves is significantly larger than both competitors' valves, and it reduces the pressure more that the Sapien 3 and CoreValve. Paterson said that the company's device is 50% better than the competition.

Its valve is only a single piece, whereby the competing valves are sown together using three pieces. The Anteris valve uses the proprietary ADAPT treatment process developed in Australia. From heart tissue repairs in children, the ADAPT treated tissue has shown resistance to calcification for 10 years. The company says it has the best anti-calcification treatment in the world.

Paterson said that the competing valves still leave the patients with mild stenosis after implant where the Anteris valve returns the patient to a healthy state with a mean pressure gradient across the valve of 5-10 mmHg.

Continued over

The Anteris valve closes by pivoting at the base rather than at the top of the valve, which is one of the reasons that better closing can be achieved. Paterson said that aortic valves need to be anatomically correct. The DurAVR 3D was designed as a valve first and is the only valve that delivers perfect laminar flow through the aorta.

In August 2019 the FDA approved TAVR procedures for low-risk patients. Many of these are younger patients. However young patients are expected to live longer and so require a more durable, longer-lasting valve. There are obvious advantages of implanting the device through a catheter, with up to eight weeks recovery from open chest surgery which is also limited to younger patients.

These devices are tested in a laboratory under an 'accelerated wear test'. Each valve is required to last a minimum 200 million cycles. Paterson said that competing valves start to wear out around 300-400 million cycles, where the Anteris valve lasts for between 750-800 million cycles. The Anteris valve has shown to operate for 15 years under simulated wear testing.

Presentation of Data

At the TCT conference to be held later this month in Boston, it is expected that data will be presented on the Anteris aortic heart valve which will compare its performance with aortic valves implanted using surgical (open-chest) procedures. This should be highly significant for the company.

At the PCR London Valves conference at the end of November it is expected that 12-month data will be released on the first five patients implanted with the DurAVR 3D valve.

Competitive Tension

Anteris is building competitive tension for acquisition from its two competitors. Paterson believes the company with the largest market share is the most at risk from this new technology. If Anteris continues to make positive advancements with the development of its valve, it is likely to become of interest to the two companies that dominate the TAVR market, Edwards Lifesciences and Medtronic.

Continued over

Anteris Medical Advisors

North America		
Samir Kapadia	Cleveland Clinic	Chairman, Dept of Cardiovascular Medicine, Cleveland Clinic
Vinayak Bapat	Abbott Northwestern Minneapolis	Chief of Cardiac Surgery
Paul Sorajja	Abbott Northwestern Minneapolis	Interventional cardiology specialist
Joao Cavalcante	Abbott Northwestern Minneapolis	Director of MRI and Structural CT Labs
Martin Leon	Columbia University Medical Center	Director of Columbia Interventional Cardiovascular Care Center
Susheel Kodali	Columbia University Medical Center	Director of the Structural Heart and Valve Center
Nadirea Hamid	Columbia University Medical Center	Non-invasive cardiologist and Assistant Professor of Medicine
Rebecca Hahn	Columbia University Medical Center	Professor of Medicine
Allen Zajarias	Washington Uni St Louis	Professor of Medicine, Cardiovascular Division
Gorav Ailawadi	University of Virginia Charlottesville	Professor of surgery and section chief of adult cardilogy surgery
Michael Reardon	Houston Methodist	Cardiac surgeon and medical researcher
Janar Sathananthan	St Paul's & VGH, Vancouver, BC	Interventional and structural cardiologist
Alexandra Lansky	Yale School of Medicine	Professor of Medicine, Cardiology
Azeem Latib	Montefiore Medical Center, New York	Section Head and Director of Cardiology & Director of Structural Heart Interventions
UK & Europe		
Bernard Prendergast	Guys & St Tomas', **London**	Professor of Interventional Cardiology and Valvular Heart Disease
Thomas Modine	CHU de Bordeaux, **France**	Cardiac surgeon and heart valve specialist
Didier Tchetche	Clinique Pasteur Toulouse, **France**	Interventional cardiologist, ehad of structural disease program
Nicolas Van Mieghem	Erasmus University Medical Center, **Netherlands**	Medical Director of Thoraxcenter
Magnus Settergren	Karolinska Uni Hospital, Stockholm, **Sweden**	Director of Interventional Cardiology
Australia		
Karl Poon	The Prince Charles Hospital, Brisbane	Interventional cardiologist
Dion Stub	Cabrini Medical Centre, Melbourne	Interventional cardiologist
Ajay Sinhal	Flinders Medical Centre, Adelaide	Interventional cardiologist
Jayme Bennetts	Flinders Medical Centre, Adelaide	Director of Cardiothoracic Surgery

Studies to Date

In November last year the first five patients were implanted with the DurAVR 3D device. Paterson said that the first cohort was a very sick patient population. It included one patient who Paterson believes was two weeks from dying with a pressure gradient of 90 mmHg. Following implant that patient's function was returned to normal with a pressure gradient of under 10 mmHg.

In May this year a further eight patients were successfully implanted with the Anteris TAVR device.

In June the company reported a six-month follow-up of the first five patients. All patients were progressing well, with a mean reduction in pressure across the valve of 86% from baseline and 6% improvement from three-month data. Using the six-minute walk test, patients have improved 46% from baseline and an additional 21% from the three-month assessment.

Medical Advisory Team

Anteris has put in place an exceptional medical advisory team of 23 cardiac specialists across North America, Europe and Australia (see table on previous page). It includes Samir Kapadia, chairman of the Department of Cardiovascular Medicine at the Cleveland Clinic, which in 2021 the centre performed 652 TAVR procedures.

Earlier this year Dr Martin Leon joined the company's medical advisory board and is a highly significant addition. He is Director of the Columbia Interventional Cardiovascular Care Center and he has performed more than 10,000 procedures. Dr Leon is also director and founder of TCT (Transcatheter Cardiovascular Therapeutics), the world's premier interventional cardiovascular meeting which will be held in two weeks. He has been a principal investigator on more than 50 clinical studies, which have underpinned advancements in the field of interventional cardiovascular medicine.

The centres where the company's medical advisors are based represent a receptive audience for the company in both its clinical studies and for commercial launch once approved.

Clinical Pathway Ahead

To gain European approval, a trial involving around 100 patients will be required, with European approval likely to be received before US approval.

In the US, Anteris will first conduct a feasibility study in around 15 patients, which is expected to only take a few weeks to recruit. The company will then conduct a pivotal IDE study in the US and Australia, which is expected to take around one year to recruit. The company will be eligible for reimbursement for these procedures (US$25,000 per device). Patients will be followed for one year. That study is expected to start early next year and may involve around 400 patients.

Share Register and Funding

Anteris held cash of $33 million at the end of June. In March the company raised $28 million from a major US life sciences fund managed by Perceptive Advisors. It has US$9.5 billion in funds under management and will be a useful potential source for additional funding.

In February this year it declined an acquisition by US cashbox Medicus Sciences Acquisition Corp, which *Bioshares* believes was a sensible decision.

Summary

Samir Kapadia believes that the field of interventional cardiology has reached a stage where TAVR procedures for aortic valve replacements should be considered for all patients (i.e. replacing surgical implantation). The 30-day mortality rate has fallen to just 0.3% in recent years from 7.5% in the early years of TAVR implants.

However, with TAVR procedures now being implanted in younger patients, there is a strong need for biologic valve material to be less resistant to calcification, which is the primary advantage offered by the Anteris valve.

Anteris is capitalised at $299 million.

Bioshares recommendation: **Speculative Buy Class A**

(Anteris has been added to the Bioshares Model Portfolio.)

Bioshares

How Bioshares Rates Stocks

For the purpose of valuation, Bioshares divides biotech stocks into two categories. The first group are stocks with existing positive cash flows or close to producing positive cash flows. The second group are stocks without near term positive cash flows, history of losses, or at early stages of commercialisation. In this second group, which are essentially speculative propositions, Bioshares grades them according to relative risk within that group, to better reflect the very large spread of risk within those stocks. For both groups, the rating "Take Some Profits" means that investors may re-weight their holding by selling between 25%-75% of a stock.

Group A

Stocks with existing positive cash flows or close to producing positive cash flows.

Buy	CMP is 20% < Fair Value
Accumulate	CMP is 10% < Fair Value
Hold	Value = CMP
Lighten	CMP is 10% > Fair Value
Sell	CMP is 20% > Fair Value

(CMP–Current Market Price)

Group B

Stocks without near term positive cash flows, history of losses, or at early stages of commercialisation.

Speculative Buy – Class A
These stocks will have more than one technology, product or investment in development, with perhaps those same technologies offering multiple opportunities. These features, coupled to the presence of alliances, partnerships and scientific advisory boards, indicate the stock is relative less risky than other biotech stocks.

Speculative Buy – Class B
These stocks may have more than one product or opportunity, and may even be close to market. However, they are likely to be lacking in several key areas. For example, their cash position is weak, or management or board may need strengthening.

Speculative Buy – Class C
These stocks generally have one product in development and lack many external validation features.

Speculative Hold – Class A or B or C

Sell

Corporate Subscribers: Cogstate, Opthea, ResApp Health, Pharmaxis, Dimerix, Adalta, Patrys, Antisense Therapeutics, Imugene, Chimeric Therapeutics, Neuren Pharmaceuticals, Neurotech International, Aroa Biosurgery, Radiopharm Theranostics, Imricor Medical Systems, Anteris Technologies