On-X heart valves | a product group of On-X Life Technologies, Inc.™

On-X Heart Valve: Unique Echocardiographic Signature

Echocardiography confirms less turbulence with the On-X® heart valve

The On-X Heart Valve:

FDA approved in 2001

17 years of clinical excellence

Proven exceptional patient results

Prospective Randomized On-X Anticoagulation Clinical Trial (PROACT): FDA application submitted to lower INR levels for On-X valve patients.

On-X® Standard Aortic Prosthetic Heart Valve

Aman Mahajan, MD, Chief of Division of Cardiothoracic Anesthesiology at UCLA David Geffen School of Medicine described the different echocardiographic appearance of the On-X valve, "The difference is obvious and consistent." **"I've been quite impressed by the flow profile of the On-X valve… even valves which are smaller sized… you do not see that mosaic of colors as the blood flows across the valve."**[1] Dr. Mahajan, referring to less turbulence that is evident in the On-X valve (Figures 1 and 2).

Comparing Echocardiographic Flow

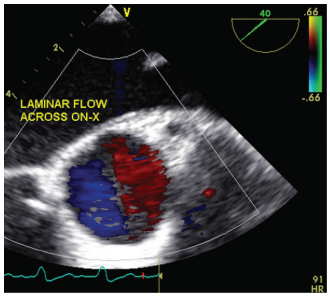


Figure 1.
On-X Valve: Non-turbulent flow.
Red and blue indicate laminar flow.

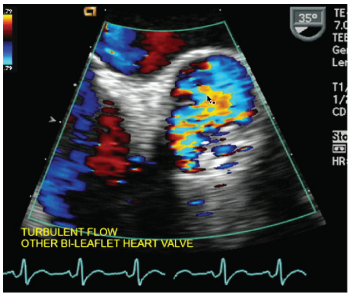
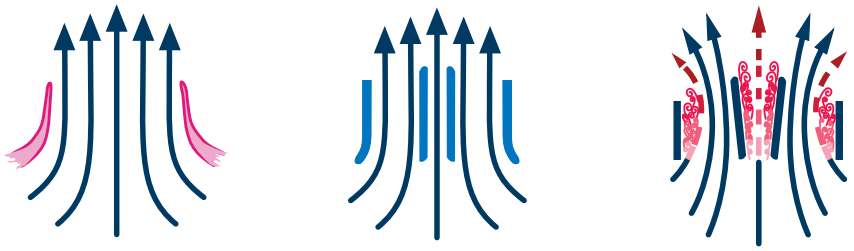


Figure 2.
Other Mechanical Valves: Turbulent flow.
A mosaic of color indicates turbulence with leading bi-leaflet valve.

Comparing Flow Dynamics



Native Valve Flow | On-X Valve Flow | Traditional Mechanical Valve Flow

Valve design comparison to the natural valve.
Minimizing turbulent flow improves coronary flow.[2]

1. Mahajan A. Video. Reduced Anticoagulation Clinical Trial of the On-X Prosthestic Heart Valve. Medical Carbon Research Institute (On-X Life Technologies, Inc.) Austin, Texas 2006.
2. Bakhtiary F, Schiemann M, Dzemali O, et al. Impact of patient-prostheseis mismatch and aortic valve design on coronary flow reserve after aortic valve repalcment. J Am Coll Cardiol, 2007; 49: 790-796

On-X Valve Lowered Anticoagulation Trial

October 2012: On-X Life Technologies, Inc.™ submitted applications to the U.S. FDA and to the Conformité Européenne (CE) for revised Instructions for Use (IFU) recommending lower INR levels (1.5 – 2.0) for patients with On-X aortic valves. The applications were submitted based upon the results of the PROACT high-risk aortic valve patient group.

PROACT Test Groups[1-3]

Pre-randomization

Transition Period
First three postoperative months with standard anticoagulation therapy[3]

AVR = aortic valve replacement
MVR = mitral valve replacement

Post-randomization

Low Risk AVR
After loading dose, Clopidogrel 75 mg/day, Aspirin 325 mg/day

High Risk AVR
INR 1.5 to 2.0, Aspirin 81 mg/day

All MVR
INR 2.0 to 2.5, Aspirin 81 mg/day

Control Groups
Each of the three post-randomization groups will be given standard anticoagulation therapy[3]

PROACT Patient Group Criteria

PROACT Trial High Risk AVR Criteria

- Chronic atrial fibrillation
- Left ventricular ejection fraction < 30%
- Enlarged left atrium > 50mm diameter
- Spontaneous echo contrasts in the left atrium
- Neurological events (any history prior stroke or TIA)
- Left or right ventricular aneurysm
- Women receiving estrogen replacement therapy
- Hypercoagulability

PROACT Trial Low Risk AVR Criteria
Patients are considered low risk only if they have no high risk factors.

PROACT Trial Exclusion Criteria

- Multiple valve replacement (MV repair is acceptable)
- Active endocarditis
- Terminal illness
- Emergency cases
- Inability to return for follow-up
- Persons unable to give adequate consent

On-X Valve Lowered Anticoagulation Trial

2001
On-X Valve FDA approved

2006
Exceptional worldwide On-X valve clinical data results inspired PROACT Trial

2006
PROACT Trial initiated

2011
Positive preliminary results presented at American College of Cardiology (ACC) Annual Meeting[4]

2012
Submission to FDA for IFU changes for high-risk aortic group

2013
Projected submission to FDA for IFU changes for low-risk group

2014
Projected submission to FDA for IFU changes for mitral group

1. FDA Approved Non-Warfarin and Reduced Warfarin Anticoagulation Trial of the On-X Prosthetic Heart Valve Initiated at Emory Crawford Long Hospital -Tuesday, August 22, 2006. News release Medical Carbon Research Institute, LLC, Austin, Texas USA; © 2006 http://www.onxvalves.com/about_news_item.asp?NewsID=31
2. PROACT Investigation Plan. Medical Carbon Research Institute, LLC, Austin,Texas USA; © 2006
3. ACC/ AHA 2006 Guidelines for the Management of Patients With Valvular Heart Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the1998 Guidelines for the Management of Patients With Valvular Heart Disease): Developed in Collaboration With the Society of Cardiovascular Anesthesiologists Endorsed by the Society for Cardiovascular Angiography and Interventions and the Society of Thoracic Surgeons Circulation 2006;114;84-231. DOI: 10.1161/CIRCULATIONAHA.106.176857.
4. Puskas JD, Quinn R, Fermin L, McGrath M, Gerdisch M, Hughes C, Martin T, Kong B, Nichols D. Reduced anticoagulation for a mechanical heart valve. Presented at the American College of Cardiology 2011, New Orleans, Louisiana, USA, April 4, 2011 in Late-Breaking Clinical Trials

On-X aortic and mitral valves are FDA approved.

Until the PROACT Trial is complete, On-X Life Technologies recommends all patients should be retained on existing ACC/AHA guidelines for mechanical valve anticoagulation. CAUTION: Federal law restricts this device to sale by or on the order of a physician. Refer to the Instructions for Use that accompany each valve for indications, contraindications, warnings, precautions and possible complications. CAUTION: This investigational use of this device is limited by Federal law to investigational sites. For further information, visit www.onxlti.com.

Headquarters and Manufacturing Facilities:
1300 East Anderson Lane, Building B | Austin, Texas 78752 U.S.A.
Telephone: (512) 339-8000 | Facsimile: (512) 339-3636 | www.onxlti.com | onx@onxlti.com

On-X Life Technologies, Inc.™ | designed for life