Vancouver clinical researchers are world leaders in a new minimally invasive valve procedure pioneered at St. Paul’s Hospital and now successfully implemented at Vancouver General Hospital as part of the new Vancouver Regional Structural heart Program.

Valory Craske is 80 years old and severe shortness of breath was impacting her quality of life. She has been recognized for her volunteerism both locally and nationally but she became so tired and fatigued she found it difficult to even leave her house. Valory had severe aortic stenosis. Her aortic valve, the main valve leading from the left side of the heart to the body, had stiffened and narrowed over time, making it difficult for her heart to pump blood through the valve and out into her body.

Severe aortic stenosis causes shortness of breath, chest pain, fainting, and is ultimately fatal if left untreated. Until recently, the only effective treatment was to replace the aortic valve by performing conventional open heart surgery. Many patients are too old or too frail to withstand this surgery. Valory was seen by a cardiologist and surgeon and it was felt that she would be at high risk for either significant complications or death if she underwent conventional valve replacement.

British Columbians are fortunate to be on the cutting-edge of a new, minimally invasive treatment, called transcatheter aortic valve implantation, or TAVI.

Instead of open-heart surgery, TAVI requires only a small incision in the leg through which a catheter (a small flexible and hollow tube) is inserted. The new valve travels within the catheter and is placed inside the old valve using advanced cardiac imaging (see Image 1). A balloon is inflated within the transcatheter valve and the new valve pushes the old valve out of the way, where it remains indefinitely within the heart. The procedure takes one or two hours and the new valve starts functioning immediately. Unlike open heart surgery, there is no need to open the chest for this procedure.

The modern TAVI procedure was invented by Dr. John Webb at St. Paul’s Hospital. With an ongoing database which tracks procedures and outcomes, the Vancouver team has been able to document steadily improving results. The team has published over 200 valve-related manuscripts in peer-reviewed journals. Recently, the team participated in the landmark Placement of Aortic
Transcatheter Valve (PARTNER) trial. Published in the New England Journal of Medicine, PARTNER was the first multicentre randomized controlled trial comparing TAVI, conventional medical management, and conventional surgical management. Based on the results of PARTNER, transfemoral TAVI is now the standard-of-care for inoperable patients with severe symptomatic aortic stenosis and is an accepted alternative to conventional surgical aortic valve replacement in high-risk operable patients.

To facilitate patient care, the Vancouver Regional Structural Heart Program was created in 2011 with Dr. Webb as the inaugural director. Under the auspices of a single program, TAVI is now performed at both St. Paul’s and Vancouver General Hospital.

Led by Sandra Lauck (RN), and structural and interventional cardiologists Dr. David Wood and Dr John Webb, TAVI arrived at VGH last summer. With seamless care and interdisciplinary practice from referral to discharge, 17 patients have now undergone TAVI at VGH. The average length of stay has been 2 days and 7 patients have gone home the day following their procedure. All patients are alive and well.

On August 30th, 2011, Valory Craske was the first patient to undergo TAVI at VGH (see Figure 2). The procedure was a success and she went home 2 days after her new valve was implanted. With conventional open heart surgery, Valory likely would have been in hospital for 1 or 2 weeks.

Valory is no longer short of breath and her energy returned almost immediately. She is able to volunteer again.

TAVI at VGH has involved amazing collaboration between cardiology, surgery, anesthesiology, perfusion, critical care, radiology, nursing, and multiple allied health care team members. Practicing in a team environment, the VGH TAVI team are recipients of a Vancouver Coastal Health People First Award for Excellent Interdisciplinary Team Work and Collaboration to achieve excellent patient outcomes. (See team photos below.)