



StentBoost: a real eye-opener

Philips StentBoost provides a clear view

Who/where

Royal Columbian Hospital,
New Westminster, British Columbia,
part of Fraser Health.

Located in Canada's largest health region,
Royal Columbian serves a population of
over 1.5 million people.

Challenge

Assist cardiologists working in this
extremely high volume environment to
confirm stent placement and deployment
in complex cases such as a bifurcations
and side branches, without adding
significant procedure time, cost, or
disrupting workflow.

Solution

Philips StentBoost is a unique visualization
tool to assist cardiologists. StentBoost
enhances views during stent placement
and deployment. Cardiologists can assess
placement and deployment while the
patient is still on the table, increasing
confidence in the procedure and positively
impacting the department's workflow.

Royal Columbian Hospital in New Westminster, British Columbia, is one of Canada's busiest cardiology catheterization centers. Serving over 1.5 million people each year, the hospital's cardiac cath lab handles approximately 5,000 cases annually, almost half of which include some type of intervention. Six cardiologists work on two Philips Allura FD10 labs, diagnosing and treating a population with a very high prevalence of unstable plaques. On average, the department schedules ten patients a day, on each of the two labs, in some cases six days a week.

Dr. Gerard Simkus, Director of Cardiac Services at Royal Columbian Hospital in New Westminster, BC, points out to visitors that this is one of the busiest primary infarct angioplasty centers in Canada.



Dr. Gerard Simkus

“To be honest, I like doing 300 or 400 angioplasties a year, because it keeps your hands in shape, and you don't get very good doing something only once every two or three weeks.” Referring to the number of challenging cases coming through his lab, Dr. Simkus says, “You need to be on top of your game.”

A challenging high volume environment

With the high volume of cases and limited resources it's not surprising that Dr. Simkus's focus stays primarily on those tools which translate into a direct benefit for his patients and the department's workflow. He notes the challenges in serving such a large population: “In round numbers, three quarters of what we do are unstable coronary syndromes, acute infarcts, ST Segment elevation myocardial infarcts, acute coronary syndromes, hospitalized patients, that sort of thing. You can't always predict when all of a sudden people are going to get into trouble, so you need the resources to move people and be able to do cases in a timely fashion.”

Exterior photo of Royal Columbian Hospital – Jerald Walliser



On a recent morning, the scene at Royal Columbian Hospital's cath lab bears out Dr. Simkus's point. Dr. Simkus and his staff are dealing with two emergency infarcts and an elderly patient in cardiogenic shock, in addition to their scheduled patients. Referring to one emergency case he's about to scrub for, he simply notes, "The acute infarcts can come in at any time, and you just try and do your regular day job in between."

Imaging tools designed to help

To efficiently handle the high volume of patients and still deliver the best care possible, Royal Columbian Hospital selected two Philips Allura FD 10 systems. Dr. Simkus

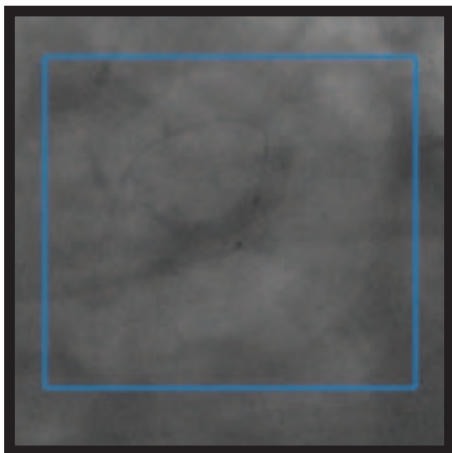
describes the reasoning behind the hospital's choice, "The ergonomics are good and so on, but they are doing a lot of work in terms of the digital image processing. And one aspect of this is StentBoost." StentBoost, a unique imaging tool from Philips, allows clinicians to quickly and easily check for proper stent positioning and deployment, at the time of placement, while the patient is still on the table, and the catheter is still in place. (see images 1 and 2)

Dr. Simkus describes StentBoost this way: "It basically signal averages the image, so you get a tremendous accentuation of the visualization of elements within the coronary,

and particularly stents and calcification. And we use it in cases when you really need very fine visualization, particularly of stent positioning and stent deployment."

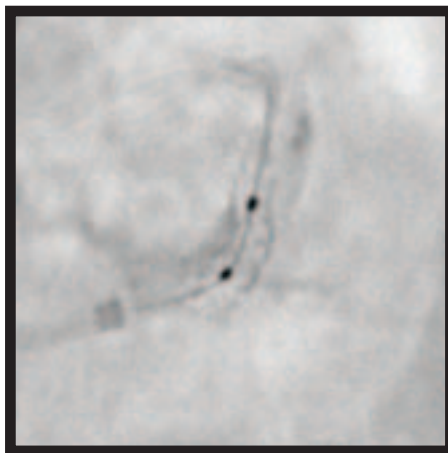
StentBoost now averages multiple images with a very short three-to-four second acquisition, smoothing out the natural motion occurring due to the beating heart, to deliver an exceptionally sharp image directly to the exam room monitor. This allows clinicians to see the status of the stent they've just positioned in very good detail and make appropriate decisions about re-positioning, post-dilation or additional intervention right at the table. (see images 3 and 4)

Image 1



before StentBoost

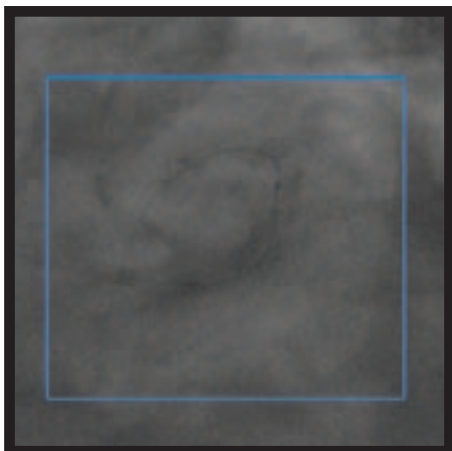
Image 2



with StentBoost

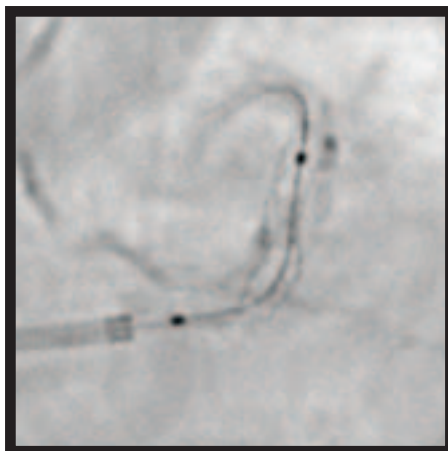
Dr. Simkus, who in more than 25 years of practicing interventional cardiology has seen his share of challenging cases, notes, "Anything that enhances visualization, you can immediately see the utility of it." From the earliest discussions concerning his new labs, Dr. Simkus saw the value in StentBoost. "You know we are all about visualization," says Dr. Simkus. "Certainly it was completely obvious to me that this enhanced visualization was going to be a good thing and eminently useful."

Image 3



before StentBoost

Image 4



with StentBoost

"The image quality . . . (with StentBoost) is good, but it just makes it that much better, because what you think might be the case on an angio, is absolutely clear when you do a StentBoost."

Dr. Gerald Simkus, Director of Cardiac Services,
Royal Columbian Hospital, New Westminster, BC

Dr. Simkus acknowledges that he doesn't use StentBoost on every case, but he quickly adds that there are specific clinical circumstances in which he wants all the help he can get. "After doing 10,000 cases you know when it is a slam dunk, it's done, it's perfect, and there is no issue to it. But it's the more complicated cases where that enhanced visualization really makes the difference, in terms of confirming what you've got, whether you think it's okay or not. When it is a calcified lesion, difficult to expand, or has issues, in those cases we do it." He goes on to explain, "You can kind of imagine things just based on your usual shots, because the image quality with the Philips is quite good, but it just makes it that much better, because what you think might be the case on an angio, is absolutely clear when you do a StentBoost."

Getting the stent right the first time

According to Dr. Simkus, "It stands to reason that anything that helps you make sure you get it right is going to be of benefit." In fact, research shows that a surprisingly high percentage of stent placements miss geographically, and a significant number of stents are not fully deployed on the initial placement.¹ As stents become smaller, and in some cases made with newer materials, they can be even harder to visualize. As Dr. Simkus points out, "If your stent is



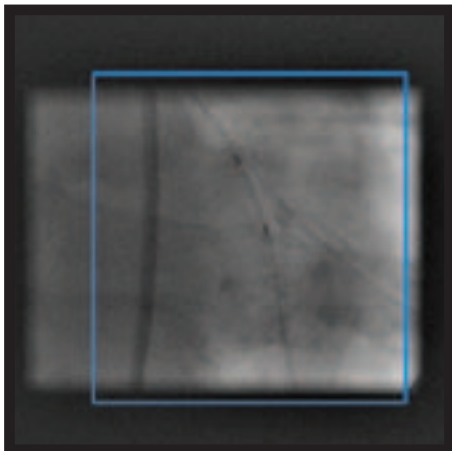
Dr. Gerald Simkus in one of his two Philips Labs

underexpanded that's one of the major causes of late stent thrombosis or re-stent thrombosis. In the setting where we have had a stent thrombosis, you go in and do a StentBoost just after you've opened up the artery and you often see that the stent is underexpanded as well." He also notes that the wide scale use of drug-eluting stents is adding to the necessity of getting optimal deployment. "So with cases of stent thrombosis or stent re-stenosis, and with drug-eluting stents, just to assess the adequacy of that initial stent deployment, StentBoost is quite useful."

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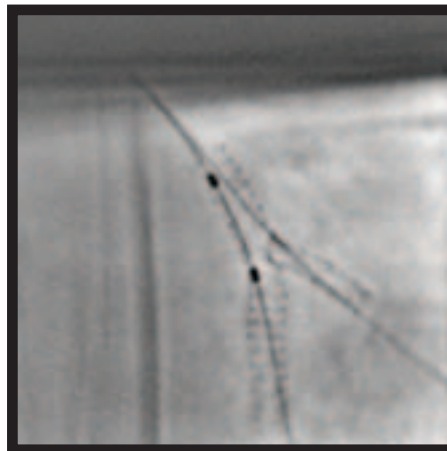
Dr. Gerald Simkus, Royal Columbian Hospital

Image 5



before StentBoost

Image 6



with StentBoost

Dr. Simkus also identifies bifurcations and side branches as situations in which StentBoost is particularly advantageous. "When you are looking at positioning at both side branches, and you can actually see very nicely the deformation of the main stent when you are doing a side branch and opening it up, it is a real eye opener. Because of the magnification and the enhancement of the image, it is really much easier to see. What you see is what you've really got." (see images 5 and 6)

¹ Costa M, et al. *Geographical miss during implantation of sirolimus-eluting stents: Insights on deployment techniques from the S.T.L.L.R trial.* ClinicalTrials.gov, abstract presentation number 1065-24, Monday, Mar 07, 2005.

“We are such a high volume lab we don't have a lot of time to horse around with anything that would slow us down.”

Carol Laberge, Health Services Manager, Royal Columbian Hospital, New Westminster, BC

In evaluating options from various modalities that can provide this critical information on stent deployment and positioning, Dr. Simkus compares StentBoost with intravascular ultrasound (IVUS). “In a lot of ways it's a poor man's IVUS, because it does give you such good visualization of the stent deployment.” In some cases Dr. Simkus uses StentBoost in conjunction with IVUS. “When we are doing left mains, I've tended to involve both IVUS as well as StentBoost, just to make sure the stent is in there perfectly. StentBoost adds about a minute to the procedure, as opposed to pulling out an IVUS which adds about fifteen minutes to roll in the cart, pull out the catheter and have a look, and review it. StentBoost entails about a three-to-four second acquisition, with a few additional seconds processing time. So to take less than one minute to do a StentBoost is certainly a significant advantage.” Using IVUS also involves an added cost of approximately \$800 for each catheter used.

Carol Laberge, Health Services Manager, agrees on the advantage StentBoost offers, particularly in not adding any significant time to the workflow in their busy department. “We are such a high volume lab we don't have a lot of time to horse around with anything that would slow us down. From my perspective, it helps physicians determine that the stent is in the right position, so why wouldn't you use a tool like that to make sure you are where you want to be. It adds to the quality of the work we can do.”

Enhancing clinical confidence

After finishing with another patient, Dr. Simkus is back in his office going through some of his archived cases. Highlighting the value of StentBoost, he points to regular acquisition images, and then calls up the subsequent StentBoost image on a bifurcation stent case using the crush technique. With this technique, it's important to see what happens with the first stent before deploying a second stent. “You can certainly see the stents a whole lot better than you could,

you can see exactly the deformation and definition. (StentBoost allows us to see) that I covered that whole side branch, I've crushed off the struts on this one, and it all looks good and expanded nicely.”

It's clear from a visit to the Cath lab at Royal Columbian Hospital that Dr. Simkus and his staff are experienced and dedicated clinicians, used to handling a steady stream of challenging cases in a bustling environment. When asked whether a busy cardiologist with all his experience really needs a tool like StentBoost, Dr. Simkus is quick to reply, “Well, I've been doing this for twenty-five years and anything that helps you visualize the most difficult cases is a good thing.” Looking ahead, Dr. Simkus is enthusiastic about getting his hands on the new release of StentBoost, which will include a contrast capability and an even faster processing time. Carol LaBerge echoes his sentiments adding, “I have to say, as far as looking at buying a new system, StentBoost would be one of the things I would definitely want on a new machine.”

“In a lot of ways it's a poor man's IVUS, because it does give you such good visualization of the stent deployment.”

Dr. Gerald Simkus, Royal Columbian Hospital



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Philips Healthcare is part of Royal Philips Electronics

www.philips.com/healthcare
healthcare@philips.com
Tel: +1 888 647 4285

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Philips Healthcare
22100 Bothell Everett Highway
Bothell, Washington 98041