

# At the Heart of Cardiac Imaging Solutions in Australia



## QA

### Anytime, Anywhere Cardiology Imaging Systems

Addressing cardiovascular disease requires interoperability and image availability

#### What are some technical challenges you face when caring for patients with cardiovascular disease?

The main challenge is accessing imaging data wherever and whenever you need it. For example, to share data, we sometimes send CDs of patient data back and forth between hospitals using the postal service. It seems archaic, but it remains a standard in many places. It's especially difficult in Australia with many people living outside metropolitan cities. This often leads to duplication, but doing scans twice or more is wasteful and inefficient. Clinicians are frequently on the move, working in many different places, collaborating within and between specialties; the ability to show someone at the point of care the images in their original format is an important one.

#### Would you say that's the first requirement for a contemporary cardiology system—the ability to deliver images anywhere, anytime?

Increasingly, we are also making more collaborative decisions during a case—such as getting a surgical opinion during an angiogram—and having the ability to send the images immediately and then continue with the case is critical. There are other things we need, like the ability for all DICOM systems to have access to advanced measurements that we might do on an echocardiogram of the heart or a CT scan that we might do of the body. Having those advanced measurements available is key. But when we think about just starting, it should be as simple as this: When someone's heart is scanned somewhere, we should be able to view it anywhere.

#### From a clinical standpoint, what are the most important considerations in choosing a new cardiology system?

Today's advanced systems touch many different users. Administrative users want to think about the archive in terms of storage requirements, speed, and impact on the network. A doctor wants to be able to bring up patients quickly on a mobile device or within a laboratory working environment and share those images with colleagues. Others are concerned with reporting and advanced analysis. It's critical to make sure that all users are trained in a way that maximises the capabilities of a system. If they aren't leveraging those new capabilities, a new system may not realise all its potential benefits.

#### Does that imply an increase in complexity?

Not necessarily. If someone is coming to have a heart valve replaced, we might do an X-ray of their chest—there's one image—an ultrasound of their heart—there's another 90 or 100



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images—and then we'll do a CT scan. And that will have almost infinite images with this 3D data set that we'll extract. Now, all that information needs to be compiled and made accessible. And it needs to be formatted in a way that a clinician can look at it, but also so patients can look at it if they'd like.

Automation plays a critical role in creating simple outcomes from complex processes: having the ability to click a button and report, and, when we're finished, the system will take over and send it exactly to the right person as soon as possible. ... That improves patient care because things happen faster. But it also improves our relationships with our referring team because they are getting the information they need as soon as possible.

#### What lessons would you share with colleagues who are looking to deploy a new cardiology system?

There are three key points:

1. Moving to a cloud-based system: The cloud offers flexibility we didn't previously have.
2. Integrating technology: These imaging systems are becoming more and more clever around integrating different technologies. So, for example, combining an ultrasound and a CT or pressure measurements within the heart all together to do something more complicated for the patient.
3. Determining how machine learning and artificial intelligence [AI] can [be applied to] this huge treasure trove of data: Can we leverage novel insights from pre-trained models elsewhere?

The key to success is not whether AI can analyse the image on our server, but how it faces the clinician using that image. Does it provide a report? Does it just highlight dangerous findings? Does it improve our workflow through better triage? Does it involve better compression of the images? Whatever it is that AI does, it's going to be involved with our images. And we need to think about platforms that integrate that in the best way possible.

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