



# Imaging made fun at Women's and Children's Hospital Adelaide

*NEW FACILITY TAKES SOME OF THE INTIMIDATION OUT OF MRI.*

**N**ick Zabanas, Chief Radiographer at Adelaide's Women's and Children's Hospital says that in the years since he joined the staff in 1985, he's "seen and practically done it all" – starting out on a single slice GE 8800 CT in the 1980s and moving on with each technology upgrade. He played an integral part in the introduction of the MRI service at the hospital in 2003 and was the sole operator for a period of time on their Philips Intera 1T. Since 2009 he has been a member of the team that has managed the hospital's ongoing new technology programme.

"We've come along in leaps and bounds in the last three years," he says. "In 2008 we upgraded from a 4 slice to a GE 64 slice HD 750 CT, the first of its type in Australia and in March this year we installing our first GE Discovery 650 DXR system. This filled a need for a low dose system with capacity for paediatric long leg and long spine pre-surgery planning for conditions such as scoliosis."

Wet film processing was finally a thing of the past in April this year and the hospital is in the process of digitising film x-rays onto the archive, a task that Zabanas describes as "demanding and time consuming." He's

looking forward to the not distant future when a state-wide RIS PACS system will be implemented.

"As a tertiary referral paediatric and women's hospital, we perform in the vicinity of about 60,000 examinations on neonatal, paediatric and women patients each year. The Women's and Children's Hospital services all of South Australia, the Northern Territory and part of Victoria, so a central image archive will be a great benefit."

Installation and testing of the hospital's newest technology was completed in 16th August when Philips handed over an

Ingenia 1.5T Digital MRI and an Ambient Experience suite, both the first to be installed in Australia.

Zabanas says the Ingenia “ticked all the boxes and was easily the preferred magnet.

“We were looking for a 1.5 T wide bore machine with the latest coil technology and the flexibility to image both paediatric and adult patients efficiently.”

The Ingenia 1.5T wide bore is the first-ever digital broadband MR. Powered by dStream architecture, this is the first MR system that brings MR signal digitisation – in the RF coil – as close to the patient as possible. dStream delivers a high purity MR signal for increased signal-to-noise ratio (SNR), combined with enhanced workflow and ease of use for greater efficiency in daily operations.

The new dStream architecture is at the heart of the system and comprises DirectDigital RF technology which digitises the MR signal directly in the RF coil; FlexStream workflow which increases system versatility and up to 30% increase in throughput through better coil and patient management; and EasyExpand, which enables plug and play expansion of clinical capabilities without major hardware upgrades.

Zabanas comments: “On the very first test scan, the radiologists’ reaction was ‘Wow!’. The SNR ratio is up to 40% higher than a conventional analog to digital MRI therefore improving image quality.

“An upgradeable path can be quite expensive exercise,” he adds. “The Ingenia provides a innovative solution to an upgrade path, the digital technology will give us the ability to upgrade by just plug in and play, not limit us to the number of channels available to us. This is our insurance that our MRI system will be current for the life span of the magnet.”

Philips Ambient Experience in tandem with Ingenia takes the experience of MRI



*Four-year-old Eleni Zabanas explores the Philips Ambient Experience with Paula Ciccozzi, MRI Specialist*

to a new level. This superb example of creative thinking brings together multimedia technologies and architectural design features to provide a welcoming, patient-friendly environment.

It represents the culmination of research drawing on a range of patient, technologist, nursing, and industry experts. By incorporating anxiety-reducing design features and giving patients an active role





Scott Brown, Acting CT MR Team Leader and Nick Zabanas

in the healthcare environment, Ambient Experience can help patients feel more at ease. And patients who feel comfortable, especially children, require less sedation and few rescans.

The benefits are clinical as well as emotional. Calmer child patients are more cooperative and that results in better images, fewer repeat scans and faster throughput. These patients are also less likely to need sedation, sparing them six to eight hours of recovery time.

Philips quotes the Advocate Lutheran General Hospital in Park Ridge, IL, USA as an example, where the results of a study comparing sedation rates before and after installation of the Ambient Experience suite were dramatic. With Ambient Experience, the hospital reduced sedation rates by 16% for children under 18 years of age and by 28% for children under four.

The Ambient Experience begins in the radiology patient registration area, where the patient is first introduced to Ambient Experience and allowed to choose a theme. The themes include colors, images, animations and sounds that are designed to focus the patient's attention and relieve anxiety. Once the patient enters the MR suite the room immediately transforms as the walls and ceiling take on a color palette matched to the child's animation choice and the themed music begins.

Ambient Experience projects the chosen image theme and animation on the wall and ceiling of the room. Sound effects complete the sensory experience. For example, sounds of ocean waves and seagulls accompany an underwater theme. Going a further step, children can watch their favourite movie



Dr Rebecca Linke, Paediatric Imaging Unit Head

through the MRI DVD goggles during the examination.

At the Women's and Children's, there are two preparation rooms, one for hospital inpatients who require sedation and the other for outpatients. While one patient is being examined, the next is being prepared, making for higher throughput and a welcome shortening of anxiety-inducing waiting time for children and their parents.

The hospital has purchased two tables, which, with their inbuilt coils, have eliminated the need for staff to swap a 20 kg coil between examinations.

Rebecca Linke, Head of Paediatric Imaging says: "We can do a head and spine in one session with the new tables."



Nick Zabanas, Chief Radiographer

The system's image quality enables spectroscopy and neural pathway mapping and cardiac imaging. It has ended the previous practice of sending patients to Melbourne for cardiac angiography.

"We have a strong relationship with the Cardiac Department," Linke says. "We are learning together; we hope that better imaging may mean fewer angiography procedures."

She is hugely enthusiastic about the Ambient Experience. "We are in awe... it actually encourages the children to go into the suite. When the colour is switched on the white machine 'merges' into the scene so it's not a big, threatening thing. The Ingenia is also much quieter than previous generation MR machines.

"I can see research opportunities for psychological studies on the effect of Ambient Experience systems on paediatric and adult patients."

At the end of six months of planning, building works, installation and testing, and staff training, the Women's and Children's now has an MR suite that is the equal of any in the world. And well worth the \$3.5 million budget.

"We went to the Little Heroes Foundation for help with the funding and they just 'fell in love' with the whole concept," Zabanas says. "Without the Foundation's help all this would not be possible."

"It's not easy to describe in words the impact Ambient Experience has on children. They just 'light up' and this gives us a better feeling of job satisfaction as well. It breaks down all of their apprehensions of what a clinical examination might possibly entail, it makes our job so much easier to do when the child is relaxed and cooperative."