

Making CT Child Friendly in London and Stockholm

Great Ormond Street Hospital for Children (GOSH) in London and the Astrid Lindgren Children’s Hospital in Stockholm have developed new strategies for dealing with the most difficult diagnostic challenges – small children, who are scared or anxious and cannot just be told to lie still during a scan.

Text: Linda Brookes and Nils Lindstrand | Photos: Andrea Artz and Lasse Burell



The need for a calm environment

Every year, over 250,000 children from all over the UK and overseas come to GOSH in London for its wide range of pediatric health services and high-quality facilities. In the radiology department, which performs around 57,500 exams per year, the priority is to get the right technology, says Catherine Owens, MD, consultant radiologist at GOSH. But putting patients and their families at ease by creating an age-appropriate, child-friendly environment in the department is not regarded as just “frills”, she stresses.

“By minimizing patient trauma and getting diagnostic images in small children who are often not very cooperative, we are able to maximize

image quality and output,” Owens explains. “By creating a welcoming environment, we have also increased the numbers of patients scanned and the numbers of patients having scans without sedation or anesthesia.” A ‘win-win’ situation is how Owens describes it.

Most of the patients who come to GOSH will return for scans several times over many years, so it is very important to give them a positive experience with their first scan which does not leave them traumatized and refusing to have another exam on their next visit. Owens emphasizes, “It is cumulative exposure to both radiation and to personalities and structures in the department.” She and her colleagues create as positive an experience as possible by preparing patients and their parents for their visit beforehand, by training staff to interact with children,

through special decorations in the exam and waiting rooms, and by use of distraction techniques.

Distraction works

Having staff at GOSH that are used to dealing with children and are able to put them at ease, particularly when using the scanner, is key. Owens says, “There are popular staff members whom the children may only see once a year, but it has a huge impact on them to see friendly faces – it makes them feel happy and relaxed.”

The GOSH radiology department also works with hospital play-specialists, who sit with patients and help them understand the process ahead of time. Children can touch the scanner and the controls, and operate them without exposure.

“This is especially valuable for more nervous children, such as those with learning disabilities, autism, or challenging behaviors,” Owens notes.

Because CT is a very fast examination (only 2–3 seconds), the main part of making the child feel comfortable is getting them into the exam room. For a child having a CT scan at GOSH, the fun starts in the waiting room, where there is an interactive projection on the floor with motion tracking, so that when anyone walks on it, bubbles appear around their feet. “It is incredibly pretty and a very clever way of introducing children to the room,” Owens notes.

The exam room itself is not so large that it is intimidating, nor so tiny that it looks like it is all one big machine, Owens explains. There are a lot of different colored lights around the room,

At Astrid Lindgren Children’s hospital in Stockholm, an audio-visual display helps to make kids feel comfortable before a scan.



Having a welcoming environment in the scanning area created a 'win-win' situation for patients and the medical team at GOSH.

including lights in the ceiling at the periphery that the child can change using an interactive pad. There is wall art, including a projection panel of an underwater scene showing coral and rocks, with fish that move, and a ceiling projection of swimming turtles above the scanner.

To get children to remain completely still in the scanner, several different immobilization and/or sedation techniques are available. Children aged under 2 years are wrapped in a blue padded blanket to make them feel comfortable. There is also a range of large stuffed animal toys that can be placed on the scanner to distract the child during the process.

At GOSH, parents accompanying the children are very important in distracting the child. The hospital staff will conduct discussions with them in advance of the visit about what to expect and what they can do when they arrive. They can bring in an iPad or other tablet or their own DVDs

to play cartoons for the child during the scan ('Peppa Pig' is popular!). The parent can hold the tablet or it can rest in a specially constructed frame that the child can hold.

Many mothers bring cellphones preloaded with music and sing along with their children. Owens notes that GOSH patients come from a wide range of multicultural backgrounds and a number have traveled from overseas. On-site translators are available, but often they are not needed, as many of the children are happy just listening to music or watching cartoons without sound, she says.



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Great Ormond Street Hospital for Children, London

Owens and her colleagues have shared their experience with other hospitals worldwide, including representatives from the Astrid Lindgren Children’s Hospital, which set up its own pediatric CT unit. The new scanning room design worked, and not only for the children.

Projections, cartoons, and scanning

The patients at the scanning center at Astrid Lindgren Children’s Hospital are often very small, some of them just babies. They move, they refuse to lie down on the scanning table, or simply won’t go near the impressive, but somewhat scary, piece of technology.

“When we moved Astrid Lindgren Children’s Hospital to the new hospital complex where we are today, we realized we wanted to do something drastic to convert the scanning room into a friendly environment for children,” says Lena Gordon Murkes, MD. “It was clear that the latest in scanning technology gave us a chance to get good images even with children as patients, but we still needed to get them to cooperate and to be calm for a few minutes”.

Gordon Murkes knew of a company in Sweden that is developing audio-visual technology for commercial and educational use. “I phoned them up, and we started collaborating to create a scanning room that would invite and calm children and parents instead of scaring them,” she explains. Cartoons, light effects, and video films are projected onto walls or complex backgrounds, using very powerful projectors.

By combining a bit of modern magic with committed professionals, the challenge has been turned into a major success. The rest of the room is dark, and the gantry is covered with images of stars, rainforest backgrounds, or simply dream-like flickering lights. For small children, popular cartoons are screened on the ceiling. And it worked – it really worked.

At the Astrid Lindgren Children’s Hospital, Gordon Murkes says, “We had one boy about ten years old who was autistic. He got very anxious when he was about to lie down on the scanning table, and got quite aggressive in his agitated



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Lena Gordon Murkes, MD
Astrid Lindgren Children’s Hospital, Stockholm

state. But when we showed the popular children’s cartoon ‘Babblarna’, originally created for children with reading or communication disabilities, this young man became quite calm, and totally focused on the story played out in the cartoon.”

Gordon Murkes says, smilingly, that the old challenge of getting the children to lie still during the scanning procedure has been replaced by the problem of making them leave. “If we show them one episode of a popular cartoon, they want to watch all the episodes before they have to go home.”

“We also saw the positive effect it had on the parents,” says Lena Gordon Murkes. “They came in, obviously very anxious about what the scan would show, and nervous about the scanning procedure as well. The audio-visual display gives them another focus, and something beside the health issues to talk about. This provided a much more calm, positive situation overall.” ●

Linda Brookes is a freelance medical writer and editor who divides her time between London and New York, working for a variety of clients in the healthcare and pharmaceutical fields.

Nils Lindstrand is an independent business and technology writer based in Stockholm, Sweden.

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