



# Saving lives and saving time in Critical Care

**Philips Sparq** touchscreen mobile ultrasound system offers new clinical capabilities

**The Oxford University Hospitals NHS Trust** is one of the largest acute teaching trusts in the UK. There are 16 adult intensive care beds at The John Radcliffe Hospital for acute medicine, surgery and trauma; and 8 beds at the Churchill Intensive Care Unit, for major surgery, cancer, haematology and transplant. Nursing and medical staff work across the two sites.

#### Challenge

To meet the need for a fast, robust, high-quality multi-functional ultrasound system that can be used for both basic training and specialist visualisation techniques in a high-acuity environment.

#### Solution

Philips Sparq mobile ultrasound system

From the moment the Philips Sparq was delivered to the critical care team at The John Radcliffe Hospital, Oxford, the system made a huge impact on the service clinicians were able to deliver:

Dr. Claire Colebourn, consultant medical intensivist and clinical lead for critical care echo, has been extremely impressed: "Ultrasound is very important on our unit," she explained. "We do 1200 echoes per year - 160 in six weeks at one site, recently - and in intensive care echoes have a direct clinical impact for around 70% of cases. It's all about immediate clinical care. Our previous equipment was just not up to the task and we all love the Sparq."

#### Robust design adds value

As John Radcliffe is a major trauma centre, the Sparq moves between ICU and A&E around ten times a day, travelling swiftly through corridors. Dr. Colebourn claims that the clever design details on the Sparq protect it from the rigours of the task. "In our practice we're so mobile," she said. "I recognised immediately that the Sparq had many features that addressed problems we had had with other machines. We previously used to lose probes because they would get



Dr. Claire Colebourn, consultant medical intensivist

run over because everything dangled down but with the Sparq you have this clever cable-catch bay. Also, going in and out of the lift it gets banged around a lot but the Sparq's screen can fold down completely and the curved handle really protects it."

The system has already become such an integral part of the team, that it has been given a name - 'Sparqy'. "Personalising equipment means that people take better care of it," explained Dr. Colebourn. "And Sparqy lives up to his name - he's fast, robust and very good at his job."

# PHILIPS



Jo Mundy, Philips account manager, with Dr. Toby Thomas, senior echo fellow, and Dr. Claire Colebourn.

**Versatile with excellent image quality**

As founder members of the Critical Care Echocardiography Fellowship, Dr. Colebourn and her critical care echo fellows are all highly-experienced and discerning ultrasound users and have been surprised by the high quality of the images they are achieving with the Sparq. “The image quality is very good,” she said. “I’m able to see things such as the endocardial borders really well. Even many of the more experienced fellows now prefer using the Sparq to our higher-end machine. The system is excellent value for money.”

Dr. Toby Thomas, senior echo fellow, is particularly impressed with the fact that the Sparq is able to move seamlessly between different functions. He said: “It’s great to have a single versatile machine that can be used for three different indications. It’s more usable in intensive care and the Sparq is in constant use. I use it predominantly for cardiac investigations and I can switch easily between putting a line in or doing a chest ultrasound without changing any connectors.”

At 6ft 6inches tall, Dr. Thomas appreciates being able raise the height of the system’s monitor up so that he can see better. He added: “The Sparq is really user-friendly and has lots of good points. It’s very quick to turn on which is important when you need it in a hurry. The images are great and downloading them is very easy. That was one of the things we had a problem with on our other machines.

The database would get overloaded and slow the machine down but with the Sparq, you just plug it in and download it to Xcelera.”

**Putting patient safety first**

Infection control is of the utmost importance in every hospital department but in ICU, patients with potential for multiple organ failure are especially vulnerable so the Sparq’s



Dr. Toby Thomas is impressed with the Philips Sparq ultrasound system.

## “It’s great to have a single versatile machine that can be used for three different indications.”

sealed glass touchscreen control panel is an enormous help. “You have to be really careful in intensive care if a patient is carrying something like C.difficile,” said Dr. Colebourn. “Everything can get covered in spores. The bugs and dust can get trapped in a normal keypad so the wipe-clean touchscreen is brilliant.”

### Increased clinical value

The team at John Radcliffe Hospital are certain that the Sparq has enabled them to make significant medical advances. “The clinical value has been enormous since we started using the Sparq,” claimed Dr. Colebourn. “Direct visualisation for vascular access and chest drain insertion is now a

standard of care. Echocardiography is on the crest of the wave. You can’t get away from technology in ICU, it is integral to what we do here and the Sparq’s capabilities follow a ground swell of what’s going on nationally.”

She added: “Our patients are benefiting directly from the Sparq. Their first two hours are the most critical period and we need to know what’s going on quickly. Immediate access to cardiac information guides drug selection, fluid management and escalation decisions - all of which have an immediate and tangible impact on patient care.”

### A new era in non-invasive technology

Dr. Colebourn described how historically,

ICU has had a tendency to be a, “black box input and output operation” and how the transformation of the speciality, moving away from risky, invasive procedures, can only be achieved by embracing more intelligent technologies.

“The Sparq allows us to be more clinical,” she said. “It enables us to find out what’s going on without invasive procedures. It fits right into modern ICU thinking.” Dr. Colebourn claimed that 99% of the echoes performed in her department are now Transthoracic echocardiograms (TTE). The enhanced imaging capabilities of the Sparq means that there is less necessity to perform Transesophageal echocardiograms (TOE).

## Philips Sparq – the perfect system for new professional qualification



The Oxford critical care echo team (left to right): Dr. Claire Colebourn, Dr. Toby Thomas, Dr. Dave Garry and Dr. Graham Barker.



Dr. Colebourn explained: “Through the efforts of both the BSE and the ICS we now have established examination processes for both basic and advanced critical care echo. It is very likely to become the norm for patients admitted to ICU to have an echo as part of their initial assessment. These new examination processes mean that those echoes can now be standardised.” Dr. Colebourn has contributed to defining echo in ICU – something that has not been done before.

“The Sparq is ideal for the two new accreditations in echo,” she said. “Intensive care echocardiography is a specific skill – it has its own arena. With the support of our cardiology colleagues we are learning to use echo in a very clinical context. There is a clinical thrust to it.”

Dr. Thomas added: “It’s very easy to teach people using the Sparq. The user interface is simple to work out and you can adjust the settings on the system so that new people are not overwhelmed. Within thirty minutes they are up and running.”

**The team has been so dedicated to promoting patient safety and clinical progress through education, that in 2010 the clinicians at John Radcliffe established the Oxford Critical Care Echo Fellowship in collaboration with the cardiology department. Dr. Colebourn is its programme lead.**

The two-year fellowship programme supports the fellow through full accreditation in TTE, through a mentored process and on to develop as a teacher themselves. It is a local realisation of the vision established by a working group composed of members from the Intensive Care Society (ICS) and the British Society of Echocardiography (BSE).

“With TOE there is always the risk of oesophageal rupture which is rare but catastrophic,” she explained. “We should be at the top of our game with TTE so that we don’t need to expose intubated patients to TOE unless it is specifically indicated, and the Sparq will make it much easier for us to do that. ICU patients are traditionally thought to be difficult to echo but we almost never have to resort to TOE here – it’s all down to technology and the enshrinement of purpose – knowing why you are doing something to a patient. That’s why it’s so important to keep our skill levels up.”

### Intuitive features aid training

The John Radcliffe is one of the largest training centres for adult Focused Intensive Care Echo (FICE) in the country. The team currently has ten FICE trainees and the Sparq is enabling Dr. Colebourn and her colleagues to deliver the highest quality training.

She said: “Using the Sparq means that we don’t need different machines for training. It would have cost us double in the past or we would be putting more advanced machines at constant risk from trainees who are not yet sure what they are doing. The Sparq is brilliant because it’s so robust that it allows people to get started in echo without the fear that they going to break something. The Sparq is for the iPhone generation and it fits intuitively with other modern technology. Trainees really love it.”

Dr. Colebourn claimed that before they had the Sparq, she used to have to deal with “weekly, if not daily complaints” about their ultrasound systems not working properly, meaning that people were unable to complete

their training. Now, everything has changed and the large screen and articulating monitor has also improved visibility and engagement for even the most junior people standing at the back.

“The Sparq has definitely boosted staff morale,” she added. “Mobile is the way things are going and the Sparq has come at the right time. It is designed for this job. What it can do is just so powerful – we would feel paralysed without it.”

### Case study - instant results with better outcomes

A patient with weak heart function - restrictive cardiomyopathy – was undergoing a renal transplant, with a kidney donated by her mother. During surgery, the patient became increasingly unstable and looked as though she may also lose the donated organ. “We used the Sparq to perform an intraoperative echo which demonstrated a big increase in right sided pressures,” explained Dr. Colebourn.

“The transplanted kidney had become very swollen due to the elevation in venous pressure. We immediately venesected the patient and stabilised her on ICU while the theatre team preserved the kidney ‘on ice’. The next day the kidney was successfully re-implanted. Echo saved both the patient and the kidney – a really great outcome.”

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