

## Bristol Royal Infirmary

### Quantifying the quality of care

Healthcare costs a lot of money – and critical care is where a significant percentage is spent. That's why healthcare managers are scrutinizing that particular part of the business. As a result, hospital intensive care units are being pressured to provide evidence of the quality of care they provide.



Today's ICUs are under a financial microscope. According to Dr. Tim Gould, a visionary intensivist and critical care consultant at the Bristol Royal Infirmary (BRI) in Bristol, England, "The government is starting to want to see value for money. Also, many intensive care organizations in different countries now have to come up with quality outcome measures that can be used to quantify how good an ICU is in terms of value. One measure is mortality, but the government also wants to see metrics regarding patient safety and quality of care."

Long realizing the value of research, Dr. Gould wanted to be able to look at certain patient groups to see if various steps the ICU was taking – or not taking – had an effect on outcomes. He also realized that it's virtually impossible to do that kind of research on paper.

#### **Moving away from paper**

In 2005, the BRI needed to replace outdated patient monitors in its General ICU. Dr. Gould, who then was Clinical Director of General Intensive Care, wanted to add a clinical information system within that replacement cycle because he was interested in taking the first step in replacing paper-based charting. He also wanted to be able to automatically collect information for research from devices such as patient monitors, ventilators, lab and fluid management systems, as well as manually collected data on medication, intervention and assessments.

The BRI asked Dräger to install Infinity® Omega Plus patient monitoring systems in the 16-bed General ICU. The solution included an electronic charting system, the precursor of the Innovian® clinical information system.

Innovian replaced the ICU's manual charting, which consisted of a big A3 paper chart at the foot of every bed – one per day, per patient. So if a patient had a four-week stay, for example, the records were spread across 28 individual charts. Using that data for research was virtually impossible.

Now, Innovian automatically gathers data from bedside devices, including patient monitors and ventilators. "We're documenting more data than ever before and we don't have to worry about capturing that data," says Dr. Gould. "In addition, the system automatically calculates patient scores to evaluate the severity of illnesses." Manual patient scoring is typically time consuming and very often is not done in clinical routine because it requires so much time.

#### **Comprehensive data capture**

In 2008, Dr. Gould transitioned out of his position as Clinical Director of General Intensive Care to devote more of his time to research. He set up a critical care research group and is supported by three dedicated research nurses.



“If you use a clinical information system such as Innovian to its full potential, it can allow you to improve the quality of care that you deliver to your patients.”

– Dr. Tim Gould, Intensivist and Consultant  
Bristol Royal Infirmary

The mission of Dr. Gould's group is to prove that the BRI ICU complies with certain factors that have been set up as benchmarks of quality – such as care bundles for pneumonia patients based on evidence that certain treatments benefit patients.

“Although we do these things in our everyday practice, we need to be able to prove that we do it,” says Dr. Gould. “Innovian’s data capture is incredibly comprehensive and efficient. The database capability makes it very easy to generate reports describing our compliance with a particular treatment strategy. You can look at various groups of patients and see how well you do against national averages. It’s a good way of confirming that our strategies, treatments and processes deliver good quality results.”

The BRI participates in all of the UK's audit activities for intensive care – which measure quality, outcomes and cost effectiveness. Based on data over the last 16 years, the BRI consistently ranks in the top echelon of hospitals.



“Since data capture happens automatically, the nurses are free to spend more time caring for patients. Innovian has allowed us to shift our focus and be more patient-centric.”

– Zoë Evans, RN, Clinical Information Systems Manager  
Bristol Royal Infirmary

### **Configurability is key**

The BRI was able to use a patient data management system as a springboard for research because the platform can be configured. “The configurability of Innovian has allowed us to adapt the system to the specific needs of the unit – which is in essence why we went with the Dräger product over any else’s,” states Zoë Evans, RN, Clinical Information Systems Manager at the BRI, who was instrumental in configuring Innovian for the ICU.

Mrs. Evans was also responsible for transitioning the staff from a manual to an electronic workflow. “A lot of nurses had never used a computer at all, so that was the big challenge. Nurses want the traditional way of caring for patients at the bedside, but their role is becoming more and more technical. So we had to ensure we provided them with the right tools to facilitate that kind of change.”

Now, nurses are learning that they actually have more time to care for their patients. “Since data capture happens automatically, the nurses are free to spend more time caring for patients,” says Mrs. Evans “Innovian has allowed us to shift our focus and be more patient-centric.”

Mrs. Evans also configured Innovian to combine documentation for admission and discharge, so for the first time in the hospital's history, doctors and nurses are documenting on the same screen. "There was a lot of duplication between what the doctors and nurses were writing. Now that duplication is eliminated," she said.

Two years after going electronic, clinicians look at the system as a computer and not a paper chart. "Now that our clinicians are using Innovian, I don't think they would ever go back to paper," says Mrs. Evans.

#### **Electronic prescribing helps increase patient safety**

Dr. Gould and his team have configured Innovian to include parameters of the drugs typically prescribed for ICU patients. While Innovian was not designed to check drug interactions, Dr. Gould states, "The fact that Innovian lists the drugs in a pull-down menu format where they are written correctly with the appropriate dosage has improved the quality of our prescribing – compared with it being my handwriting on a paper form."

#### **Web-based means access anywhere**

Innovian is Web-based, so the staff can access the system from anywhere in the hospital – and even beyond. "If you're on call from home in the middle of the night and need to look at something that's not quite right with a patient, you can have all the relevant information on hand to help with decision making," says Dr. Gould.

Innovian also makes archived data easily accessible to physicians. "In a morning ward round, I can look at an event that happened overnight," says Dr. Gould. "Or if a patient has outstanding problems, I can review the archives to see their medical history. Very comprehensive data is available to describe those kinds of episodes, so I can get a clear picture of what went on long after the event."

Another advantage this Web-based solution provides is that very detailed information can go back to the pharmacy regarding the way the ICU is using drugs and the amount of drugs it is using, so reordering and stocking of

#### **Infinity Omega Plus: Infinity Omega + Innovian**

The dual-screen Infinity Omega solution combines an Infinity Delta vital signs monitor with a medical-grade workstation that brings networked information – such as clinical applications, lab values and DICOM images – to the point of care.

Innovian is a Web-based clinical information system that can gather data from bedside devices in critical care and perioperative care environments and documents care-related activities. This allows the ICU to compare patient status by analyzing vital signs and lab values together with patient care activities that physicians and nurses provide.

#### **THE CHALLENGE:**

Hospitals today are under increasing pressure to quantify the care they deliver.

#### **THE SOLUTION:**

Implement the Innovian clinical information system in conjunction with Infinity Omega patient monitoring solution; configure IT solution as a springboard to create research that helps the ICU address quality, safety and costs.

#### **THE RESULTS:**

- Generates the research data necessary to satisfy governmental requirements for quantifying the quality of care
- Saves time spent on documentation, enabling clinicians to spend more time with their patients
- Provides quick and easy access to current and archived patient data, even remotely

### Bristol Royal Infirmary

With roots tracing back to 1735, the Bristol Royal Infirmary is a teaching hospital with close links to Bristol University. It is part of the University Hospitals Bristol NHS Foundation Trust, a dynamic and thriving group of hospitals in the heart of Bristol, England that also includes the Bristol Heart Institute (BHI). University Hospitals Bristol is a leading international centre for healthcare research and education and has a strong reputation for innovative research and development.

The BRI provides acute medicine and surgery, critical care, trauma, orthopedic, and accident and emergency services to the population of the southern part of Bristol (approximately 2.3 million). It also provides the centre for cardio-thoracic services (open heart surgery).

activity in your unit using the database is very powerful because you have a very good description of what you're doing day to day, week to week, month to month with patients and their outcomes. You can target specific disease groups and look at those in more detail."

Essentially, what Dr. Gould is trying to achieve is more standardized care for every patient. "By ensuring that you have standardized, best-practice care for every patient, you will improve the overall quality of outcomes for patients. If you use a clinical information system such as Innovian to its full potential, it can allow you to improve the quality of care that you deliver to your patients."

drugs from day to day can be optimized. Because of this database capacity, the ICU can generate very detailed information about what it actually costs to treat a patient.

### Learning from history

Dr. Gould believes that anyone who is running an intensive care unit has a responsibility to run as safe and as good a unit as possible. "Being able to look back at the

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