



## Case Study

# Tracking mobile medical devices

Keeping track of a large inventory of mobile medical devices in a busy hospital environment can be demanding and time-consuming. NHS Forth Valley uses an RFID Discovery Asset Tracking system from Harland Simon to automatically track 2,500 devices around their main hospital site, including infusion pumps, syringe drivers, monitors and scanners. This helps minimise time spent looking for equipment, improves utilisation levels and reduces the requirement to purchase new devices.

## About NHS Forth Valley

NHS Forth Valley is responsible for providing health services and improving the health for the population of Forth Valley. With its 860 beds, 25 wards and 16 operating theatres, their main hospital, Forth Valley Royal Hospital is one of the most modern and well equipped in Europe and has been purpose-built to provide the very highest standard of accommodation and facilities for patients, visitors and staff.

*“The system has been a great time saver. We used to spend as much time looking for equipment as we did servicing it.”* Bryan Hynd, Head of Medical Physics

## Objectives

The main drivers for introducing radio frequency identification (RFID) Asset Tracking for mobile medical devices at NHS Forth Valley were

- ▶ Problems keeping track of a large number of movable medical devices
- ▶ A lot of nursing and technician time was wasted trying to locate equipment
- ▶ Poor equipment utilisation meant that more devices than necessary were in circulation
- ▶ Budget constraints meant purchasing additional equipment was not an option
- ▶ Staff were often keeping supplies of equipment locally which exacerbated some of the other issues

## Key Benefits

- ▶ Accurate record of where medical assets are
- ▶ Saves time looking for equipment
- ▶ Better asset utilisation means less new equipment is needed
- ▶ Improved efficiency for maintenance and auditing
- ▶ Safer patient environment

## Solution

In June 2014 Bryan Hynd, Head of Medical Physics at NHS Forth Valley chose RFID Discovery to track the location of mobile medical devices in Forth Valley Royal Hospital. With his team of 14 staff Bryan is responsible for managing all 14,000 mobile medical devices which includes purchasing new equipment, carrying out planned preventative maintenance and repairing faulty devices.

Initially 1000 medical devices were fitted with active RFID tags and 5 fixed readers were installed in key areas of the hospital. In addition, 8 hand-held mobile readers are used by the medical physics team when auditing wards.

Bryan comments: "It's always a challenge to get funding for new projects. The fact that RFID Discovery is easily scalable enabled us to start off with a smaller system restricted to specific areas of the hospital. The benefits we are experiencing made it simple for me to justify further investment and the system is now expanding very rapidly."

Once it had become evident that the system delivered the expected benefits, funds were provided to extend the

system so it now tracks a total of 2,500 high-value medical devices throughout the hospital. A total of 30 fixed readers have been fitted in the main wards to accurately track the location of assets within a ward with a further 70 readers awaiting installation in the remaining wards.

## How does it work?

The Asset Tracking system uses RFID technology. Each tag on a device transmits a unique ID at pre-set intervals and signals are picked up by fixed readers. In addition, the Medical Physics team uses mobile hand-held readers to perform local equipment searches in the different wards. Location information is sent back to a central database which is fully integrated with Forth Valley's e-quip asset management database supplied by Integra. This means the Medical Physics team, who use e-quip, can see at a glance where equipment was last detected enabling them to locate equipment quickly for patient care or servicing.

Bryan comments: "I love the fact that I can walk into a ward with a handheld RFID reader and see at a glance which equipment is due for a service. It's my favourite feature and a great risk management tool." says Bryan.



## Benefits

Improving equipment utilisation with RFID Discovery has considerably reduced capital expenditure at NHS Forth Valley. Bryan gives an example: "When we had to replace our bladder scanners, the initial proposal was to purchase 12 monitors at £10,000 each plus £500 annual servicing per unit. Data from RFID Discovery proved that 6 scanners would be sufficient, resulting in a total life time saving of around £90,000."

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Being able to locate assets quickly with RFID Discovery has minimised the time technicians spend looking for equipment so more time is being spent carrying out vital tasks. Bryan quantifies: "It used to take us 8 to 9 weeks to service our fleet of 200 blood pressure monitors and even then some of the monitors could not be found. With RFID Discovery in place we have been able to cut this down to 5 weeks."

An RFID read range of up to 20 meters means that devices can even be detected through barriers like walls or curtains. Bryan explains: "We used to have problems with barrier nursing rooms which you could only enter when you were fully gowned up, which takes time. Now you can simply stand outside the room and audit what's inside. It's been a huge time saving."

The Outpatient Department with its many individual treatment and consultation rooms was another problem area for auditing. Bryan comments: "Most of the time all doors are closed, so we used to have to pay staff overtime to audit the area over the weekend. Now we can carry out inventory checks from the corridor in normal hours."



As there is no central storage for medical devices at Forth Valley Royal Hospital, Bryan uses a virtual library. Some wards used to hoard equipment because clinical staff thought it may be needed. Bryan gives details: "It was not unusual for us to find a dozen infusion devices hidden in a cupboard, not charged and not particularly well stored and sometimes even with expired maintenance. With the Asset Tracking system we now have full visibility of where items are kept and have been able to put a stop to items being gathered and kept in individual wards and departments."

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Another advantage has been able to identify where surplus equipment is in circulation. "With improved utilisation levels through RFID Discovery we have been able to remove around 35 to 40 syringe drivers without anyone noticing. They have been serviced and removed from circulation temporarily until more are required. This means for a while we will not have to purchase new equipment and our on-going servicing costs are reduced." says Bryan.

## What's next?

Having proven how effective RFID Discovery can be for tracking high value mobile medical assets, NHS Forth Valley is already looking at further applications of the system for other areas.

## Tracking Beds

Additional funding is now being provided at NHS Forth Valley to expand the RFID Discovery system to track beds throughout the hospital. This will be achieved by installing additional readers in all areas where a bed can be found as well as fitting tags to each bed over the next few months.

Like many other hospitals Forth Valley Royal Hospital use a managed bed service so the majority of beds are rented. Often additional beds are hired in simply because an appropriate bed cannot be found. It's also not uncommon to find that a specialist bed is used instead of a standard bed, for example a bariatric bed being used for a normal sized patient, which increases hire costs unnecessarily.

“Tracking beds with RFID will allow us to considerably cut hire costs by reducing the overall number of additional rental beds required and also by ensuring beds are used for their appropriate purpose.” explains Bryan.

## Passive RFID

But NHS Forth Valley is not only expanding the use of RFID to include beds. Bryan is also planning to fit the remaining 11,500 mobile medical devices with passive RFID tags to improve inventory management for his lower value medical equipment. One of the drivers for this is new government regulations which require hospitals to carry out a full audit of all their medical devices every 12 months.

Bryan explains: “Last time it took us a total of 3 months to complete the inventory. With all of our 14,000 devices tagged with either active or passive RFID tags we will be able to cut this down to a few days which will mean huge time saving every year.”

Passive tags are a more cost effective choice for tracking of lower value medical devices. They can be read with fixed or handheld ultra-high frequency (UHF) readers. Bryan is planning to use the new RFID Discovery trolley, which offers a higher read range. Fitted with 3 passive RFID readers, it can record tagged assets and inventory as it is pushed around the hospital site.

## Access to location information for clinical staff

NHS Forth Valley will be rolling out a new internal webpage with a simple search function to allow clinical staff to access the RFID Discovery database for location information of medical devices. This easy-to-use graphical user interface, including images of the devices, will be accessible from local computers via the hospital network and enables nursing staff to quickly locate equipment without prior training or a log-in, eliminating the need to contact the Medical Physics team when equipment cannot be found.

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## Future

With plans for a new building on the grounds of Stirling Community Hospital currently at financial approval stage, strategies are already in place include RFID tracking technology at this new site from construction level. Bryan explains why: “This is an exciting opportunity for us, as we will be able to specify ideal locations for readers throughout the new hospital to ensure appropriate data and power points are available.”

