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Increasing Patient Safety Through IT

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Nigel Humble, Haematology Manager, and Lisa Jones, Manager of the Anticoagulant Dosing & Advisory Service (ADAS), took first prize in the section for innovative use of IT at the 2006 UK Awards Allied Health Professionals and Health Scientists for their anti-coagulant dosing service, used by 4,500 patients in Fylde, which helps to monitor effectiveness of the drug Warfarin through computer-accessible records. Thanks to their service, patients on Warfarin controlled by Blackpool Victoria Hospital are now more stable and make fewer and shorter visits to clinics.

Technology

The international normalized ratio (INR) – the unit that is used worldwide to indicate the intensity of OAT (oral anticoagulants) – is derived from a prothrombin time determination. The standard practice in the UK for someone needing to monitor his or her INR is to go to a hospital or outpatient facility, and have 4.5 ml of blood drawn from a vein and placed in a tube containing 0.5 ml sodium citrate anticoagulant. An INR is then determined using a calibrated laboratory device with appropriate controls.

Point-of-care (POC) devices for monitoring long-term OAT were introduced in the 1990s. The technology allows for greater convenience for patients, because the devices are portable and only require a drop of blood from a fingertip. Clinical studies on these devices are widespread. In some countries, such as Germany, self-testing and self-management with POC devices are established therapeutic methods.

Blackpool Victoria Hospital introduced point-of-care community testing some years ago. It is indicated for use by health professionals or for self-testing by patients. New technology makes it possible for patients on long-term OAT to be monitored with portable devices in the community, rather than having to go to a hospital or laboratory to provide blood by venepuncture. POC devices provide the same type of test result as the traditional laboratory test, the INR, but may provide it in a more convenient setting and in a less invasive way. Patients or healthcare professionals take a drop of blood from the finger after a lancet puncture. They then use the POC device to measure the blood's clotting tendency. Results are obtained in about one minute.

New Procedures

In the clinic, the biomedical scientist who sees patients will have access to their full clinical history, downloaded onto a laptop from the main ADAS system. The patient's INR (International Normalised Ratio), a measure of the time taken for blood to clot and used to calculate the dosage of anti-coagulants such as Warfarin, is measured using a painless, finger-tip, blood test; the result is entered onto the laptop; the patient's dosage and review period are calculated automatically, taking account of any clinical or medication changes; any change in dosage is explained, and the next appointment confirmed.

The whole process takes less than five minutes. If the results need to be referred, this can be done on return to the hospital and the ADAS manager phones the patient later that day.

Although patients rarely need to see the consultant now, this is still very much a consultant-led service. The effectiveness of the decision-making process is dependent on settings built into the dosing software. An analysis of benchmarking information provided by the software supplier, showed that too many patients were spending too much time outside acceptable INR ranges, mostly as a result of under-dosing. Settings have been refined by the team to reflect those used by the best sites. The change was dramatic! Despite initial fears that the changes would lead to patients becoming overdosed, patients are now not only more likely to be in the therapeutic range but staff need to perform fewer INRs than two years ago, despite rising numbers of patients registered with the clinic. The service is designed to ensure patients get appropriate treatment at the right time in the right setting; testing is carried out in the community and at the point of care, and results are collected directly into the

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patient's electronic record.

Asked about her vision for the service, Lisa Jones said that she wished their budget would stretch to the next version of the software which is web-browser based: "This would enable us to share patient information with others treating the patient, especially in A&E and the cardiac clinic, and with GPs.

"We could also update the patient record directly from the clinics instead of worrying about getting the laptop back intact. This would provide a truly integrated system as recommended by Lord Carter."

Impact on Patients

Patients in Blackpool can choose to attend one of twelve community ADAS clinics close to home, instead of having to make the journey to the main hospital. With some patients needing to be reviewed weekly, they save a lot of time, and transport costs.

Nigel Humble, Haematology Manger at Blackpool Victoria explained: "The patients benefit from a computer-assisted, decision-making process for dose and time of next visit, which is proven to be more effective than traditional manual methods.

"Any remedial action can be taken immediately. This highly responsive service means that patients' INRs are better controlled, leading to fewer visits and better quality of life."

It is clear that patients agree. Susan McGinn said that this was the speediest and most efficient clinic she had ever attended. "I used to attend clinics in London where you could wait all morning, first for the test and then to see the consultant. Now I hardly ever wait more than ten or fifteen minutes.". This doesn't stop some patients treating it as a social occasion and coming early to meet their friends and discuss their treatment!

Staff also like the service. Biomedical Scientist Tim Wells said: "Coming out into the community provides a change of scene, more independence and a chance to get to know your patients better."

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