

Early warning signs

June 1 2011

A unique monitoring system offering healthcare providers an early warning system to accurately predict and aid management of one of the most common and painful infections has been developed by University scientists.

Thousands of patients every day in the UK, many of them old, frail and vulnerable need to have a urinary [catheter](#) fitted due to incontinence or [immobility](#).

[Catheters](#) in over half of those patients who are long term catheterised become blocked which can lead to [extreme pain](#) and other serious complications including [kidney](#) and [blood infections](#).

Cardiff scientists have developed a sensor that fits to a catheter that changes from yellow to blue/black before the catheter becomes blocked – allowing doctors to take action and treat infection before complications arise.

Dr. David Williams, School of Dentistry, who led the development said: "The implication to a patient's health if the catheter gets blocked is serious. Not only does it lead to extreme discomfort, but can potentiate other clinical problems which may prove fatal.

"There is currently no effective method to manage this problem. Catheter blockages remain uncontrollable, unpredictable and dealt with – more often than not - when it's too late. This is extremely painful for the patient, frustrating for the doctors and a massive drain on finances.

"By developing the first [early warning system](#) for urinary catheter blockage we hope we can offer doctors and nursing staff an accurate way of predicating and preventing encrustation before it is too late."

The new sensor comes as a result of a major collaboration between Cardiff and Bristol Universities. The Severnside Alliance for Translational Research (SARTRE) was established in 2009 to combine and accelerate translational research.

Supported by the Welsh Office of Research and Development and by the Medical Research Council (MRC) to create a leading medical translational research hub in the Southwest and South Wales.

As part of the 2010 MRC Developmental Pathway Funding Scheme Devolved Portfolio (DPFS) researchers from Cardiff University have developed advanced features of the new sensor technology which is now ready to be trialled by patients.

The sensor technology was initially developed by Dr. David Stickler and Professor Mark Waters from the School of Dentistry.

Dr. David Williams and Dr. Sladjana Malic have since continued the development through the Medical Research Council's DPFS project, both enhancing the [sensor technology](#) and validating the ability and consistency of the device in early detection of catheter blockage.

The collaboration also involved the medical polymer laboratory in the School of Engineering, developed in collaboration with Principality Medical which provides a unique facility for manufacturing prototype sensors for clinical trials.

MBI Wales Limited, who have considerable experience in manufacturing novel, application based materials for the medical

industry, have supported the project throughout and have an option to the license for the manufacture and distribution of the sensor.

The collaboration with Bristol is continuing and Bristol Urological Institute will be running the first clinical trials in Spring 2011 under the direction of Adele Long at Southmead Hospital.

Dr. Williams added: "As we enter the next important part of clinical trials – we get ever closer to making this project a reality for patients. The sensor provides a simple and useful solution that is cost effective and can be attached to any line, making it for the first time a real opportunity to crack this longstanding problem for patients."

Provided by Cardiff University

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