



A*Star researchers' prototype toilet seat diagnosis system measures patients' urine for levels of proteins called albumin and creatinine, which are present in the urine of kidney patients. ST PHOTO: JOYCE FANG

Use toilet seat to check for diabetes

SOME day soon, your toilet seat may be able to alert you and your doctor to signs of diabetes or kidney disease.

Scientists at the Agency for Science, Technology and Research (A*Star) are working on a toilet seat system for at-home diagnosis and monitoring of these diseases.

Their system measures patients' urine for levels of proteins called albumin and creatinine, which are present in the urine of kidney patients but not in healthy people. Within two minutes, it can measure protein levels and send them wirelessly to doctors via a handheld remote control device.

The remote control device is able to store weeks' or months' worth of data for up to eight people.

While a Japanese patent exists for a similar device, no such devices are currently on the market, said project leader Zhou Xiaoqun of the Institute for Infocomm Research, an A*Star institute.

Why a toilet seat?

"After you use the toilet, everything is already there, so you don't have to collect urine samples," she explained.

The at-home system would do away with the need for patients to visit clinics frequently for regular urine tests. And it could be used by those who have a genetic risk of kidney disease, as a first screening measure.

Singapore has the fifth-highest number of kidney failure cases in the world, and 750 people are diagnosed with it here each year.

Dr Zhou's team was awarded a first grant two years ago as part of an A*Star scheme to develop home-based technology.

The team has filed for a patent for the device and is also developing a smaller, desktop version for urine analysis, much like a blood glucose monitor.

So far, the project has attracted the interest of Osim and other medical technology firms, said Dr Zhou.

While the prototype toilet seat device costs about \$1,000, a mass market version would likely be cheaper thanks to savings from mass production, she added.

The toilet seat system could be adapted to screen for other illnesses such as prostate cancer, she said.

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