Sensors help keep seniors safe at home

At first glance, Mr Foong Keng Soon's spartan two-room flat looks just like any other.

But peer closely and you'll see one big difference. Palm-sized sensors dot the whitewashed walls, in the bathroom, above the stove, below the mattress. There is even a tiny one in his pillbox.

They are designed to collect data, track motion and ambient air quality, and check whether he takes his pills daily.

The 77-year-old retired accounts clerk is divorced, and his only child – a daughter – lives in Hong Kong. Having lived there himself for most of his working life, he has few friends or family here.

He cannot walk very well because of an old leg injury and uses a motorised wheelchair to get around.

Last year, he slipped and fell in the dark. With no one to help him, he had to pull himself up and get into bed himself. "It was painful, but I had no choice," he told The Sunday Times. It was a key reason he signed up to get his home wired.

Some other sensors being used in flats here detect mainly inactivity, but these Singapore-made devices can also sense falls and send alerts to caregivers' phones. They can even alert caregivers if a senior forgets to take his medicine.

Mr Foong knows the system is entirely voluntary but, given his history of falling, he signed up readily. He has a panic button, which he can wear and activate if he falls again. "It gives me peace of mind."

About 100 Housing Board flats in Marine Parade are being hooked up with sensors as part of a pilot project initiated by Singapore Management University (SMU).

When fully operational, they will be able to check ambient air quality as well, and trigger an alert if, say, a person has left the gas on for too long, said research programme manager Elina Yu from SMU's School of Information Systems, which is helping to devise the technology for the project.

The project is unique and not just because of the technology. Its promise lies in its ambitious attempt to marry technology with care services for frail or elderly poor people who have no caregivers.

While other sensor and emergency alarm projects enable older folk to connect to a family member or call centres they pay a monthly subscription fee for, this project connects those who have little or no family support to volunteer caregivers in the area, who can check on them if something goes wrong.

"We are trying to create a community where neighbours and volunteers can stand in as caregivers for those who have no one to look out for them," said Goodlife director Desmurn Lim. The centre for seniors is run by non-profit group Montfort Care.

Mr Lim's staff are responsible for following up on emergency calls during office hours. But early in the morning, late at night or during holidays, volunteers step in. There are nearly 25 currently, including 15 who opted to have their homes wired. "They are eager to help out too and give back," said Mr Lim.

The system has been activated a couple of times since being installed in October last year.

Once, an elderly man living alone pressed the emergency button on a weekday evening. "He was dizzy and breathless, but after my staff spoke to him and calmed him down, he said he did not need to go to the hospital," said Mr Lim. "Sometimes, it's just fear, and they need someone to talk to."

SMU is not the only university researching how sensor-enabled smart homes can be used to help older folk who live alone.

Similar projects are under way at Nanyang Technological University (NTU). The Research Centre of Excellence in Active Living for the Elderly (Lily) – a partnership with the University of British Columbia in Canada – was set up in 2012 to enable researchers to develop technology solutions for the elderly, including ones that enable them to age at home. Researchers have already developed software games that can help predict a person's risk for illnesses such as Parkinson's.

Some of the prototypes are also based on unobtrusive sensor technologies. Sensors are designed to maximise the privacy of seniors, said Lily centre director Miao Chunyan, who is from NTU's school of computer engineering.

"The sensor-enabled service preserves both the dignity and independence of the elderly," she said.

Among the prototypes being developed is the eHealth portal, a software-based social support hub meant to provide information and alerts for older folk living alone.

Taking cues from data gathered by the sensors, an "e-nurse" can remind a senior to take his medicine, turn off the gas and even suggest social or educational activities advertised online that he might enjoy, said researcher Wang Di, who is working on the project.

"Eighty-three per cent of seniors here already own smartphones, so future cohorts are likely to be far more tech-savvy than before," said Dr Wang. "That's an opportunity we want to tap."

Radha Basu

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