

An ageing population needs more than a homogeneous system

# Innovate and integrate elderly healthcare

**GIRISH RAMACHANDRAN,**  
THE BUSINESS TIMES

The world is growing old. More people are ageing, ageing lonely, and ageing with declining mental and physical abilities.

Longevity has become a slow-burning fuse for governments, with the potential to blow up budgets, pressurise healthcare systems and tear apart families.

Society appears unprepared to deal with this. Yet, combined with declining birth rates, the dynamic will only accelerate in the years to come.

One quarter of Japan's population is over 65. In Australia, the people older than 65 will outnumber those younger than 14 by 2030.

Singapore shares these problems. Life expectancy at birth here reached 82.6 years in 2014 – a 7.3-year increase from 1990.

By 2030, the citizens older than 65 will have more than doubled from the current level to 960,000 and 92,000 of them will live alone.

This drives the urgent need to innovate how we deliver healthcare services to the elderly.

The traditional, altruistic model of care in nursing homes and pension-funded assisted-living facilities is unsustainable given this demographic divide.

It is financially erosive, and has undesirable psychological consequences for the elderly. When every person over the age of 65 is lumped into one homogeneous category, they are stripped of their individualities, dignities, privacies and independence.

Enter a new paradigm of ageing active, ageing-in-place and

ageing-with-grace. This new model not only provides cheaper, faster and more reliable care – it can tailor solutions for individuals and deliver them to their doorsteps through digital technology.

## POSSIBILITIES OF TECHNOLOGY

Today's technology has the tools to provide in-home and community monitoring and response systems to deliver both pre-emptive and responsive healthcare intervention.

For example, multimodal sensors and devices can track the whereabouts of elderly citizens, creating alerts to trigger medical response when needed.

Wearable technology such as RFID-tagged slippers can prevent falls or avert dementia patients from getting lost. Gloves fitted with a gyroscope and sensors can even combat hand tremor in those with conditions such as Parkinson's disease.

This is only the beginning. Robotics and sensing technology are also going further to create intelligent robots that can tell apart feelings such as joy, sadness and anger. They can be used to conduct exercises, enable basic cognitive tasks, and as a form of therapy for depressed elderly. The possibilities, then, are endless.

## HARNESSING THE POTENTIAL

Technology, however, comes with challenges.

What if the elderly are resistant towards smart technology? What if the disruptive technologies are incompatible with existing healthcare investments?

Many digital initiatives in

elderly care have previously failed. Most were traditionally designed and implemented by technologists with little input from other stakeholders, making them unsustainable in the long run.

This has been compounded by the lack of ownership and supporting infrastructure; flawed funding models; and difficulty of integration into broader healthcare systems.

While commitment to the elderly and their caregivers is vital, there is also a growing realisation that a successful aged-care model needs continuous involvement from the whole chain – from grassroots workers, voluntary welfare organisations, families, healthcare providers to government agencies.

## IMPLEMENTING TECH-DRIVEN MODEL

In order to be successful, a tech-driven care solution should be unobtrusive, scalable, reliable (particularly if caregivers are to put their trust in digital alerts), flexible enough to incorporate new technologies as they emerge, and committed to real-time data collection and processing so that reactive care and intervention can take place with urgency.

Building on these key attributes, a comprehensive technology solution must be designed to link the various stakeholders in the elderly-care industry on a single, cost-effective, integrated and personalised-technology platform.

The starting point of this platform would be the instrumentation of homes and local communities with some of to-

day's fastest-growing technological advancements – that is, enabling hardware such as cheap and ambient sensors, consumer wearables, intelligent robots and more.

Advanced anomaly detection algorithms, predictive health-analytics technologies and deep diagnostics for daily activities of the elderly can then be employed to create a care platform for pre-emptive and responsive intervention.

The next step would be to link technology with the human element and to generate the processes, escalation protocols, and procedures to establish workflow and responsibility for caregivers.

Finally, user interfaces could help disseminate information so that various stakeholders, including financiers, are able to take ownership, track outcomes and incorporate improvements.

The beauty of this integrated-care platform is that it creates a holistic model of delivery that is technology-driven, but interacts actively with stakeholders to deliver personalised care according to the unique profiles of individuals.

This is the human-centric approach to elderly caregiving.

The model is not reliant on any one technology or vendor, making it resilient and adaptable. Different vendors can be engaged to supply home-care technologies while caregivers use a single platform to provide services.

It is also versatile in being neutral to the entity of the caregiver, who could come from family, institutionalised care or a volunteer organisation.

## DELIVERY IN ACTION

A test run of the model under the SHINESeniors project, a research initiative from the SMUTCS iCity Lab (a joint venture between Singapore Management University and Tata Consultancy Services) has offered encouraging results.

The three-year trial equipped 50 homes with activity-monitoring sensors and devices, with participation from a local voluntary organisation to create a friendly and comfortable ecosystem. While more trials will follow, we found that flexibility is the key.

This is what makes the model future-ready. It is interoperable with other IoT (Internet of Things) cloud platforms and major healthcare initiatives such as Google Fit, Microsoft Health and Smart Things, and can be integrated with social media.

It is also potentially extendable to elder concierge services, elderly-volunteer matching, elder help or befriending services, and home or community-based rehabilitation.

By linking with other data sources, including medical, financial and also unstructured data obtained by caregivers through surveys, conversations and observations, the platform can even support personalised financial planning and insurance solutions.

Clearly, as far as holistic and personalised elderly care is concerned, the future is now.

The writer is president, Asia-Pacific, of Tata Consultancy Services. This article appeared in *The Business Times* yesterday.