

Appropriate Housing and Smart Technologies for Ageing-in-Place

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Demographic Change in Australia

- Population growing by natural increase and migration-but will also grow older!
- Population is predicted to be about 31 million by 2030 but number of over 65 will increase from 3 mill in 2011 to about 6 mill in 2030
- Significant change in proportion of over 65 from 14% to 19% of population and also in characteristics-economic, social and health
- Causes of death are chronic diseases not infections

Challenges of an Ageing Population

- More than 90 % of aged people wish to live independently-need suitable housing and support systems
- Increased disabilities with older cohort- musculoskeletal, nervous system, circulatory and respiratory conditions, strokes, dementia, vision
- Shortage of carers-formal and informal
- Improved care needed for rural areas
- Spending on health care on people over 65 estimated to increase dramatically

The Future of Aged Care

- Current aged care is unsustainable-only caters for 7% of population-change from discrete facilities to integration within neighbourhoods
- Reasons-more positive perception of ageing; third age is getting longer; current funding models are restrictive for consumers and expensive for government; ageing-in-place is a win-win situation for both; smart technologies are changing scene.

Smart Technologies and Ageing in Place

- Liveability at home can be extended by use of assistive technologies & personalised medicine.
- Simple technologies can improve quality of life and reduce hospital admissions due to falls and domestic accidents
- Connected technologies can improve social interaction, reduce mortality and allow patients to control treatment for chronic diseases

Opportunity Areas for Improving Quality of Life for Aged Population

- Security and Safety
- Diagnosis and Treatment
- Mobility
- Underlying all of these is the need for communication and social interaction
- Nanotechnology ,biotechnology, ICT and cognitive science in combination offer wide range of possibilities These areas are being actively researched in many countries and many actual and potential products are forthcoming.

Security and Safety

- ❑ Elderly-friendly homes-appropriate housing is central component of ageing-in-place; systems for movement control, simple communication devices, medication monitoring-can retrofit or build into new houses
- ❑ Falls prevention-major cause of accidental injury and hospitalisation; systems for monitoring gait and exercising, better environmental design
- ❑ Communication and social interaction-essential to maintain quality of life of housebound people; mobile phones, video linkages, Internet, companion robots , virtual reality

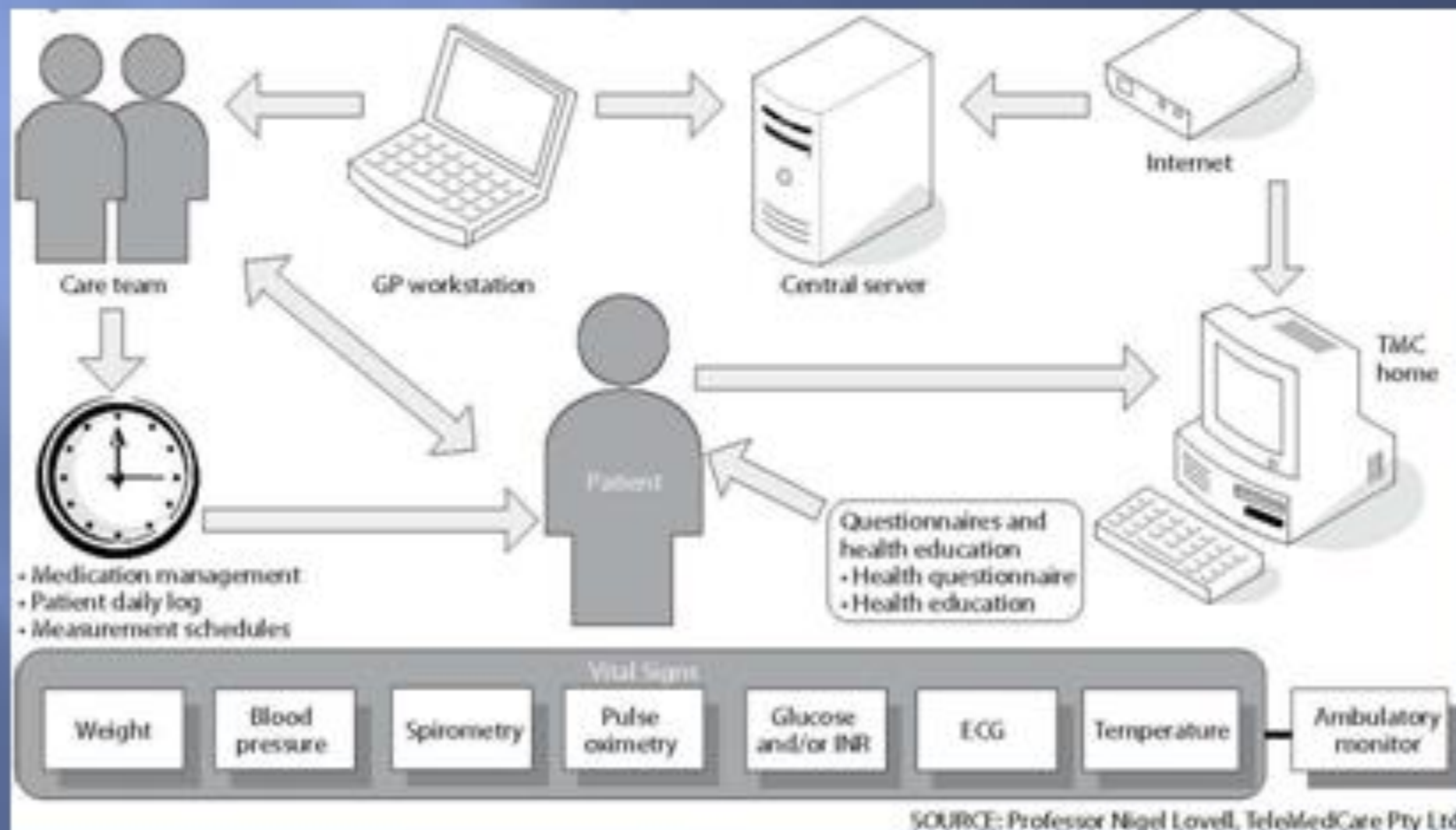
Diagnosis and Treatment

- ❑ Telehealth-use of ICT to support ageing-in-place; diagnostic devices linked to central system for health management, medication management, videoconferencing with specialists, development of m-health
- ❑ Coping with degenerative diseases-rapid increase in numbers; dementia- tracking, hearing- cochlear implant, vision- bionic eye, walking aids-exoskeletons
- ❑ Improved diagnosis and treatment- cheap and rapid biomarkers and genetic data
- ❑ Coping with routine tasks- use of robots in scanning images and in routine surgery

Telehealth as an Aid to Ageing-in-Place

- Telehealth was conceived as a means of improving links between patients and medical staff at the same time as increasing responsibility of patients for their own care
- Patient collects data for transmission to base for analysis and action by carers and doctors
- Developed in different degrees of complexity and with different concepts of user needs
- Numerous trials and installations in Australia

Schematic of a Telehealth System



Potential of mhealth as a Change Agent

- Innovation in communications, particularly the development of smart phones, is changing healthcare- mhealth.
- Low cost, flexibility and ubiquity of smart phones offers great opportunities for linking to wearables and add-on diagnostic devices to monitor vital signs and exercise regimes.
- Significantly, mhealth is moving to replace in-home telehealth systems. It can also give access to medical information, thus empowering patients.



Mobility-linked to Ageing-inPlace

- ❑ Transport systems-major issue for social interaction; improved infrastructure and way-finding for pedestrians using public transport, use of virtual reality
- ❑ Mobility scooters-rapid growth in numbers, improved design, safety and training
- ❑ Automated vehicles-potentially transformative for lifestyle of aged and disabled, rapidly evolving on global scale, difficult transition

Concluding Remarks

- Coping with an increasing ageing population will require new thinking, particularly in appropriate housing. There will be a shift in organisational forms of delivery of healthcare, particularly in aged care, as changes in approach to financing lead to a shift from a supply-side push of services to one where consumer demand is the main determinant of value and activity. Appropriate housing coupled with support in services is a vital part of this shift.

Thank you for your attention

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