SMART TECHNOLOGY FOR HEALTHY LONGEVITY

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World Demographic Change

- World is undergoing unprecedented demographic change.
- Global population is expected to increase by 3.7 times from 1950 to 2050 but the number of 60+ will increase 10 fold and the number of 80+ by 26 fold.
- This demographic change is coupled with an epidemiological transition from infections to chronic diseases as the primary cause of death.
Ageing is accelerating worldwide
Convergence of Developed and Developing Countries
Factors Driving Demographic Change

- Fertility rate-falling due to improved economic conditions and empowerment of women
- Migration-younger people moving from rural to urban areas, and to more economically developed countries, in order to improve opportunities
- Life expectancy-increasing due to improved nutrition and health care but non-communicable diseases increasing
Demographic Change in Australia

- Population growing by natural increase and migration.
- Difficult to predict future growth but realistic scenario is a population of between 30 and 34 million by 2050 compared to 23 million at present.
- Of these about 6 million will be 65+ (currently about 3 million) and about 2 million will be 80+ (currently about 0.5 million).
- Demographic support ratio (people aged 20-64/people over 65) will change from 5:1 to 2.7:1.)
Challenges of an Ageing Population in Australia

- More than 90% of aged people wish to live independently-need suitable housing and support systems, predominantly in existing urban areas
- 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 and aboriginal areas
- Spending on health care on people over 65 estimated to increase 7X by 2050
- Current health care system is unsustainable!
Critical Role of Ageing –in-Place

- Ageing-in-place is critical component of future ageing care system.
- Liveability at home can be extended through incorporation of universal design principles in housing and use of assistive technologies.
- Such technologies can promote health and wellness, home safety and security, social connectedness, intellectual stimulation and mobility.
- ATSE produced major report in 2010 and has followed up with meetings, overseas delegations and presentations.
Home Health Care Technology

- Home health care technology is an attractive option because it empowers patients to self-manage their conditions to a greater extent and helps shift care from high cost institutions to patient’s homes and communities (patient-centred care)
- First generation-non-connected single purpose devices e.g. sleep support, defibrillators
- Second generation-connected devices without interactivity that send signals from person to providers e.g. telecare, alarms, telemonitors
- Third generation-connected devices with interactivity that empower patients and carers e.g. on-line consultations, telehealth, mHealth
Case for Home Health Care Technologies

- A considerable body of evidence exists to show the benefits of home health care technology based on telecare and telehealth trials, mostly in Europe and the US but also in other countries e.g. Australia.
- 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, reduce hospital admissions and allow patients to control treatment for chronic diseases.
Obstacles to Adoption of Technology by the Aged

- Despite benefits, uptake—especially of advanced solutions—remains limited. Possible factors are:
  - The product: poor definition of needs and hence poor design, lack of integration of stand-alone systems, lack of training support, difficulty of maintenance, high cost
  - The social environment: lack of policy from governments, who pays?, threats to existing system
  - The users: unfamiliar technologies, privacy issues, dignity, lack of health literacy
How Can We Improve Uptake of Technology by the Aged?

- Keep technology simple for both patients and health care professionals
- Tailor the technology to the needs of users
- Focus on high-volume and low-cost solutions
- Embed an IT infrastructure to act as basis for integrated systems
- Enhance human contact by better connection of patient to family and care staff
- Build relationships to get all sectors of health care working together
What are Opportunity Areas for Development of Technologies in Aged Care?

- **Security and safety**: elderly-friendly housing, falls prevention, communication and social interaction
- **Diagnosis and treatment**: telehealth, coping with degenerative diseases, nanomedicine
- **Assistive technologies**: biorobotics, brain/machine interaction, mobility systems
- These were identified in ATSE study in 2010 but similar areas have been defined in many countries
Enabling Technologies and Ageing

- Considerable activity in interdisciplinary approaches to these identified opportunities - aims are to improve quality of life, reduce costs, improve efficiency of treatments, reduce intrusion of technology,
- Concept of enabling technologies - bringing together technologies and knowledge systems that enable each other in pursuit of a common goal
- Thus nanotechnology, biotechnology, ICT, cognitive science (NBIC) in combination offer wide range of possibilities for new approaches to ageing
ATSE Recommendations for Future of Health Technologies for the Aged

- Create a National R&D Agenda on Technology and Ageing
- Identify priority areas and ensure R&D funding
- Create Gerontotechnology Centres of Excellence
- Recognise importance of ageing-in-place
- Build skills for future gerontotechnology workforce
- Assess economic benefits of technology usage
- Emphasise importance of international links
- Provide funding for translation to practice
Critical Role of Networking

- ATSE experience and later NETS workshop in 2011 stressed critical role of a multi-disciplinary, cross-sector network.
- With funding from DIISRTE, a feasibility study is underway to examine thoroughly the details of such a network and propose a suitable business model. An issues paper is being prepared and a workshop will be held in Sydney in two weeks.
- The present workshop provides an opportunity to test your support for such a concept!
Thank you for your attention

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