Personal Monitoring Clinical Trials Program

Sensing physiological information for individual patients.

e-Health Research Centre

Factors such as ageing population, rising health costs and the increasing incidence of long-term chronic diseases are creating a growing crisis in health care. These issues are driving a trend towards increasing levels of care in the home, with early discharge from hospitals, or 'ageing in place' initiatives, in which the elderly are encouraged to maintain independent living for as long as possible.

Recent adoption of wireless technologies has lead to the development of systems which can provide a truly continuous monitoring of patient vital signs and movement for extended periods, in almost any location.

Advances in sensing, telecommunications and information technologies have led CSIRO and biomedical companies into the development of personal monitoring systems to improve the quality of care of the ageing population with chronic diseases.

One of the focuses of the e-Health Research Centre is directed towards rapid testing and implementation of these personal monitoring technologies in clinical settings with the aim of extending it to the home environment. As part of the program of ambulatory monitoring of stroke and elderly patients, a Smart-State initiative of the Queensland Government, the e-Health Research Centre will apply this technology with the aim to detect pre-cursors and prevent falls in the ageing population.

Advantages of Continuous Personal Monitoring

- Events such as heart arrhythmias, falls and stumbles can be alarmed, detected and recorded as they occur.
- Immediately provides medical professionals with quality information that facilitates interpretation and analysis for early detection.
- Allows users to remain independent in familiar surroundings.
- Accessibility to continuous monitoring is improved for those with poor mobility or for people living in rural areas.
- Reduces costs by providing continuous home monitoring rather than requiring travel to a health care facility.

Personal Monitoring Technology

Motion Sensors

Motion sensors record movement, measure long-term trends in activity level, and provide the means to detect falls quickly and accurately.

Vital Signs Sensors

Incorporation of sensors to detect vital signs such as ECG, heart rate, respiration rate become necessary for patients under critical conditions and therefore, enhance the quality of personal monitoring systems. These signs can also provide important information on pre-cursors leading to falls.

Communication Systems Options

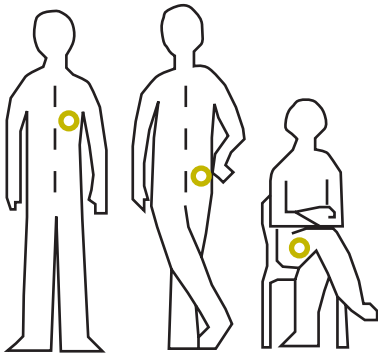
Personal monitoring technology can use standard wireless transmission of data to a PC/Laptop/PDA when indoors or via mobile phone/conventional phone when outdoors/home. Devices can also record data to an internal memory card in situations where wireless protocol cannot be used.

Data System Possibilities

Information recorded could be accessed by carers using a standard web browser. In an emergency, the system software could have the ability to send text messages to or alert family, physicians, or other carers or emergency services directly.

Device Technology

Advances in movement and physiological sensor technology, as well as the miniaturisation of microprocessors, means that ambulatory monitoring devices can be placed on patients in a variety of ways.



Sensor Information

Information gathered from sensors will be used to directly measure or infer the following information:

Movement

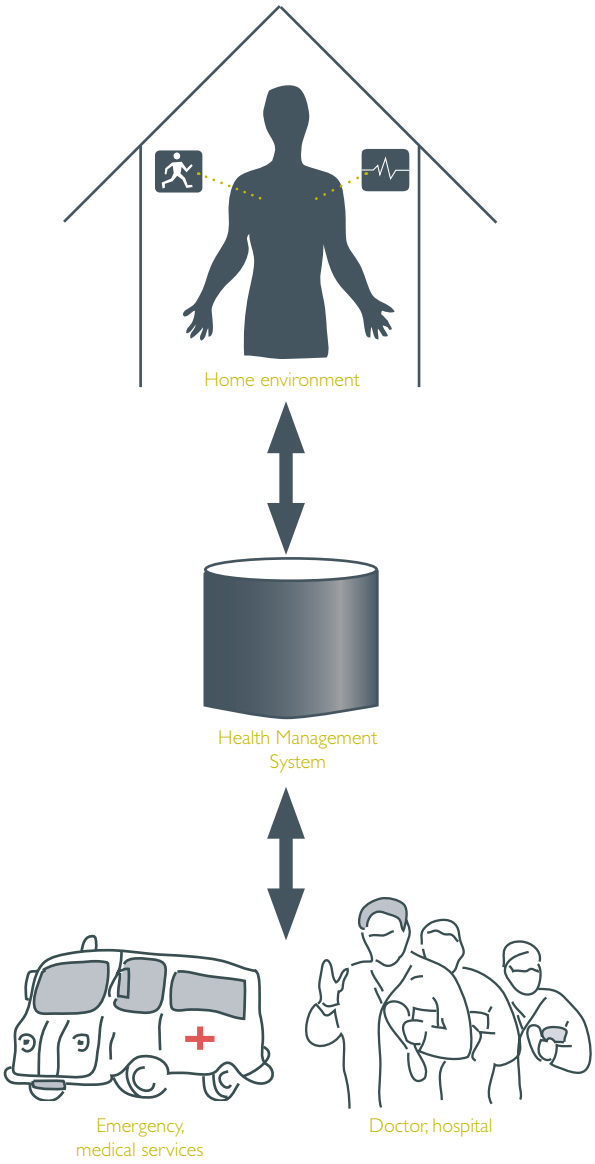
- Gait patterns
- Fall characteristics
- Level of general activity
- Postural sway

Physiological

- Heart Rate
- ECG
- Respiration Rate

Options for Applications

Use of personal monitoring systems with wireless technology will enable real-time, remote monitoring while the patient can continue with normal daily activities. Patient information can be stored in a secure database allowing access by clinicians or carers.



Contact e-Health Research Centre

Phone 07 3024 1600
Email research@e-hrc.net
Web www.e-hrc.net

A joint venture between

CSIRO

Queensland Government

For further information about Personal Monitoring contact

Dr Anthony Maeder
Research Director
+61 7 3024 1605
anthony.maeder@csiro.au