



Home Healthcare and Telemedicine



November 2008



## Executive Summary

Currently it is estimated that there are about 600 million people aged 60+ worldwide. In Europe alone, almost 36 million people will reach age 80 and above by the year 2020. This has generated a growing interest in telemedicine since governments wish to alleviate the disproportionately high bed occupancy of seniors in hospitals (and resulting costs), in favour of home care.

Significant resources are increasingly being allotted by governments worldwide to the care of senior citizens in their homes. In the UK, local governments are the largest customers of home healthcare (Dispersed Alarms) and account for 80% of the market. Other interested parties who are stakeholders in this growing market include service providers, such as medical monitoring companies, physicians and clinics.

The market for Dispersed Alarms is growing at an annual rate of 10-15% and is worth, in the UK alone, \$250M per annum at installed prices in 2004.

End-users themselves, be they the elderly, infirm or other patients in need of medical care, are a key audience for the advantages of telemedicine. Telemedicine offers them quality of life, through at-home or mobile medical testing with real-time professional consultation.

## World Population Ageing

Population ageing is unprecedented, without parallel in the history of humanity. Increases in the proportions of older persons (60 years or older) are being accompanied by declines in the proportions of the young (under age 15). By 2050, the number of older persons in the world will exceed the number of young for the first time in history.

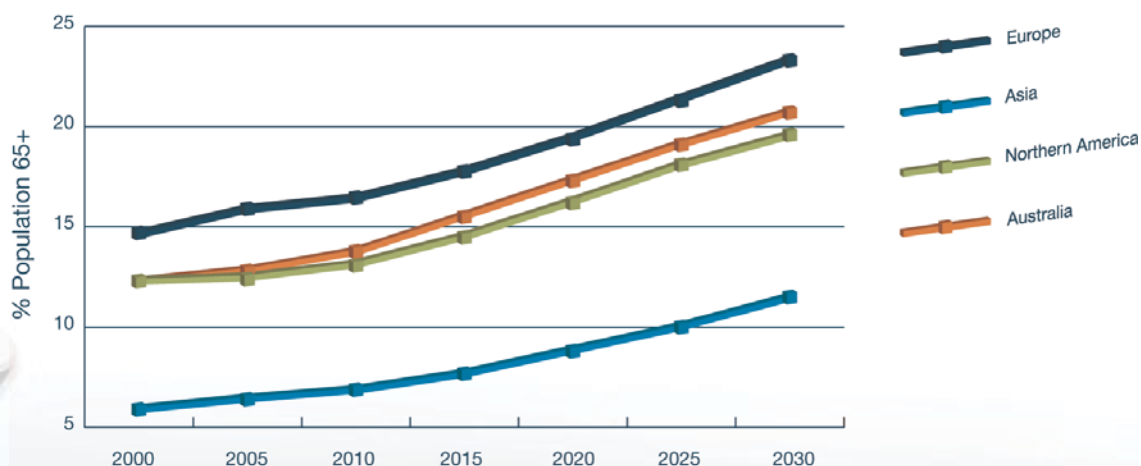
Population ageing is enduring. During the twentieth century the proportion of older persons continued to rise, and this trend is expected to continue during the twenty-first century. For example, the proportion of older persons was 8 per cent in 1950 and 10 per cent in 2000, and is projected to reach 21 per cent in 2050

The trend towards older populations is largely irreversible, with the young populations of the past unlikely to occur again. As the twenty-first century began, the world population included approximately 600 million older persons, triple the number recorded fifty years earlier. By mid-century, there will be some 2 billion older persons - once again, a tripling of this age group in a span of 50 years.

The older population is itself ageing. The fastest growing age group in the world is the oldest-old, those aged 80 years or older. They are currently increasing at 3.8 per cent per year and comprise more than one tenth of the total number of older persons. By the middle of the century, one fifth of older persons will be 80 years or older.

The majority of older persons are women, as female life expectancy is higher than that for men. In 2000, there were 63 million more women than men aged 60 or older, and at the oldest ages, there are two to five times as many women as men.

## The world is ageing



Source: United Nations population division



## Addressing the Needs of a Rapidly Ageing Population

The health of older persons typically deteriorates with increasing age, inducing greater demand for long-term care as the numbers of the oldest-old grow. The parent support ratio, the ratio of the population 85 or older to those aged 50 to 64, provides an indication of the support families may need to provide to their oldest members. Globally, there were fewer than 2 persons aged 85 or older for every 100 persons aged 50-64 in 1950. By 2000, the ratio had increased to 4 per 100, and it is projected to reach 11 by 2050.

Population ageing is characteristically accompanied by an increase in the burden of chronic noncommunicable diseases (NCDs) such as cardiovascular diseases, diabetes, Alzheimer's and other ageing-associated mental health conditions, cancer, chronic obstructive pulmonary disease and musculoskeletal problems. As a consequence, pressure on health systems worldwide will increase.

Supporting the health of older people and ensuring a good quality of life in their later years is one of the greatest challenges for the health sector in all countries.

People with disabilities and older people are constantly faced with the choice of remaining at home, with a care package to meet their requirements, or being institutionalised. However, the decision to move from the familiar surroundings of their home to the alien environment doesn't have to be as drastic and disorientating as they may fear.

Due to the ageing trend, together with the constant need for effective monitoring in care homes, the integration of assistive technology is now becoming more commonplace in today's caring society. Many people with disabilities can now lead more independent lives in their communities and in their homes by taking advantage of the systems and technologies now being offered. However, in order to reduce the non-use of assistive technology, a common problem, it is essential to successfully match the product with the individual needs and expectations of the user.

The market for home healthcare and telemedicine, through Dispersed Alarms, is covered by three primary channels. These are:

- Local Government
- Pressure Groups
- Security Installers
- Related Businesses

In the UK, the prime channels are dominated by Local Government which accounts for approximately 80% of the market demand.

The UK Governments 'Working in the Community' policy directive ensure that local government departments provide these services to the elderly living on their own or with disabilities.



# The Advantages of Home Healthcare and Telemedicine

Telemedicine and home healthcare offers solutions to a host of issues raised by current population trends - predominantly the ageing of populations and the increased medical implications of this trend.

Assistive technologies come in varying degrees of sophistication. Relatively simple and easy to use systems are Personal Emergency Response Systems. Their features include 24/7 emergency response capabilities, fall detection, medical reminders and compliance monitoring, inactivity monitoring, wellness verification and two-way voice communication. More advanced versions of these systems include home safety, home control and ultimately telemedicine.

Telemedicine systems transfer medical data from remote locations to a clinician, via a fixed line or wireless communications, allowing monitoring, diagnosis and consultation. Telemedicine enables advanced disease management in fields such as cardiology, pulmonology and diabetes. In Europe alone there are about 215 million patients with diseases in cardiology (77m) asthma/COPD (35m), diabetes (40m) and hypertension (63m). Telemedicine applications include testing blood pressure, spirometer, glucose, ECG, oxygen saturation, weight scale and drug dispenser. The data is then transmitted in encrypted form and easily accessed by the physician from any web access point accessible from any handheld device or PC. The patient's data is immediately brought to the attention of the physician via SMS/email notification.

The three major groups who can reap huge benefits from this kind of technology are local governments, service providers and the patients themselves.

Local governments are increasingly enthusiastic supporters and customers of telemedicine because of the reduction in medical costs which this technology offers. Telemedicine enables patients to receive a significant part of the medical attention they need outside hospitals and thus reduce bed occupancy, reduce waiting lists and enable local government to better manage chronic illness and the ageing population in general.

Telemedicine service providers are tapping into a growth market for which there will be increasing demand. The sustainable business model in this case will be by capturing incremental revenue from subscriptions to their service. Physicians and clinics also stand to increase their efficiency and revenues by catering more effectively to a larger number of patients, as well as improved medical data collection of a patient's personal health record.

Patients and their caregivers stand to increase their quality of life by being able to perform the tests their condition requires in the comfort of their home or any place their lifestyle warrants, and then receive diagnosis, consultation and even a second opinion, immediately or within a short span of time. Telemonitoring can also benefit isolated patients living in rural areas, remote countryside, islands or areas lacking convenient public transport. Although much of these applications are tailor-made for the senior population, it can be expanded to high-risk pregnancy and other medical conditions.



# The Amber Telemedicine Solution

Visonic's Amber Health & Safety Support Solution is much more than an emergency response system. The Amber product features medical reminders, fall and inactivity detection and telemedicine capabilities - offering a 24/7 virtual safety net.

Visonic has tailored the Amber product design for the senior population. With large LCD and buttons and backlight, speed dial up to 3 numbers, powerful speaker and sensitive microphone, adjustable volume, 24 hour backup, rechargeable battery, reporting to private numbers as well as monitoring service, it is the most comprehensive solution for seniors and those who care about them.

Amber is an excellent way for community service providers to protect and care for seniors while maximizing their patient's dignity and independence. Ambers telemedicine capabilities include compatibility with remote diagnostic devices for testing blood, sugar, weight, ECG, lung capacity and more. Features include advanced home control and even video verification. The wide range of peripherals include wrist pendants and detectors such as fall detectors, smoke detectors, gas detectors, food detector, inactivity detector (PIR).

## Wide Range of personal safety accessories

### MCT-241 - Fall detector

- Sends an emergency signal to the Amber when the user falls
- Fully water resistant, factory-sealed model
- Visible and transmitted low battery indication
- Belt or pendant worn

### Next+ - Motion / Inactivity detector

- Can be used as motion sensor when the Amber is defined in security mode or monitor pre-defined activities when activated under emergency assistance mode
- 15m (50ft) multiple-curtain coverage
- Also available as pet-immune for animals weighing up to 38kg (85lb)

### MCT-550 - Wireless Flood detector

- Highly sensitive ; detects water at ground level
- Compact design not harming the house décor
- Includes 3 meter (10ft) sensor cable for optimal positioning of the transmitter

### MCT-442 - Wireless CO detector

- Early warning alarm sounded before CO levels become dangerous
- Loud built-in buzzer (95db) and a large flashing LED alarm
- Continuous self-testing and manual testing
- Sensor end of life indicator (5 years life)
- Certified by the strictest European standards

### MCT-425 - Wireless Smoke detector

- Sound and transmitted alerts (smoke, tamper, low battery)
- Sensitivity degradation notifications
- Certified by the strictest European, US and other international standards



# Amber Family - Advanced Telecare and Telehealth Solutions

Visonic's Amber family include a range of 3 systems, providing a versatile, modular solution that fits the widest range of requirements, from a highly reliable social alarm (PERS) through to the most advanced vital signs monitoring and other telehealth applications.

**AmberBasic** is a convenient, highly affordable personal emergency response system (PERS) that is designed for simplicity of use. This system provides a solution for the basic needs of those wishing to stay at home with a 24\7 safety net which is simple and easy to use. Those features include an emergency call to a central station or private telephone, built-in 2-way voice and speakerphone, inactivity monitoring etc.

**AmberClassic** incorporates the AmberBasic features with a full array of home and personal safety alarms that detect dangers such as carbon monoxide (CO), smoke, floods and intrusions, as well as falls and unusual inactivity that may indicate a problem. Alerts and a large emergency button provide immediate connection to an emergency response service or designated personal contact.

**AmberSelect** provides a uniquely complete answer by combining telemedicine support as well as lifestyle and safety management in a single, attractive solution. Aside from being a personal safety and emergency response system, the AmberSelect also monitors health status (using devices such as ECG, glucometer, blood pressure and weight scale) and sends the diagnostic data to designated health providers or monitoring services. With its sleek and modern unique design, the AmberSelect provides the ideal telehealth and lifestyle support solution for the high-end market.

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