

Go Home and Get Well Soon

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Thanks to innovations in communications and biomedical technology, hundreds of thousands of patients the world over will soon be able to recover from operations and major illnesses in the comfort of their own home, with no greater risk to their health. No hospital would ever allow a patient to go home who is not sufficiently recovered to do so. It is the slim risk of post-operative complications that often results in patients lying in a hospital bed many weeks after an operation. But doctors would allow them to go home if their vital statistics could be monitored there as effectively and regularly as on a ward. The technology now exists to let patients convalesce at home, a place with less stress and a reduced risk of infection.

In recent years, great strides have been made in telemonitoring and telemedicine, allowing post-operative patients, those with critical illnesses and elderly patients with degenerative conditions to receive a high standard of care within their own homes. A combination of technologies such as ZigBee, radio frequency identification (RFID) and asynchronous digital subscriber line (ADSL) can relay vital statistics to a health suite, which can trigger an alarm if, for example, blood sugar or oxygen levels exceed normal parameters. This improves patient life, while freeing up valuable beds in under-resourced hospitals.

Orange Business Services has recently joined forces with an innovative Canadian telemedicine specialist, IgeaCare, which has developed a range of market-leading telemonitoring tools. Together, these companies will provide fully managed telemonitoring services to healthcare providers, first in North America and then worldwide.

Health monitors can measure and transmit many vital signs, such as blood pressure, pulse rate, blood oxygen and sugar levels, electrocardiography results and peak flow. Technology solutions using RFID tags attached to bottles and dispensers can check that patients are taking their medication and at what time.

The technology is fairly simple. Monitoring tools, which can be automatic or initiated by the patient, are connected by Bluetooth technology to a device that relays them to Orange's data centre via DSL, the public switched telephone network (PSTN), satellite or wirelessly. Using technology developed by France Telecom, the content of the messages is translated and then routed, based on its context rather than an Internet protocol (IP) address, to the relevant healthcare provider.

The business case exists for telemedicine. It costs \$2,500 (US) per day for a patient to stay in a hospital but \$50 (US) per day to monitor a patient with a home monitoring plan. But the reasons for use are not simply a matter of economics. Freeing up hospital beds allows a higher turnover of operations and, thereby, reduces waiting lists.

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CARING FOR THE ELDERLY

Caring for an aging population is another problem facing healthcare providers and insurers. The United States currently has approximately 35 million people who are older than 65 years. This number is expected to double by 2030. The patients' families, healthcare providers and insurers share the burden of looking after this active, increasingly elderly population.

Simple capabilities, such as a mobile panic alarm, can have a major impact on healthcare costs, allowing patients to live at home for longer. According to the American Academy of Orthopedic Surgeons, every year almost 30% of all people above age 65 experience a fall and incur injuries, which can lead to death. Many of these injuries would be minor if ambulances or doctors reached them rapidly, rather than the injured older adults being discovered days later.

One of the many projects of France Telecom telemedicine involves supporting elderly patients within nursing homes. France Telecom has developed a ZigBee-based tracking system. Currently in trial in Orgeres en Beauce, elderly patients wear a tracking sensor that sets off an alarm if they stray from the nursing home. The system also incorporates a panic alarm if the patient becomes incapacitated, and allows the nursing home to monitor exits and windows.

CARING FOR THOSE WITH MENTAL IMPAIRMENT

Telemonitoring is helping people who have mental impairment. Orange Business Services' partner IgeaCare is involved with a small project in Ontario that supports 22 patients with a number of conditions, including mental impairment. Homes have been supplied with home monitoring software, vital signs measuring devices and an interactive touch screen monitor and video conferencing link. Nurses can use the video link to monitor these patients, who need daily supervision. By reducing the number of personal visits they have to make, operational costs are reduced considerably.

FIELD TRIALS FOR DRUG FIRMS

Hospitals and health insurers are not alone in their interest in monitoring patients remotely. There is a growing interest in using the monitoring capabilities during third- and fourth-stage drug trials. These involve people at home testing a new medication over a period of months.

Normally, data gathering is slow; trial administrators must wait for patients to go to their doctor for testing before the data are relayed to the administrators, who must then compare data of those on the medication with data from those in a control group.

Real-time data results could cut the time to market by up to 60%. If there are any negative results, the trial can be ended quickly. This could save lives and have a massive impact on reputation management. It's no wonder that many pharmaceutical giants are now taking an interest in telemonitoring to improve drug trials.

LOOKING TO THE FUTURE

Beyond simple telemonitoring of whereabouts and vital signs, telemedicine is on the verge of even greater automation. Within a few years, wireless modules inside the human body – for instance, within a pacemaker – will be able to relay status data to a unit outside of the body and then to the healthcare provider. Monitoring won't even require patient intervention. This will be a win-win situation for the patient, provider and health insurer.

About the Author

Hans van Eck-Casteels is the head of Pharmaceuticals and Healthcare Industries for Orange Business Services in North America.

