

- HERSCHEL "BUZZ" PEDDICORD -

## The Growth of In-home Telemonitoring

Mr. Peddicord is the CEO of HomMed™ L.L.C., based in Brookfield Wisconsin

**T**he health care industry is facing a severe personnel shortage, not only are there fewer nurses, but medical school enrollment is down. Add to that the aging Baby Boomers and the pressure to reduce costs, and the question becomes, 'who's going to take care of everyone?'

The simple answer is technology. In-home telemonitoring is a rapidly growing form of home care technology. In fact, one analyst predicts it will increase 20-fold in the next four years. The industry is developing as the result of two converging trends: cost-containment demands; and staffing shortages in clinics and hospitals, where patient monitoring tests have traditionally taken place.

Those trends have not only required patients to take greater responsibility for their own health, they have also created a need for medical devices that enable patients to monitor their health every day while under the supervision of a qualified health care professional.

In-home telemonitoring technology utilizes telecommunications devices placed in patients' homes to take their vital signs. It's a system that brings benefits to both patients and health care professionals.

By having their vital signs taken seven days a week, patients' medical irregularities can be caught before they become full-fledged problems. They also save time, eliminate the need and expense of travel to a clinic or doctor's office, and reduce their health-care costs. Plus, they become more self-aware of their condition and how diet, activity and other factors affect their medical state.

Patient education is one of the hot topics of home care. Everyone accepts the fact that patients need to understand their health condition and, by understanding it, will intuitively be more compliant. What better way to educate a patient than to show them, in their own home, the effects of medication, diet and exercise on their body than with a monitor that can display their blood pressure, heart rate, weight, temperature, lung function, oxygen saturation or glucose level?

Daily monitoring allows the patient to see that taking a blood pressure pill keeps their blood pressure regulated. Taking a diuretic prevents fluid from building up in their system and keeps weight down. Daily monitoring allows the entire family to take a more active role in managing the patient's health and can dramatically increase compliance with medication and diet. There is no better education than hard numbers staring the patient in the face.

Quality of life is another important issue for home care patients. For them, quality of life diminishes when constant visits to the ER,

### Telemonitoring System Background

In-home telemonitoring systems can be used to care for patients with a variety of chronic illnesses, including hypertension, congestive heart failure, chronic obstructive pulmonary disease, preeclampsia and asthma.

Telemonitoring systems have two components - the home unit, which collects and transmits data from the patient, and the observation unit, which receives the data and presents it for clinical review.

Each morning, a voice prompt walks patients through a three-to-five minute collection of vital signs such as heart rate, lung function, blood pressure, blood oxygen saturation, body weight and temperature. The data are then transmitted via digital wireless technology over a virtual private network (VPN) for review by clinicians at the central observation station. There, professionals can detect and address even the slightest abnormalities before they become serious.

doctor's office or hospital are necessary.

Granted, there are true emergencies that come up without warning. However, the vast number of emergencies are indicated before they become crisis situations. Daily monitoring of health status is an early warning system. What nurse wouldn't respond to a congestive heart failure patient who had an overnight four-pound weight gain and a sharp increase in blood pressure? The same logic applies to diabetics, asthmatics, hypertensive patients, etc.

How does a telemonitoring model provide better home care? Telemonitoring is a new type of care, a more comprehensive care that covers the entire week. However, in order to take full advantage of its capabilities, a new plan of care must be established.

When the patient is discharged from the hospital and assigned to home care, this new plan of care takes effect. A telemonitoring device is placed in the patient's home and alarm parameters are set around the patient's health indicators. For example, the patient's doctor may want to maintain systolic blood pressure between a high of 130mmHg and a low of 80mmHg. These alarm parameters are programmed into the monitor. If the patient's systolic BP reads above or below the limits, a notification is immediately sent to the home care agency, alerting the patient's nurse that some action is needed.



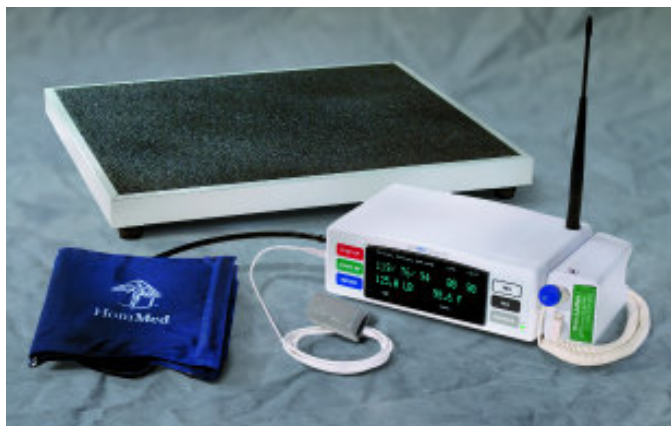
The "Observer"

Often nothing more than a phone call reminding the patient to take their blood pressure medication is required. However, it is better to know today than three days later when the next visit is scheduled. The same process is followed with all of the other health indicators. Some monitors even ask questions each day so that the patient's quality of life can be better assessed and to catch symptoms that may not yet be indicated by the vital signs. The patient is assigned one visit per week to maintain personal contact.

This new home health model reduces nursing visits but provides daily care for the patient. If a vital sign falls outside the agreed limits, the nurse is notified that day and action can be taken on the day the need exists. The nursing staff becomes an immediate response team that is using the telemonitoring device to determine which patients need to be seen on a given day.

The exact same model is using on the telemetry floor of a hospital. There are not enough nurses available to be with all of the patients all of the time. The hospital patient is given a monitor with alarm limits and when the central station alarm is activated, the nurse attends to that patient right away.

Telemonitoring lets health care professionals work more efficiently, since the system allows one nurse to observe the clinical health of



The "Sentry"

The system HomMed offers can also transmit data using traditional telephone lines. This dual data transfer capability ensures that patient monitoring can be offered to those without telephones and can continue in the event of brief loss of service by either wireless or land-line providers.

In July 2001, HomMed introduced its third generation home monitoring unit and updated software. The new Home Unit and its software are positioned to raise the standard of home telemonitoring technology to a new level, according to Peddicord. The addition of a digital camera, blood glucose meter, PT/INR, spirometer and card reader to the Home Unit extends the system's use into wound care, diabetes treatment, monitoring of patients who suffer from blood clotting disorders and multiple user situations, like assisted living centers.

Another advantage of the new Home Unit is its multilingual capability. Although the system's voice commands are pre-programmed in English, Spanish and French, individual units can be set to deliver instructions to patients in their native language. The new home monitoring device can also be programmed to ask up to 10 subjective questions about a patient's particular illness and general well-being.

For more information, please call HomMed at 1-262-783-5440 or visit the company's Web site at [www.hommed.com](http://www.hommed.com).

up to 500 patients at a time and effectively direct medical attention to those who need it most. Reducing unnecessary visits not only lets home health providers target their services to those who need attention, it also helps keep health care costs down.

The average home care nurse can visit six patients per day in an urban area and fewer in rural locations. In a five-day week, the nurse with urban patients can make 30 visits. If the nurse is visiting each patient two times a week, then that nurse can manage 15 patients.

In a telemonitoring model, the nurse is only visiting each patient once a week, allowing the nurse to see more patients with her 30-visit schedule. The increase in nursing capacity is not 100 percent because occasionally the nurse will have to visit the same patient more than once a week, as determined by the monitor. However, even a 50 percent increase in nursing productivity would allow the home care agency to take on more patients with its existing staff, thus eliminating the need to turn away referrals and increasing significantly the revenue of the agency.

Telemonitoring also provides a point of differentiation since neighboring home health care agencies are in competition, in-home. The agency using telemonitoring is a step ahead of the agencies that do not. Referring physicians and hospitals will choose between an agency that offers clinically based nursing visits and vital signs monitoring seven day a week and another agency that offers only one or two days of nursing care a week, with no daily attention. Put another way, which would you prefer, 100 percent coverage or 28 percent care (two visits per week)? The agency that adopts telemonitoring will be able to market itself as the home care option that provides the most complete care.

