

*Telemedicine: Telehomecare as a homecare option*

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Homecare is common to many people's healthcare routine across the world. Follow-up care for cardiac, pulmonary and fetal monitoring is the most common reason to have a home health nurse making regular visits to a patient's home. Much of the vital signs the nurse will check, are available through remote electronic monitoring systems that have been developed in recent history. Monitoring of ECG function, heart sound through a stethoscope, blood pressure, blood glucose, pulse oximetry, temperature with a digital thermometer, and weight can all be measured quite easily. "Televisits" or "telehomecare" is the new technology that is seeking to replicate these functions of home nurse visits, making the medical care less expensive because the nurse's physical presence is not necessary. Also, patients report a greater sense of independence when they are able to maintain their health on their own, without as much assistance from a visiting health aide. The components of the telehomecare system include an audiovisual conference between the patient and the doctor, remote measurements of the vital signs and other physiological data, transmittance of the biomedical data across an internet connection, such as DSL, ISDN or LAN, capable of a bandwidth of 384 kb/s. The videoconference is set up in a patient's home using their existing TV set and remote control; a PC-based "set-top-box," similar to the appearance of a VCR is placed behind the TV to interface. The Windows 98 environment is hidden from the user. The data is transmitted through standard USB and RS232 ports. The video screens are very

"patient-ready," easy to follow, and provide step-by-step instruction for the patient. The telehomecare does require the patient have minimal competence to place a blood pressure cuff around his/her arm, and place electrodes and other equipment in the proper location. The televisit and videoconference allows the patient and medical staff to see each other, thus ensuring proper use of equipment. The health service is capable of videoconferencing, customized clinical protocol, remote monitoring, and communication through audio and text, and calendar and prescription functions. In Europe, several studies were conducted on test groups: 50 gynecology patients, 2 pregnancies on bed rest, and 10 university students at the Polytechnic University of Valencia. Upon completion of a series of "televisits," they evaluated global acceptability of the product, ease of use, feelings of virtual presence, and confidentiality and privacy. Overall, the results were promising, indicating the future success of such health monitoring. The main difference between the trial groups was the university students had the highest rating of "a sense of virtual perception;" this can be accredited to the fact they are frequent users of up-and-coming technology. The results support the use of this mechanism in home health care, yet there still exists several barriers to full implementation. Legal issues, cost-effectiveness, and ease of use for untrained people present problems. To date, some private insurance and Medicare have provisionally approved the use of "telehomecare" in defined situations.

Source: Guillen S, Arredondo MT et al. "Multimedia Telehomecare System Using Standard TV Set," *IEEE Transactions on Biomedical Engineering*, vol. 49, no. 12, December 2002.