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Emerging Trends in Medical Technology: More and Better Personal/ Home Care ???



Medical technologies, devices, and products are converging to revolutionize self-care and home-care health systems. They are making it possible for people to play a greater role in maintaining their own health.

These focus is on producing "smart devices" that can "think" for themselves, customized wearable devices and electronic patient records, and wireless Internet-linked systems.

For patients, this means convenience in time and travel and possibly reduced health-care costs. It is hoped that new home-care systems will teach people to monitor themselves with gadgets that give timely warnings of illness. Thus one can turn to hi/her doctor at an early stage, when intervention will do the most good. For doctors, this many also mean more efficient--and effective--health care. The driving engine of this is patients taking greater responsibility for their own health.

New Concepts/ Technologies

The list of planned and imagined medical devices is like science fiction. For example, imagine a toothbrush with a biosensing chip



*Zap Lasers Soft Lase Pro Dental
Surgical Diode Laser System*

that checks your blood sugar and bacteria levels while you're brushing your teeth. Ideally, this brush would come with a holder that would transmit information to a database containing your medical file.

One device consists of computerized eyeglasses with a tiny embedded screen that can help you remember people and things. Another new device maps the skin surface and collects images over time thereby enabling people predisposed to melanoma to detect malignant moles as soon as they begin to develop.

Also in the future, a "smart" bandage could be made of material that could detect bacteria or virus in a wound. It will tell the patient if treatment with antibiotics is warranted and which to use. Finally, advanced technologies such as wireless electronics and digital processing, will lead to heart monitors that can be connected to your personal computers. This could make it convenient for you to track your heart rate, and other vital information at home and then transmit it to their health-care providers.



Philips Aed Defibrillator Hs1 M5066a

The U.S. Department of Defense developed a wearable "smart T-shirt," which successfully monitored the vital signs of climbers on an expedition to Mount Everest. Other types of devices allow people with disabilities to operate machines and perform routine tasks using a hands-free instrument that is controlled by small muscle movements, such as a blink of an eye (electromyography), and brain activity

(electroencephalography). Other devices include those controlled by tracking eye movements or by speech recognition technology. Devices that offer this kind of assistance show promise for individuals with spinal cord injuries or other nervous system disorders resulting in paralysis.

Products well along in the development pipeline are about to make possible dramatically improved medicine delivery systems. The ability to bring these kinds of tools into the home adds a dimension of health care that people never had access to in the past.

User Issues--A Major Concern

Telemedicine is a simple steppingstone to a more sophisticated home health-care future. But as information technology becomes a more robust resource for people and their health-care providers, the link to home- and self-care products will raise issues such as liability, privacy, financing, and most important, the safety and effectiveness of the products.

Given the newness of various technologies and known problems with some home-use devices, FDA and other regulatory agencies are skeptical of new medical technologies. Technological developments are becoming more complicated, and so do the requirements for their design to ensure their safe and effective home use. Problems in the design of medical devices can lead to errors when



laser tattoo removal machine

designers don't consider that patients and their families can become easily confused using devices in the home.

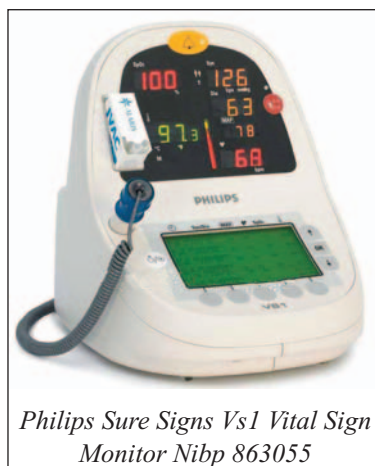
Variations in lighting and noise levels, distractions, such as children or other family members, and the demands of using the modern technology exceeding the user's capabilities, contribute to problems and errors. For example, a patient receiving oxygen, died when a pressure hose loosened from the unit. The alarm volume was not loud enough to be heard over the sound of the device. Also abuse such as dropping a device or using it in changing temperatures or high humidity (such as a bathroom or shower) also may affect its performance. Other problems, like not following precisely the operating instructions or relying on the device too heavily, are also major concerns.

Moreover, once the patient becomes accustomed to a device, they often fail to follow maintenance and calibration procedures and/or take shortcuts when a specific technique is critical. They also fail to communicate with the health-care professionals as often as they should, thereby leading to problems.

No Mistakes

In using home-care technology, there are too many opportunities to make bad mistakes. The critical issue is the ability of patients to use new medical technology without making unintentional errors that could compromise their health. The ability of patients to operate a medical device depends on their experience, language barriers, literacy, memory, learning ability, dexterity, vision, and hearing. Difficulties using certain devices can be caused by advanced age, medications, or the actual medical condition that requires use of a product.

Another factor contributing to the increase in user errors is the difficulty that consumers have understanding instructions



Philips Sure Signs Vs1 Vital Sign Monitor Nibp 863055

provided with devices. Consequently, the FDA and other regulatory agencies focus has been on ensuring that users can safely operate and maintain the device. This involves anything one needs to know about, such as controls, displays, software, labeling, and instructions.

To wrap up, one of the biggest problems is the inability of systems to be used by people who have not been trained. The other big problem is the feeling of increasing control and a feeling of security new devices give people when managing their health; thereby leading them sometimes to be out of regular contact with their health-care providers.

Internet/ Communications and Health Care

Today, the return to home health care has also been much driven by the Internet which is acting as a source of health information to patients. However, this carries with it a lot of dangers especially when this information is being used as solid knowledge to treat oneself. On the other hand, it has allowed patients to communicate with their doctors and other doctors quickly and efficiently. In certain instances, also doctors can practice some telemedicine and do some basic treatment for patients. Doctors can also enter the patient electronic medical record and read through it to give the patient a better treatment. However, the flow of electronic private medical personal information over the Internet and the ease of intercepting it raise some serious concerns about the privacy and confidentiality of this information.

Conclusion:

New medical, Information and communication technologies are opening new venues for delivering better and more advanced homecare for patients. However, they are not the maintenance free/ extremely simple to use one touch "magic lamp" of Aladdin where the genie will grant you your wishes.



RF skin lift machine