

Design Appeal: The Patient Perspective



Designing devices with the patient in mind means that the patient is more likely to have a better experience with a product—and more likely to continue using it.

Sherrie Conroy

No pain. More comfort. More attractive. And, how about more fun? This year's Medical Design Excellence Awards turned up more than a few winners that made appeal to the patient a top priority. One promises little or no pain for a traditionally terrifying dental injection. Others make the patient—or in one case, the patient's parent—feel more at ease. Some were designed to fit into the patient's home décor. And another simply makes the product fun so that the patient will stick with the therapy.

"Clearly, enhanced performance and patient experience is an appropriate and useful design opportunity, benefiting patients—and the company, if it is able to achieve a business advantage," says juror William Hyman, a professor of biomedical engineering at Texas A&M University.

Jurors attribute the trend to several factors. "Demands by users are being heard, in part, because of the shortage of nurses and similar caregivers," says juror Craig Jackson, PhD. Jackson is president of Hemosaga Diagnostics Corp. (San Diego). "Also, there is competitive pressure. If pricing is somewhat inelastic, then innovative features are necessary to make one product desirable over another," he says.

"The reason for the trend toward positive user experiences is that this topic is getting more attention among designers of all types of devices," says juror Molly Story. Story is president of Human Spectrum Design LLC.

Sherrie Conroy is editor-in-chief of MD&DI.

"It might also be that FDA's requirement that medical device developers use a human factors process is causing them to pay more attention to the user experience in general," she says.

Giving Patients Freedom

The Genesis DM by Honeywell is the latest generation of the company's telehealth vital signs monitor. The device measures objective and subjective patient data for a complete picture of a chronic patient's health from home.

It is a Web-enabled device that also has general packet radio service communication capability.

"Honeywell has incorporated several user preference factors into the design of the new Genesis DM monitor. The major design modification was the introduction of an angled display area," says Eric Zalas, emerging-segment marketing manager for Honeywell HomMed (Brookfield, WI). "Our focus group feedback indicated that patients wanted a device that was easy to read when they were standing. This simple design modification made it much easier for the elderly patient to read the graphic display," he explains.



The Genesis DM made incremental improvements, such as an angled display that users can view while standing.

The Genesis DM provides remote patient biometric and symptom evaluation by measuring heart rate, blood pressure, weight, pulse oximetry, and blood glucose readings. It allows clinicians to remotely monitor the vital signs of chronically ill patients on a daily basis. It may help clinicians detect the onset of a negative outcome that may result in early rehospitalization. The Genesis DM is used by patients suffering from chronic conditions such as congestive heart failure, COPD, CAD, diabetes, and hypertension.

Zalas says that customer feedback also helped Honeywell design a monitor with a small footprint. “The Genesis DM is small enough to easily fit on a patient’s nightstand. In addition, the Genesis DM weighs less than 2 lb, making it easy for patients to move it around the house if necessary,” he says.

Honeywell conducted primary research with its elderly Medicare patients during the design phase, says Zalas. “Most of the patients that use the monitor are over 70, and many are frail. We learned early in the process that patients didn’t want to have a device in their homes that looked medical,” he says. Based on this input, Honeywell designed the Genesis DM to resemble an alarm clock or small stereo component.

Honeywell’s ergonomic studies with the control buttons have resulted in a design for maximum ease of use for chronic patients. “Our research showed that elderly patients are easily confused by multiple buttons, so the Genesis DM was designed with simplicity in mind. Each of the six control buttons is large and color-coded. Each button also has a rounded-outward or convex surface that helps the patient feel when his or her finger is on exactly the right spot,” says Zalas.

Patients can use the Yes or No buttons on the monitor to answer more than 50 detailed disease-specific symptom-management questions. This feature allows physicians and clinicians to not only assess the patient’s objective vital signs (i.e., weight, blood pressure, etc.), but also subjective inputs (e.g., “Are you feeling better today?” or “Are your ankles swollen?”), explains Zalas. “The patients like this feature because they can provide subjective feedback to their clinician on a routine basis.”

Conclusion

Modern living has made patients much more aware of what is pleasing to them. They have become more vocal in letting their healthcare providers know what works for them personally. For OEMs, that translates to incorporating patient demands into their designs.

“The word *pleasing* may be too weak,” notes Hyman. “I don’t want to just be pleased. I want my medical experience enhanced with respect to efficiency of my time, reduction of anxiety and pain, and efficacy of treatment. These issues to me go beyond pleasing.”

As a trend, satisfying patients could be a business opportunity to create or secure a niche. There is more opportunity through improvements than through breakthroughs. “Improvements also are likely to present a lower regulatory hurdle, especially if you are improving your own product,” Hyman says.

There is more to making a device easier to use than just improving functionality. Human factors, ergonomics, patient studies—these are just a few of the methods that were part of the design process for some of the 2008 MDEA winners. Whether the results made a process less painful or a device more pleasing, appealing to the patient was a key factor in the designs. ■