

Merck Serono



easypod™ was awarded a Gold Medical Device Excellence Award in 2007 and an iF product design award in 2008 for its outstanding contribution to over-the-counter and self-care medical products

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easypod™ - advanced auto-injector device for growth hormone therapy

Background

Merck Serono (formerly Serono), a world leader in the field of biotechnology engaged PDD to design an auto-injector for its Growth Hormone (GH) Therapy product Saizen®.

GHT is given to children and adults with growth hormone deficiency. Treatment, which can last for several years, involves a daily injection, normally administered at bedtime.

In a competitive market, the device can be a key differentiator. Merck Serono had conducted global research in the major markets which revealed the key issues for a next generation device would be: reliability, ease of use, reduced pain during injection, safety in use and storage, adherence to therapy and fewer steps in use.

The Challenge

The brief was to simplify therapy administration and management through the automation of as many features as possible and to improve adherence to therapy. Our first response was to establish a clear understanding of the relationship between people, products and the environments of use.

To understand the human and technical challenge, our behavioural psychologists, designers and engineers met with children, parents, adult users and a range of medical practitioners. The outcome of this research was a clear map of product life from dispatch to disposal and an understanding of the anxieties and fears. These types of issues can make bedtimes difficult, put a strain on the child/parent relationships and lead to non-adherence to therapy.

The design approach was to first rationalise potential methods of automation. This led to a

breakdown of mechatronics and control functions into discreet technical challenges and ideation solution options. CAD and physical modelling were then used to evaluate the ergonomic implications of potential build configurations.

Full analysis of the tasks and the many variables of preference and individual practice in real life were combined by our interaction specialists into a comprehensive information architecture. This underpinned the full graphical user interface that was custom designed for the device and helped shape feedback and help functions to reflect concepts of gentleness and confidence, foremost in the minds of users.

The design also had to consider the more subtle aspects of embodying confidence and control. The product identity was developed to strike a balance between the approachability of mainstream electronic aesthetics, design cues from toys and the seriousness and trust engendered by some medical products.

A programme of stakeholder research helped guide the final design direction. The aesthetics and processes sympathetic to adult and child use were combined with foolproof interaction protocols and a robust framework for the final mechatronic configuration of the device.

The electronics, detailed engineering and manufacturing of the device were then carried out by Flextronics.

"We are extremely encouraged by the response to easypod™ from our young patients and their parents, as well as from nurses and physicians. It has been extremely well received, bringing additional benefits to the often sensitive task of administering daily therapy to children and young adults ... this device is easy to use and reliable."

Dr. Jovanna Dahlgren, Queen Silvia's Children's Hospital, Gothenburg

The Result

easypod™ is the first electro-mechanical device for subcutaneous injection of medicinal products. The device offers these advantages:

Ease-of-use: the device requires minimum dexterity and patient interaction. All operation steps are displayed clearly on the LCD screen.

Ease-of-dosing: the dose is pre-programmed in easypod™ and can be protected by a PIN code, thus avoiding the patient setting the wrong dose by accident.

Comfort: easypod™ offers a number of settings for patients to select in order to fine tune the comfort of the injection.

Confidence: easypod™ gives patients the confidence to receive the correct dose everyday thanks to injected dose confirmation. This will allow patients to take ownership of their own treatment rapidly.

Safety: providing a device that reduces handling by the patients ensures that the correct dose is always administered. Automatic needle retraction and ejection mechanisms ensure safe handling and a skin sensor prevents accidental injection.

Technology with a human touch: the complex automated functions combined with sensitive design detailing creates an easy to use, friendly and non-threatening product which simplifies patients lives and aids therapy compliance.

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