Many patients with chronic diseases do not take their drugs as prescribed by their physician. Poor adhesion to the prescribed regimen may cost as much as US$300 billion (£186 billion) per year to the US healthcare system alone (Medco Studies).

Increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments (WHO, 2003). Additionally, studies from Health Maintenance Organisations (HMOs) are showing that improved patient compliance could lower healthcare management costs.

With the objective in mind of enhancing patient adherence, Aptar Pharma has been working since more than a decade ago on smart solutions leveraging electronics for future drug delivery devices.

REGULATORY DRIVERS

There is a growing trend by health authorities across the world towards increasing device regulations. For example, any new drug product using an asthma pressurised Metered Dose Inhaler in the US now needs to be fitted with a dose indicating or counting system to allow the patient to monitor the number of doses remaining. Another move applies to the regulation of multidose nasal spraying devices for controlled substances such as opioids used to treat breakthrough pain. Some countries now require these devices to have a dose counter and/or a locking mechanism to prevent overdose and drug abuse.

Electronics offer the most attractive way forward. In the context of dose counters, electronic systems provide advantages; for example, allowing the device to display large and highly legible digits (compared with mechanical counters). Effective time-controlled robust locking systems can only be achieved with electromechanical components and so electronics are essential here.

MARKET ACCEPTANCE

User studies confirm that electronic drug delivery devices are now as well accepted by the majority of consumers as smart portable devices such as phones, games, and pads. Because these drug delivery devices are designed with a patient-centric approach, the targeted patient population finds them very convenient to use. Furthermore, electronics are getting smarter, requiring less power consumption, having a higher integration level, and incorporating more functionality. In our daily lives, electronics are becoming increasingly visible.

Ease of use is key to the design of a successful electronic device. For example, there must be no need to replace the batteries; the user doesn’t want to get involved with tasks such as this.

In this article, Aptar Pharma describes its latest innovation, e-Device platforms, which have recently been launched. The two new electronic devices, e-Dose Counter and e-Lockout, embrace current rapid increased acceptance of electronic devices in everyday life and are designed to take advantage of the benefits electronics can bring to the drug delivery device field in order to promote increased adherence and compliance.

Based on a presentation by Joachim Koerner, Vice-President e-Device platform R&D, Aptar Pharma Prescription Division.

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TWO NOVEL SMART DELIVERY DEVICES FOR THE FUTURE

With more than 15 years of experience in smart drug delivery solutions, Aptar Pharma recently launched its two new electronic drug delivery e-Device platforms: e-Dose Counter and e-Lockout.

“Smart devices will have an important role to play in integrated healthcare provider systems as these start to be deployed in the mid-to long-term future,” said Joachim Koerner, Vice-President e-Device platform R&D, Aptar Pharma Prescription Division. “With all these innovative developments, Aptar Pharma is able to offer robust and cost-effective solutions for enhancing patient compliance.”

E-DOSE COUNTER

e-Dose Counter (see Figure 1) is a cost-effective solution which meets EU and US regulatory recommendations for nasal and sub-lingual spray delivery of controlled substances. The use of electronics allows the counting display to be large and highly visible making it suitable for patients of all ages and with different conditions and disabilities. Electronics can also provide patient comfort features such as acoustic feedback and flashing displays to inform and warn.

The lightweight, robust device promises cost savings through improving compliance. It is IP protected yet customisable, thus representing an ideal means for achieving product differentiation and effective lifecycle management.

E-LOCKOUT

In addition to counting and displaying the number of actuations, e-Lockout (shown in Figure 2) also prevents the device from being used for a specific period after a predefined number of actuations. Its purpose is to promote compliance and specifically also to prevent overdosing, and it can meet regulatory requirements for controlled substances.

Its locking system, which warns of overdosing, is recommended by regulators for nasal and sub-lingual spray delivery of controlled substances used in breakthrough pain management. In addition to counting and displaying the number of actuations and locking, some of the key features which can also be incorporated into e-Lockout include patient aids and feedback as well as data transmission.

These two novel e-Device platforms are aimed at improving patient compliance.

“USER STUDIES CONFIRM THAT ELECTRONIC DRUG DELIVERY DEVICES ARE NOW AS WELL ACCEPTED BY THE MAJORITY OF CONSUMERS AS SMART PORTABLE DEVICES SUCH AS PHONES, GAMES, AND PADS”
MULTILANGUAGE VERSIONS OF THE APTAR PHARMA WEBSITE NOW LIVE!

When Aptar realigned its activities in 2010, including placing all of its pharmaceutical activities under the brand Aptar Pharma, the company launched a new web page. Since that time, web traffic has doubled and continues to grow, driven in part by strong demand from around the world including the emerging markets.

In response, Aptar developed and has now launched versions of its originally English webpage in four additional languages: Chinese, French, German and Spanish. Access in more languages, including Portuguese, is planned for 2014.

A GLOBAL LEADER

Aptar Pharma was one of the pioneers in the local manufacturing of drug delivery systems. Its production facility in Argentina, which was opened in 1981, serves the pharmaceutical markets of Central and Latin America. The company started its manufacturing operation in Suzhou, China in 1996 to serve both China and other Asian countries, and was the first company licensed to manufacture spray and aerosol drug delivery devices in China. In early 2012, a new manufacturing site was opened in Mumbai, building on 22 years of presence in India.

In Latin America and Asia, Aptar Pharma has been market leader for several years now, and will continue to expand its business in these local markets, which require adapted communication tools and materials.

Visitors to the new web pages now have easy access in their own languages to comprehensive information about Aptar Pharma. These information resources include a company snapshot with Aptar’s identity and strategy as well as key facts and figures; detailed information about our products and services and their therapeutic areas of application; scientific materials for academics and researchers; and media resources for the press.

www.aptar.com/pharma

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