

Adopting Connected Drug Delivery Devices: Top Tips for Pharmaceutical Companies

It has long been recognised that there are serious shortages in the healthcare workforce across all settings and disciplines, as demand for healthcare increases. By 2030, one in six people will be 60 years of age or older¹ and with that comes a range of long-term health conditions such as diabetes, heart disease, osteoarthritis and dementia. At the same time, the WHO estimates a projected shortfall of 18 million health workers by 2030.² The pandemic has magnified these long-standing problems and put health services and their staff under increasing and unprecedented strain and demand.

In this context of staff shortages and increased demand for healthcare, pharmaceutical companies are going beyond simply manufacturing drugs; they are increasingly providing holistic service packages that include training and education around their medicines. Connected drug delivery could significantly enhance such services, by producing valuable data insights on medication compliance, which can then be used to improve therapy management. This article will address the benefits that clinicians, patients and pharmaceutical companies stand to gain from connected drug delivery devices, and later provide pharmaceutical companies with top tips to ensuring the market's sustained growth and successful implementation.

Responding to Demand for Remote Patient Monitoring

Remote consultations have gained traction within the context of the current health crisis, but even before the crisis, remote services were considered one of the three top benefits of digitalisation, according to healthcare stakeholders.³ Remote patient monitoring is already in practice for chronic respiratory conditions and diabetes, but data exchange via digitally connected drug delivery devices is still relatively new. With this comes the possibility of remotely monitoring patients who self-administer

medication in the home, which is invaluable at a time where healthcare services are under so much strain. Projections for the connected drug delivery device market are unsurprisingly positive, with our own analysis⁴ estimating the global market both for injection and inhalation to be \$706 million by 2025, up from \$225 million in 2020 – that is to say a CAGR of over 25%.

For digitally-enabled remote healthcare services to provide maximum value to patients, however, pharmaceutical companies must ensure they meet a number of key capabilities. Principally, these digital tools must provide patients with access to clinicians while allowing clinicians to verify that the right dosage at the right frequency is being administered by patients for prescribed therapies and ultimately to monitor their patients' condition and its evolution. Bearing influence over the development and adoption of the area of connected drug delivery devices are a number of key stakeholders, most importantly clinicians and patients themselves. It will therefore be vital to consider

their needs and expectations first, as will be discussed below.

Consider Your Audience: Clinicians

The benefit of connected drug delivery devices for clinicians is two-fold. From a patient benefit perspective, clinicians recognise the value of remote monitoring as a means to improve patient adherence, and in turn optimise patient outcomes. Having observed the benefits that remote consultation has had for patients with chronic diseases such as rheumatoid arthritis, Crohns' disease and multiple sclerosis, clinicians are likely to see the value-add of bringing connectivity to the area of drug delivery. Using embedded electronics and sensors, connected drug delivery devices provide benefits such as dosage reminders and dose confirmation as well as adherence tracking. This would, for example, enable a diabetic's blood glucose to be monitored remotely, while also recording all adjustments and their reactions in a clinical database. For clinicians, the other concrete benefit of remote monitoring is that it helps to alleviate some of the pressure on



them and their colleagues, helping to tackle the staff shortages and limited resources faced by healthcare services.

Think of the End-user: Patients

As the end-user of connected drug delivery devices, the patient will encounter a number of benefits also. Connectivity opens the door to greater personalisation, potentially providing patients with access to treatment that is tailored to their specific health indicators, which can be adjusted as needed over time. Getting patients more involved with their own treatment through connected devices can strengthen their understanding of their condition and its management. By providing access to and greater transparency of treatment data, patients can easily follow their own progress and fully comprehend the importance of adhering to their prescribed therapy. Where patients are less compliant, they can access training and support tools to help improve adherence to their therapy regimens.

Boundless Potential: Pharmaceutical Companies

Pharmaceutical companies can also benefit from the possibilities created from the

rollout of connected drug delivery devices. In the industry, providing demonstrable value for money has become a critical competitive differentiator. As discussed earlier, dosage reminders can help to improve adherence and most likely outcomes, thereby improving the overall success of a drug using connected devices. Furthermore, knowing that clinicians can keep a careful eye on patient compliance and intervene where administration may not be occurring properly is a huge asset to pharmaceutical companies.

Going further, safely stored and anonymised patient data around outcomes and adherence will be an invaluable tool to demonstrating the efficacy of their drug through concrete, data-backed real-world evidence. Conversely, where outcomes aren't as expected, manufacturers may be able to address instances of patient non-compliance in a more informed way. This data will also be of central importance for the training, adherence monitoring and benefit tracking services that are increasingly being offered by pharmaceutical companies. With these benefits in mind, here are some top tips to consider when implementing connected drug delivery devices:

- Ensure regulatory compliance and address security risks:**
 Working in partnership with health-care authorities and providers, pharmaceutical companies must ensure that data derived from devices are interoperable with standard clinical record systems, and they must also provide robust protection from data breaches. Ensuring that patient privacy is respected and protected, and being able to demonstrate this to stakeholders, is essential to the success of connected drug delivery devices. In a cloud-based world, collaboration between regulators and market players will be essential to data security.
- Prioritise comfort and ease-of-use:**
 While connected functionalities offer new opportunities for self-tracking to patients, they typically find comfort and ease-of-use to be the most important deciding factors. For a connected device to be accepted by patients, it will have had to undergo thorough human factors studies to ensure that non-professional users' needs have been considered and addressed.



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- Stick with simplicity:**
 Since patients may already struggle with remembering to administer medication or the administration procedure itself, new products should ideally avoid introducing new challenges or complexities. Similarly, the perception that a device is complicated to use may lead to resistance from clinicians or carers. This can be a particular challenge for connected devices which require charging, pairing and data transfer.
- Raise awareness among patients:**
 With patients taking on a bigger or potentially more complex role in their own treatment regime, it may be helpful for pharmaceutical companies to raise patient awareness of the benefits of connected drug delivery devices and their capacity to provide a more tailored treatment regime in order to encourage adoption and use.
- Regulate information load and offer training:**
 It may take some adjusting for patients to feel confident using new digital features and apps. To avoid users feeling overwhelmed or distressed, pharmaceutical companies can offer training and support programmes which address concerns and promote the benefits of digitalisation. For this same reason, it may be worth limiting the frequency of notifications and the load of information at patients'

disposal and keeping alerts to a minimum.

Conclusion

As the connected drug delivery market moves to empower patients to take a more informed and active role in their own treatment, pharmaceutical manufacturers are embracing the opportunities these new connected devices will bring, to help deliver the greatest health outcomes to patients. Connected devices equip physicians and care professionals with data they would not otherwise have, and in a timely manner, meaning that they can provide more informed advice, take quicker action when needed, and adjust treatments to specific patient needs. Likewise, patient data can provide invaluable insight into drug efficacy and can serve as the foundation for offering training and education services around therapy management. In future, we are likely to see more sophisticated monitoring and reporting capabilities, and it is more important than ever that clinicians and patients are at the very heart of decisions over new product development to help prevent health services becoming overwhelmed in years to come.

REFERENCES

1. WHO, Decade of healthy ageing report, 2020
2. WHO, Addressing the 18 million health worker shortfall, 28 May 2019
3. Siemens Financial Services, Priority Investment, 2019: <https://new.siemens.com/global/en/products/financing/whitepapers/whitepaper-healthcare-priority-investment.html>

4. Referencing proprietary data, along with third party reports such as: GrandView Research, Connected Drug Delivery Devices Market Analysis, Dec 2018; Acumen Research, Connected Drug Delivery Devices Market, Nov 2019; Future Market Insights, Connected Drug Delivery Devices Market, Dec 2019.



George I'ons

George is currently Head of Product Strategy and Insights at Owen Mumford having worked for the former OEM and now Pharmaceutical Services division of the organisation since 2006. His current focus is on deciphering the rapidly changing pharmaceutical and biotech sectors in relation to their needs for combination products. In his previous roles in business development he worked closely alongside R&D to develop devices for a variety of global pharmaceutical and diagnostic clients. Prior to Owen Mumford George worked for Abbott in EMEA marketing roles in Germany, focusing on their diabetes business.