DEVELOPING DEMONSTRATORS TO INCREASE PATIENT CONFIDENCE AND REDUCE ANXIETY

In this article, Joe Reynolds, Research Manager at Noble, using Noble's collaboration with BD as an example, discusses the value of demonstrators for making patients comfortable and effective with their prefilled syringe, leading to a significant improvement in treatment adherence and patient quality of life.

According to recent research, the global prefilled syringe market is estimated to reach US$22.5 billion (£17.3 billion) by 2025. Driving forces in the market's expansion include technological advancements in drug delivery and the growing use of prefilled syringes for biologic and large molecule medications.[1] While these medications can significantly improve patient quality of life, the WHO estimates that 50% of patients diagnosed with chronic conditions do not take their medications as prescribed.[2] Whilst myriad factors influence patient adherence and outcomes, research has shown that demonstrators and education can positively influence patient acceptance and adherence to treatments using prefilled syringes, safety systems and other forms of drug delivery.

Through advancements in usability and human factors engineering, the overall understanding of patient adherence and, in particular, the value of device demonstrators and onboarding education has greatly improved. While Instructions for Use (IFU), package inserts and other content-based collateral are effective, it is estimated that only 12% of patients have the health literacy needed to understand and manage their treatment using these materials alone, resulting in training gaps that can adversely affect the use of prefilled syringes and safety syringes by patients and other stakeholders.[3]

From experience, Noble has found that confidence and anxiety are two key variables that influence a patient's perception toward drug delivery devices and their overall

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therapy. The onboarding period (or the first 30, 60, 90 days of treatment) is where these attitudes and usage behaviours are first established, becoming key predicators of long-term adherence and outcomes (Figure 1). During the onboarding phase, 45% of patients skip or avoid injections due to needle anxiety or fear,[4] which can subsequently lead to ingrained avoidance behaviours and, ultimately, the discontinuation of treatment.

REDUCING NEEDLE ANXIETY THROUGH THE USE OF DEVICE DEMONSTRATORS

Needle anxiety is a common adherence barrier for patients who use prefilled syringes and other injection-based delivery systems. To help patients overcome the emotional barriers of self-injecting, novel

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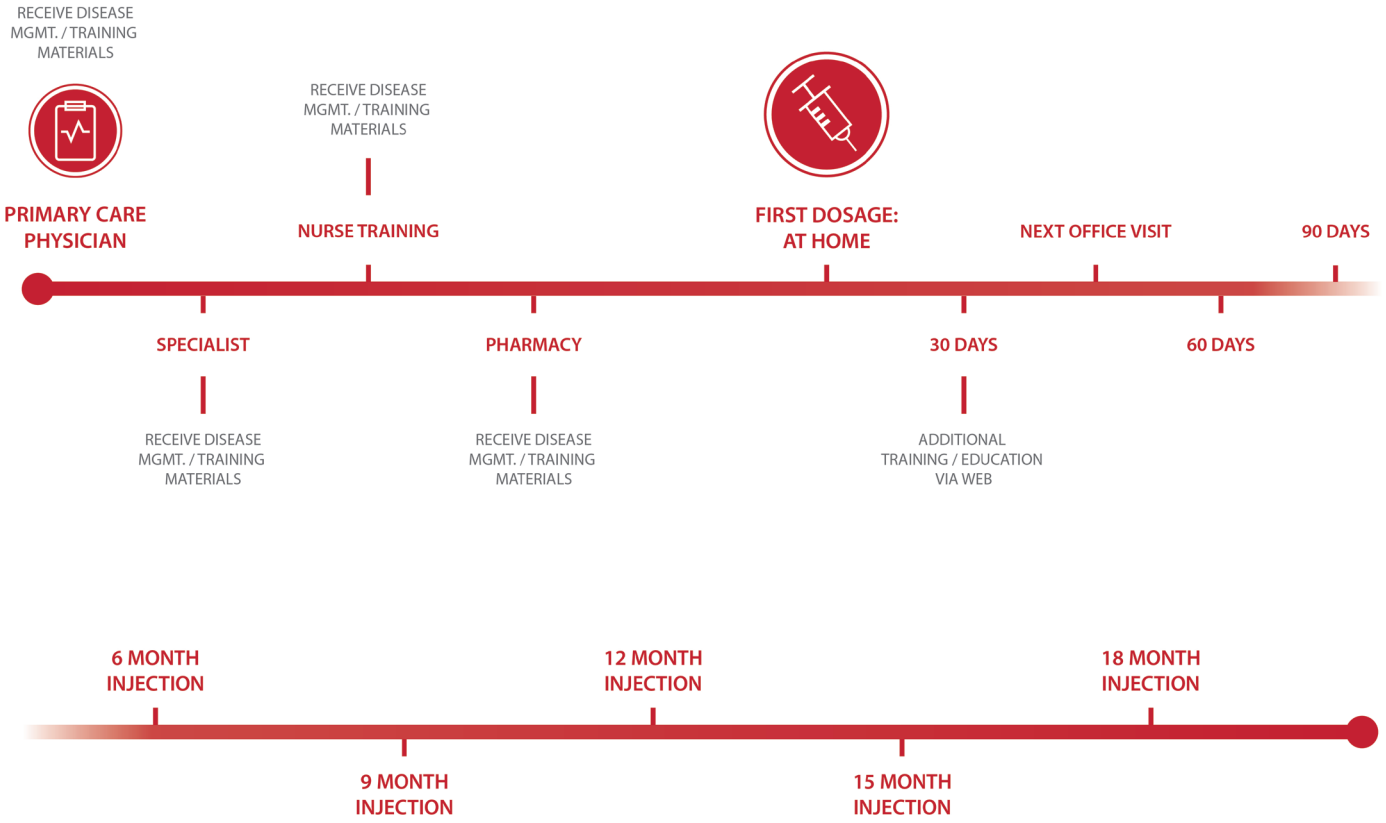

Figure 1: Onboarding timeline.

needle simulation technologies have been developed to fully mimic the deformation, puncture and insertion force characteristics of syringe needles. When applied to prefilled syringe training, these proprietary technologies allow patients to learn, safely, the force and technique required to insert a needle into subcutaneous tissue. A study announced by Noble revealed that demonstrators that incorporate needle simulation technologies result in a greater reduction in patient anxiety compared with traditional training.

COLLABORATIONS THAT FOCUS ON PATIENT SUCCESS

As the pharmaceutical market continues to grow, so too does the need for injection devices that support both the complex properties of molecules and the needs of the end-user performing the injection. By providing a best-in-class user experience, pharmaceutical manufacturers can ensure that patients have access to resources that promote meaningful outcomes and build confidence in their ability to self-mange treatments and use drug delivery devices.

Noble collaborates with Becton Dickinson (BD) to provide advanced patient onboarding solutions, including demonstration devices (Figure 2).

> "Through the ongoing collaboration, Noble leverages its onboarding solutions to develop novel demonstrators based on BD UltraSafe™ technology, thereby improving the patient experience and confidence."

Through the ongoing collaboration, Noble leverages its onboarding solutions to develop novel demonstrators based on BD UltraSafe™ technology, thereby improving the patient experience and confidence. Noble's market expertise and BD's passive needlestick safety devices allow for a platform approach for drug delivery devices and access to dedicated onboarding systems. BD has been an early innovator

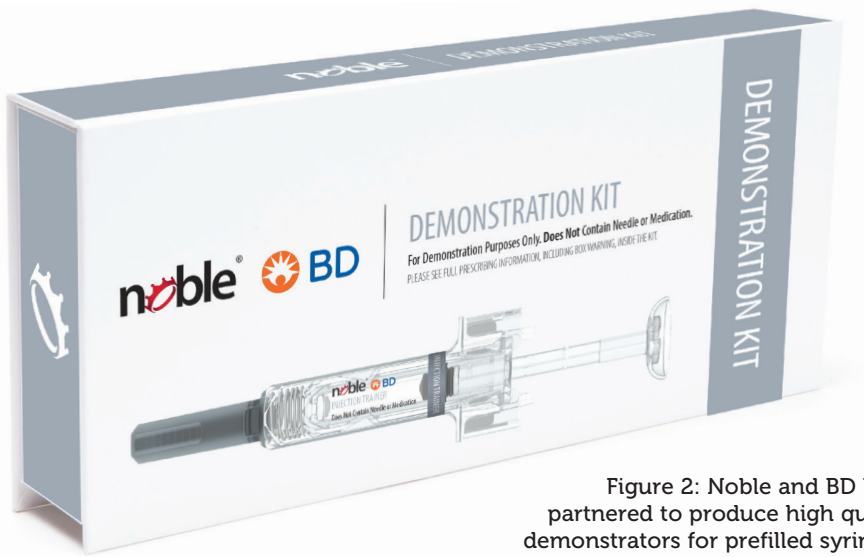

Figure 2: Noble and BD have partnered to produce high quality demonstrators for prefilled syringes.

in developing safety-engineered solutions for the market, partnering with numerous customers to ensure product success.

Partnerships and collaborations like the one between Noble and BD provide the expertise needed to develop optimal treatments from start to finish. In a recent market survey conducted by Noble, 89% of patients reported that it was very important to them to have the most realistic demonstrating device possible. By having a deep understanding of complex device engineering and patient needs, companies are better able to create positive and impactful onboarding solutions for patients. User-centric companies like BD and Noble have the patient in mind as they begin the onboarding process for treatment all the way to the final step, the administration of treatment.

One example of how this collaboration benefits patients is BD's UltraSafe Plus™ Passive Needle Guard. The overall design of the product was validated by performing handling studies with both nurses and self-injecting patients. Results from the user study confirmed that the BD UltraSafe Plus™ Passive Needle Guard was intuitive and easy to use with a 100% activation success rate for all 500 injections. Noble's device demonstrators will compliment BD's syringe and help instil another level of confidence during the onboarding process through hands-on experience that fully mimics the actual device (Figure 3). Device demonstrators have become the foundation for effective education and onboarding strategies, allowing patients and healthcare providers to safely learn how to use prefilled syringes and other forms of drug delivery.

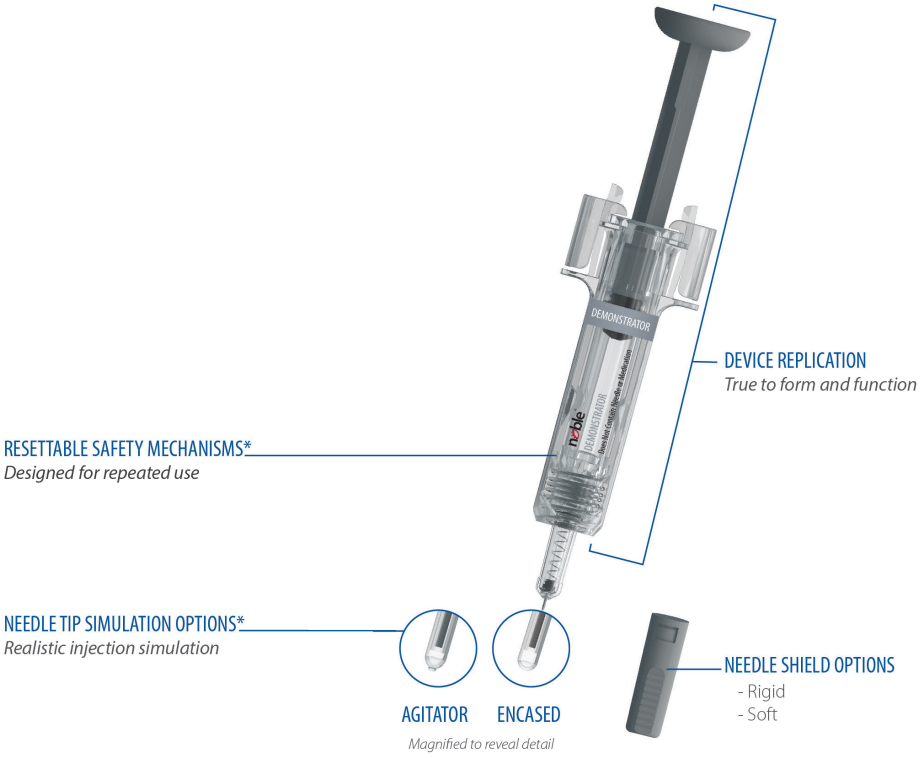

Figure 3: Noble offers a variety of innovative features designed to simulate BD UltraSafe™ technologies with the goal of familiarising and preparing patients to self-inject.

DEVELOPMENT OF DEMONSTRATORS FOR PREFILLED SYRINGE SYSTEMS

Noble's prefilled syringe demonstrators simulate the attributes of real prefilled syringes and are available as off-the-shelf or customised platforms, which include proprietary technologies. With the ability to be customised, brands are able to include capabilities like audio, tactile feedback, sensors, syncing and error detection features. They also offer customisable options for syringe angle training that can be custom-fit to shape and design, colour, and 45- and 90-degree angularity.

These demonstrators are custom developed to mimic standard prefilled syringes and prefilled syringes with safety systems. A few key features include:

- **Locking Needle Shield & Resettable Safety Mechanisms** – Demonstrators are intended to replicate the device safety and shielding systems with the capability for users to reset the mechanisms for repeated use.
- **Replication** – Demonstrators are designed to be true to form and function of the real prefilled syringe, able to simulate all aspects of the patient experience including form, colour adjustments, window size and actuation force.
- **Needle Tip Simulation Option** – Demonstrators should also offer the option to exhibit realistic injection simulation designed to simulate the feel and forces involved with an injection.

> "By setting high quality standards when designing medical demonstrator devices, companies are able to prioritise user needs and translate those needs into effective onboarding solutions."

BEST PRACTICES IN QUALITY

Noble adheres to a strict quality control process to ensure patients are provided with best-in-class demonstration devices. All device demonstrators are tested to guarantee that needle simulation and other features accurately simulate those of real drug delivery devices. By setting high quality standards when designing medical demonstrator devices, companies are able to prioritise user needs and translate those needs into effective onboarding solutions.

The industry will continue to evolve, giving patients the opportunity to gain confidence in their treatments, overcome adherence barriers and, in the end, achieve an improved quality of live. Through partnerships and collaborations that put the patient at the centre, like the relationship between Noble and BD, patients will have a better onboarding experience for treatment all the way to the last step as they administer their medication. Industry leaders like BD and Noble, partners who know the power of incorporating human factors into engineering and experiential training, inspire the industry to innovate design and onboarding practices and ultimately provide patients with better overall treatment options.

ABOUT THE COMPANY

Noble is a full-service, user-centric advanced drug delivery training device and patient onboarding company. Noble works closely with the world's leading drug delivery device original equipment manufacturers and pharmaceutical companies to develop educational and training solutions designed to provide positive patient onboarding experiences, reduce errors and improve patient outcomes.

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ABOUT THE AUTHOR

Joe Reynolds is Research Manager at Noble, where he leverages his knowledge and experience to develop and implement strategies that improve the patient experience and maximise value for stakeholders. His experiences include commercial, managed care and product development initiatives with leading medical device, pharmaceutical and biopharmaceutical manufacturers. Mr Reynolds earned his Bachelor of Science in Business Administration from the University of Central Florida, a Master of Science in Marketing from the University of South Florida, and a Master of Science in Pharmacy and Master Certificate in Drug Regulatory Affairs from the University of Florida.

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