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THE IMPORTANCE OF TRAINING AND ONBOARDING FOR INTRANASAL RESCUE THERAPIES

With a recent resurgence in nasal drug repurposing, Joe Masci, Executive Director, Business Development at Noble, an Aptar Pharma company, looks at the importance of training and onboarding for intranasal rescue therapies.

Nasal drug repurposing has seen a real resurgence recently, driven by several factors. From an economic perspective, partners benefit from reduced development costs, intellectual property (IP) creation, increased market share and extended lifecycle. The regulatory pathways, such as the US 505(b)2, sometimes complemented by orphan drug designation, are faster and less complex. It may also provide an opportunity to respond to a currently unmet medical need.

Patients benefit too – they feel empowered because medical staff intervention and supervision can be reduced, putting patients back in greater control of their lives. And, of course, nasal drug delivery does provide simplified access, often with an intuitive, user-friendly method of delivery.

That said, repurposing does remain a complex exercise and that complexity is often underestimated. We are now seeing a new generation of industry newcomers and disruptors making their mark, particularly in the rescue therapy space. Narcan® (naloxone), a competitive antagonist to opioids in the central nervous system (CNS) – and more recently a short-term treatment for seizure clusters in patients with epilepsy – are examples of existing therapies repurposed for nasal drug delivery.

So why nasal drug delivery? Primarily because of better patient convenience, greater personal empowerment and improved user compliance but also to overcome particular objections to certain more invasive delivery routes. It also means the patient does not need a healthcare professional (HCP) to administer the drug, which could be life critical in an emergency scenario where, for example, the patient has fainted or is unconscious. Essentially, anyone can be of assistance in administering an intranasal product.

> "As well as confirming that intranasal administration via a Unidose delivery device was the easiest dose to administer, the study also revealed a significant improvement in study participants' ability to administer the dose when trained prior to administering the drug.[5]"

But therein lies a challenge. In principle, anyone can help. But when faced with an emergency scenario, will people have the confidence to come to someone's aid? The levels of anxiety when using a drug delivery device can be high under normal circumstances, let alone under stress and using a product you are unfamiliar with.

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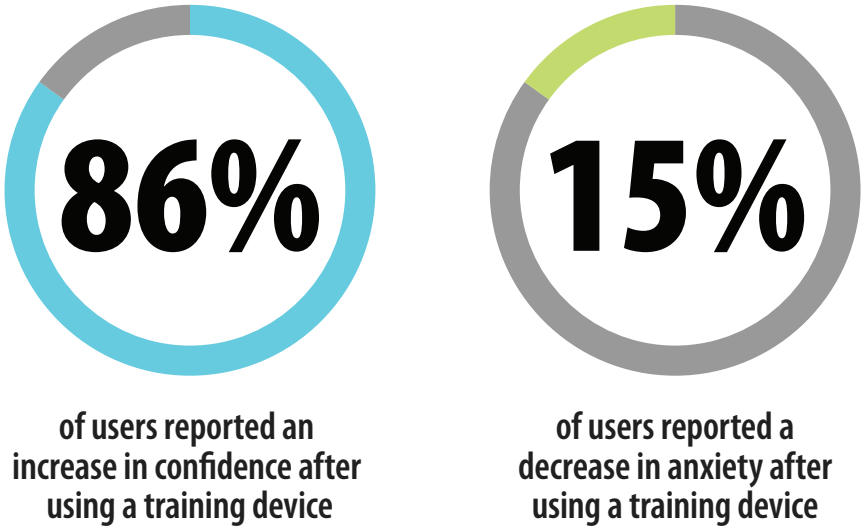

Figure 1: Proper training and onboarding help build user confidence, which in the rescue therapy setting can be a crucial factor.

> "A University of Texas study found that only 16% of adults with an epinephrine autoinjector prescription were able to demonstrate how to properly use that device."

Noble has extensive experience in medical device training solutions, patient onboarding strategies and multisensory product development that can be leveraged to help improve patient outcomes through proper device usage in either a chronic or emergency therapy setting.

PATIENT DEVICE TRAINING

For some, the value of patient training may not be immediately evident, particularly as device developers strive to make devices more intuitive with the goal of improving adherence rates. Nonetheless, data from various studies affirms the need for effective patient training.

In a study of more than 16,000 patients, effective training was an integral element of a patient support programme that was responsible for a 77-85% decrease in treatment abandonment.[1] Training has also been found to not only reduce errors but also aid psychologically. Some 86% of users reported an increase in confidence after using a training device, with 15% of users reporting a decrease in anxiety after using a training device (Figure 1).[2]

A REAL CHALLENGE

In the following section, we explore three recent repurposed nasal therapies where the requirement for effective training is quite evident.

The first repurposed intranasal seizure medication received US FDA approval in 2019. This therapy enables epileptic patients and their care partners to benefit from a simple and intuitive Unidose nasal device to treat seizure clusters. Rescue treatment of seizure clusters is critical because when left untreated, they can increase the risk of physical injury and neurological damage. Despite the potentially serious impact of seizure clusters, many diagnosed patients may go untreated because of the stigma associated with existing emergency remedies.[3]

A second intranasal seizure medication was approved by the FDA in January 2020, further expanding rescue treatment options for epileptic patients and their circle of care partners. These two products now offer patients and caregivers much greater flexibility when developing seizure rescue plans.

Although not yet approved by the FDA, several companies are developing rescue therapies for severe allergic reactions by repurposing epinephrine via Unidose and Bidose nasal delivery devices. If approved by the FDA, intranasal epinephrine products may address commonly cited issues with epinephrine autoinjectors, including ready access, discomfort with needles and a lack of proper training in device use.

The lack of training in the proper use of emergency autoinjectors has been well documented in several studies. A University of Texas study found that only 16% of adults with an epinephrine autoinjector prescription were able to demonstrate how to properly use that device. Another study by Northwestern University found that one-third of parents indicated that their child's doctor did not provide any training on the proper use of an epinephrine autoinjector.[4]

TRAINING FOR AN EMERGENCY

Unidose nasal delivery devices are comparatively simple and intuitive to use; however, there does remain a real need for robust stakeholder training, particularly when it comes to rescue therapy administration. The key considerations include improving user care partner confidence and countering training decay. Within one hour, people will have forgotten an average of 50% of the information presented. Within 24 hours, they have forgotten an average of 70% of new information and, within a week, they have forgotten 90% of new information.

Reducing any anxiety surrounding the administration of the drug product, overcoming the stigma that may exist with legacy FDA-approved therapies for these conditions and addressing negative transfer (the tendency to apply skills from a previous task to a new task) may all result in errors in administration.

As with all products that place the burden of administration in the hands of the user, care partner or even an onlooker, proper training and onboarding helps to build user confidence – which in the rescue therapy setting can be a crucial factor. Offering a well-designed training kit that includes a resettable demonstration device (Figures 2 & 3) can help ensure a high level of user confidence in what will be unscheduled, stressful and potentially life-threatening circumstances. These scenarios will inevitably create a high level of anxiety, with unpredictable effects on the user.

Training not only reduces errors but can help address user anxiety. In 2014, we conducted some research in conjunction with Auburn University (AL, US), testing 55 injection-naïve users. Our data showed that providing access to training prior to using a self-administration combination product results in an 86% increase in confidence after using a training device.

A recent study conducted by the University of Binghamton (NY, US) was undertaken to evaluate the effectiveness of different routes of administration for the

Figure 2: Noble's resettable devices are the core of its training and onboarding kits.

Figure 3: For optimal user training, the Noble Unidose training device closely replicates the look and feel of Aptar Pharma's UDS, the drug delivery device upon which it is based.

"Training is most successful when users are equipped with a mechanical training device that replicates the look, feel and operation of the device as closely as possible."

delivery of naloxone to opioid overdose patients. As well as confirming that intranasal administration via a Unidose delivery device was the easiest dose to administer, the study also revealed a significant improvement in study participants' ability to administer the dose when trained prior to administering the drug.[5] Separate research also suggests that training is most successful when users are equipped with a mechanical training device that replicates the look, feel and operation of the device as closely as possible.[1]

PRACTICE MAKES PERFECT

As we have already discussed, training decay – the tendency to forget what we've been taught – can also play a crucial role. By the very nature of the situation, the circumstances for having to administer rescue therapy medications for severe seizures or anaphylaxis will be unpredictable and unplanned. A variety of steps can be taken to counteract the effects of training decay, including equipping users with a training kit and a resettable demonstration device.

In our own study, we looked to understand how patients interact with training collateral during the first 14 days of their treatment. The study was composed of three cohorts who received different training stimuli for use during the decay period. Some 56% of participants who only had access to the instructions for use (IFU) made critical mistakes during administration. By contrast, one group given just a training device and a second group receiving a training device and instructional video completed all steps perfectly. Those participants with access to the training kit practised at least three times over a two-week period, strongly suggesting that access to a kit can empower users to master the self-administration process. In all, 92% of all study participants indicated that they would prefer to receive a training device to take home and practise with.[6]

IMPACT ON LIMITED HEALTHCARE RESOURCES

Prior to the FDA approval of the first intranasal therapy, the only FDA-approved rescue treatment for epileptic seizure clusters was a rectal gel. Despite its efficacy, there is an inevitable stigma associated with this route of administration, and studies indicate that most care partners would instead prefer to rely on the assistance of emergency personnel in a seizure emergency.[7] Equally, the challenges of using emergency epinephrine autoinjectors to treat severe cases of anaphylaxis are well documented.

> "By collaborating on the integration of a device training strategy, pharmaceutical partners can benefit from a unique market entry strategy."

One study revealed that 52% people who suffered a severe allergic reaction chose to seek in-clinic medical attention rather than use an available autoinjector.[8]

Every study referenced so far demonstrates how training can enable patients and caregivers to take better control of their medication regimen. Training, together with more patient-friendly devices, also benefits the wider healthcare community – removing dependence on HCPs and freeing limited resources for other patients.

BREAK OLD HABITS AND CREATE NEW ONES

Negative transfer – where previous knowledge interferes with new learning – is a real threat to the effective use of devices. For example, users familiar with over-the-counter nasal decongestants may wrongly assume that a Unidose nasal delivery device must be primed before use. Clearly, following that premise with an emergency Unidose device could have a catastrophic outcome as that action would use up the single rescue dose.

WHERE TRAINING ADDS VALUE

We know that 50% of HCPs do not receive training with new delivery devices, and that 49% of HCPs do not train patients. We also know that 86% of patients misuse autoinjectors. This all adds up to a significant opportunity to establish differentiation and competitive advantage through training programmes. By collaborating on the integration of a device training strategy, pharmaceutical partners can benefit from a unique market entry strategy – one that is the epitome of a patient-centric approach: "Not only have we delivered an intuitive, life-saving device, but we will also help you use it."

An effective training strategy can help with future product development, too. Understanding the users' view of what is needed by population type, therapy area and even by dosing, provides real insight that can fuel research and development for future devices. At Noble, we believe our value proposition is as much about enabling the next generation of better devices as it is about enabling users with current technologies.

A CASE STUDY

The first intranasal treatment was developed using the Aptar Pharma Unidose device for intermittent, stereotypic episodes of frequent seizure activity in people living with epilepsy. The treatment is intended be used by non-HCPs – making it imperative that patients and caregivers are trained in the proper administration of the drug.

Noble developed the nasal trainer for this product that replicates the look and function of the real device, whilst being easily resettable by twisting the plunger. The kit includes packaging and training device IFUs, ensuring that end users are properly equipped with the knowledge and confidence to administer the emergency medication quickly and effectively – and empowering patients to engage their care partners with the knowledge that this new rescue therapy is simple to use.

CONCLUSION

We have acknowledged that drug repurposing has seen a real resurgence recently, primarily because of the lower cost of market entry and the more streamlined regulatory pathway. Particularly for the administration of rescue therapies, nasal drug delivery offers real benefit – essentially, anyone can be of assistance in administering the product. However, in the stress-filled emergency scenario, how can we help ensure that onlookers or caregivers are ready to deliver the product timely and error-free?

Delivery device training is becoming more of an accepted practice but there are nuances between a normal self-administration scenario and an emergency one. Significant physiological factors come into play which can be overcome with an effective stakeholder training and onboarding solution – enabling users to understand and, most importantly, remember how to use the device properly and with confidence.

Training should not be viewed as a nice to have. In a world where patient centricity is the primary driver, training should become an integral part of pharmaceutical partners' product launch strategy. The benefits in return are significant – value-add to the product proposition; deeper understanding of user behaviour; and, ultimately, wider acceptance and greater adherence. If training isn't on today's agenda, be prepared because it will certainly be on the priority list very soon.

ABOUT THE COMPANY

Noble is focused on fostering healthy patient outcomes for those who self-administer drug therapies, through the development of robust training devices and onboarding solutions for the world's top pharma brands and biotech companies. Noble manufactures and commercialises training devices that mimic the exact feel, force and function of drug delivery devices such as autoinjectors, prefilled syringes and onbody, nasal and pulmonary devices in order to increase patient adherence and confidence, and decrease usage errors. Noble is an Aptar Pharma company.

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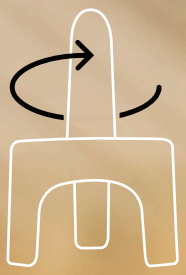
ABOUT THE AUTHOR

Joe Masci, Executive Director of Business Development at Noble, an Aptar Pharma company, is responsible for new business development, business strategy and the Noble sales team. He has more than 30 years of experience in the design, development and manufacture of mechanical and electronic devices and 14 years' direct experience in the drug delivery device segment. Prior to joining Noble in January 2019, Mr Masci served as Director of Business Development for the Bespak division of Consort Medical. He earned a Bachelor of Science in Mechanical Engineering from The Massachusetts Institute of Technology and served in the US Navy for five years.

Nasal training devices with a twist

Noble's Unidose training device replicates the form and function of Aptar Pharma's UDS and features a novel ***twist*** reset function, making it easy for users and caregivers to practice how to administer a dose quickly, safely and effectively.



Twist reset mechanism

As the popularity of nasal Unidose and Bidose devices gains momentum, particularly in the rescue therapy segment, so does the need for effective training. Noble's training platform solution accelerates your market entry strategy on several levels - enabling your drug product's training program to get to market quicker, minimizing development, tooling and testing time, while supporting your brand.

Learn more: **GoNoble.com/Unidose**

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