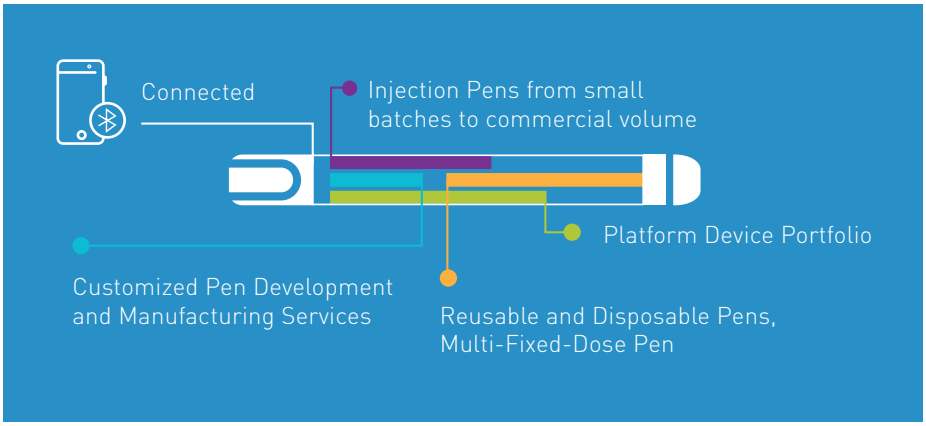
THE D-FLEX™ INJECTION PEN FOR GLP-1 MEDICATION

The Patient-centered Treatment Approach to Type 2 Diabetes

Compliance with treatment and effectiveness can be improved through connectivity



Brief summary: Type 2 diabetes is a global health problem – according to expert estimates, the number of patients worldwide will increase by 48 percent[1] by 2045. Constantly elevated blood sugar levels mean stress for the blood vessels, which can lead to feared complications, including life-threatening sequelae such as a heart attack, organ failure or stroke. A consistent treatment of type 2 diabetes as early as possible can significantly improve the quality of life for the patient and the course of the disease.

All patients have in common that they have had to treat it on their own their whole lives. A patient-centered approach must be consistently developed so that the GLP-1 analogs treatment is efficient. The innovative D-Flex™ injection pen can make a significant contribution to this.

The course of treatment is the starting point for developing an injection pen

If type 2 diabetes is detected at an early stage, patients can initially achieve impro-vement by changing lifestyle habits. This includes more exercise, healthy diet and possibly weight loss, which is sometimes also supported with medication. This is followed by a phase in which the patients have to use a combination of pills and a injection pen. During this stage, nearly 75 percent of patients still manage without insulin.
„After 10 to 20 years, almost all patients with type 2 diabetes require in-sulin," says Alaleh Mazhari, DO, Associate Professor of Endocrinology at Loyola Me-dicine in Maywood, Illinois.

The course of the disease is almost identical in all patients, making the patients' needs also similar. This is where the development of the D-Flex™ for GLP-1 comes in.

Different Active Ingredients – An Injection Pen for GLP-1

The abbreviation GLP-1 means glucogonlike peptide. This is an impor-tant hormone for sugar metabolism, which is formed in the intestine. GLP-1 promotes the release of insulin in the body and pre-vents the release of glucagon. At the same time, it delays emptying of the stomach and promotes the feeling of being full.

The innovative D-Flex™ injection pen can thus contribute to patients reducing weight and delaying the use of insulin. Common active ingredients modeled as GLP-1 ana-logs to the hormone include:

- Exenatide (Byetta / Bydureon), approved in 2005/2012
- Liraglutide (Victoza, Saxenda), approved in 2010
- Albiglutide (Tanzeum), approved in 2014
- Dulaglutide (Trulicity), approved in 2014
- Lixisenatide (Lyxumia), approved in 2016
- Semaglutide (Ozempic), approved in 2017

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The **D-Flex**™ Injection Pen for GLP-1 Medication

The success of the injection pen for GLP-1 greatly depends on how easy it is for patients to use. Additional criteria include:

- ease of adjusting the prescribed dose
- mechanism for avoiding incorrect dosages
- sturdy design of the GLP-1 injection pen

Step-by-step training with injection pens for improved treatment efficiency

It has been proven in practice that patients can be trained to handle the injection pens carefully. For only in this way are they ready when they need to switch to insulin at a later point in time. "We do not tell patients that the GLP-1 active ingredient can be injected in a time window of 4 to 5 hours. We tell them that it must be administered no more than one hour before eating. Because we would like them to develop a routine right from the start so that it's not too big of a transition to handling insulin," says Jan, diabetes nurse at the University Hospital of Antwerp (UZA). In the first months of treatment, not only does the application routine need to be monitored, but the correct dose also needs to be determined. Innovative injection pens are ideal for this, which can be preset for different doses. A injection pen for GLP-1 with connectivity also makes sense, which contributes to an increased treatment efficiency by supporting the patient and, for example, sending data to the diabetes nurses or other relevant people involved.

Pharmaceutical manufacturers benefit from a patient-oriented solution approach for the D-Flex™ injection pen for GLP-1 Drug dosing systems that were developed based on the patient and his or her needs are successful as such, which are implemented top-down. Without the necessary acceptance among patients and the consideration of patient needs, compliance with treatment will not be satisfactory in practice and the treatment will not be successful. So the D-Flex™ injection pen itself is just as important as the innovative active ingredient. Haselmeier has a long tradition in developing modern injection systems and places particular value on first knowing the patients' living circumstances and their needs. That is why the company is developing a new generation of injection pens and devices that are very popular with patients and are particularly easy to use. Haselmeier is currently working on an innovative injection pen with connectivity: The D-Flex™ pen will be able to be sup-plemented with a smart cap in the future that connects the system to a smartphone. Haselmeier is a development partner for companies from the pharmaceutical and biotechnology fields. The company has extensive expertise and provides bro-ad support in assisting manufacturers of drugs for subcutaneous self-application to develop and introduce new active ingredients.

Conclusion: Type 2 diabetes will continue to spread worldwide in the estimation of the International Diabetes Foundation in Brussels. Modern GLP-1 analogs may delay the use of insulin and at the same time prepare patients for how to handle insulin. The D-Flex™ injection pen (thanks to connectivity also suitable for smart health) supports patients and can thus make a significant contribution to efficient treatment.

[1] Source: International Diabetes Foundation, Brussels

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