



RESHAPING THE INJECTABLE LANDSCAPE: NOVEL METABOLIC THERAPIES, EXPANDING PATIENT REACH, AND RISING TECHNICAL COMPLEXITY FOR DRUG DELIVERY DEVICE PLATFORMS



Our vision is to become the most patient-centric drug delivery device solutions & combination product services company. We design and manufacture drug delivery device solutions that maximize treatment efficacy and partner with our customers in their device strategies, to ultimately bring high quality and safe treatment solutions to patients.

Breakthrough diabetes & obesity treatments driving a new standard of care

The treatment landscape for obesity and type 2 diabetes is rapidly evolving beyond traditional GLP-1 (glucagon-like peptide-1) receptor agonists, which have demonstrated substantial benefits on body weight, glycaemic control, and cardiovascular outcomes. Novel therapies increasing-

ly target multiple metabolic pathways simultaneously, including GIP (glucose-dependent insulintropic polypeptide) and glucagon receptors. Dual and triple agonists, such as GLP-1/GIP and GLP-1/GIP/glucagon combinations, aim to harness complementary mechanisms: GLP-1 reduces appetite and delays gastric emptying, GIP may enhance insulin secretion and improve adipose tissue metabolism, while glucagon receptor activation can increase

energy expenditure and promote fat oxidation. This multi-receptor approach seeks to achieve greater weight loss and metabolic improvements than GLP-1 monotherapy, positioning next-generation incretin therapies as potential standards of care for obesity and cardiometabolic disease.

Beyond incretins, several new hormonal pathways are attracting significant interest. Amylin receptor agonists mimic the pancreatic hormone amylin, enhancing satiety, reducing food intake, and potentially complementing GLP-1-based therapies. NPY2 receptor agonists, which act through peptide YY (PYY)-related pathways, target appetite regulation at the level of the hypothalamus and gut-brain axis, offering another strategy to suppress hunger and improve weight management. Meanwhile, UCN2 (urocortin-2), acting through corticotropin-releasing factor receptor type 2 (CRFR2), has shown potential to improve insulin sensitivity, glucose utilization, and energy metabolism in preclinical and early clinical studies.

Amylin is naturally produced by pancreatic beta cells and is released alongside insulin. Unlike GLP-1 ther-

apies, amylin works primarily by increasing feelings of fullness (satiety), slowing stomach emptying, reducing post-meal glucagon secretion, helping control post-meal blood sugar spikes and food intake. Amylin is not new, the first one demonstrated benefits, but had limited uptake because it required frequent injections and offered modest efficacy. There is a renewed interest as newer, long-acting amylin analogues are being developed and may provide substantially greater weight-loss and metabolic benefits, either as standalone therapies, or in combination with GLP-1 medicines.

Although these mechanisms remain at varying stages of development, they reflect a broader trend toward combination therapies that address multiple physiological drivers of obesity and diabetes, with the goal of delivering greater efficacy while preserving tolerability and long-term adherence.

Expanding access to large and diverse patient populations

The rapid expansion of indications for obesity and cardiometabolic

therapies is significantly broadening the population eligible for injectable treatments. What began primarily as a therapeutic option for patients with type 2 diabetes has evolved into a treatment paradigm that now addresses obesity, cardiovascular disease, chronic kidney disease, and other interconnected metabolic disorders. As clinical evidence continues to demonstrate benefits across multiple disease states, healthcare systems are preparing for much larger and more heterogeneous patient populations, encompassing different ages, health literacy levels, physical abilities, and treatment experiences. This shift requires drug delivery solutions that can support a wider range of users while maintaining safety, effectiveness, and ease of administration. The move toward patient-centric care makes accessibility and usability critical factors in ensuring successful treatment adoption across diverse patient groups. As access expands, the role of the delivery device becomes increasingly important in supporting adherence and long-term clinical outcomes. Many newly eligible patients may have limited prior experience with self-injection, creating a need for intuitive, reliable, and confidence-in-

spiring device platforms. Features such as simplified dose selection, clear visual feedback, ergonomic design, and reduced injection force can help minimize administration errors and improve the overall injection experience. By combining innovative therapies with user-friendly delivery technologies, manufacturers can reduce barriers to treatment initiation and persistence, ultimately enabling more patients to benefit from these transformative medicines. This patient-focused approach will be essential as injectable therapies



*Enhancing comfort and confidence
for injection-naïve patients*

continue to reach broader global populations and become a standard component of cardiometabolic disease management.

Managing Increased Complexity in Drug Delivery Systems

Above-mentioned recent advances in peptide- and protein-based therapies have driven the development of device platforms with higher drug concentrations, larger administered doses, and extended dosing intervals. These attributes were historically more common in specialty biologics and immunology treatments but are now becoming a significant consideration in metabolic care. Consequently, formulations are frequently associated with increased viscosity and, in some cases, larger injection volumes than those traditionally encountered in the metabolic therapy landscape. These trends introduce important technical challenges for combination product development, as elevated viscosity can significantly increase injection force requirements, prolong administration times, and affect the overall patient experience. Device platforms must therefore be engineered to en-

sure robust delivery performance, dosing accuracy, and formulation compatibility while maintaining acceptable levels of patient comfort and ease of use.

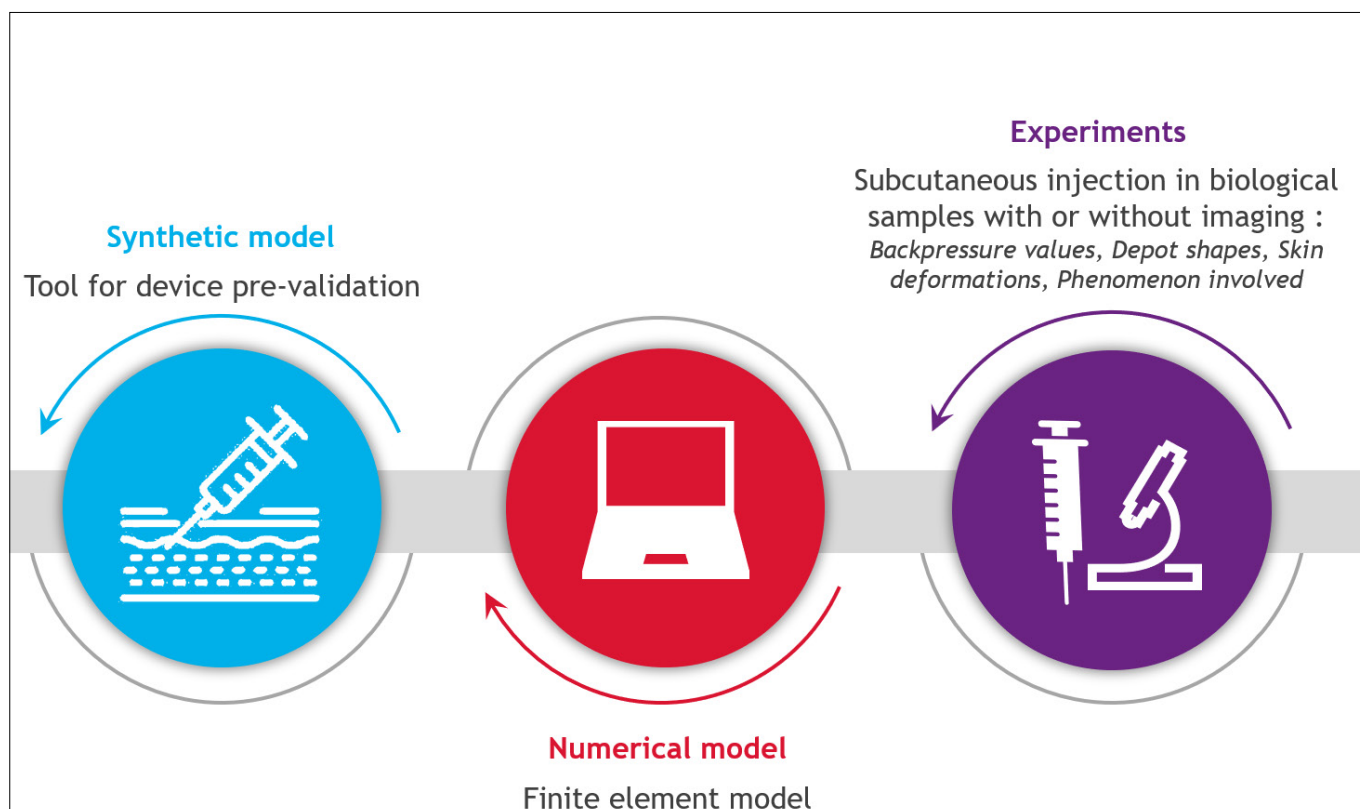
The emergence of high-volume and high-viscosity formulations represents a notable shift for metabolic therapies, where drug delivery systems have historically been optimized for relatively low-volume subcutaneous administration. To address these evolving requirements, next-generation delivery platforms are incorporating advanced drive mechanisms, enhanced container closure systems, optimized fluid pathways. Beyond technical performance, particular consideration must be given to human factors engineering, given the chronic nature of metabolic diseases and the large populations expected to self-administer treatment over prolonged periods. Consequently, the successful integration of drug formulation and device design has become a critical determinant of therapeutic adoption, adherence, and commercial success, underscoring the growing importance of platform technologies capable of reliably delivering high-dose, high-viscosity medicines in a patient-centric manner.



Addressing patients with overweight or obesity as their primary health condition

To address these challenges, Nemera has adopted a science-driven approach centred on developing a

deeper understanding of subcutaneous (SC) tissue behaviour during high-volume and high-viscosity injections. Through an industrial PhD program and advanced synchrotron-based imaging studies, Nemera is investigating the mechanical phenomena that occur within SC tissue, with the objective of generating predictive models capable of optimizing device design and injection performance for next-generation therapies. This research aims to identify how formulation viscosity, volume, pressure, and tissue structures interact during injection, providing valuable insights for the development of more patient-cen-



A skin modeling tool to understand the biological tissue impact in high volume delivery

tric delivery solutions. In parallel, Nemera is collaborating with MTD Group, the needle technology specialist to explore how needle design and flow-rate optimization can help mitigate injection burden, reduce required injection forces, and improve the overall injection experience for patients receiving complex biologic therapies. Together, these complementary initiatives reflect Nemera's patient-centric approach to combination product development: not only ensuring that increasing-

ly challenging formulations can be delivered effectively but also helping patients receive their treatment with greater comfort, confidence, and convenience.

The injectable cardiometabolic market is entering a new growth phase driven by next-generation therapies that target multiple metabolic pathways, offering superior efficacy versus traditional GLP-1 treatments. At the same time, expanding indications across obesity, cardiovascular, and kidney diseases are significantly increasing the addressable patient population and raising expectations for simple, patient-centric self-injection solutions. However, higher-dose, higher-volume, and more viscous formulations introduce greater device engineering challenges. Success will increasingly depend on drug-device integration, with innovative delivery platforms becoming a key differentiator for treatment adoption, adherence, patient experience, and long-term commercial performance.



Reducing injection burden - How needle and flow-rate optimization improve patient comfort