

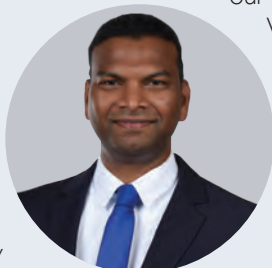



## Putting Patients First

Injections are increasingly administered by patients at home, so convenience and useability are essential. Patient perspectives can make a huge difference when designing drug delivery devices that are truly fit for real-world use. And that's why Terumo Pharmaceutical Solutions works so closely with its customers on product design that addresses the resulting patient needs. Here, Anil Busimi, Marketing Director, explains how the company supports its customers – and how a new website will further enrich the customer journey.

What's the Terumo Pharmaceutical Solutions mission and backstory? In short, we are dedicated to delivering outstanding solutions to the pharma industry and ultimately patients. We like to describe ourselves as proactive innovators – and we feel it's important to create solutions in the context of the larger issues facing medicine – from reducing patient burden to improving safety in support of medical efficiency and improved care.

Like many others, I love working in the pharmaceutical industry because it offers a great opportunity to make a positive difference to people's lives. Our customers in pharma and biotech are working hard to find effective medicines against many diseases to improve quality of life for patients – and we are part of that story. Companies like Terumo play a crucial role in investing all possible resources to strive for drug delivery devices – especially injection devices and accessories – being safe, convenient, and of greater comfort.

As for the backstory, we are part of the Terumo Group – a global healthcare technology leader with almost 100 years of experience and the mission of “Contributing to Society through Healthcare.” The company was established in 1921 in Tokyo, and now employs over 25,000 associates across key international markets, delivering a full portfolio of medical and parenteral delivery solutions to more than 160 countries.

What are your views on patient centricity? In simple words: “The patient is our end user.” Everything we do should always take into account the patient and we must always ask if we are improving products for end users. We supply our products to pharma companies, so we rely on our customers to incorporate patient perspectives right from our first interactions on a project.

Where possible, we also engage closely with patient groups to fully understand real-world challenges with drug and injection devices. Just recently, our team conducted a research project amongst the hemophilia community to see how safety winged infusion sets are used. Our aim was to gather insights into the daily activities of patients to see how we could improve on the process of administering medication. These important insights will fuel our future innovations and ensure the voice of the patient is embedded in the projects we pursue. It is amazing how even a minor detail in a device design can have such a huge impact.

How do you work with customers to design user-friendly devices?

We pride ourselves on being patient centric in our thinking and customer centric in our actions – meaning that we support our customers in the design and development of patient-centric devices. Generally speaking, our pharma customers have three key drivers: i) ensuring time to



## Tackling Today's Challenges

Drug developers face a number of demands and challenges; choosing the right partner and the right drug delivery technologies has never been more important

Challenge 1 – a significant pipeline of injectables and biologic drugs  
There are more than 3000 injectable drugs in the pipeline – many of which are sensitive biologic drugs with potential stability challenges. Thus, primary packaging solutions must reduce drug-container interactions throughout the shelf life. In addition, many biologic drugs in the pipeline are targeted towards smaller patient populations, which requires the manufacture of smaller batches even in pre-filled syringes – without compromising on quality. Flex filling lines in combination with ready-to-fill components like PLAJEX is the answer to address this trend.

Our PLAJEX™ ready-to-fill polymer syringes are designed to meet the needs of a wide variety of drug types, including highly sensitive biologic drugs. PLAJEX provides lower interaction with proteins, lower sub-visible particles, and excellent strength and clarity. In addition, the syringes

market for new drugs, ii) lowering the risk for both during the development and post commercial launch, and iii) lowering total cost of ownership. We must address each of these drivers to ensure a smooth customer journey.



significantly reduce the drug container interactions, with its silicone oil-free, tungsten-free, and adhesive-free features, as well as an autoclaving process to reduce potential leachables or free radicals.

PLAJEX also applies Terumo's proprietary i-coating™ to the surface of the stopper and it is chemically bonded to the substrate, resulting in a silicone oil-free container for drug products that require lower interactive surfaces.

Challenge 2 – achieving safe, convenient, and painless drug delivery  
Prefilled syringes kickstarted a trend that moved injectable drug delivery from hospital to home environments. Today's pharma companies want to make the self-administration of injectables as safe, convenient, and painless as possible. Combining pre-filled syringes with autoinjectors is a popular approach. And it is also possible to combine drug delivery devices with electronics to collect data at the time of administration. For example, we work with external partners to ensure compatibility of PLAJEX with autoinjectors and safety devices so that our customers have an integrated solution.

Considerable efforts have been made to minimize pain when injecting medication. Success has been achieved by reducing the diameter of the needle, but this may raise injectability challenges, especially for viscous formulations. Resistance to flow can be reduced by using a conically-shaped needle with small diameter at the tip and a larger diameter at the bottom. Our

Tapered Needle of 34G combines these approaches by achieving similar emptying forces as 30G normal wall needles, even for viscous drug products.

Challenge 3 – increasingly stringent regulatory requirements  
Regulators demand that drug manufacturers pay close attention to the safety and efficacy of their delivery devices, and also ask for robust documentation to ensure that no risks stem from the drug delivery device design or manufacturing process. In the EU, the change from Medical Devices Directive (MDD) to Medical Devices Regulation (MDR) may affect how pharma companies think about their devices for example equip them with needle intended to prevent accidental needle stick injuries. Terumo has developed the K-Pack Surshield™ – a hypodermic needle with an integrated sharps protection feature for (pre)-filled syringes.

Challenge 4 – digitalization  
The increasing use of digital technologies in the pharma industry – from drug discovery to post-market surveillance – brings positive change. Digital tools incorporated into devices can be used to collect patient data to improve adherence and treatment outcomes. And the move to Industry 4.0 is also encouraging companies to think more about data and process capability. One example is track and trace of medical devices to fully protect patients. In this

regard, Terumo offers the K-Pack® II needle, which features color-coded, tamper-evident labels and a 2D-code. It can also be used to implement full 360° camera inspection for optimal packaging processes to facilitate device identification and inventory control. Supporting the customer journey from drug discovery to lifecycle management is crucial. To complement our existing touch points, we plan to introduce additional digital touch points to make the customer journey even more seamless and to help them get the right information when they need it.

Challenge 5 – sustainability and a reduced carbon footprint  
Reducing environmental impact is a social responsibility. Terumo has established and applied its proprietary Human×Eco Development Guidelines to product development.

With this approach, we ensure our products have a low carbon footprint and we continue to drive innovations to improve sustainability.

In tune with the industry  
At Terumo, we are passionate about solving customers' and end users' problems in the areas of primary packaging, drug delivery devices, and fill and finish. To do this successfully, it is important that we keep in touch with industry trends and challenges and ensure that our products are well-positioned to offer effective solutions.

Why is the 2021 launch of your new website such an important moment – and how will it benefit customers? Websites are the first place most people go to when they are searching for information. Our new website is designed to give visitors

easy access to comprehensive information on all our products and services. Another key advantage for customers is that they can stay in touch with us from across the world! In the current climate, a digital presence is crucial and websites should

be simple and easy to navigate. Modern customers have high expectations at every touchpoint. And we'll continue exploring opportunities to further personalize and enhance our customers' journeys.

