

Portal Instruments' Revolutionary Needle-Free Injection Technology Offering Hope for a Pain Free Delivery of Biologics to Patients with Chronic Diseases



Patrick Anquetil
CEO

Portal Instruments
<https://www.portalinstruments.com/>

Contact:
Patrick Anquetil
+1-617-500-4348
partnering@portalinstruments.com

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Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine

CEOCFO: Mr. Anquetil, what is the idea behind Portal Instruments?

Dr. Anquetil: Our mission is to have a world free of needle intervention. Needle intervention devices are great devices. They are very effective clinically and relatively easy to use but they are dangerous, and everyone hates them, so we want to change that. We want to make sure that when patients take medicine that they do so in a way that they are comfortable and confident that they will get the right dose and that they do not have to worry about anyone else including themselves getting harmed or pricked.

We licensed-in a technology that has been developed at MIT by Prof. Ian Hunter that uses a very fine jet of the drug to pierce the skin and deliver the medicine exactly where it needs to go.

CEOCFO: How is it piercing the skin without being dangerous in some way?

Dr. Anquetil: It is a virtual needle almost, you could say. The problem with the needle besides being pokey is it is quite big and if you try to make it thinner to improve the patient's comfort, you eventually run into a problem in that if the needle is too thin it cannot pierce the skin or it might break once it is in the patient's skin. If that happens it is a trip to the OR because you cannot get it out yourself, you have to have a surgeon extract it.

How the Portal device works, at the fundamental level we actually compress the drug and accelerate it to very high speed. The whole process, for example the delivery of a vaccine, would be about one-tenth of a second to complete the injection. Because the drug travels so fast it actually pushes the skin gently and creates an opening to deliver the drug where it needs to go.

Because the jet is so thin, it is about the size a typical syringe, it is practically unnoticeable to the patient. It does not cause any pain for the patient and we've measured this in published clinical studies.

CEOCFO: *What were the challenges in creating this and why has it taken so long?*

Dr. Anquetil: There have been multiple challenges going on at once. The needle is an effective device; it is very simple and quite straightforward. People are afraid to use it on themselves but you can train a nurse or healthcare professional to do it for the patient. The additional advantage of the needle intervention is that it is extremely cheap. Even a sophisticated syringe that has some sort of safety feature only costs \$0.10 per injection. It is difficult to compete against that, and particularly if you have a device like ours that has a great deal of tech, computers and so on in it. Therefore, we had to understand how we could create value and what we realized was that if what we inject is of high-value then it is actually better for everyone including us, as we might be able to capture some of that value back.

We thus needed to find some chronic use for our device and we realized that the at-home self-injection of patients suffering from chronic diseases such as multiple sclerosis and hemophilia, for example, could be an attractive market. Such chronic patients are treated by a class of drugs which called biologics, and these drugs are of high-value and actually can only be injected. In other words, there is no way at this point in time to make pills out of these medicines.

The device is better not only because of the needle-free injection, but also because it is easily connected to the cloud and can thus provide additional services. For example, it can alert the care team on what the patient is doing. It can also provide an ability for the care team to interact with the patient to provide context to their treatments, and track how well they are doing or if they have challenges. As such our vision is to bring the delivery of medicines to the 21st century by closing that loop between the patients and all stakeholders.

"We have the opportunity to be the next great medical device technology company. Everyone in the world needs an injection at some point in their lives and it is universally accepted that needles are unsafe and hated." Patrick Anquetil

CEOCFO: *How do you get the medical community to pay attention?*

Dr. Anquetil: For our natural partners which are the pharmaceutical companies, the question is, how do you actually bring them to care about bringing a better experience to patient and it is actually challenging. We are trying to displace established technologies such as the autoinjectors that pharma companies have been using for the delivery of their biologics. These drugs need a device because they are difficult to inject as they are quite viscous and the patients may not have enough force to push the syringe themselves. Therefore, the patients need to be augmented with an autoinjector, which is like an Epi Pen. In other words, a spring in the auto-injector is doing the pushing on the syringe for the patient.

We realized we could present our needle-free reusable auto-injector to pharma as an alternative and use the competition that exists in biologics markets to create exclusive deals and as such create value for both sides. That is how we overcame that.

CEOCFO: *Where are you in the commercialization process?*

Dr. Anquetil: Today we have a device that has gone through various validation studies and is also being produced. We are ready to go and the device works. We have not gotten FDA clearance, yet, and are working towards that. We have had several meetings with FDA and we hope to file soon. We also have pre-commercial relationships with some of our pharma partners and are still doing the required testing with their drugs before entering the market. We are almost there but not quite.

CEOCFO: *How do you deal with some of the frustration knowing you have something that could be important for people and yet it is a long and stressful process to get there?*

Dr. Anquetil: We do not despair and we do not give up. This is a long road; it is not a race but a marathon. We try to be as creative as we can to overcome objections, to find new solutions to problems. If we can be a great partner to our pharmaceutical friends, then the premise is already in our favor. It takes a lot of mental stamina. I think it is important for any executive to realize you win a few and lose a few but you keep on fighting and creatively advance forward.

CEOCFO: *Where do you stand in terms of funding? Are you looking for investors or partners?*

Dr. Anquetil: We are always looking for investors to take us further. We have been very blessed in that we have been able to attract a very diverse group of investors. We also have strategic partners on the pharma and manufacturing sides.

We have always been able to present the company as valuable to the partners. At this time, we are looking for more financing to take us further through scale-up and then the full commercialization including the market launch.

CEOCFO: *When you are talking to potential investors, do you find that they understand, do you find that it helps that it is pain-free, something everyone can appreciate?*

Dr. Anquetil: I think we have the easiest story to tell. We could just walk on the street and ask anyone we encounter if they like needles and I think the answer would be 100% no. What is interesting with our technology is that anyone who has had an injection before would relate to it. We receive emails every day asking us about this technology and when might it be ready. What's challenging is how to make it work economically at the end of the day. You may have the greatest device but if it costs too much you will not be able to sell it. We have addressed that issue, and not only have we made the device easy to manufacture, but we have also reduced its complexity to make sure we have the most cost-competitive price. Because the device can be reused across multiple injections over three-years, its cost per injection is below an auto-injector. Economically it will actually make sense.

Another big benefit is, if you look at the tremendous success with certain therapies, for example the treatment of obesity which we hear about all the time these days, the part that is forgotten is that those therapies require a disposable device every time the injection is made. The typical dosing for those drugs is one an injection each week. That means that each week you through away one auto-injector that has a lot of plastic and a contaminated needle. By the end of one year that's 52 devices per patient that go into a land-fill. Goldman Sacks estimates that 15 million Americans will be taking weight loss drugs by 2030. That would represent 780 million devices per year that are thrown away!

With our re-usable device that is needle-free, this means we also have both an economically and environmentally fantastic value proposition. On a cost per injection, we are actually lower than those other devices and there is a much smaller impact to the environment because just the cartridge is disposed of and not the entire device as is the case today. I believe in the long-term we have an immense value proposition to not only provide to the healthcare community (less needle-stick injuries) but also the whole society.

CEOCFO: *We reach the healthcare and investment community; why pay attention to Portal Instruments; why does Portal stand out?*

Dr. Anquetil: We have the opportunity to be the next great medical device technology company. Everyone in the world needs an injection at some point in their lives and it is universally accepted that needles are unsafe and hated. We have run a couple of market studies during the COVID years to challenge our assumptions about the unwillingness of some folks to get vaccinated. It turns out that about half of the unvaccinated people we surveyed would actually have gotten a COVID vaccine if they had a needle-free option. I think there is a true opportunity for impact. We as a company not only have an amazing mission which is to reach a state where we have a "needle-free world", but we are also a very values-driven company, driven by innovation, doing what is right for patients and also creating an environment where people can grow as the company grows. The crucible is there for us to expand and we need to continue and have stamina to withstand the ebbs and flows on invariably experiences in the early years of company formation and creation.

In the long-term the sky is bright because as more of us age and perhaps end up with chronic diseases, we will need to be treated with injectable biologics therapies. Therefore, better solutions for the patient and the healthcare community as well as the environment will be required.

