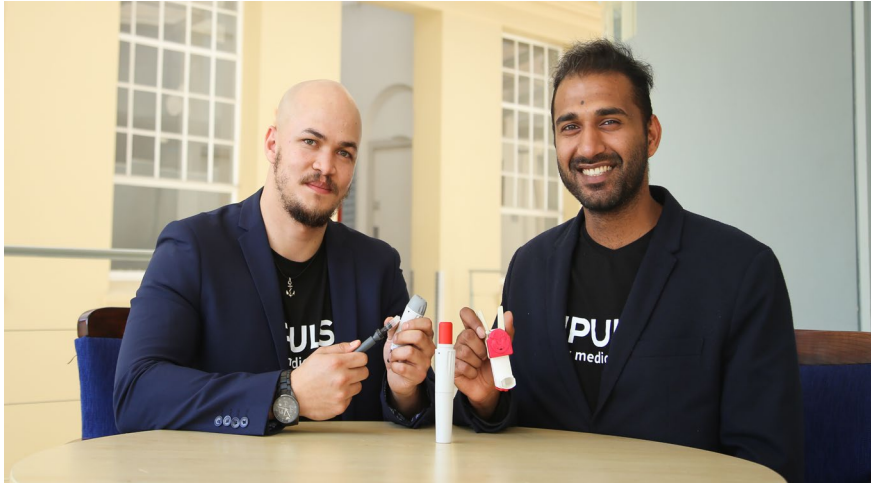


## Futuregrowth dips its toes into start-up waters once more with an investment in Impulse Biomedical

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The Futuregrowth Development Equity Fund (DEF), on behalf of its clients, has recently invested in a pioneering Cape Town-based biomedical engineering start-up, Impulse Biomedical.



Impulse's flagship device, the ZiBiPen, could revolutionise the emergency treatment of life-threatening anaphylaxis. The device was developed by two passionate engineering graduates, Gokul Nair and Giancarlo Beukes, while completing their Masters' Degrees in Biomedical Engineering at the University of Cape Town (UCT). The company aims to make these and other life-saving healthcare technologies accessible to the developing world.

Impulse is the first pre-revenue startup Futuregrowth has invested in. Amrish Narrandes, Head of Unlisted Equity Transactions at Futuregrowth, explains: "While our focus is normally on late-stage venture capital investments, Impulse Biomedical is an exception. We love Impulse's ground-breaking technology and products, which, when coupled with the strong founding team, give us confidence that this investment will grow from strength to strength."

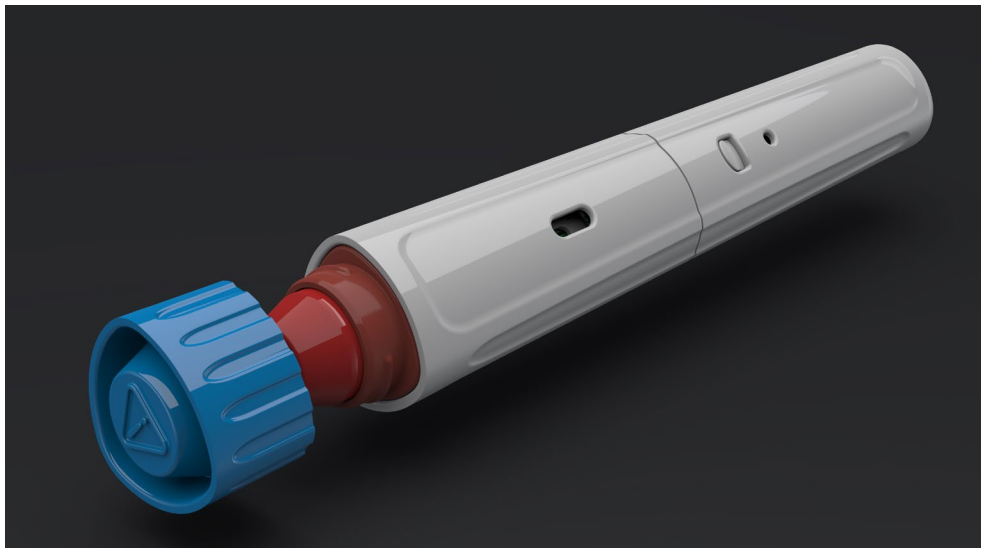
### The challenge

Anaphylaxis is a severe allergic reaction that occurs when a patient is exposed to a foreign substance (or antigen) such as an insect bite or certain foods. Without immediate treatment, it can be fatal in as few as 15 minutes.

To increase the probability of patient survival, a dose of adrenaline must be administered. Adrenaline Auto-Injectors (AAIs) such as the ZiBiPen are the safest, quickest, and most efficient way to do this. However, middle- to lower-income groups often cannot afford this technology.

The first and most dominant AAI on the market, the EpiPen, sells for \$650 - \$700 in the United States for a pack of two (and up to R1 800 in South Africa for a single device). The rising cost of the EpiPen over the past decade has been met with public outrage and even a class action lawsuit against manufacturer Mylan in the US after the price was reported to have increased by more than 500% over a seven-year period. At present, there are no alternatives to the EpiPen in South Africa.

Further, the adrenaline in the available devices expires within 18 months, at which point the entire device needs to be discarded and replaced at a recurring cost to the patient. For local patients, the effective shelf life is often closer to 12 months by the time the devices arrive in the country. This is a major shortcoming in existing AAIs. The recurring cost can be prohibitive for low-income consumers, putting this potentially lifesaving technology out of the reach of many South Africans.



## The solution

The ZiBiPen has an innovative design that extends the life of an unused AAI. The device is reloadable, meaning that when the adrenaline expires, the user only replaces the cartridge rather than the whole device. The Impulse team is aiming for a useful life of three years. This is a global first, as there are currently no reusable AAIs on the market.

The ZiBiPen will be sold for approximately R1 000 per device (including an initial cartridge). Thereafter, unless the device is used, only the cartridge costing R200 to R250 will need to be replaced annually. This means that the total cost to a patient over a three-year period (assuming the pen is unused) would be reduced to about **R1 500** (R1 000 upfront plus R250 per refill), compared to up to **R5 400** for the EpiPen (R1 800 per year).

The ZiBiPen can also be customised for any patient – addressing complaints that the dose and needle length of existing devices are based on the average male, making them less suitable for children or the obese.

## Estimated time of arrival

The ZiBiPen is in the second phase of development, to ensure that the device is both effective and safe for use by all patients. It is expected to be launched into the market by April 2023.

## Easy Squeezy

Another product in the Impulse pipeline is the Easy Squeezy, a device that attaches to a standard asthma pump, making it easier for young children, elderly and disabled patients to activate the device when they are struggling to breathe during an asthma attack. The design also aims to make asthma pumps more fun and interesting for children, thereby counteracting the common stigma attached to using them.



## Milestones and successes to date

Despite the very early-stage nature of the venture, Futuregrowth was encouraged to invest in Impulse given the strength of the concept, the societal benefit of the products, and the key milestones achieved by the founders to date.

The company has made notable strides in product development, industrialisation, clinical testing and fundraising since starting the business in 2017. Narrandes adds: “The successes that the founders have achieved so far demonstrate the ability of the management team to take this business to new heights.”

As a testament to the exciting, breakthrough nature of their innovations, the team has been recognised in various competitions, both locally and internationally. These include the UCT Graduate School of Business Venture Incubation Programme; the Merck Pharmaceuticals Accelerator pitch competition; the Technology Innovation Agency Global Cleantech Innovation Programme; Venturelab<sup>1</sup> in Basel, Switzerland; the BRICS Young Innovator award; the Mili Valuation Competition held at the Design of Medical Devices Conference in Minneapolis, USA; the London Business School ACCEL Awards; and the Emerging Medical Innovation Competition at the Design of Medical Devices Conference in China in 2018, where Impulse was awarded a full technical and market evaluation by the Medical Industry Leadership Institute, valued at R180 000.

Impulse has also raised over R15 million from the Department of Trade and Industry's THRIP<sup>2</sup> programme, amongst other grants and private investments.

Melissa Moore, Investment Analyst at Futuregrowth, sums up: "We are excited to back these local entrepreneurs. We believe their innovations will create proudly South African products and intellectual property that will disrupt both local and global markets. We are confident that, when taken to market, the ZiBiPen will revolutionise the emergency treatment of anaphylaxis, which up to now has been dominated by much less affordable options."

The Impulse Biomedical investment once again affirms Futuregrowth's commitment to improving all South Africans' lives by striving to identify opportunities that yield optimal financial returns for our clients and make tangible contributions to society. Other early-stage business investments in the DEF portfolio include Rubicon, hearX, and Yoco, complemented by a variety of maturing and established companies in the developmental space.

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<sup>1</sup> University of Basel and the Technology Innovation Agency - Swiss Business Venture Leaders South Africa programme

<sup>2</sup> Technology and Human Resources for Industry Programme