

Made-in-India Medical Tech Saves Lives Across Borders

Spanning areas such as medical devices, stem cells and next generation drugs, a group of startups is creating breakthrough innovations that are gaining global acceptance, reports **Peerzada Abrar**

At the Alfred Hospital, one of the oldest in Victoria, Australia, a robot helps Dr Kenneth R Thomson treat cancer by precisely inserting a needle in the affected area to burn or freeze a patient's tumour. The robot also identifies the spot where pain is originating from and administers medicine to eliminate it. All Dr Thomson has to do is guide the robot and it does the rest. Besides being accurate, the swift movement of the robot causes less pain and discomfort to the patient. "It's quite remarkable, it's taken away all the complexity and the difficulty out of placing the needle anywhere in the body," says Dr Thomson, programme director of radiology and nuclear medicine at Alfred.

This next-generation robotic healthcare device that allows clinicians to perform complex procedures with a high degree of accuracy has been developed by a Chennai-based startup Perfint Healthcare.

Perfint is among a handful of emerging companies in the healthcare sector engaged in developing cutting-edge technology. Spanning areas such as medical devices, stem cells and next generation drugs, these fledgling ventures are creating breakthrough innovations that are gaining global acceptance.

As private equity and venture capital investments in the healthcare industry increases rapidly this year, new funds like Aarin Capital are playing a key role in backing startups developing such cutting-edge technologies.

"There is a greater availability of capital and a brain gain, with Indians returning from the West driving this surge of new startups in the life sciences space," says Ranjan Pai, CEO of Manipal Education and Medical Group. Pai teamed up with former Infosys director Mohandas Pai to float Aarin Capital, a private equity fund that invests in life sciences startups. The \$100-million fund has already backed a clutch of ventures, including Vyome Biosciences and Inshigtra Medical.

This year, the healthcare and life sciences sector has received the maximum investment from private equity and venture capital players, attracting \$817 million across 29 investments till August, according to data from private equity focused research firm Venture Intelligence. Last year, there were 38 deals in the sector worth \$421 million.

ET profiles a few of the medical technology companies that are backed by risk capital investors. The products of these small healthcare companies are not only finding application in emerging countries like India, but even developed markets such as the US and Europe.

MEDICAL DEVICES

Perfint Healthcare sells two robot products under the brand Robio and Piga in South-East Asian countries, Europe and Latin America. These are used by radiologists for biopsy, drug delivery and ablation, a process in which the tumour is burnt or frozen by inserting a needle in the affected area. Perfint is now betting big on its newest robot product Maxio, which makes complex, multi-probe ablations simpler. The product will help to make these life-saving procedures available to more cancer patients than ever before.

"These products are affordable and unique. The needle path is visible even before any needles are placed," says Dr Thomson of Alfred Health.

The algorithms and the software in these products also help the clinicians to visualise, plan and perform tumour ablation safely. This includes preventing passage of a needle path through user selected no-go areas. The four-year-old startup, founded by entrepreneurs S Nandakumar, K Guruswamy and K Puhazhendi, has done 120 installations till now. Perfint is gearing to enter markets like the US, Japan and Korea with Maxio and enter China with its Robio product.

The firm, which sells these products for \$150,000-\$300,000, is clocking revenues of about ₹50 crore. It aims to achieve revenues of ₹550 crore in the next four years. Perfint has raised around \$17 million from Norwest Venture Partners, IDG Ventures and Accel Partners.

PERSONALISED CANCER THERAPY

Mitra Biotech, a Bangalore-based bio-technology company, develops personalised cancer therapy. Founded in 2008 by a team of Harvard and MIT researchers, Mitra has developed the 'OncoprintR' technology based on the individual tumour characteristics that allows doctors to predict which drugs might work and which might not in a cancer patient.

Traditionally, doctors try out different medical regimes on patients diagnosed with cancer. Very often, the first medical regime may not work.

Doctors then try out alternative drug regimes, resulting in side-effects and loss of valuable time.

Mitra, which has tied-up with several leading hospitals in India and abroad for delivering personalised treatment options, is also accumulating a database of "market-sets" or types of patients whose tumours respond to specific drug combinations.

"These assets are highly useful for understanding why drugs fail in clinical trials.... and to avoid it in the first place," says Massimo Loda, principal investigator of pathology at US-based Dana-Farber Cancer Institute. A study has found that nearly six lakh Indians die of cancer every year, 70% of them between the ages of 30 and 69.

"The World Health Organisation estimates one member of each family in India will be diagnosed with cancer by 2020," says Pradip Majumder, chief scientific officer and a co-founder of Mitra Biotech.

The company is backed by global venture capital firm Accel Partners, Karnataka Information Technology Venture Capital Fund and India Innovation Fund.

NANO DRUGS

Shiladitya Sengupta and his team, who developed technology to help in cancer treatment at Harvard-MIT division of the Health Sciences and Technology in Boston, have founded Invictus Oncology.

The Delhi-based start-up is developing a drug smaller than one-thousandth the diameter of a human hair, which homes in on tumours and reduces its side-effects. It shrinks tumours by cutting off blood supply and continues to sit on the tumour till it dies.

"I was told that this is a crazy idea as nobody discovers drugs in India, especially for cancer," says Sengupta, an assistant professor at Harvard Medical School's Brigham and Women's Hospital in the US.

He initially built the technology in his lab at Harvard. It has been further developed by a group of scientists who relocated to India.

Sengupta says similar drugs in the US cost \$9000 per dose and people in emerging markets and even developed markets cannot afford them.

STEM CELLS

Stempeutics Research, a startup focused on stem cells in collaboration with Vignani Technologies, a niche engineering services company is developing Stempeutron, an automated, point-of-care medical device for isolation of stem cells from humans.

The device helps to take out good stem cells quickly. These cells bring back feeling to patients, unlike synthetic implants used for cosmetic breast augmentation or breast reconstruction in cancer patients.

"Current model of bringing the fat tissues to the lab and processing it for isolating the stem cells is cumbersome and have poor viability rate," says Manohar BN, CEO at Stempeutics Research.

The team has filed two patents related to Stempeutron, which will be commercialised in 2014.

Manohar of Stempeutics said they are trying to bring down the cost of their device to less than ₹20 lakh. Similar devices cost around ₹1 crore in the US.

"This is unique in the regenerative medicine and make the treatment easier in lost cell structure and function," says A Jeya Prakash, a leading plastic surgeon in the UK, who has worked at the National Health Service there.

Though Stempeutics and Vignani are still in the research and development phase, the firms will be going after the global general cosmetic surgery services market, which is expected to reach \$40.1 billion in 2013. India ranks fourth with 850,000 cosmetic surgeries a year, compared with the US, the number one ranking country where 3,100,000 such procedures take place, according to the International Society of Plastic Surgeons.

Vignani is backed by Intel Capital, while five-year-old Stempeutics is funded by Manipal Education and Medical Group and pharma major Cipla.

Pai of Manipal says the biggest challenge for these cutting-edge technology companies to bloom is follow-on capital. It is still risky for an investor to back such startups.

Pai said, if not private equity, he is hopeful that good science will attract capital from global pharma companies. In the case of Stempeutics, the entrepreneurs were able to convince Cipla.

"We know all our bets will not succeed, but at least a few will in the next few years," says Pai.

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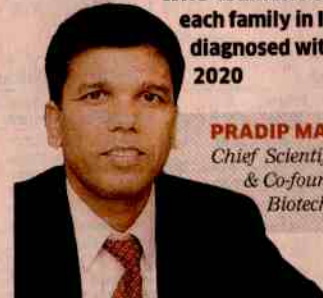
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CEO, Manipal Education & Medical Group

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