

## Israel's Medical Device Industry and Its Global Impact

Mon, 05/09/2016

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Israel's medical device industry continues to astonish. Recent successes attracting global attention include:

- *Given Imaging*. Given Imaging developed the "PillCam", an ingestible imaging capsule facilitating the visualization and detection of gastro-intestinal disorders. Founded in 1988, it received CE approval and went public on NASDAQ in 2001. In 2014, Covidien (now Medtronic) acquired Given Imaging for \$860 million.
- *Re-Walk Robotics*. Re-Walk has developed a wearable robotic exo-skeleton that enables people with severe spinal cord injuries to move around independently, climb stairs and "go mainstream" in their daily activities. Founded in 2001, it went public on NASDAQ in 2014, and in 2015 reached an agreement to sell its exo-skeletons to the U.S. Veterans Administration for use by combat veterans. It is now trading with a valuation of \$120 million.
- *Brainsway*. Founded in 2003, Brainsway markets a helmet that provides a non-invasive treatment for depression based on magnetic stimulation. It went public on the Tel Aviv Stock Exchange in 2007 and has a current market cap of NIS 262 million (approximately \$70 million).



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These are just a few of many successes. This article explores the sources of Israel's vibrant medtech industry, discusses financing

opportunities available to Israeli medical device companies, and examines the challenges facing these companies as they seek to expand globally.

### **Sources of Medical Technology Innovation**

The sources of med tech innovation are not based in local laws or regulations, but include first rate academic and medical institutions, enlightened government support, and the active presence in Israel of global medical device companies.

#### *Academic Excellence*

Israel is blessed with a large number of world class academic and medical institutions within a relatively small geographic area, giving rise to an environment of cross-fertilization of disciplines that lead to medical technology innovation. Practicing medical institutions include the world renowned Hadassah Hospital in Jerusalem, the Rambam Hospital in Haifa, Tel Aviv's Ichilov Hospital and the Chaim Sheba Medical Center at Tel Hashomer outside of Tel Aviv. Some of Israel's leading academic institutions include Tel Aviv University, the Weizmann Institute of Science in Rehovot, the Technion in Haifa and the Hebrew University of Jerusalem. The strength of these institutions is reflected in the large number of scientific papers which they publish, as well as the largest number of medical device patents anywhere in the world (on a per capita basis).

All of these institutions, and others, have active technology transfer offices which are engaged full time in the commercialization of technological inventions developed by their respective academic and medical staff, with sophisticated licensing and start-up practices. These inventions, and their transfer to industry, ultimately serve as the foundation of the medical device industry in Israel.

#### *Government Support*

Israel's Office of the Chief Scientist, now the Israel Innovation Authority, provides financial support for research and development programs in all technological fields, including medical device technologies. Grants, which can be a substantial part of R&D budgets, are provided directly to start-up companies through various programs, such as the MAGNET Program (which supports consortia of academia and industry) and the NOFAR Program (which supports applied academic research).

However, government support is probably most effective when provided through the OCS incubator programs, which have aimed to attract global expertise to support local start up companies. Through these programs, government funding dramatically reduces the risk involved in investing in medical technology start-ups. Recent examples include:

- *MindUP*. Haifa's Digital Health Incubator, a venture of Medtronic, IBM, Pitango Venture Capital and the Rambam Medical Center, recently won an OCS incubator tender. MindUP will

focus its investments in the areas of Big Data, Predictive Analytics, Telemedicine, Cloud Computing, Wearable and Implantable Sensors, Advanced Point of Care Diagnostics, Personalized Medicine, Hospital IT Systems, and technologies to improve the quality and efficiency of healthcare delivery.

- *MedXelerator*. Based in Tel Aviv, MedXelerator is a venture of Boston Scientific, Intellectual Ventures, MEDX Ventures and the Sheba Medical Center. It is scheduled to commence operations in September, and will focus on medical devices and digital health.

#### *Global Presence of Medtech Giants*

Seeking access to the trained and innovative engineering and medical talent in Israel, a large number of global medtech companies have set up local R&D centers. These centers are also a source of medical device innovations. For instance, Microsoft Ventures has partnered with Becton Dickinson and Healthbox to run a medical device accelerator. Johnson & Johnson, GE Healthcare, Philips, Biosense Webster, IBM, Covidien, Samsung Electronics and ThermoFisher Scientific, are also active in the medtech space in Israel.

All of the above combine to produce a steady flow of new medical device start-ups. One of the first challenges they face, either from inception or upon graduating from the incubator or accelerator is obtaining financing (beyond grants that may be available).

#### **Financing Opportunities**

There are multiple financing sources available to early-stage Israeli medical device companies. While obtaining funding is always a challenge, for the most part promising ideas succeed in finding financial support.

#### *Angels, Accelerators, Incubators and Accredited Investor Clubs*

Angel investing is highly developed in Israel. Once the province of real estate moguls and diamond merchants, angels these days are more likely to be successful serial entrepreneurs who can bring some added value to companies. There are also on-line accredited investor portals, such as Our Crowd, which allow investors accredited in their jurisdiction of residence to make on-line investments of as little as \$10,000 in early stage companies, including medical device companies, that have been diligenced and screened by Our Crowd. Other active incubators and accelerators include Alon MedTech Ventures, Next Generation Technology, RAD BioMed Accelerator and Trendlines Medical Misgav Venture. Mass Challenge, the premier Boston-based accelerator, has also recently opened operations in Israel and is active in medical devices.

#### *Venture Capital*

A large number of Israeli and foreign (primarily Silicon Valley) venture capital funds are active in Israel, and many of them invest in medical device companies. Some, like Clal Biotechnology Industries and Pontifax, invest primarily in medtech companies. Out of total VC investment in healthcare, over 50% is in medical device companies.

### *Public Markets*

Israeli medical device companies that can, aim for NASDAQ. Those that cannot, settle for the Tel Aviv Stock Exchange. These days, the public markets are closed to all but the most promising and profitable medical device companies, and public money is not a major source of financing.

### *Acquisition*

A far more likely fate of promising medical device companies in Israel is acquisition by global medical technology companies. All of the “big names” in medical devices have acquired at least one, and in some cases, several, Israeli companies in recent years. These include Medtronic, Boston Scientific, Johnson & Johnson, Kyphon, GE Healthcare, Essilor, Philips Healthcare, Covidien and Stryker. Once acquired, the companies often remain active in Israel, becoming a source of trained medical device managers and professionals.

### **Challenges Facing Israeli Medical Device Companies**

Being a small country, the Israeli market is almost irrelevant to Israeli medical device companies from a commercialization perspective; at most, it can serve as a convenient beta site. Rather, in order to survive, Israeli companies must pursue global markets. This puts them in direct competition with medical device companies around the world, many of which have more extensive networks, are larger and have more resources at their disposal.

Foremost among the challenges faced by Israeli medtech companies, like all companies in this space, is coping with the ever-changing regulatory environment in leading global markets. Israeli companies need to prepare for global regulatory challenges including, for instance, such recent developments as the revised version of ISO 13485 dealing with quality management systems, the U.S. FDA’s recent requirement for Unique Device Identification (UDI) for devices, and proposed changes the EU’s medical device regulations for CE markings.

Moreover, recent surveys of medical device professionals find a majority observing that the regulatory environment in major markets (U.S., China, Europe, Japan and Russia) is getting more difficult. All of this impacts directly on Israeli medtech companies seeking to obtain the necessary regulatory approvals.

### **Opportunities and Future Growth**

Medtech is clearly a major component of the high-tech engine that has been driving the economy

of Israel, aptly called the “Start-up Nation”, over the past decade and it is poised to remain so for the foreseeable future. Despite the challenging regulatory landscape, we continue to be actively involved representing numerous young and maturing companies involved in the development and commercialization of innovative medical technologies. In addition, Asia in general and China in particular are increasingly attracted to opportunities in the medtech sector in Israel – both in terms of making investments and obtaining access to Israeli technology in this area, something that will be the likely sources of significant growth in a sector that is bringing meaningful improvements to the lives of millions of people around the world.

*Find out more about Yigal Arnon & Co. [here!](#)*

This article was originally published in **Medical Design Technology**

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