Rialtas na hÉireann
Government of Ireland

Focus on Medical Technologies

August 2020

Prepared by the Department of Business, Enterprise and Innovation

Medical Technologies

Description

Medical technology, (Medtech), encompasses medical devices and technologies for diagnosis, monitoring or treatment of diseases or medical conditions. The Medtech sector is diverse and encompasses a myriad of products across segments including: Medical Devices - minimally invasive technology, implanted devices, diagnostic equipment and imaging systems, surgical systems, dental equipment and devices, drug delivery devices, and ophthalmic and optical products and technology and Medical Technology - Digital health, electronic health records, analytics, diagnostics and telecare/telemedicine. Companies may be involved in some or all activities in the supply chain including: R&D; clinical trials; design and/or manufacture of products and solutions; management of global business services; as well as sub-supply and services specific to the sector.

Snapshot

Global Market			Market Size		Growth Forecast		
	Medical Devices Technologies [i]		$470.5 bn (2018)		$640.9bn by 2023 (CAGR) of 6.4% for the period of 2018-2023		
Agency Employment and Exports		Exports (2018) [iii]	% of national exports [ii]	Employment [iii]	% of national employment [v]	5 -year CAGR of employment	DEE (2018) [v]
	All Agency	€10.2bn	4.19%	36,845	1.56%	5.93%	€3.4bn
	Irish owned Enterprises	€68.4m	0.03%	769	0.03%	5.89%	€0.1bn
	Foreign owned enterprises	€10.1bn	4.16%	36,076	1.53%	7.85%	€3.3bn

i. Medical Devices: Technologies and Global Markets, BCC Research, September 2019, https://www.bccresearch.com/market-research/healthcare/innovations-in-medical-device-technologies.html; Statista also estimate the total medical technology revenue globally to reach nearly $600 billion by 2024; https://www.statista.com/statistics/325809/worldwide-medical-technology-revenue/.

ii. ABSEI 2018, DBEI - figures do not include optical equipment (e.g. contact lenses manufacturing) and does not include exports or employment in sub-supply and support services firms that cater primarily to the medical devices

sector. % national exports derived from using total exports from ABSEI 2018, €243.8bn. IDA Ireland estimate total exports of €12.2bn for the Medtech sector in 2018, based on ABSEI returns.

iii. AES 2019, DBEI- figures do not include optical equipment (e.g. contact lenses manufacturing) and does not include exports or employment in sub-supply and support services firms that cater primarily to the medical devices sector. IDA employment survey 2018: ca 38,000.

iv. National percentages derived using CSO, LFS Q4 2019 figure of 2,361,200

v. Direct Economy Expenditure relates to total payroll costs, materials and services sourced from Irish suppliers

Pre-COVID-19 Position

Prior to the COVID-19 Pandemic, the Medtech market was experiencing strong growth, driven by opportunities presented by ageing populations, growing demand in emerging economies, growth in healthcare expenditure, developments in technology, personalised medicine and increasing focus on wellness and prevention.

- In Vitro Diagnostics (IVD) was the largest market component with 13.4% share, followed by Cardiology with12.2%. Neurology was the fastest growing device area (9.1% market growth 2017-2024). Diabetic Care was 7.8%; Cardiology, 6.4%; General & Plastic Surgery, 6.5%; Endoscopy 6.3%, IVD 6.1% and Healthcare IT 5.9%.[1]
- Industry trends are towards acquisition and partnerships among market leaders e.g. Abbott acquired St. Jude Medical. BD, Boston Scientific, Stryker, Zimmer-Biomet also made acquisitions.
- Developments in digital health and personalised medicine are enabling development of more customised medical technology products including combination products, companion diagnostics, connected health solutions and digital therapeutics and innovative delivery mechanisms.
- The industry was experiencing a progressive shift from hospital to patient centric care enabled by convergence of IT and integrated sensors with medical devices enabled by data analytics and IoT. In addition, analytics is core to operational excellence, quality and customisation.
- With strong growth in global Medtech R&D spend (4.5% CAGR)[2], the industry is constantly innovating. Technology developments in advanced diagnostics and sensors, Industry 4.0 and 3D Printing, biocompatible materials and coatings etc., are all enabling Medtech product and process developments.
- An ever-growing focus on wellness and awareness of physical fitness is leading to market growth of wearable medical technology.

[1] World Preview 2018, Outlook to 2024; EvaluateMedTech Sept 2018; EvaluateMedTech predicts the MedTech industry will achieve sales of $594Bn by 2024, growing at a rate of 5.6% CAGR between 2017-2024.
[2] https://www.MedTechdive.com/news/global-device-industry-set-to-grow-56-a-year-through-2024-report/533240/

- Health economics is increasingly at the fore as procurers focus on patient outcomes as a key criterion.
- Industry 4.0 and additive manufacturing is driving competitiveness and opportunities to enhance goods and services, increase productivity, improve energy efficiency, and to deliver customised solutions for the sector.

Ireland is among the top destinations of choice for Medtech investments into Europe with a world-class community of FDI multinationals and innovative start-ups, excellent research and effective collaboration across enterprise and the research system

- Ireland's Medtech sector has become one of the world's top five global Medtech hubs and is one of the largest exporters of Medtech products in Europe with annual exports of €10.2 billion to over 100 countries worldwide[3]. IDA Ireland estimate total exports of €12.2bn for the Medtech sector in 2018, based on ABSEI returns.
- There are 450 Medtech companies in Ireland, 60% of which are Irish owned. Most of the world's top 15 leading Medtech multinationals have operations here and many have multiple sites including companies such as Boston Scientific, Medtronic, Johnson & Johnson, Stryker, Becton Dickinson, Baxter, Abbott, Edwards Life Sciences, Cardinal Health, Siemens and Cook Medical. Boston Scientific and Medtronic are in the top 5 employers in Ireland. Jobs in Medtech are highly regionally dispersed with the majority of jobs outside the Dublin area. The sector secured the highest number of Medtech job investments and second highest amount of capital invested in Europe between 2015-2018.[4]
- Medtech Spin-outs from academic research are a key driver of the start-up pipeline and are characterised by strong IP and innovative technologies. Irish Medtech start-ups have raised more than €178m in finance over the past two years, bringing medical technologies to the market and to patients.[5]
- Products manufactured in Ireland include interventional products, diagnostics, medical equipment, vision care, hospital/homecare, hearing products and orthopaedic and cardiovascular implants. eHealth is a growing sector in Ireland.
- eHealth Ireland estimates that there are 179 Digital Health companies with over 2,300 employees in Ireland, which includes Medtech MNCs.[6]
- Many innovative Irish high potential indigenous start-up companies have been acquired by global multinationals. Amongst the larger Irish Medtech companies acquired by overseas firms in recent years are: ArcRoyal (2014), Pro-Tek Medical (2015), Creagh Medical (2015), Creganna (2016), Steripack (2016), Neuravi (2017), VistaMed (2017), Finesse Medical (2017), Avenue Mould (2017), Vention (2017), Crospon (2017), Arrotek (2019).
- Ireland also hosts a strong Medtech sub-supply base with expertise in delivering high quality materials, sterilisation, wire, tubing, printing, packaging, tool-making, automation, and a

[3] https://medinireland.ie/MedTech-in-ireland/
[4] FDI Intelligence 2019
[5] https://www.ibec.ie/connect-and-learn/media/2019/09/13/irish-MedTech-sets-its-sights-on-530-euro-billion-global-market
[6] eHealth Strategy for Ireland, eHealth Ireland

successful services base (including contract research & manufacturing) with 50% of companies located here in the “Business-to-Business” space.

- Brexit presents a risk to Medtech companies for access to the UK and EU markets where quality, regulatory, supply chain, distribution, customs, tariffs and financial procedures are often interlinked with the UK.[7]
- Transition to the new EU Medical Device Regulation (2020) and In Vitro Diagnostics Regulation (2022) will potentially cause delays in certification and recertification by EU Notified Bodies.[8] In May 2020, the European Parliament voted to postpone implementation of its new Medical Device Regulation (MDR) by one year. 43% of Irish Medtech companies rely on UK Notified Bodies to gain certification.[9] Any regulatory divergence between the UK and EU post Brexit could result in the loss in recognition of UK CE marked products in the EU27 and also result potential delays.

Impact of COVID-19

GLOBAL

- COVID-19 has put the Global Medtech industry at centre stage with unprecedented demand for diagnostic tests, personal protective equipment (PPE), ventilators and other critical medical supplies. In addition to the extraordinary measures underway to rapidly ramp up manufacturing capacity and capabilities, Medtech leaders are also looking outside their normal sector boundaries to explore creative solutions to further supplement capacity, such as partnerships with companies outside the sector, open-source equipment design and deployment of medically trained employees to support public-health needs.
- The global Medtech industry is also being affected by the dramatic drop in elective medical procedures, many of which are being postponed or cancelled so that hospitals can focus resources on treating COVID-19 patients. McKinsey’s models project a 60–80% decline in elective procedures in the second quarter of 2020 for Europe and the United States, with an additional 40–50% decline in the third quarter. The recovery phase will see a likely increase in demand for both elective and delayed essential procedures coupled with potential and associated challenges for the Medtech sector to support this surge.
- Recent analysis[10] by Frost & Sullivan shows that that the demand for telehealth technology is expected to rise dramatically; driven by the critical need for social distancing among physicians and patients as the COVID-19 pandemic continues to disrupt the practice of medicine and the delivery of healthcare worldwide.

[7] http://irishmedicaldevicesassociation.newsweaver.com/IMDANewsletter/qnvvjmhac7ia4l5h91sroq?a=2&p=53515740&t=29207093,
[8] IMSTA.ie
[9] Ibec, Sept 2019
[10] Frost & Sullivan Telehealth-A Technology-Based Weapon in the War Against the Coronavirus, 13 May 2020,

NATIONAL

- The Irish Medtech sector has remained operational through the emergency, employing remote working where appropriate and redesigning shift patterns to facilitate the new COVID-19 reality. Some sites have become involved in emergency projects with the HSE to fulfil the urgent need for devices and to provide expertise where needed.
- Many Medtech sites have ramped up to 24/7 production in response to the virus and are adapting shift patterns where possible to accommodate social distancing as well as switching to remote working where possible.[11]
- Some medical devices have had to be repurposed for the treatment of seriously ill patients. Examples include transport ventilators and anaesthetic machines which have needed to be configured to provide longer-term ventilation for patients.[12]
- There has been an increased demand for equipment such as nebulisers, ventilators, and PPE. Medtronic has had to double its capacity by more than doubling its workforce of 250 and moving to round the clock production. M&M Qualtech, who manufacture products for the Medtech, aviation, ICT, and other sectors, has seen a capacity demand that is 3 to 5 times higher than pre-crisis level.[13]
- New developments rapidly emerging from Ireland are being used to help stem the advance of the virus. Dublin based HiberGene Diagnostics are developing new rapid COVID-19 diagnostic tests that can diagnose a positive test in approximately 20 minutes. Irish Biotech company Aalto Bio Reagents launched a new protein to fight the virus through diagnosis, vaccines, and research. Pioneering plasma technology developed by Novaerus is also being deployed to purify air for patients and medical staff.[14]
- The shift to the prioritisation products that are addressing the global pandemic resulted in a reduction in the sales of non-COVID-19 products into the hospital/healthcare system. On the flipside, given the COVID-19 pandemic, a number of the medical device, diagnostic, medical sub-supply and contract manufacturing clients are seeing a huge increase in demand for the production of PPE, hand sanitisers, ventilators, testing kits, and other critical devices/aids both from the healthcare systems (HSE and global) and large OEM companies.

Issues, Opportunities and Challenges for the Sector

- While the sector broadly continued to operate as an essential service provider throughout the period of restrictions, impact has been non- uniform with products targeting respiratory conditions, for example, being in high demand, but a significant slowdown globally in elective procedures. Resumption of normal activity in the health sector may result in a surge in demand for Medtech products presenting challenges to the sector to meet demand. There

[11] https://www.irishMedTechassoc.ie/IBEC/Press/PressPublicationsdoclib3.nsf/wvIMDANewsByTitle/MedTech-professionals-dedicated-to-tackling-covid-19-23-03-2020?OpenDocument, 2020
[12] http://www.hpra.ie/homepage/medical-devices/covid-19-updates/ventilators, 2020
[13] https://irishadvantage.com/ireland-races-to-produce-ventilators-nebulisers-and-more/, 2020
[14] https://irishadvantage.com/irish-innovation-working-to-combat-covid-19, 2020

are some immediate supply chain issues for the sector and air freight costs have increased significantly.

- Distancing requirements have had an impact on productivity.
- There are opportunities for big data analytics that can help researchers learn more about the way COVID-19 progresses among diverse patient populations.
- New technologies, e.g. AR/VR & AI may become more prevalent to support remote working in the future.
- The widespread use of telemedicine and telehealth would decrease the need for patients to attend healthcare facilities presenting opportunities for development of telehealth products and services including sensors and remote diagnostic equipment, practical applications of artificial intelligence and robotics, cybersecurity and privacy solutions.
- A new COVID-19 scheme was launched in June 2020 to support companies undertaking R&D, investing in infrastructure or production capacity for COVID-19 relevant products.
- Early stage commercialisations or pre-revenue companies are reporting cash flow concerns. Many of these companies are viable but vulnerable. The funding environment is very challenging for these companies as they do not have access to traditional banking facilities and the investment community is taking a cautious approach.