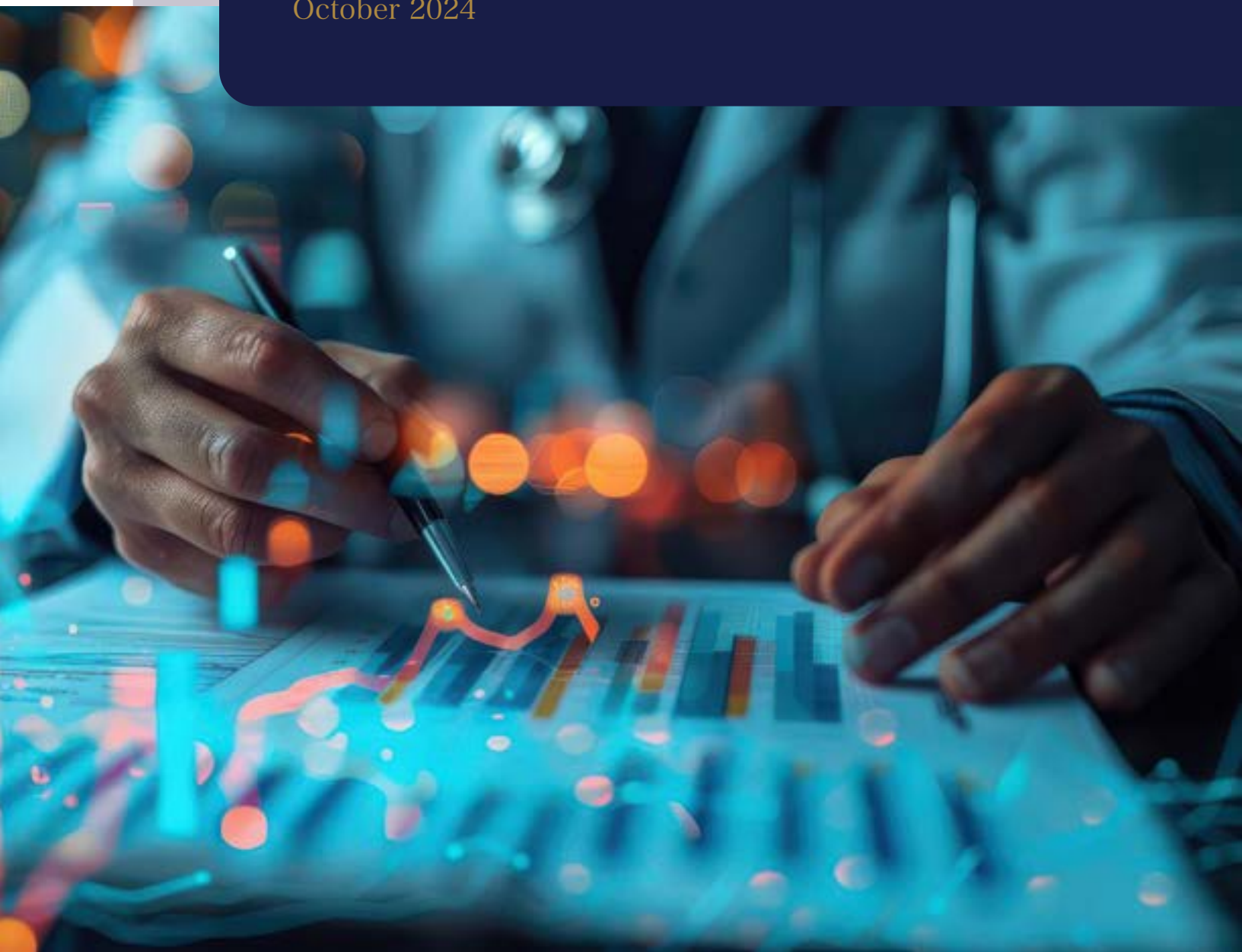
LeagueMed

UNDERSTANDING INVESTMENTS IN THE MEDICAL DEVICE SECTOR

Part 2: MedTech Markets & Innovation

October 2024



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The Medical Device Market & Sectors

The medical device industry in the United States is estimated at $180.22 billion in 2023 and is projected to grow from $314.96 billion by 2032. Globally, the medical devices market size was valued at $518.46 billion in 2023 and is projected to grow $886.80 billion by 2032[1].

The medical device markets are dominated by major players, with the top global companies achieving medical device sales in the tens of billions of dollars, as reported by GetReSkilled[2]. The MedTech sector, like most industries today, is consolidated at the top, however, according to AdvaMed, the industry trade association, there are over 6,500 MedTech companies, most small and mid-sized, operating in the U.S. These largely private companies are the drivers of healthcare operations, the nuts and bolts, if you will, of diagnosis, treatment, and healthcare delivery innovation, with growing revenues and healthy profit margins. Innovation thrives in the small and mid-sized MedTech industry, led by entrepreneurial visionaries who see gaps in care and the need for new treatment options to invent and commercialize the next medical advance.

Revenue from Medical Device Sales 2023

(Annual Report Data)[2]

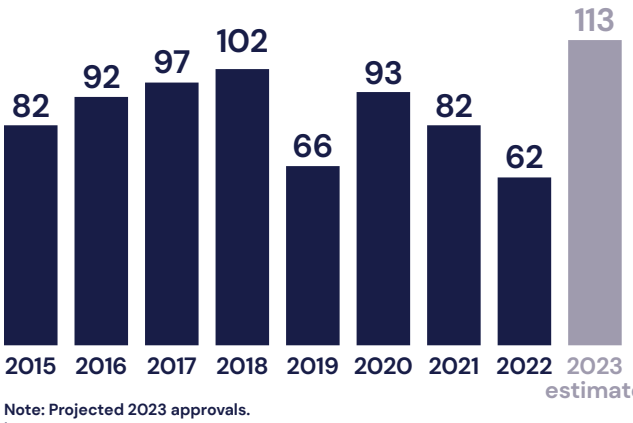
Company (Country)	Revenue (B $ USD)
1. Medtronic (US)	$31.22
2. J&J (US)	$30.40
3. Abbott Laboratories (US)	$26.87
4. Siemens Healthineers (Germany)	$23.20
5. Medline Industries (US)	$21.20
6. Stryker (US)	$20.49
7. GE Healthcare (US)	$19.52
8. Becton Dickinson (US)	$19.40
9. Roche (Switzerland)	$15.40
10. Baxter (US)	$14.80
11. Philips (Netherlands)	$14.95
12. Boston Scientific (US)	$14.20
13. Danaher (US)	$9.60
14. B. Braun (Germany)	$9.39
15. Fresenius (Germany)	$8.62

Evidence of the innovation in Medtech is provided by the US Food and Drug Administration (FDA) that approved more novel medical technologies in 2023 than it has in any single year ever before (see page 4). According to a report by McKinsey[3], several factors contributed: approvals of AI and machine-learning-enabled MedTech products reached an all-time high; miniaturization and improved visualization continued to drive approvals in cardiovascular and urology segments, among others; and digitally enabled categories, such as neuromodulation and robotics, continued to grow steadily.

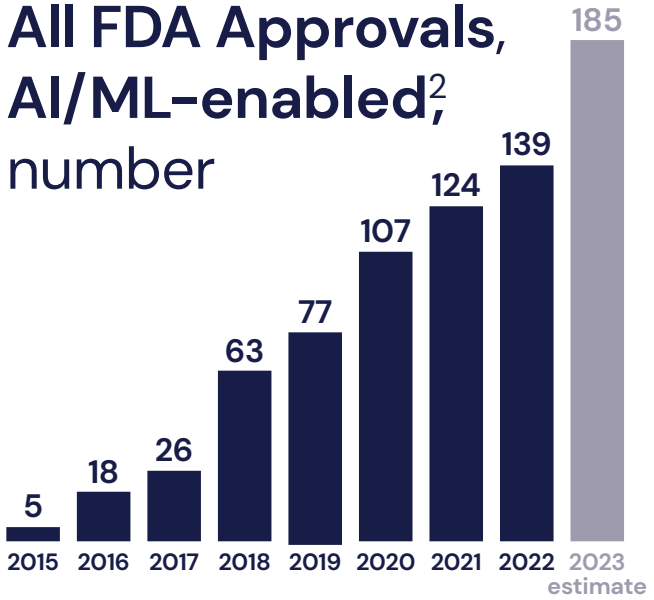
Also, waiting times for FDA reviews receded by almost 15 percent from 2020 to 2022.

The innovation pipeline is opening, with Medtech generating the industry's most novel approvals ever.

Novel FDA Approvals[1], number



All FDA Approvals, AI/ML-enabled[2], number



Note: Projected 2023 approvals.
[1] US Food and Drug Administration approvals include original premarket approvals (PMS), panel track PMA, and 501(k) De Novo approvals.
[2] The FDA publishes lists of approved AI/machine learning-enabled medical devices primarily based on information provided in the summary descriptions of the submitter's marketing authorization document. The 2023 estimates are annuizations via linear regression.
Source: Evaluate Medtech; FDA database

Given the size and growth of the MedTech market, it's no surprise that larger medical device companies have become more willing than ever to in-license or acquire companies making meaningful change in the space. Growth by acquisition appears to be the predominant model for sourcing new products, R&D expertise and, by extension, innovative approaches to managing and treating disease. Acquisitions of innovative smaller companies by larger firms drive innovation in this sector. Given the consolidation, market power, and financial wherewithal of the large MedTech companies, M&A will continue to be the exit strategy in the next decade for emerging MedTech firms.

MedTech Sectors & Innovation

MedTech comprises a vast array of companies, products and services across medical specialties, each with unique clinical, economic, and operational needs. Artificial intelligence and machine learning are accelerating technology-enabled device development; engineering is driving the miniaturization of devices for wearability or implantation; robotics is changing surgical suites; materials science is advancing across sectors with new alloys, polymers and biomaterials; and 3-D printing using these materials to manufacture orthopedic and dental implants, with printed organs on the horizon.

Artificial Intelligence

Interestingly, the medical community, long averse to change, is evaluating and adopting innovative technologies and Artificial Intelligence (AI)-driven solutions at a rapid pace. In a report by the Berkley Research Group (BRG), 75% of surveyed healthcare providers believe that AI-enabled technologies will be widespread within three years, and that AI use in diagnostics and imaging, preventative screenings, health predictions and patient safety would significantly impact the industry. Administrative tasks, including revenue cycle management and supply chain management, could also be positively impacted[4].

Generative AI is reducing administrative burden by streamlining and managing healthcare and insurance documentation. Tasks like scheduling operating room times, staffing, and patient logistics can all be managed efficiently by AI systems. And with interoperable data exchange systems, AI platforms can not only compile patient records, but also analyze those records for co-morbidities, pharmacy records, and potential risk factors to ensure a complete, documented patient record. AI is helping physicians and nurses overcome the challenges of clinical and payment documentation with speech-to-text technology and generative AI with Large Language Models (LLMs) to automatically complete EHR records and coding. More than two-thirds (68%) of hospitals and health systems use artificial intelligence (AI) in some clinical or administrative capacity, according to a recent Becker's Healthcare survey on AI adoption in healthcare[5].

The field of radiology is being transformed by machine learning. According to Suzie Bash, MD, neuroradiologist and a medical director at RadNet[6], the AI healthcare market is worth about $20B today, projected at $188B by 2030. As reported by Applied Radiology, there are over 10,000 healthcare AI patents right now in the marketplace and there's been 30% growth in FDA approval for AI products in 2023 alone. Of all the approvals, 79% of those are in radiology[7]. Other groups like Precedence Research project similar growth in this explosive market.

Artificial Intelligence in Healthcare Market Size (US Billion)

Source: Precedence Research, Artificial Intelligence (AI) in Healthcare Market (February 2023)

This uptake and adoption of new digital technologies in healthcare has been further enabled by the now near universal implementation of electronic health records (EHRs), integrated data systems, and interoperable data exchange capabilities through application programming interfaces or APIs.

The regulatory paths for increasingly complex and technology driven products continue to evolve with the integration of AI into smart devices while offering streamlined pathways to clearance through the 510(k) application. The FDA and world regulatory bodies recognize the complex and dynamic processes involved in the development, deployment, use, and maintenance of AI technologies, and have engaged with the healthcare community to ensure proper oversight while promoting adoption. In March 2024, the FDA published a report, Artificial Intelligence & Medical Products: How CBER, CDER, CDRH, and OCP are Working Together that illustrates FDA's medical product Centers are collaborating to safeguard public health while fostering responsible and ethical innovation.

Diagnostics

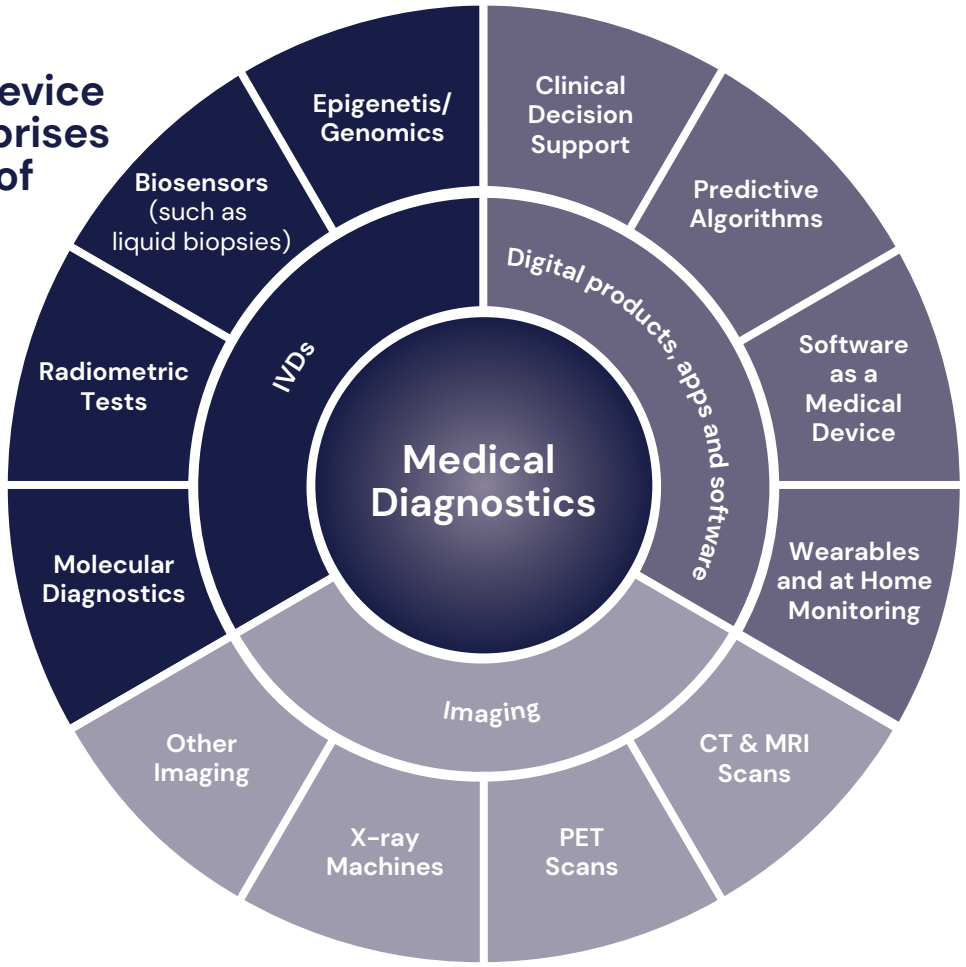
The focus of diagnostic technology now extends beyond simply identifying disease and infection to embracing tools that enable prediction, prognosis, and continuous patient monitoring throughout the healthcare journey.

Medical diagnostics include a broad range of products, from point-of-care in vitro diagnostic kits to advanced imaging modalities like MRI and CT scans. Recently, the digitization of health data and the emergence of wearable and implantable connected devices have opened new categories of digital medical devices, both in the clinical and consumer settings. The graph illustrated in Figure 1 was developed by Deloitte Centre for Health Solutions.

Diagnostic technologies have applications across clinical care in infectious, metabolic and cardiovascular diseases, oncology, drug metabolism, drug targeting, pharmacogenomics genotyping and immunology, microbiology, pathology & cytology. Advanced technologies have enabled precision medicine through the adoption of genomics and genetic testing (qPCR), next gen sequencing, gene and protein microarrays, glycomics (glycosylation ID), proteomics, gut microbiome analysis, and epigenetics (DNA Methylation, siRNA). Integration of information science, machine learning, computer-assisted imaging, and nanotechnologies continue to advance the field and expand the frontiers of disease diagnosis and management. Clearly MedTech innovation is a key driver in the global growth of the diagnostic testing market, which is estimated at $210.58 billion in 2023 and is expected to be worth around $284.38 billion by 2033, according to a report by Vision research Reports[8].

Figure 1.

The Medical Device Industry Comprises a Wide Range of Technologies[9]



Diagnostic laboratories are major markets for MedTech, comprising ~260,000 CLIA-certified laboratories across the country that conduct an estimated 14 billion diagnostic tests annually. 70% of today's medical decisions depend on laboratory test results, showing the important role of clinical laboratories in today's healthcare system.[10]

As of April 29, 2024, the FDA estimates that there are around 80,000 medical tests available for diagnosis and management of disease. The FDA reviews tests and kits made by medical device manufacturers, but labs, universities, and large hospitals develop their own tests called Laboratory Developed Tests or LDTs that have not been regulated by FDA to date. The FDA also approves companion diagnostic (CDx) assays, which are almost exclusively linked to oncological and hematological drugs.

The FDA recently announced their intention to regulate LDTs, requiring hospitals and laboratories to submit 510(k) applications for review and approval within 3 to 4 years. This has been a controversial step, as it affects tens of thousands of tests and an estimated 1,200 clinical laboratories and require significant work and cost to the healthcare system. The program is temporarily on hold pending an industry sponsored lawsuit; however, if the FDA final rule is implemented, there will be numerous investment opportunities to fund FDA clearance for diagnostic tests that are currently in use and generating revenue.

Product development in the laboratory sector includes not only clinical diagnostic tests, but also encompasses analytical platforms for CDx assays that use a variety of technologies, including immunohistochemistry, in situ hybridization, polymerase chain reaction, next generation sequencing, and imaging. Other areas of MedTech development for laboratories include:

- Laboratory information management systems (LIMS)
- Automation and robotics
- Digital pathology
- Electronic health records
- Big data and analytics
- Telemedicine and remote monitoring
- Point-of-care testing
- Patient engagement
- Research and development

Orthopedics

Orthopedic surgeons are using robotics assisted surgery, computer navigation, augmented reality and smart sensors to improve patient care.

Robotic surgery, already prevalent in general surgery and rapidly growing in orthopedic joint replacement procedures, neurosurgery, and cardiovascular procedures. According to a report by Bain & Company, the more than $3 billion surgical robotics market will continue to balloon over the next decade, with 78% of US surgeons interested in embracing the new technologies[11] Advances in robotics and augmented reality are providing patient-free, yet hands-on surgical training as well as virtual practice for complex surgeries, reducing operating time and saving money.

3-D printing is being adopted in hospitals across the country in the planning of, and assistance during, surgical procedures using 3D anatomic models as surgical guides and to create custom prosthetics and implants for individual patients. According to GlobalData, a leading data and analytics company, the medical 3D printing market is forecast to grow from just over $2 billion in sales in 2022 to $4 billion in 2026 at a 21% compound annual growth rate[12]

New materials are being developed to manage fractures and surgical repairs. A great example is a revolutionary orthopedic casting technology introduced by Cast21, a company founded in 2016 by Ashley Moy upon her graduation from the University of Illinois – Urbana. To date, Cast21 has raised $5.6 million, first through grants and seed funding, and in 2022 a $3.2 million Series A round that enabled them to launch their MedTech casting technology into the market.

Regenerative medicine products have gained widespread use in orthopedics in surgery and wound care. Artificial skin, biological substances like platelet-rich plasma (PRP) therapies, autologous chondrocytes to promote cartilage formation, bovine collagen, bone matrix, and proteins are often classified as medical devices. And actual devices for shock wave therapy, also known as Extracorporeal Shockwave Therapy (ESWT) or Extracorporeal Pulse Activation Technology (EPAT) are used to stimulate the body's natural healing mechanisms to repair damaged ligaments, tendons, and other structures.

Advances in digital technology and prosthetics are paving the way for digital implants that communicate with the patient and physician.

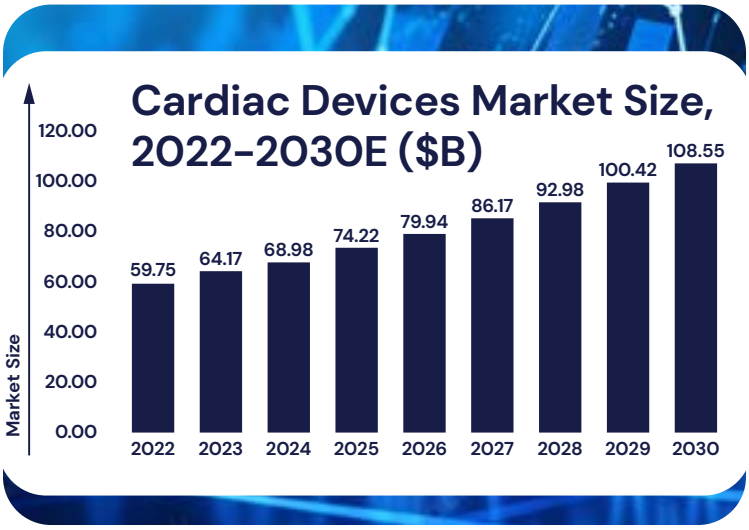
The Persona IQ "Smart Knee" implant is a prime example of orthopedic innovation that has a smart stem extension that contains sensors to seamlessly collect motion data after knee replacement surgery to aid in rehabilitation and recovery.

Cardiovascular

Cardiovascular disease is one of the world's leading causes of mortality and morbidity, causing nearly 8 million deaths a year, according to the World Health Organization. Acuity Knowledge Partners reports that the global cardiac devices market was valued at $59.75 billion in 2022 and is expected to grow to more than $108.55 billion by 2030.[13] Approximately three quarters (76%) of the cardiovascular medical device market is directed toward surgery and therapeutic interventions, with the remaining quarter focused on diagnostic and monitoring devices.

The uptake of innovative treatment technologies, including Transcatheter Aortic Valve Replacement (TAVR) and 3D printing, is creating new cardiovascular treatment options and expanding the MedTech cardiovascular market beyond stents and balloons, drug eluting devices, heart valves, and ablation devices. Advances in cardiac imaging enable early diagnoses and more precise surgeries. Implantable electric devices like pacemakers are now Bluetooth enabled to provide continuous data monitoring, and predictive AI is utilizing machine learning to evaluate patient records to identify patients at risk for cardiovascular disease.

Wearable and remote monitoring technologies are facilitating patient care, enabling at-home care and patient engagement in their own health, and machine learning is being used to create predictive analytic models that can identify changes in cardiac function to alert patients, their caregivers, and their medical team about potential problems before a cardiac event that would lead to hospitalization.



Neurology

Neurology is on the frontier of medicine as we unravel the mysteries of the brain. In the last decade, significant advances have been made in neuromodulation, deep brain stimulation (DBS), and responsive neurostimulation (RNS) to treat such neurologic diseases as epilepsy, Parkinson's Disease, depression, anxiety, pain, and paralysis.

According to Morder Intelligence, the global neurology devices market size is estimated at $14.4 billion in 2024 and is expected to reach $18.26 billion by 2029.[14]

Cutting-edge imaging technologies, including magnetic resonance imaging (MRI) and positron emission tomography (PET), are playing a pivotal role in the early diagnosis of neurological disorders, and the combination of data from these two imaging modalities enable previously unimaginable brain surgeries to precisely eliminate tumors or defective brain regions that cause seizures.

Miniaturization and Bluetooth technologies are being used to develop new implantable devices for long-term continuous EEG monitoring in the outpatient setting, and AI and machine learning are being utilized in these systems to predict seizures before they occur.

Spinal cord stimulation (SCS) devices are being developed to promote recovery from spinal cord injury and paralysis, as well as for treating back pain, an ongoing problem that affects an estimated 75-85% of Americans during their lifetimes[15] according to the American Association of Neurologic Surgeons. In fact, back pain is a leading cause of health-related economic drain, accounting for an estimated total cost of $250 billion and 264 million lost workdays annually.[16]

Dermatology & Wound Care

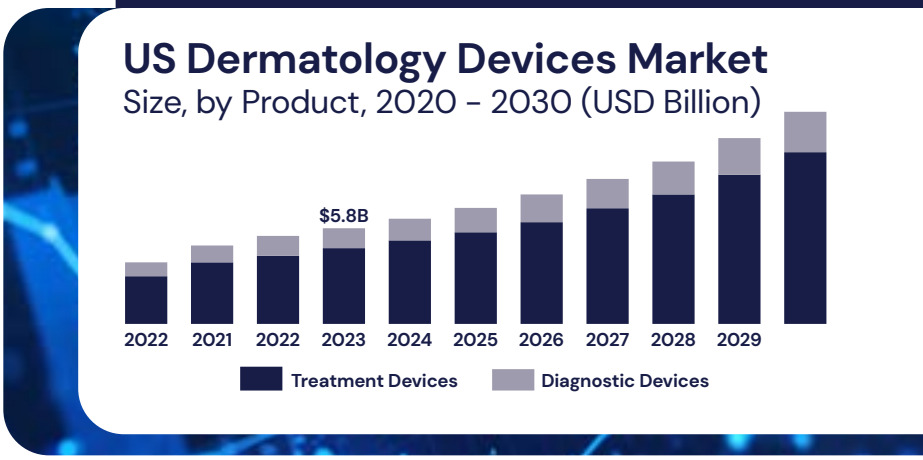
In a report by Grandview Research, the U.S. dermatology devices market size was estimated at $5.77 billion in 2023 and is projected to grow at a CAGR of 12.4% from 2024 to 2030. The increasing incidence rate of skin diseases and skin cancer is driving the market growth. According to the Skin Cancer Foundation, between 2014 and 2024, there was a 32% annual rise in newly diagnosed invasive melanoma cases in the US.[17]

Aesthetic dermatology procedures bolster the business of dermatology as society continuously emphasizes personal appearance, especially in today's social media environment. Further, as society ages, the quest for eternal youth portends significant upside for dermatology practices. Light therapy devices, microdermabrasion devices, and laser devices help dermatology professionals deliver less invasive and more effective treatments to improve skin structure and appearance. A broad range of biocompatible implants are being used for cosmetic body contouring as well as for restorative procedures after injury or cancer surgery.

Medical devices, including lasers, microdermabrasion devices, LED light therapy, and cryotherapy have widespread use in aesthetic dermatology for skin rejuvenation, scar and lesion repair, and hair removal.

Chronic wounds represent a significant health and economic burden, as the U.S. spends over $50 billion annually on successful wound care.[18] Chronic wounds affect 10.5 million (up 2.3 million from the 2014 update) of U.S. Medicare beneficiaries. Chronic wounds impact the quality of life of nearly 2.5% of the total population of the United States. Given the aging population, the continued threat of diabetes and obesity worldwide, and the persistent problem of infection, it is expected that chronic wounds will continue to be a substantial clinical, social, and economic challenge.[19] Advanced wound care products including skin substitute grafts, and cellular and/or tissue-based products (C/TPs), which are regulated as medical devices, have been widely adopted for managing such chronic wounds as diabetic foot and venous leg ulcers, pressure ulcers (bed sores), and non-healing surgical wounds. Advances in stem cell therapies, biologic formulations of collagen, and platelet rich plasma products have demonstrated promising results in healing chronic wounds due to their activation of growth factors for skin regeneration.

12.4% US Market CGR, 2024 - 2030
Source:grandviewresearch.com



Dermatology has been at the forefront of imaging technology and AI-assisted image analysis driven by advances in skin cancer detection technologies and increased awareness about the need for early detection. The field of dermato-oncology has seen significant advancements in noninvasive diagnostic tools, including dermoscopy, ultrasonography, confocal microscopy, and optical coherence tomography. These tools are essential for diagnosing skin cancers at earlier stages as the incidence of these cancers continues to rise. Earlier this year, the US Food and Drug Administration (FDA) authorized DermaSensor, the first artificial intelligence (AI)-enabled medical device for skin cancer detection in primary care. The device was authorized by FDA through the de novo pathway.[20]

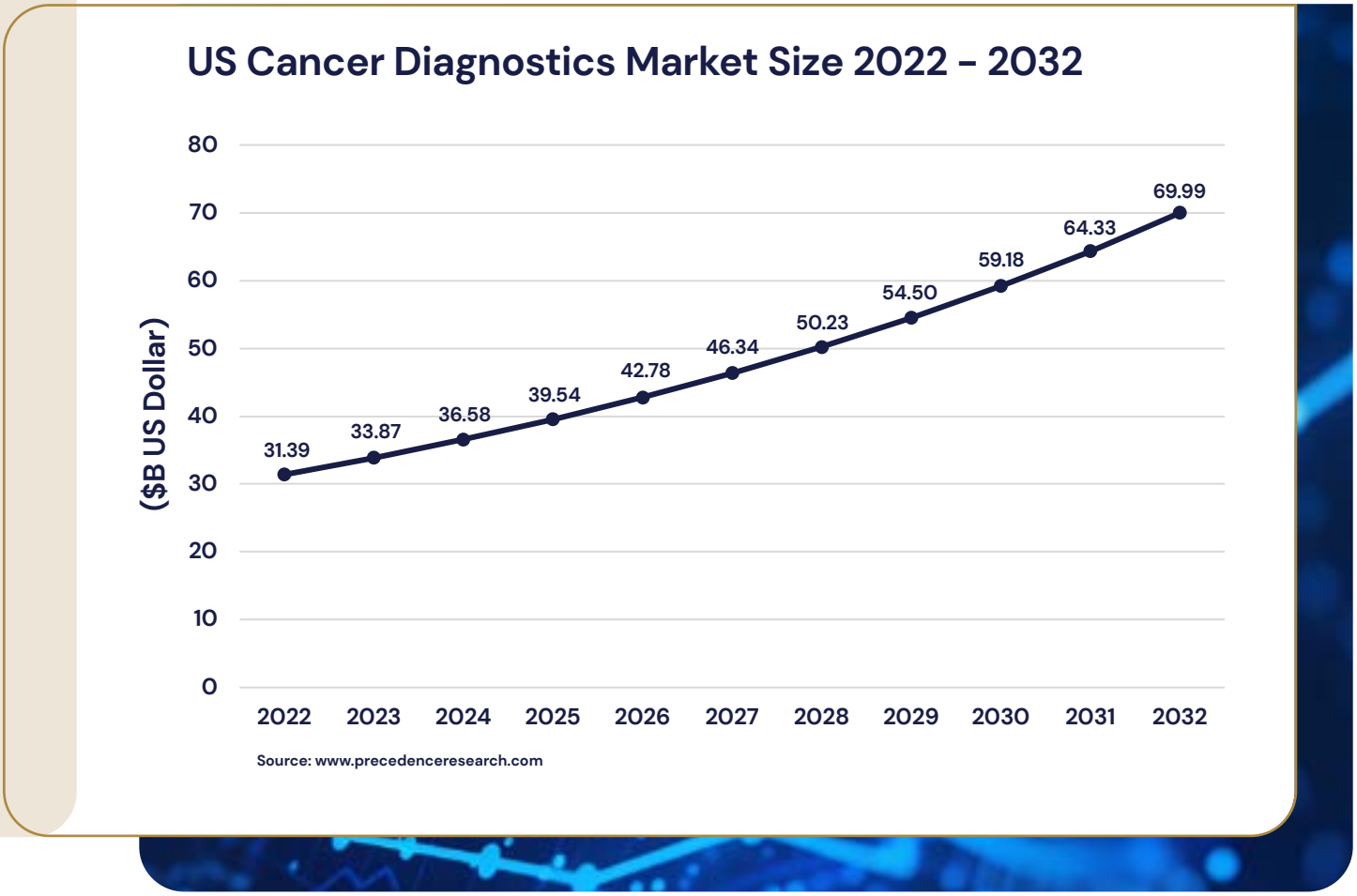
Because dermatology involves visual analysis of skin lesions, pictures are often as good as personal interaction, and with the emergence of computer-assisted image analysis, usually better. Therefore, telehealth and remote image analysis have exhibited explosive growth due to the increasing rates of skin conditions driven by the aging population combined with the shortage of dermatologists. According to a report by Fortune Business Insider, The teledermatology market size was valued at $8.06 billion in 2022 and is projected to grow to $24.88 billion by 2030.[21]

Oncology

Cancer is a simple word that belies the multi-dimensional complexity of disease diagnosis, treatments, and patient care. MedTech is revolutionizing precision and personalized medicine for oncology, integrating genomic data, AI-driven analytics for large databases, and AI enhanced detection of malignant and high-risk premalignant lesions. The National Cancer Institute has recognized technologies and innovations like CRISPR, artificial intelligence, telehealth, the Infinium Assay, cryo-electron microscopy, and robotic surgery that are helping accelerate progress against cancer.

The U.S. cancer diagnostics market size was estimated at $31.39 billion in 2022 and is projected to reach $70 billion by 2032. The cancer diagnostics market is intricately segmented based on products, applications, and end-use for a thorough evaluation. Products include consumables (antibodies, kits & reagents, probes, etc.) and instruments (pathology-based, imaging, biopsy instruments). Applications encompass a spectrum of cancers, including lung, prostate, kidney, breast, blood, colorectal, skin, ovarian, liver, pancreatic, cervical, and others. End-use categories comprise hospitals & clinics, diagnostic laboratories, diagnostic imaging centers, and research institutes[22].

Molecular diagnostics including protein and genetic biomarkers, combined with advanced imaging technologies like PET/MRI are being used to identify and evaluate tumors at earlier stages and to measure effectiveness of treatment. Diagnostic microarrays are being developed to evaluate multiple biomarkers on a single assay chip to further personalized cancer care.



In oncology, AI algorithms are now being deployed to enhance diagnostic accuracy, to predict treatment responses, and to identify new therapeutic targets. With the evolution of electronic medical records and AI applications, large datasets of cancer patient data offer an opportunity to unravel the tangle of genetics, immunology, molecular pathways and targets, drugs and biologics that comprise cancer diagnosis and treatment. Companies are developing AI-powered platforms to facilitate research and development efforts in oncology by providing access to a wealth of integrated healthcare data, enabling researchers to analyze trends, treatment responses, and outcomes across diverse patient populations. With the integration of genomic and proteomic data, AI systems can identify new biomarkers and genetic profiles for the discovery of new drug targets or diagnostic strategies. This could ultimately support the advancement of precision oncology and the development of innovative cancer therapies.

Additionally, there are opportunities to develop Cancer Diagnostic Algorithms (CDAs) for primary diagnosis, staging, grading, and genetic/biomarker analysis. Based on recent regulatory approvals, CDAs can be approved and protected by the FDA, which makes them reimbursable products for oncology diagnosis and treatment. In particular, the immunotherapy field is ripe for AI analysis and treatment guidance.

The U.S. FDA has enacted regulations that allow for the submission of Real World Evidence (RWE) in support of regulatory approval. The FDA Commissioner recently stated that he expects a growing number of regulatory decisions, such as expanded FDA approvals, will be based on real-world evidence from EHR data, not just within the FDA but across the federal government. AI systems enable retrospective analysis and virtual clinical trials to support the collection and analysis of RWE using large datasets. As biologics, immune system modulators, and cancer vaccines become widely available for personalized therapy, identifying effective combination treatments for populations can provide the necessary RWE to support FDA approval.

By integrating and analyzing diverse healthcare data, including patient records, genomic information, and clinical trial databases, algorithms can facilitate efficient and accurate patient-trial matching, thereby helping both patients and biopharmaceutical companies to accelerate the development of new oncology treatments.

By analyzing a wide range of healthcare data, including imaging studies, laboratory results, genetic and biomarker analysis, and patient history, AI can be used to identify potential markers or patterns suggestive of early-stage cancer, enabling early detection and diagnosis, and improved prognoses and treatment outcomes.

For patients undergoing cancer treatment, wearable technology enables remote monitoring for continuous tracking of vital signs, symptoms, and treatment adherence to improve outcomes and patient quality of life.

Conclusion

The future of MedTech is clearly bright, as innovations in biotechnology, materials science, engineering, electronics, and machine learning continue to bring new products to market. Demonstrating the power of MedTech, in the last year, Johnson & Johnson (JNJ) consolidated their medical technology brands under one company, JNJ MedTech, and has since expanded their business through a costly M&A spree acquiring Laminar ($400 Million + Milestones and royalties), ShockWave ($13.1 Billion), and shortly V-Wave Technologies ($1.7 Billion), three MedTech companies focused on cardiovascular disease.

Across the medical community, MedTech is making an impact – in research & development, in operations and logistics, in clinical practice. LeagueMed is leading the way to inform physicians and medical professionals on the new and innovative MedTech products that can optimize patient care and clinical operations, and as importantly, educate the community on finance and investing in private markets. By joining LeagueMed, those healthcare professionals who will be most impacted by the next wave of MedTech innovation now have an opportunity to participate in the growth and promise of new MedTech companies through the LeagueMed investment platform.

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Richard Purcell
Director, Business Development
rpurcell@leaguemedent.com

Bell Works
101 Crawfords Corner Road, Suite 3128
Holmdel, NJ 07733
leaguemed.com
732.444.1592

Addendum: Top 15 Medical Device Companies

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15. Fresenius SE & Co (Germany)

2023: (Fresenius Kabi): $8.62 B (€8.09 B)

2022: (Fresenius Kabi): $8.40 B (€7.85 B)

Change: +3%

2023: total revenue: $23.86 B (€22.29 B)

# of employees (Fresenius Kabi): 43,200

Fresenius SE & Co has its corporate headquarters is in Bad Homburg v. d. Höhe, Germany and presently has 45 production sites in more than 20 countries around the world and is a supplier of essential drugs, clinical nutrition products, and medical devices. Note: we have only included revenue from Fresenius Kabi and have excluded revenue from Fresenius Helios and Fresenius Vamed.

Ref: Fresenius SE & Co Annual Report 2023

14. B. Braun (Germany)

2023: $9.39 B (€8.775 B)

2022: $9.19 B (€8.49 B)

Change: +3%

# of employees: 63,000

Revenue per employee: $144,200

B. Braun is a medical and pharmaceutical device company based in Melsungen, Germany. With a history dating back to its founding in 1839, the company remains family-owned by the Braun family. B. Braun has over 63,000 employees worldwide and operates offices and production facilities in more than 60 countries.

Ref: D. Braun Annual Report 2023

13. Danaher Corp. (US)

2023 (Diagnostics): $9.6 B

2022 (Diagnostics): $10.8 B

Change: -11%

2023 total revenue: $23.9 B

# of employees: 63,000

Revenue per employee: $388,000

Danaher Corp is a family of more than 30 companies including Beckman Coulter, Implant Direct and Leica Biosystems. The Danaher group encompasses diagnostics, life sciences and biotechnology with a number of sites around the globe.

Ref: Danaher Corp Annual Report 2023

12. Boston Scientific Corp (US)

2023: $14.2 B

2022: $12.68 B

Change: +12.3%

# of employees: 48,000

Revenue per employee: $295,000

Boston Scientific produces a large range of medical devices used to diagnose and treat patients with issues in the areas of cardiology, urology, endoscopy and many more. It was founded in 1979 with the aim of creating less invasive medical devices and procedures, they continue to innovate across expanding areas of medicine. They estimate that around 21 million people were treated with one of their products in 2014. Boston Scientific currently employs approximately 48,000 people across 40 countries.

Boston Scientific has had a manufacturing presence in Ireland since 1994. There are currently three manufacturing sites – Galway, Cork, and Tipperary. Established in 1994, the Galway site is the largest in the country providing research and development, manufacturing, regulatory affairs, and new product development. The Cork site was opened in 1998 and manufactures a range of devices across several areas of the business. In Clonmel, they have a focus on the development, manufacture, and distribution of defibrillators and pacemakers – the Cardiac Rhythm Management area is an area of high potential and growth for the company. These sites export approximately 10 million devices every year. They currently have around 5,700 employees across Ireland.

Ref: Boston Scientific Corp Annual Report 2022

11. Philips NV (Netherlands)

2023 (Diagnosis & Treatment and Connected Care): $14.95 B (€13.95 B)

2022 (Diagnosis & Treatment and Connected Care): $14.64 B (€13.57 B)

Change: +2.8%

2023 total revenue: $20.04 B (€18.7 B)

Number of employees: 69,700

Revenue per employee: $298,000

Philips is a technology company based in The Netherlands with headquarters in Amsterdam. Their main areas of focus are lighting, electronics, and healthcare – the latter accounts for 42% of global sales revenue. Philips Healthcare is a diverse range of over 450 different types of medical equipment including MRI scanners, diagnostic ECG devices, and patient monitoring equipment.

Ref: Philips NV Annual Report 2023

10. Baxter (US)

2023: $14.80 B

2022: $15.10 B

Change: -1.9%

# of employees: 60,000

Revenue per employee: $260,000

Baxter began in the 1930s by launching the first commercially prepared intravenous solutions, today Baxter operates as a global diversified healthcare company. Its products serve disease areas such as hemophilia, infectious diseases, kidney disease, immune disorders, and trauma treatment.

Baxter moved into Ireland in the mid-1960s and built its first manufacturing site there in 1972. They currently have two manufacturing sites in County Mayo: one in Castlebar, where they produce renal dialysis solutions, premixed IV solutions, and several drug products; the other in Swinford, which produces devices for administration of these products. Between them, they employ over 1000 people. They also have a compound facility and sales and marketing offices in Dublin.

Ref: Baxter Annual Report 2022

9. Hoffmann-La Roche AG (Switzerland)

2023 (Diagnostics): $15.48 B (14,10 B CHF)

2022 (Diagnostics): $19.45 B (17.73 B CHF)

Change: -20%

2023 total revenue: $69.4 B

# of employees: 103,600

Revenue per employee: $669,000

Hoffmann-La Roche is a Swiss global healthcare company founded by Fritz Hoffmann-La Roche after whom the company is named, in 1896. Its headquarters is located in Basel, Switzerland. Other companies owned by Roche are Genentech, Chugai Pharmaceuticals and Ventana. It manufactures a range of Diabetes management products under the brand name Accu-check.

Ref: Hoffman-La Roche AG Annual Report 2023

8. Becton Dickinson & Company (BD) (US)

2023: $19.40 B

2022: $18.90 B

Change: +2.6%

# of employees: 75,000

Revenue per employee: $258,000

Becton Dickinson & Company (BD) was founded in 1897 in New Jersey, US, and now employs 75,000 people in over 50 countries around the world. They manufacture and sell medical devices, instrument systems, and reagents and the company was a pioneer in the production of hypodermic needles. Presently, the company is divided into three sectors – BD Medical, BD Life Sciences and BD Interventional.

BD has had a presence in Ireland since 1969 and currently has more than 1,000 employees in Ireland across four sites at Drogheda, Dun Laoghaire, Wexford and Limerick.

Ref: Becton Dickinson & Company Annual Report 2023

Top 15 Medical Device Companies (cont'd)

LeagueMed

7. GE Healthcare (USA)

2023: $19.52 B

2022: $18.46 B

Change: +6%

# of employees: 51,000

Revenue per employee: $384,000

GE Healthcare is the medical technology subsidiary of General Electric – a multinational conglomerate based in the USA. With a history as far back as 1893, the healthcare subsidiary today is involved in areas such as medical imaging, diagnostics, and patient monitoring. They work in specialized disease areas including neurology, coronary disease, and cancer.

GE Healthcare has Sales and Service Support offices in both Belfast and Dublin but also has a Global Manufacturing site in Cork. The site is of particular importance for the 'contrast media' technology manufacturer which is improving the visibility of structures in radiography processes. Approximately 750 people are employed within the Cork manufacturing site and products from this site are exported to over 70 countries worldwide.

Ref: GE Healthcare Annual Report 2023

6. Stryker Corp (US)

2023: $20.49 B

2022: $18.40 B

Change: +11.3%

# of employees: 52,000

Revenue per employee: $394,000

Founded by an orthopedic surgeon in the U.S. in 1941, Dr. Stryker was aiming to make products that met his patient's healthcare needs. Stryker continues in the field of medical technology with a focus on surgical devices and is now one of the biggest such companies in the world. They currently employ over 52,000 people worldwide.

Stryker has seven sites located across Ireland – five manufacturing sites in the Republic of Ireland and an R&D Innovation Centre in Cork. They also have a manufacturing site in Belfast, Northern Ireland. Stryker employs over 3,500 people.

Ref: Stryker Corp Annual Report 2022

5. Medline Industries (US)

2023: $21.2 B

2022: $20.2 B

Change: +5%

# of employees: 36,000

Revenue per employee: $589,000

Medline is a healthcare company – a medical supply manufacturer, distributor, and solutions provider focused on improving the overall operating performance of healthcare.

Ref: Medline Annual Report 2023

4. Siemens Healthineers (Germany)

2023: $23.21 B (€21.68 B)

2022: $23.43 B (€21.71 B)

Change: -0.9%

# of employees: 69,500

Revenue per employee: $337,000

Siemens is a multinational conglomerate based in Germany – it is the biggest engineering company in Europe covering sectors including energy, industry, and healthcare. Siemens Healthineers focus on equipment for medical imaging, clinical IT and lab diagnostics and employs around 69,500 people worldwide.

Siemens has over 450 employees across Ireland including staff in headquarters and sales roles. More specifically, Siemens Healthineers has a manufacturing plant for diagnostic equipment in Swords in Dublin.

Ref: Siemens Healthineers Annual Report 2023

3. Abbott Laboratories (US)

2023 (Med Devices & Diagnostics): $26.87 B

2022 (Med Devices & Diagnostics): $31.27 B

Change: -14%

2023 total revenue: $40.01 B

# of employees: 114,000

Revenue per employee: $351,700

Founded in 1888, Abbott has now become one of the leading pharmaceutical and medtech companies in the world. They produce a broad range of branded generic pharmaceuticals, medical devices, diagnostics, and nutrition products and in 1985, the company developed the first-ever HIV blood-screening test.

At present, they have a number of sites in Ireland including in Dublin, Sligo and Tipperary, where they employ over 5,000 people.

Ref: Abbott Laboratories Annual Report 2023

2. Johnson & Johnson (US)

2021 (MedTech): $30.40 B

2022 (MedTech): $27.40 B

Change: +9.6%

2023 total revenue: $85.16 B

# of employees: 134,400

Revenue per employee: $635,000

Founded in 1886 with the initial idea that wounds should be treated and dressed using sterile equipment – today's Johnson & Johnson is one of the world's biggest healthcare companies. Johnson & Johnson operates three distinct divisions – medical devices, pharmaceuticals, and consumer health. Both their medical device and pharmaceutical divisions have manufacturing sites in Ireland. Johnson & Johnson products are marketed in 57 countries via almost 250 operating companies – global personnel is approximately 132,200.

Johnson & Johnson has had a presence in Ireland for over 70 years. Today, that presence is in the form of DePuy Synthes, Janssen (Biologics & Sciences), Johnson & Johnson Vision Care and Ethicon. Between them, they have several separate manufacturing operations in both Limerick and Cork.

Ref: Johnson & Johnson Annual Report 2023

1. Medtronic (US)

2023: $31.22 B

2022: $31.68 B

Change: -1.4%

# of employees: 95,000

Revenue per employee: $333,000

Medtronic began as a medical supply repair shop in the US in 1949, their first commercial product was a battery-powered, wearable pacemaker. From then on they have focused on technology as a means of improving treatment. Today there is a focus on using that technology to improve treatment and management of chronic conditions specifically – Medtronic claims that "every three seconds, another life is improved by a Medtronic product or therapy". In 2014, Medtronic bought Irish-headquartered Covidien to further expand its scope. Globally, Medtronic employs over 95,000 people in over 150 countries.

Medtronic moved into Ireland in 1999 and now operates five facilities – two manufacturing sites in Galway, a manufacturing site in Westmeath and two office sites in Dublin. Their Galway sites employ over 2,000 people and manufacture respiratory monitoring devices.

Ref: Medtronic Annual Report 2023