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MedTech Disruption 2025: Startups Powering the Next Healthcare Leap

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As the MedTech industry strides into 2025 and beyond, innovations are transforming the way diagnosis, treatment, and patient engagement are delivered. These advancements are centred around patient-centric care, the convergence of digital technologies, preventive health care, and personalised therapy – all aimed at improving outcomes and maximising patient satisfaction. The article will dive deep into six high-potential technology domains that are gaining global momentum and are set to transform the MedTech industry in the near future.

Technologies are expected to create a significant impact from 2025 to 2029, redefining how care is delivered to those in need. The technologies covered include: advanced neuromodulation, digital biomarkers, AI-based medical imaging, portable in-vitro diagnostics, intelligent tissue biopsy, and minimally invasive surgery. A new generation of startups are redefining modern healthcare fuelled by innovation and emerging technologies – and is poised to make a significant impact in 2025, with a focus on these six high-impact areas. From the long list of innovative startups, this article features a curated selection of top startups that meet at least one of the following criteria:

? Gained recent regulatory approval for their technology or solution

? Raised funding between 2023 and 2025,

? Are developing a first-in-class product

Advanced Neuromodulation

Advanced Neuromodulation is a minimally or non-invasive technology that delivers neuromodulation or neurostimulation to the spinal cord, peripheral, vagus, and pelvic nerves for a wide range of indications- including autoimmune diseases, mental disorders, and chronic neuromuscular pain. The technology features miniaturised, low power consumption devices with wireless connectivity, setting it apart from traditional technologies requiring regular battery charging and revision surgeries to replace implants.

Top startups to watch in advanced neuromodulation space include:

ShiraTronics, Inc.: US-based ShiraTronics raised $66 million in an oversubscribed Series B funding round in October 2024 to advance pivotal trials for its Migraine Therapy System, which offers neurostimulation for patients with treatment-resistant chronic migraine. The company is currently seeking premarket approval from the FDA and is planning a commercial launch. The technology addresses a significant unmet need for patients whose chronic migraine attacks disrupt their daily life and who are unresponsive to conventional therapies.

Neuspera Medical: In July 2024, US-based Neuspera raised $23 million in a Series D funding round to support FDA premarket approval (PMA) of the Neuspera System - a sacral neuromodulation device implanted via minimally invasive procedure. It provides relief from urinary urge incontinence (UUI), a key symptom of overactive bladder (OAB), and also treats peripheral nerve-related chronic pain. This product presents a promising solution for a high demand OAB segment, where frequent urges to urinate disrupt patients' daily routines, work, and social lives.

Digital Biomarkers

Quantifiable physiological and behavioural data collected via devices such as wearables to predict health outcomes are known as digital biomarkers. These biomarkers enable real-time health monitoring, early disease diagnosis, and effective disease management across a wide spectrum of therapy areas. Digital biomarkers can be broadly categorised into: molecular (e.g., blood sugar levels), behavioural, (e.g., voice samples), physiological (e.g., heart rate), and medical imaging (e.g., tissue images). These digital biomarkers help clinicians to make informed decisions and improve patient outcomes. Additionally, digital biomarkers as a technology are gaining notable traction from investors post COVID-19 pandemic.

Acculi Labs: India-based Acculi Labs raised $1.5 million in a seed funding round in August 2024 to develop its AI-based insights system Lyra. Lyra is a digital biomarker tool that non-invasively uses photoplethysmography (PPG) to provide remote, personalised health assessments to large populations at an affordable cost. Lyra is expected to significantly benefit developing and low-income countries by offering efficient and affordable remote health monitoring tool and playing an instrumental role in the adoption of preventive healthcare.

WELT Corp.: South Korea-based WELT uses smart Bluetooth-enabled sensors and smartphones in its digital biomarker platform to track metrics such as gait balance, steps interval, foot movements, and ground reaction force – all aimed at predicting health outcomes. The company raised $10.1 million in a Series C funding round in June 2024 and it is currently seeking for co-development and research partners.

Braintale: France-based Braintale received CE-marked for its brainTale-care digital biomarker platform in March 2023. The platform offers new capabilities for patient monitoring and enhanced data security and supports the development of its white matter biomarkers for drug development. The solution addresses the unmet needs in a complex neurology by supporting early diagnosis, tracking disease progression, and evaluating treatment response in neurological conditions such as demyelinating diseases and neurodegenerative diseases.

AI-based Medical Imaging

Artificial Intelligence (AI)-based Medical Imaging involves the use of AI technologies for rapid and accurate detection of abnormalities in patients' medical images, supporting clinicians in their decision-making. It enables complex data interpretation and pattern recognition that may be missed due to human limitations.

Qure.ai Technologies: India-based Qure.ai raised $65 million in Series D funding round in September 2024 to expand the reach of its AI models for AI-based medical imaging. The company has 18 FDA-cleared indications, and its products are Class IIb certified per EU MDR, positioning Qure.ai's technology as the world's most deployed healthcare AI solution. As of 2024, the solutions have been implemented in more than 90 countries across 3000+ sites. Qure.ai's AI-based solutions help overcome key healthcare bottlenecks such as imaging reporting backlogs, low screening uptakes, and global workforce shortages.

DeepTek.ai, Inc.: India-based DeepTek received CE MDR Class IIb certification for its Chest X-ray AI solution in April 2025. Designed to support physicians in interpreting frontal chest X-rays, the tool detects multiple lung conditions including nodules, lung masses, pneumothorax, and tuberculosis (TB) - including young populations, which currently are not served by conventional AI models. The solution has been already used to screen over 2 million people for TB, supporting multiple public health initiatives worldwide. The Chest X-ray solution is critically important for regions with high TB burden and limited access to radiology experts.

See-Mode Technologies.: Singapore-based See-Mode Technologies received FDA 510(k) clearance for its AI-based thyroid ultrasound analysis and reporting software in September 2024. The solution automatically classifies thyroid nodules, and is the first FDA- cleared product for both detection and diagnosis for thyroid ultrasound imaging.

Portable In-vitro Diagnostics

Portable In-vitro Diagnostics refers to the use of smartphone-connected diagnostic platforms that are compact, portable, and wireless, for point-of-care testing to detect infectious and other diseases. These technologies offer cost-effective, clinical-grade tests that require a small sample and can be conducted anywhere - eliminating the location constraint.

Neodocs: India-based NeoDocs received $2 million in a seed funding round in February 2024 to develop its finger-prick blood test products to self-diagnosing urinary tract infections (UTI) and delivering results directly to patient's smartphone. The solution plays a critical role in the adoption of proactive care by offering an affordable, real-time diagnostic alternative.

Wavely Diagnostics, Inc.: US-based Wavely Diagnostics is developing first-of-its-kind WavelyDx, which allows patients to remotely evaluate ear infections using smartphones. The company raised $1.35 million in July 2024 to further develop its digital diagnostics platform for virtual ear infection care in July 2023. WavelyDx is currently the only solution in the market, specifically designed to diagnose childhood ear infections.

Healthy.io Ltd.: Israel-based Healthy.io is developing smartphone-based urinalysis test - the Minuteful Kidney test - which is FDA 510(k) cleared for home-use. It detects the presence of albumin protein in the urine, indicating early signs of chronic kidney disease. The company raised $50 million in May 2023 to expand the commercialisation efforts in the US. The easy-to-use test, paired with a smartphone app, enables large volume of population to test for kidney disease within the comfort of their homes, fuelling accessibility and equitability of kidney disease diagnostics.

Intelligent Tissue Biopsy

Intelligent Tissue Biopsy integrates AI, automation, and connectivity to improve tissue sampling, and involves use of data analytics platform to improve diagnostic accuracy of biopsy, eliminating the need for repeated and unnecessary tissue sampling and improving treatment selection for patients.

Biobot Surgical: Singapore-based Biobot Surgical received CE Certification in January 2025 for its Mona Lisa 2.0, a robotic system designed for efficient and precise prostate biopsy and ablation. The system enables real-time adjustments of prostrate model and needle positioning, supporting accurate diagnostic and therapeutic interventions. Its improved needle trajectory tracking enhances biopsy reliability and reduces the risk of injury to surrounding tissues.

Triopsy Medical, Inc.: US-based Triopsy Medical received FDA 510(k) clearance for its Integrated Biopsy System in January 2025. The system standardises prostrate biopsy tissue acquisition and transfer. It enables accurate lesion targeting with its patented trochar needle tip and allows easy, distortion-free handling of the tissue samples in the laboratory using its proprietary Biopsy Grip. The solution will also facilitate the creation of a large data repository to support future drug development and surgical treatment innovations.

Minimally Invasive Surgery

Minimally Invasive Surgery refers to surgical procedures that require small incisions – or in some cases, no incisions - to complete a surgical treatment. These approaches reduce the invasiveness of surgical procedures compared to open surgeries, reducing trauma, accelerating recovery, and improving patient outcomes. Minimally invasive surgery can be categorised into: single-port surgery – requiring single incision for the performing surgical procedure; multi-port surgery – requiring multiple small incision for the surgery; Natural Orifice Transluminal Endoscopic Surgery (NOTES) – Incisionless surgery through human body's natural orifice such as rectum or vagina to perform surgery.

Momentis Surgical: Israel-based medical device company received FDA 510(k) Clearance for its Anovo robotic surgical platform in October 2024. The platform is designed for single site, abdominal access ventral hernia repair through a single-port. Anovo is the world's first FDA-approved single-port robotics platform for ventral hernia procedures.

Cipher Surgical.: US-based startup, Cipher Surgical raised $10 million in Series A funding round in April 2025 to accelerate commercialisation of its patented technology, OpClear. The system enhances visualisation during minimally invasive surgery through continuous lens cleaning, helping reduce surgical delays. OpClear not only shortens procedure time but also lowers operating costs.

Ronovo Surgical, Inc.: China-based medical device company raised $42.1 million in a Series B funding round June 2024 to accelerate the multi-discipline clinical trial for its robotic platform, Carina. The platform offers configurable robotic assistance for laparoscopic surgeries across gynecologic, urologic, and general surgery. The platform addresses current pain points of minimally invasive surgery with limited flexibility to surgeons. Carina platform received regulatory approval in China in March 2025.

The Path Forward

As the medtech space evolves at a rapid pace, the startups highlighted in this article represent innovations that disrupt their respective domains and drive the industry forward in 2025. From digital biomarkers and AI-based medical imaging to minimally invasive surgery, these startups not only address critical clinical gaps but also reshape how healthcare is delivered globally.

While the challenges such as regulatory hurdles, tariff dynamics, funding uncertainties, and scalability remain, these startups' strong vision and groundbreaking solutions position them as key players to watch in 2025 and beyond.

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