
Optimising Healthcare Data for Improved Patient Care



Harnessing the power of healthcare data is key to developing innovative solutions that lead to better patient care.

At [Medtronic](#), two key approaches enable the medical device company to utilise data on people's health to help hospitals become more efficient and effective in their delivery of care. The first one entails developing devices that use sensing and artificial intelligence (AI) technology to provide "closed loop therapies," according to Dr Richard Kuntz, chief medical and scientific officer at Medtronic.

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The other approach is [leveraging data from multiple sources](#), which, as Dr Kuntz points out, helps clinicians create more coordinated care pathways for patients. For example, using multiple data sources – ranging from electronic health records (EHRs) to remote sensors and wearables – can help clinicians make informed care decisions and improve patient outcomes.

According to Medtronic, the application of data science, whether built into a device, or leveraged in a managed care offering, may be today's biggest opportunity for technology to advance chronic disease management (CDM) – both at an individual patient level and in terms of population health management.

In the United States, chronic conditions such as diabetes, cancer, cardiovascular disease, and chronic pain are the leading causes of death and disability. Of note, CDM is complex and requires an integrated care approach that includes regular screenings, check-ups, ongoing monitoring, and patient education.

Medtronic continues to create new data-driven solutions to meet the changing needs of both patients and health systems. The company explains that by applying the power of [sensor technology and AI into the latest implantable and wearable devices](#), and managed care solutions, they are able to address growing demands of patients for better tools and guidance in managing their chronic conditions.

In the case of patients with Type 1 diabetes, Medtronic notes that successful disease management is becoming increasingly associated with better blood sugar time in range, which can be significantly impacted by diet and exercise. Through sensor technology and the advanced application of AI algorithms, Medtronic technologies help take the guess work out of daily disease management.

For example, the Guardian™ Connect Continuous Glucose Monitor (CGM) uses a feature, IQcast, to predict hypoglycaemic events up to four hours in advance. Combining CGM technology with insulin pump therapy, the MiniMed 670G™ system automatically adjusts insulin delivery, helping patients to spend more time in range than patients on daily injections, according to the company.

"The trend in medicine we're seeing today is the need to personalise care," says Dr Laura Mauri, vice president of Global Clinical Research and Analytics for Medtronic. "The task for us is to incorporate sensor information into the tools we provide clinicians, and then help tailor treatment, in as close to real time as possible, based on the patterns we see."

In line with the shift towards personalised care for chronic pain, Medtronic offers its Adaptive Stimulation technology (Intellis™ with

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AdaptiveStim). Developed for the treatment of chronic, intractable pain, the technology uses an accelerometer that adapts stimulation to preset levels based on a patient's positions. Moreover, the device provides objective insights to a clinician on a patient's functional activity and changes in function over time. This helps with ongoing, effective patient management and care, according to Dr Chris Karas of OhioHealth in Columbus, Ohio.

"Until now, we didn't have access to that kind of quantitative data, even in the hospital," Dr Karas points out, adding that spinal cord stimulation is a very individualised form of treatment – ie, this can be specified to the location of pain in one's body and the type of pain.

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