



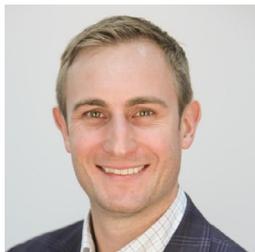
# ximedica®

## Medtech innovation & adaptation

### Insights with Boston Scientific's David Knapp



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*Boston Scientific's David Knapp recently sat down with two of Ximedica's development leaders, Mike Neidert and Mark Stevenson, to share insights on Medtech innovation and trends, and on the effects of COVID-19.*

When you look at the Medtech field, most people are biomedical engineers, mechanical engineers, or electrical engineers. David Knapp, on the other hand, has degrees in chemical engineering and kicked off his career in the oil industry, working to create environmentally friendly gasoline. It wasn't until he was pursuing his PhD in chemical engineering at the University of Minnesota that he became fascinated by Medtech, studying things like tissue engineering and how cells interact with their environment.

For the past 21 years, David has been with Medtech R&D leader Boston Scientific, developing medical devices, conducting exploratory research, and looking at new technical platforms that cut across Boston Scientific's six core divisions.

### Finding Meaningful Innovation

Meaningful innovation is at the heart of Medtech. David explains that at Boston Scientific, "we think of innovation not just as R&D, but as what happens across the entire organization, across all the functions of the company—the businesses, the divisions, as well as the regions. If we are not innovating in every aspect of what we are doing, then the company is not living up to its values. It's the lifeblood of our work."

So where does one look for innovation? Incubators and accelerators are great resources. Boston Scientific, for example, partners in the **MEDX Xelerator**, which is based in Israel and targets medical innovations in the vascular space. Boston Scientific also helped start the **gBETA Medtech Accelerator** in the Twin Cities, which looks at early-stage medical device, biotech, diagnostic, and software companies and provides guidance in a very complex space. Additionally, innovation is sparked by collaborations with academic institutions and providers, such as the one Boston Scientific has with the Mayo Clinic that created **Motion Medical**, an accelerator in Rochester, Minnesota, working to advance the development of patient-centered medical technology and minimally invasive treatments.

It is no surprise that a great deal of medical innovation is taking place in Minnesota, where David has lived for three decades. The state is home to long-established, globally acclaimed institutions like the Mayo Clinic, as well as to a vibrant startup culture, creating a very special ecosystem. "The Twin Cities is where everything comes together," explains David. "It has dynamic startups as well as the large strategics, in terms of medical devices and amazing players. It's a place where we can one-stop shop, including finding amazing original equipment manufacturer suppliers and development partners, like Ximedica."

For the past 30 years, **Ximedica** has been using a human-centered, integrated process to create medical products that are thoughtfully designed, approved, manufactured, and delivered to market. Its Minneapolis office partners with local Medtech companies to enhance innovation and accelerate the product-development process.

## Shift to Precision Medicine & Personalized Therapies

Over the decades, David has witnessed a shift in what drives innovation in medical technology. At the end of the 1990s and start of the 2000s, the Medtech industry was trying to be patient-centric by focusing on less-invasive medicine. In the 2000s and early 2010s, this expanded to exploring physicians as the users of technology and making the technology more accessible to them. Then in the 2010s, value was steering a lot of work—trying to understand value in the system and moving from volume to value.

Now that technology has largely caught up with the desire to focus on the patient, there is an emphasis on precision medicine. David notes, “Look at any technology, like neuromodulation, that is tuned to the patient and applied before the patient realizes they need it. These technologies give the patient a hand in managing their own condition, and that is incredible.” He predicts that these technologies will continue to develop, enabling medical providers to individually tailor therapies to their patients.

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## Growing Importance of Digital Health

One of the major trends in the current evolution of Medtech is the rise to prominence of **digital health** and the increased ability to gather and analyze individual data. Rather than simply paying attention to the devices and sensors that monitor patients, doctors and researchers are now able to track a broad range of analytics. “The clinical importance of gathering more patient-specific data and having a temporal history of what is going on with a patient is huge,” David shares.

Then it is possible to follow progress across the care continuum—all the way from when a person does not think they are sick (but something is starting to happen), to noticing that something is going on, to needing an intervention, to having a procedure, to being monitored afterwards. “It’s about the whole ecosystem and it’s a way of operating all of our businesses,” David adds. “It’s a way of personalizing care and improving the way that we think about healthcare.”

## A New Patient Mindset

It’s not just the doctors and researchers who are interested in the new wealth of patient data; everyday folks are getting used to the notion of tracking their health and wellness. They are using devices to measure a whole range of metrics, from counting their steps and reviewing their sleep patterns to measuring their insulin levels and checking their heart rate. They are intrigued by the information, by seeing what is happening in their bodies, and in the rapidly evolving technology that provides this data.

People are becoming more sophisticated when it comes to the quantified self, and soon they will expect to be able to track indices of health. The technology is improving in such a way that people will be able to do a great deal away from doctors’ offices. Insertable cardiac monitors, for example, are already in use and they can essentially monitor patients around the clock.

Increasingly, everyone will be looking to data for early warning signs of disease. The focus is going to turn more and more to early detection and hopefully prevention.

Of course, the pace of change has accelerated dramatically due to COVID-19. COVID has hugely sped up transformations that were already under way, such as the turn to telehealth and the shift in point of care to earlier and away from large, centralized hospitals. The pandemic is causing the Medtech industry to rethink the way in which it interacts with both physicians and patients.

## Making Medtech More Equitable

There have long been inequities in healthcare across racial minorities and underrepresented groups, and they have come into sharp relief with COVID. Seeing COVID's especially devastating impact on underrepresented groups has been a watershed moment for many in Medtech. "At Boston Scientific, we really felt the need to understand our corporate responsibility and how to be part of the solution," David says. "We knew we needed to be more than non-racist; we needed to be anti-racist."

He explains that for about 15 years Boston Scientific has had a program, Close the Gap, focused on addressing health inequities from advancing clinical trial diversity to patient empowerment to clinician education. The company has also long prioritized transparency and increasing diversity in its own ranks, from its 10-20-40 goals launched in 2018 to its newer 3-Up initiative to increase representation of women and multicultural talent. But with the events of 2020, Boston Scientific has kicked these efforts into higher gear, putting in place a comprehensive anti-racism strategy with a multimillion dollar investment behind it. It's an effort organized across the board, across all aspects of the company, and it includes education and the community.

David is proud of how the company stepped up. He explains, "I want to make sure that going forward we have the right representation in our clinical studies. We want to make sure that the therapies are safe and effective for everybody."

In order to individually tailor medicine, it is important to understand not only the physiological differences among patients, but also the cultural, socioeconomic, and other factors that may influence barriers to care. These differences should inform the way medicine is provided. It does not make sense to take the same approach to everybody. Disease is specific to the patient.

As physicians seek to better understand the broader factors that influence patient care, they are simultaneously leveraging new tools to more clearly visualize what's happening inside their patients in real time. This ties in with visualization and the other tools that enable a doctor to see exactly what is going on for a particular patient. With the right visual aids and other information, the doctor can decide on a course of treatment expressly for that situation.

Thinking about this, David admits, "It may sound very future-looking, but if we can get to that point, then I think we will take a really big step forward in consumer safety and efficacy. If we can catch the disease as it is presenting itself, then that may level the playing field."



**I WANT TO MAKE SURE THAT GOING FORWARD WE HAVE THE RIGHT REPRESENTATION IN OUR CLINICAL STUDIES. WE WANT TO MAKE SURE THAT THE THERAPIES ARE SAFE AND EFFECTIVE FOR EVERYBODY.**

ISO 13485:2016 Certified (Notified Body: NSAI): Certificate # MD19.4422

Ximedica is a full-service product development firm. For 30 years Ximedica has provided a unique growth platform enabling organizations to successfully deploy medical technology products into the market.

**Boston Scientific** is dedicated to transforming lives through innovative medical solutions that improve the health of patients around the world.

**Ximedica** designs and develops commercially viable healthcare products through world-class engineering to manufacturing.

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