

**PERSPECTIVE SYNOPSIS:** Healthcare is facing immense challenges. From shifting payment models to problems of access, providers and payers are struggling to improve patient outcomes and lower overall costs. While there is no single solution, we recognize that those who deliver care are at the center of this transformation — and that technology can help propel them forward. At Medtronic, we know we don't have all of the answers, but we are committed to partnering with others to take healthcare Further, Together.

During the six decades of Medtronic existence, our Mission has remained the same: to alleviate pain, restore health, and extend life for people around the world.

We are a technology company deeply rooted in pushing the limits of innovation, and we have worked hard to be at the forefront of medical device development, reinvention and disruption — challenging ourselves to create high-quality therapies that positively impact people's lives. And we have accomplished a lot: today more than 62 million people benefit from our technologies each year, equating to two people every second.

But we also know that we participate in a global healthcare environment that faces intense clinical and economic challenges. If not corrected, these challenges may undermine progress while leaving millions around the world untreated. We believe the approach that got us to the current state of healthcare is not necessarily what will push us ahead. The future of healthcare requires new approaches and new forms of innovation.

Medtronic has contributed to human welfare by partnering with others to create medical technologies that improve patient's lives. The full power of these technologies and the information and insight we know they generate, however, has not been fully realized. Our technologies, services and people are powerful tools for those seeking to drive more seamless, integrated care and better patient outcomes. Fundamentally, we believe the world would be a better, healthier place if we were able to more fully capture and apply the power of technology to integrate care and generate better outcomes for patients.

## HEALTHCARE'S GROWING CHALLENGES

In many ways, the history of medicine is the story of a continuous quest to ensure that people receive the life-saving or life-enhancing treatments they need to return to a full life. As we have moved along this journey, those who provide care to patients have cultivated a core set of beliefs that healthcare systems around the world now hold as common fundamental goals: improving clinical outcomes, expanding access, and optimizing cost and efficiency.

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The ability to achieve these goals, however, is complicated by a range of challenges, including an aging global population, an increasing burden of chronic disease, payment and delivery systems with misaligned incentives, and government policies and regulations that, at times, can be cumbersome. Total global healthcare spending now exceeds \$7.8 trillion, about 10 percent of the world's Gross Domestic Product, and it is expected to continue growing. Additionally, most of this spending comes from efforts to fight the leading causes of global mortality — heart disease, stroke, cancer, chronic respiratory diseases, and diabetes — which account for 87 percent of all deaths in high-income countries.

What has made tackling these challenges even more difficult is the disjointed and inefficient nature of how healthcare is delivered. While physicians and healthcare practitioners perform exceedingly well and with the utmost expertise, they operate in

healthcare systems that have traditionally rewarded volume of care over value of care. These fee-for-service or procedure-based payment and delivery systems are typically highly fragmented, siloed and disconnected — leading to one of our new challenges: inefficient, uncoordinated care that produces an estimated 20 to 40 percent of wasted resources spent globally on health every year.

In short, our current system is struggling to deliver what we all want to accomplish: high-quality and affordable care that returns people to fuller, more productive lives.

What we need is a more coordinated, connected network where technology empowers providers to deliver better care to patients throughout their health journey and where outcomes that matter to patients are prioritized relative to the cost. But what will this look like? For patients undergoing a complex procedure, this might mean therapy optimization that protects them from harmful complications and readmissions. In common surgeries that have a wide variance in outcomes, such as hip and knee replacements, this could mean bundling services for patients and physicians throughout the entire episode of care to ensure consistent and positive results. And for people with chronic diseases, this vision will entail collaboration with patients and their clinicians to help manage the condition.

## EXPERIMENTING TO ACHIEVE GREATER VALUE IN HEALTHCARE

Around the world, healthcare systems are in the early stages of experimenting with different ways to address these challenges. In many countries, new models of care are emerging that promote integration or care coordination across a patient's care continuum. Take the United Kingdom, for example, where the National Health

Service (NHS) made a commitment to bring together local authorities, care and support providers, housing services, public health workers, and others to make further steps toward better integrated care.

Similarly, to address underlying payment systems, the U.S. Centers for Medicare & Medicaid Services (CMS) has put into place new financial incentives that reward the quality of care provided rather than the volume of care. The U.S. Department of Health and Human Services (HHS) has set a goal of tying 50 percent of traditional, or fee-for-service, Medicare payments to quality or value through alternative payment models, such as Accountable Care Organizations or bundled payment arrangements by the end of 2018.<sup>i</sup> While this was thought to be highly aspirational, system leaders are seeing early signs that it can be achieved — in early 2016, HHS announced that it had already met an interim goal of having 30 percent of payments tied to quality or value.<sup>ii</sup>

And there are other signs of success that are emerging around the globe. To help identify these new best practices, Medtronic commissioned the Economist Intelligence Unit on a first-of-its-kind research project looking at 25 country's status of adopting value-based healthcare. The researchers brought together an international roster of independent healthcare experts to offer global perspectives and established a unified framework, resulting in *Value-Based Healthcare: A Global Assessment*, a report to help healthcare leaders track progress towards value-based healthcare.<sup>iii</sup>

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### **GOING "FURTHER, TOGETHER"**

Though we firmly believe Medtronic is already playing a unique role in facilitating the move toward a more aligned, value-based environment, we know we can and will do more. We call this new approach "Further, Together." "Further," because we will continue to drive progress in innovation, and devise powerful solutions with proven clinical and economic value as the basis of our offerings and value proposition. And "Together," because we will forge partnerships not only with providers, but with policymakers, payers and other new links in the healthcare chain to help our customers achieve their goal of delivering more seamless, integrated care across the healthcare continuum.

The main tenets of "Further, Together" focus on applying our technologies, capabilities and expertise to align value among the various stakeholders in the healthcare system; creating meaningful innovations at the therapy, procedural, and system level; and expanding global access to healthcare — all while developing new partnerships with those who are committed to transforming and improving patient care.

### **USING TECHNOLOGY TO ALIGN VALUE**

At Medtronic, we fully support the healthcare systems around the world that have or are seeking to adopt value-based healthcare delivery and payments systems. And though we remain focused on developing technologies, services and solutions that drive more clinical value into existing health systems, we are also dedicated to partnering with others to help drive economic value and bring about the transformation to value-based care. This endeavor will take time, but we're confident that this approach offers the best pathway to putting the patient at the center of care — leading to better outcomes, greater coordination from all healthcare players, and reduced costs.

One way we're actively moving in this direction is sharing accountability for patient outcomes with payers. For example, we entered into an outcomes-based agreement with Aetna, a major health insurer in the United States, for type 1 and type 2 diabetes patients who currently inject insulin multiple times per day. The agreement measures outcomes for patients who choose to transition to pump therapy using a Medtronic insulin pump, and ties a component of our reimbursement to successfully meeting clinical improvement

thresholds. We constructed a similar partnership with United Healthcare, another major payer in the United States, and are pursuing other agreements that guarantee the performance of our technologies will lead to better patient results.

And we won't stop there. Medtronic is working with the global healthcare community to leverage our skillsets to develop and implement a comprehensive portfolio of offerings across our businesses. Ultimately, this will help stakeholders align value across the care continuum and improve system performance, including clinical care optimization, operational efficiency and patient management.

### **Enhancing technologies to optimize care and provide more value.**

For example, for all the good a pacemaker can do, if a patient experiences an infection from the implantation of the device, the positive effects of the technology can be mired by serious medical complications. Infections occur in 1 to 4 percent of all cardiovascular implantable electronic devices, and 50 percent of patients who get infections die within three years. They also cost an average of \$50,000 to the healthcare system.<sup>iv</sup>

To help providers avoid these costly events, Medtronic now offers the TYRX™ absorbable antibacterial envelope — which has been shown to reduce the chances of infection among high-risk patients by 70 to 100 percent — within a shared accountability arrangement to providers and payers.<sup>v</sup> This arrangement in the implantable cardiac device space enables us to absorb some of the risk if a patient with a Medtronic device and the TYRX envelope gets an infection associated with the device implantation.

### **Fighting operational inefficiency and waste at the system level to help align more value across stakeholders.**

Operational efficiency has been a focus of Medtronic for a number of years given the significant unmet needs in this area. At the heart of the matter, it comes down to the fact that hospital margins today require systematic efficiencies to be maximized on a daily basis for hospitals not to lose money. Unfortunately, few care providers are successful in their efforts. This was illustrated in a recent report by the Ponemon Institute of more than 400 U.S. healthcare providers. The analysis found hospitals' and health systems' workflows wasted a significant amount of time because of inefficient communication, costing \$1.75 million per hospital and more than \$11 billion industry-wide.

To address this need for hospitals and systems, we created the Medtronic Integrated Health Solutions (IHS) business to help providers optimize costs and outcomes and produce higher value and patient satisfaction across the care continuum. In an operational excellence transformational program conducted at Maastricht University Medical Center in the Netherlands, Medtronic provided on-site program management and seasoned consultants to optimize processes and clinical pathways and to engage staff for successful knowledge transfer. We worked with Maastricht leaders and clinical teams to embed a performance improvement culture and drive advancements in efficiency, quality, clinical outcomes, and patient experience through a combination of classroom work, mentoring, and on-the-job learning to ensure lasting, transformational change. Within one year of a five-year partnership, \$2.5M in value was generated by efficiency gains through optimized resource use, which also led to productivity and capacity increases.

#### **Improving the effectiveness of care delivery through disease management.**

Another opportunity to align value in healthcare systems around the globe is to focus our efforts on improving the way we care for patients with chronic conditions — such as diabetes — who are often the most challenging and costly to treat. While many different solutions will be needed to address the vast array of chronic conditions, we're focusing on a few strategies to prevent condition escalation in chronic disease patients. We're working with healthcare practitioners to establish a baseline assessment, bundle episodic intensive care with outcome measures tailored to the disease, and incorporate periodic outcome measurements to monitor the condition.

Case in point — we offer high-tech and high-touch solutions through our Diabetes Management clinics — known as “Diabeter Clinics” — where we manage the care of 1,700 children and young adults living with Type 1 diabetes in the Netherlands. These clinics, which have the potential to scale to many other geographies, leverage personalized medicine by making use of specially developed technologies, such as an electronic system that links patient and physician. This encourages self-management with diabetes care team support. Diabeter data shows that their patients have achieved significant reductions in HbA1c levels, a key measurement used to assess blood glucose control. More consistent blood glucose

control has been shown to reduce long term complications of diabetes and in a recent analysis, Diabeter was able to showcase that its unique approach saved 8.6 percent in annual costs to its patients. The savings were mainly driven by a much lower patient hospitalization rate than that of other Dutch pediatric diabetes clinics.

Medtronic also addresses the global obesity crisis by offering a holistic approach to bariatric surgery within our Nederlands Obesitas Kliniek (NOK) clinics. At least 600 million people worldwide are obese—and if current trends continue, almost half the world's adults could be obese by 2030.<sup>vi</sup> It's the leading cause of chronic health conditions such as high blood pressure, diabetes, kidney disease and stroke, among many others. Care for chronic health conditions puts a \$2 trillion burden on the global economy annually.<sup>vii</sup> In spite of these staggering figures, less than 1 percent of patients eligible for bariatric surgery undergo the procedure, a proven way to effectively treat obesity and the associated co-morbidities.

The NOK model gives providers an opportunity to offer bariatric surgery with an accountable partner. The approach spans patient identification, the acute episode and chronic management, and focuses on differentiated outcomes for patients, providers and payers. These include weight loss that will be more durable in the long term, achieved by using periodic outcome measures to monitor and manage a patient's condition. The multidisciplinary program gives the patient and the surgeon the expertise and support they need to be successful, including standardized and measured nutritional, psychological, exercise and medical support. It is also designed for expansion globally to the benefit of many other countries struggling to deal with the obesity crisis.

#### **CREATING MEANINGFUL INNOVATIONS & INCREASING GLOBAL ACCESS TO HEALTHCARE**

The power of technology not only helps align value for providers and stakeholders, it also drives innovation. Meaningful innovations at the therapy, procedural and system levels are those that deliver better patient outcomes at appropriate costs, lead to enhanced quality of life, and can be validated by both clinical and economic evidence. Medtronic is exploring many ways to rethink what this means along the full continuum of care.

This year alone we have invested \$1.5 billion in research and development to bring meaningful innovations to market. Out of all the innovations developed, there is one that's closest to our heart — most likely because it's in so many of our patients. Medtronic was founded shortly after our founder invented the first external and battery-operated pacemaker to help patients who had a slow heartbeat. What was a significant advancement 60 years ago is only superseded today by something just as notable. In 2016, we received U.S. Food and Drug Administration (FDA) approval for the world's smallest pacemaker, the Micra™ Transcatheter Pacing System (TPS). The Micra TPS is the first FDA-approved device with miniaturized pacing technology that makes it cosmetically invisible and small enough to be implanted directly into the heart. Unlike traditional pacemakers, the Micra TPS does not require leads or a surgical “pocket” under the skin. As a result, potential sources of costly complications related to the leads and pocket are eliminated, thereby improving clinical outcomes and reducing costs for the patient and system.

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The technologies we design are meant to improve patient outcomes, but if we are to improve outcomes around the world, global access to quality healthcare must also be a critical area of focus for the company. Equity is a matter of concern across nearly all indicators in many parts of the world, with at least 400 million people currently lacking access to care.<sup>viii</sup>

In developed markets, we're working with governments and providers on care delivery and efficiency. In emerging markets, we're assisting with infrastructure development, therapy awareness and education, and capacity management. One service that stretches across all geographies and is imperative to improving outcomes is physician training. In the past five years alone, we've trained thousands of physicians around the globe. Recently, we completed a yearlong physician training program in Russia

that educated 4,000 physicians on everything from innovations in interventional cardiology to approaches for improving patient outcomes.

Emerging markets face unique obstacles in their quest to stand up and establish sustainable, high-quality, and cost-effective health systems. Access is typically impacted by location and proximity to quality health institutions, a lack of quality trained specialists and healthcare practitioners, and a lack of infrastructure or facilities.

Recognizing these dynamics, Medtronic is focusing on developing market models and partnerships that establish centers of excellence where specialized tasks and procedures are housed to increase quality outcomes, develop physician expertise, and minimize expenditures and costs. These centers are then connected to satellite or field entities focused on patient screening, diagnosis, and post-procedure patient management. These total disease-specific patient care pathway models are showing promise around the world.

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For example, in Brazil — which lost an estimated \$49 billion in economic output due to premature deaths associated with heart disease, stroke, and diabetes in the last 10 years<sup>1k</sup> — we're working with local government officials, leading physicians, emergency care personnel, and hospital systems to put into place the appropriate infrastructure to provide optimal care for heart attack patients. It's making a difference in Sao Paulo, one of the world's busiest cities, where patients suffering from one of the worst forms of heart attacks previously have had little chance to reach an appropriate hospital in time to alleviate their heart blockages.

The infrastructure program is called "LATIN" (Latin America Telemedicine Infarct Network), and we're offering telemedicine technologies that help key stakeholders develop localized protocols and educate both cardiologists and emergency care physicians on the most appropriate care pathway for ST-elevation myocardial infarction (STEMI), a serious type of heart attack, patients before they arrive at the hospital. Coupled with a large-scale public education initiative to better inform the community, the LATIN program has significantly improved outcomes for heart attack patients in Sao Paulo. To date, 1,000 healthcare personnel have been trained on this protocol and 32,000 patients have been screened for STEMI in order to treat diagnosed patients within the acceptable timeframe that allows for their greatest chance of survival. This successful program — which reduced STEMI mortality by 12 percent in just one year — has now been translated into other geographies where similar STEMI care issues are present, including Colombia and Mexico.

#### **THE WAY FORWARD: JOINT ACCOUNTABILITY FOR OUTCOMES**

Our technologies, services and solutions — coupled with our commitment to aligning value, developing meaningful innovations and improving global access — are merely the latest examples of Medtronic's six-decade commitment to serving those who provide care. Since our founder Earl Bakken and his groundbreaking work on pacemakers, our dedication to providing clinicians with the technologies they need to deliver high quality care has never wavered.

There have been many steps in this journey, including our acquisition of Covidien that doubles our portfolio of innovative products, and expands our clinical and economic expertise. And now with a larger global footprint, we're positioned as a stronger partner for physicians, hospital systems, patients, payers, and governments around the world. Our growing team and capabilities have also given us the opportunity to think beyond just the products we've typically focused on and put into place the policies and system to develop product-agnostic offerings. These new services and solutions allow us to think holistically about the entire patient journey and offer greater value to our partners across their continuum for care, including awareness, prevention, diagnosis, treatment and management.

Yet with the constantly evolving transformation of healthcare, we know providers need more than technology and service innovations.

#### **That's why we're fashioning some of our key offerings into outcomes-based arrangements with providers and payers.**

In other words, we are entering into agreements with customers where the costs of the products, services and integrated solutions we provide are directly linked to the quantifiable clinical, patient and economic outcomes.

To come up with these value-based healthcare solutions, Medtronic has spent a lot of time and investment to create a framework and methodology to identify outcomes and cohorts that help our partners succeed in risk-sharing models. Across the company — in different groups and geographies — we're using a seven-step framework that defines these new models in which we share direct accountability for system costs and patient outcomes with our customers. And, in some instances, we have gone as far as entering outcomes-based agreements that tie payment or reimbursement to these clinical outcomes.

Now is a truly exciting time to be working in healthcare, as fundamental shifts are occurring that will change how patients receive care and how we think about what real value — for patients and providers — means. These changes will only come to fruition if we all work together and evolve with the new framework that our healthcare system needs.

These new capabilities — along with our "Further, Together" mindset of driving healthcare transformation in partnership with like-minded players across the industry — are a transformative opportunity for Medtronic to improve the ways we help others in healthcare and also fulfill our mission to alleviate pain, restore health and extend life.

Let's go Further, Together.

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- <sup>xi</sup> <http://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/how-the-world-could-better-fight-obesity>
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