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Destination 2025 is an initiative of The BioBusiness Alliance of Minnesota in collaboration with Deloitte Consulting LLP to develop a roadmap for the bioscience markets in Minnesota.



The Destination 2025 project examines six markets of the bioscience industry: Animal Health, Food, Medical Device, Biologics and Biopharmaceutical, Renewable Materials, and Renewable Energy.

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Destination 2025 Focus on the Future of the Medical Device Industry



We have identified leading trends and technologies that are expected to significantly affect the medical device industry globally over the next two decades.

Executive Summary February 2009

Destination 2025 - a collaboration between The BioBusiness Alliance of Minnesota and Deloitte Consulting LLP

Executive summary

The trends and technologies identified, and opportunities in the industry, are likely to realign to different levels of importance over time.

Using the Strategic Flexibility Framework, we performed a scenario-based planning exercise to evaluate a range of different future scenarios. This allowed us to determine which of these trends and technologies are likely to have the greatest impact in the development of the industry.

The review of trends and technologies suggests that opportunities exist to develop new products and solutions. Moreover, existing markets and products may experience flux due to new trends and technologies. Strategies must evolve to benefit from opportunities and threats. Decision makers in academia, government, and industry can use the Strategic Flexibility Framework to develop strategies based on individual constraints and objectives.

Market definition

The medical device market consists of all instruments, apparatuses, implements, implants, in vitro reagents, or component parts or accessories that are used to prevent, diagnose, treat, or cure diseases. Based on product differences, the medical device industry can be divided into multiple segments, including cardiovascular, orthopedics, ophthalmology, general surgery, neurological products, in vitro diagnostics, and imaging.

The full white paper on the future of the biologic and biopharmaceutical industry is available for download at www.deloitte.com/us/d2025

Focus on the Future of the Medical Device Industry

Emerging and future trends

The following trends are expected to influence the industry in the next 20 years.

Significant demographic trends are likely to expand the demand for medical products and services. The growing and graying world population, coupled with economic growth, urbanization, and westernization of lifestyles in emerging economies, is expected to increase demand for health care products and services. The graying population accounts in part for the prevalence of chronic diseases. Proliferation of chronic diseases is expected to increase demand for medical devices.

Globalization is changing industry dynamics and is expected to continue doing so. Medical device companies will need to overcome regulatory and reimbursement challenges in the emerging economies. Interdependent supply chains, global scope of operations, new standards, and trade regulations may present challenges and opportunities for medical device companies. Availability of cost-effective and high-quality medical care at international destinations is driving the trend toward medical tourism, and medical device companies must attune their marketing strategies to this trend.

Managing the talent gap is key to industry growth and innovation. The current global talent shortage in the life sciences industry is expected to be exacerbated in the coming years by retirement of baby boomers and a growing skills gap for specialized knowledge in the field. Medical device companies may need to reevaluate current talent development and retention policies and expand the scope of their search for talent from local to global. Academic medical centers and their collaborations with other research entities and industry are critical in developing new talent.

Pressures and potential changes in the U.S. health care system are expected to affect patient decision making, and industry demand, supply, and pricing.

Rising consumerism is empowering patients. Patients are becoming increasingly active in the decision making process with their health care providers and leveraging the abundant information available to them. Marketing strategies and product delivery mechanisms may need to be realigned to account for this growing trend.

Outpatient and home-based care is expected to increase in the future and present significant opportunities for medical device companies. Demand for device-based drug delivery, and new health care products that can be self-administered or administered by a trained care provider are expected to gain prevalence. Cheaper alternatives to traditional physician-provided health care are being increasingly explored, and public acceptance of non-physician caregivers is likely to increase over the next decade.

Increased government action in health care reform and heightened device safety concerns could potentially slow the device development and approval cycle. Public policy changes and government action in the health care system are likely to intensify as rising costs, access to medical care, and medical device quality concerns become increasingly important political issues. In particular, changes are expected to affect the regulatory, legal, and reimbursement domains, with more stringent approval requirements and longer approval timelines.

Personalized medicine or targeted therapy holds promise for improving health status and costs, but challenges remain for commercialization.

Personalized medicine, with its focus on prevention and proactive approaches to health, is expected to continue to become more prevalent. With its potential to reduce health care costs over the long-term personalized medicine has the potential to be effectively integrated into the product development process by medical devices.

Convergence across health care products and industry segments is expected to transform the medical device industry.

Convergence of drugs, devices, and diagnostics is expected to introduce an increasing number of new products that may replace some traditional medical devices. Convergence of medical devices, communications, and information technology is expected to spur new products and technologies in the areas of electronic medical records, digitization, and telemedicine.

Next steps

The review of trends and technologies suggests that opportunities exist to develop new products and solutions. Moreover, existing markets and products may experience flux due to new trends and technologies. Strategies must evolve to benefit from opportunities and threats. Decision makers in academia, government, and industry can use the Strategic Flexibility Framework to develop strategies based on individual constraints and objectives.

Emerging and future technologies

Market segment	Representative products based on relevant technologies	Market segment	Representative products based on relevant technologies
Cardiovascular	<ul style="list-style-type: none"> Implantable devices Cardiac rhythm management devices Cardiac assist devices Fluid monitoring devices Improved diagnostic devices Diagnostic monitoring systems Implantable sensors Miniaturized components Valve repair Catheter ablation Biopacemakers 	Diagnosics, imaging and navigation	<ul style="list-style-type: none"> Implantable diagnostic and imaging tools Imaging and diagnostics products Predicting drug response Advanced imaging equipment Minimally invasive tools and techniques Wireless implantable diagnostic devices Digitization Biomarkers
Orthopedics	<ul style="list-style-type: none"> Improved prosthetics Synthetic polymers Embedded chip capabilities in orthopedic implants Implantable drug delivery systems Embedded sensors in implants Prosthetic surgery Minimally invasive techniques Smart implants Drug device combinations Advanced biomaterials 	Personalized medicine	<ul style="list-style-type: none"> Implantable miniature sensors and monitors Remote monitoring Blood glucose monitors and dispensers Sensors linked to mobile devices Personalized therapies Diagnostic devices Home diagnostic kits Molecular diagnostic devices
General surgery	<ul style="list-style-type: none"> New tools and equipment Robotic surgery systems Sensor applications in advanced robotics Advanced imaging devices Miniaturized tools and equipment Non- or less- invasive surgery 	Lifestyle related (obesity and diabetes)	<ul style="list-style-type: none"> Implantable diagnostic devices Stomach staplers Restrictive bands Satiety simulation device Home testing equipment Continuous external insulin infusion pumps Subcutaneous sensors Minimally invasive tools Bariatric surgery techniques Electrical nerve stimulation devices Insulin replacement therapies
Neurological	<ul style="list-style-type: none"> Implantable devices Deep brain electrical stimulation devices Neuromodulation therapy-based devices Computation applications for implantable devices Electrical spinal nerve stimulation devices Device-based and localized treatments Neurological applications Advanced brain pacemakers Nerve regeneration 	Sleep apnea	<ul style="list-style-type: none"> Implantable devices Electrical stimulation devices Advanced imaging devices Tissue removal
Nanotechnology	<ul style="list-style-type: none"> Miniature power sources for implantable devices Implantable materials for orthopedic applications Nanosurgery applications Diagnostic applications Integrated nanosystems Active nanostructures In vivo diagnostic applications Miniaturization Applications in minimally invasive surgery Molecular imaging Delivery devices and tools Lab-on-a-chip Biosensors 	Telemedicine and outpatient care	<ul style="list-style-type: none"> Healthware Bioinformatics Home monitoring and transmitting devices Applications for networks of sensors Miniaturization in home diagnostic kits Virtual diagnosis Remote monitoring and home care devices
		Convergence of drugs and devices	<ul style="list-style-type: none"> Combination products Early diagnosis tools Cardiac repair therapies Molecular medicine Tissue regeneration