New Trends in the Medical Devices Industry:

Value-based Innovation

Innovation is the driving force behind the medical devices industry. In the past, enterprises have improved upon their products through invention and development in fields such as materials science, electronics technology and machinery manufacturing. Nowadays, China’s new medical reform policies, new technologies represented by artificial intelligence (AI) and the Internet of Things, as well as new entrants such as commercial insurance companies and Internet giants are prompting the transformation of medical device enterprises from producers of products to providers of value (see Figure 1).

PwC has found that, in response to changing industry trends, numerous outstanding companies are now offering more value-added services to healthcare professionals, patients and payers by introducing new ideas, new models and new assets. In order to develop new products to better meet the needs of hospitals, patients and medical staff, they also need to understand the policies around their product categories and the requirements of hospital management. For example, primary healthcare institutions may be unable to install large medical examination equipment due to budget and site restrictions. Senior doctors may be called upon to assist in the interpretation of biochemical and imaging diagnostic data due to lack of experience. Patients don’t wish to be repeatedly examined or to spend a lot of time transferring medical records due to internal referrals. In line with trends in hierarchical medical diagnosis and treatment, leading companies have developed small imaging devices that are easier to use and maintain. Digital means such as remote diagnostic cloud services and AI-assisted diagnosis have strengthened the basic level of diagnosis and treatment and have supported remote telemedicine consultation and patient referrals (see Figure 2).

New Policies

- The Chinese government has increased its investment in primary care institutions in the hopes of, through hierarchical medical diagnosis and treatment, alleviating the difficulties associated with seeing doctors.
- With high-value consumables as its starting point, the introduction in quick succession of the two-vote system, quantity procurement, zero-price difference in public hospitals, medical insurance access, and monitoring of rational clinical use has further alleviated the issue of expensive medical treatments.
- “Made in China 2025” and the reform of the evaluation and approval system of drug and medical devices have encouraged the improvement of medical device innovation and their degree of industrialisation.

New Technology

- Internet of Things and 5G will further improve the level of automation of medical equipment and enhance the level of connectivity between the platforms of each device.
- The popularity of wearable devices and home medical devices and experiments with Internet hospitals have broadened patient access to medical services.
- Machine learning and artificial intelligence (AI) development is expected to improve the accuracy of diagnosis and treatment, while providing clinicians with a second opinion.
- US and Chinese regulators have adopted an attitude of openness towards digital medical products.

New Entrants

- Electronic equipment manufacturers, led by Apple and Huawei, have steadily promoted the research & development of wearable devices.
- Alibaba and Tencent are actively exploring cloud computing applications in healthcare.
- Commercial insurance companies expect more timely, accurate and comprehensive data to design their health insurance products.

In China, enterprises not only need to be familiar with the operating habits of each device, but also need to establish a mechanism for cross-accrual of test results. For example, a multinational enterprise and a domestic cloud platform jointly released an image-assisted diagnosis system that focused on lung cancer screening, providing data collection and auxiliary diagnosis services for the primary healthcare market.

Figure 1: The three drivers of product-to-value transformation in the medical devices industry

Figure 2: Customer-centric product design

Changes in demand under hierarchical medical diagnosis and treatment

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<td>High-definition video, real-time bedside consultations</td>
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New Concept: Including Stakeholder Voices into Product Development and Delivery

In order to develop new products to better meet the needs of hospitals, patients and clinicians, medical device manufacturers have embraced the concept of “customer-centric product design”, highlighting the advantages of differentiation. In an interview with PwC’s Health Research Institute, 20 medical device technology executives unanimously emphasised the importance of incorporating user perspectives into product design.

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Leveraging their data collection and analysis capabilities, leading medical device companies are expanding their digital business units and exploring data-driven business models with medical service providers, healthcare industry management authorities, and insurance payment organisations.
Medical device companies have traditionally offered solutions through horizontal expansion of their product portfolio or vertical integration of the supply chain. The objective, in essence, is to reduce the ongoing costs of medical institutions and research institutes by means of bulk procurement, equipment hosting, unified after-sales services and financial leasing. The economies of scale is a key success factor for large companies.

At the same time, many medical device companies have strengthened their research on the patient journey, mapping out their path from disease screening, diagnosis and clinical treatment to out-of-hospital rehabilitation and chronic disease management, while building solutions around these scenarios (see Figure 3). The majority of their products allows device companies to jointly define new business models that can unify multiple stakeholders. Business model innovation needs not only to fully consider the economic interests of all parties, they should also highlight clinical values as well as the value of hospital management. In clarifying overall objectives, the ecosystem of “participation-collaboration-benefit for multiple parties” can establish a positive feedback loop that constantly adjusts and optimises on the original design based on the implementation results, forming a cluster effect, and bringing unique competitive advantages to each participant.

With the rapid expansion in the scale of data, digital technology becomes not only a tool, but also an asset. Big data has the potential to be available as an independent product or service to data consumers, providing increased value to ecosystem participants. PwC has found that medical device companies are leveraging their data collection and analysis capabilities to expand their data-based, independent business segments to explore new data management platforms with medical service providers, healthcare authorities and insurance payment organisations.

Faced with these new industry trends, companies are now adjusting their strategies to achieve a better, brighter future. Yet many remaining challenges stand in the way of this vision and its strategic realisation. PwC therefore offers the following four suggestions:

I. Focus: Integrate the needs of key stakeholders, clarify product positioning, design more competitive products, reduce the long tail of product portfolios

   The procedures involved in the procurement, use and maintenance of medical devices can be complex and involve multiple stakeholders. Manufacturers need a deep understanding of customer needs and preferences through the honest collection of competitive product evaluations. The voice of the customer can then be transformed into product design based on a differentiated product positioning. One leading domestic equipment manufacturer reduced the number of product models by applying a minimalistic method, releasing resources that could then be invested into product portfolio development, thereby achieving superior performance returns.

II. Enablement: Accelerate the promotion of cross-functional collaboration, shorten product design, time-to-market and delivery times, and improve product launch performance and supply chain efficiencies to promote organisational restructuring and empowerment

   First, senior management needs to adopt a more forward-looking outlook and take initiative when communicating with the regulatory and policy analysis departments, fully leveraging the reform dividends from the current evaluation and approval system; and shape the policy environment to accelerate the listing of new products. Second, new product development—from demand analysis, concept selection and listing, involves a long chain of cross-functional communication and collaboration. Relying solely on the leadership of R&D departments may lead to inefficient or even failed project management. PwC’s project practices show that project teams that incorporate multiple functions, including R&D, registration, manufacturing, procurement, marketing and finance, can accelerate product development by more than 30% under appropriate workflow and incentive mechanisms. Increasing the success rate of product listings significantly raises the level of corporate income and net profit.

III. Openness: Creating a business model with business partners, premised on mutual gain, openness and innovation

   Faced with a rapidly changing policy environment and disruptive technological advances, entrepreneurs require innovative thinking, yet also need to leverage the opportunities arising from the digital economy.

In the process of digital transformation, medical device manufacturers need to build a “data closed loop” to back the results of an analysis line and share services and data with patients, doctors, hospitals and other partners who provide data to observe how this feedback affects patient behavior and decision-making. At the same time, a feedback system that offers value can help partners to continually deliver accurate, timely and complete information.

IV. Compliance: Actively follow and influence laws, regulations and technical standards that relate to the digital economy, while staying compliant in how data is obtained, analysed and used

   In order to become a fundamental player in the data economy, digital data requires a “clean data economy” that is tradeable, rights and interests assured, and maintains integrity in circulation. Governments, businesses, academics and legal professionals should jointly establish relevant laws, regulations and technical norms that relate to the digital economy.

At the same time, businesses need to recognise the difference between digital technology (DT) and Internet technology (IT). According to a survey by PwC’s Health Research Institute, only one in six executives in the pharmaceutical and medical device industries say their employees possess digital skills. Senior management has significantly increased its focus on organisational capacity building, talent development and retention, as well as corporate culture and business model transformation.