



EXECUTIVE INSIGHTS

The Evolution of Patient Care: Home-Health-in-a-Box's Impact on Healthcare Packaging

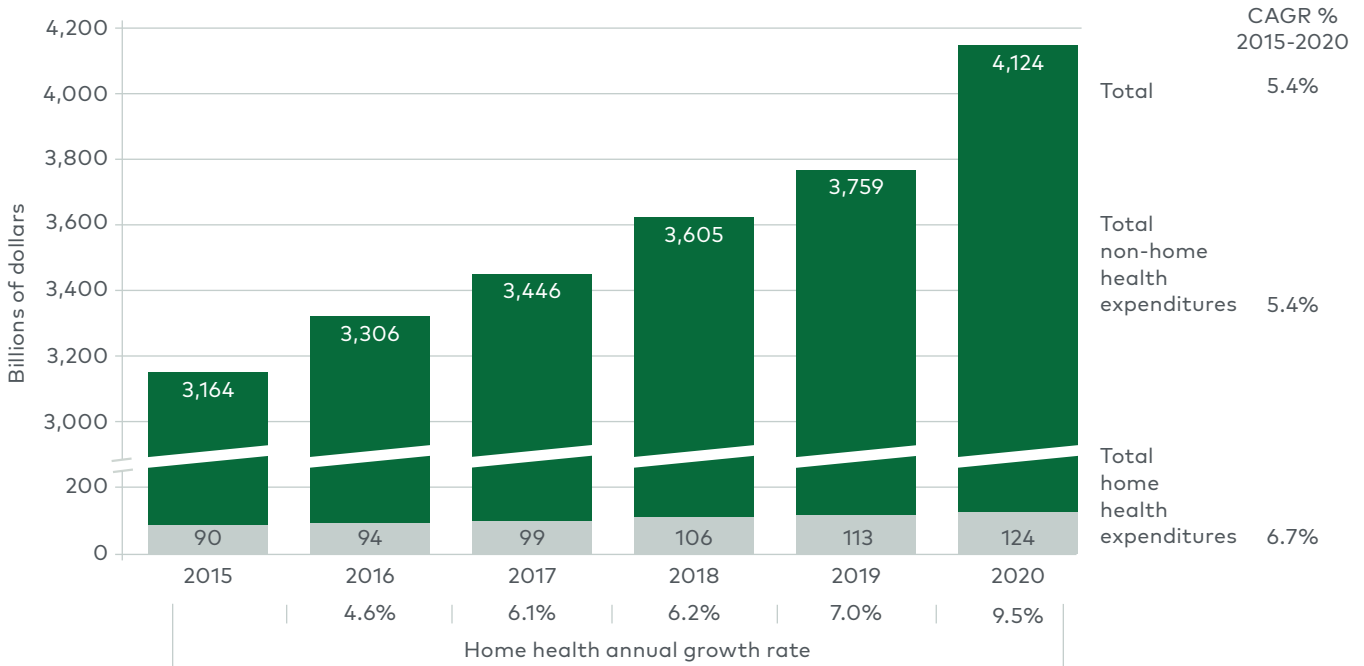
Heading to the doctor for everything from flu shots to blood tests and checkups was once a common part of everyday life. But recent decades have seen a growing shift in healthcare delivery — from the doctor's office or a hospital setting to the patient's home. This has resulted in a host of new products and services designed to make in-home care delivery both easy and practical. It has also given rise to an emerging ecosystem at the intersection of components, packaging, and the delivery of healthcare services and solutions.

While the trend toward home healthcare solutions and services has been underway for some time, COVID-19 pushed it into overdrive. Consequently, "home health in a box," including packaged products such as home diagnostics, home-administered drug delivery systems and patient monitoring devices, has become a critical part of the healthcare value chain. With total home health expenditure growth outpacing total healthcare expenditure growth and the spend in nearly all other healthcare segments, home health is becoming an attractive investment theme for industry stalwarts and private equity investors alike. Additionally, home health expenditures have substantial headroom for future penetration of total health expenditures, representing only ~3% of total health expenditures in 2020 (see Figure 1).

There are a number of ways to get into the game — from home-care offerings to the components and packaging that support them. This *Executive Insights* will dig into some of the trends and explore which areas are poised to generate the greatest value.

Figure 1

US total non-home health vs. home health expenditures over time (2015-2020)



Source: CMS National Health Expenditures

The rise in home healthcare

A number of factors are contributing to the surge in home-care products and services. First, it's far less costly to treat patients in lower-acuity settings such as the home whenever possible. Second, patients are overwhelmingly in favor of it. As the population ages, seniors are increasingly demanding home-care options, especially given COVID-19's continuing presence and threat. Third, with the pandemic discouraging patients from visiting hospitals for nonurgent reasons, there has been an acceleration of new telehealth models of care.

Consumerism in healthcare is another important trend impacting how care is delivered. Patient demand for greater convenience and medical privacy has led to an uptick in home testing and diagnostics. Concern about environmental and sustainability issues has sparked innovations in packaging design. Finally, innovation is turning home healthcare from an aspiration into a reality. For example, technological advancements have resulted in the development of remote patient monitoring (RPM) devices and wearables, while improvements in diagnostic testing (e.g., greater at-home ease of use, rapid turnaround time, simplified sample collection) have made a broader range of at-home testing possible, including for COVID-19. A more robust infrastructure is another contributing factor: Development of service platforms, availability of apps to support device technologies, access to smartphones and fast internet connections have all facilitated the adoption of RPM and telehealth services.

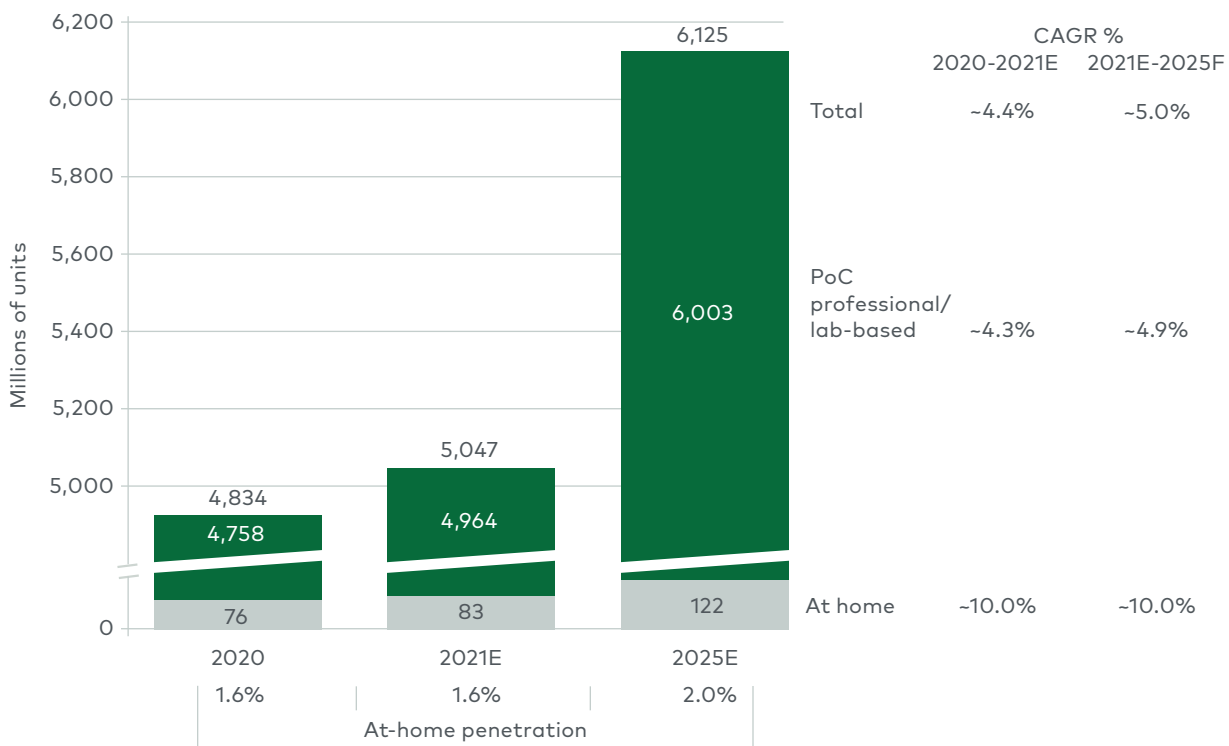
The most promising sectors of home healthcare

While the home health market has a favorable growth profile overall, several specific segments are growing especially quickly, including at-home diagnostics, RPM devices and at-home injectable drug delivery.

At-home diagnostics

As at-home diagnostic kits become easier to use, more consumers are opting to perform testing in the comfort of their own homes. Use cases include routine clinical tests (e.g., blood cell count, cholesterol), genetic tests (e.g., genealogy) and tests for various conditions ranging from pregnancy to sleep apnea. Rapid-result testing capabilities have also led to an upsurge in point-of-care (PoC) testing versus tests that must be sent off-site to labs for results (see Figure 2).

Figure 2
US PoC diagnostic test market volume (2020-2025F)*



*Excludes COVID-19 tests

Source: L.E.K. research and analysis of Kalorama Information data

The diagnostic testing market has rapid growth prospects in the medium term, for a variety of reasons. The investments companies have made in both the technology and access infrastructure have improved diagnostic test technology, modality, accuracy, ease of use, distribution and other areas. In addition, PoC lateral flow tests often have broad infection applicability, meaning they can be adapted for use in a range of disease types.

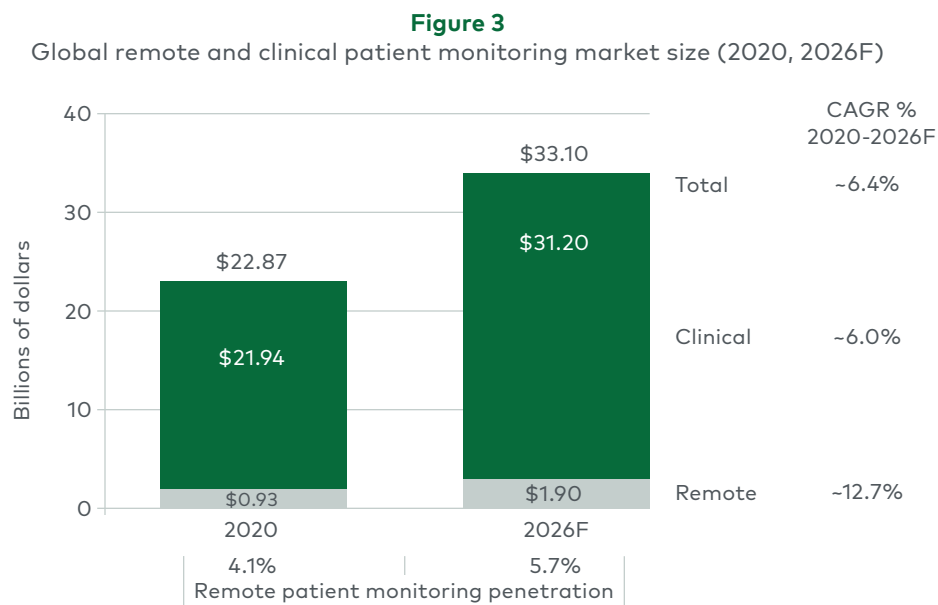
Many of today's consumers have an increasingly proactive attitude toward their healthcare and recognize the value of preventive and early-stage solutions — a significant boon for the diagnostic test market. Another boost has come from COVID-19. The pandemic has necessitated adoption of diagnostic tests for mass consumers, and this in turn has generated awareness of the benefits and applications of diagnostic testing, paving the way for future adoption.

Furthermore, at-home COVID-19 testing offering real-time results within minutes has contributed to a near-term bump in these kits. Providers of at-home COVID-19 testing also offer antigen tests either via mass-market drug stores or direct shipping, with return shipping to labs typically included in the testing package. Several brands have developed web or mobile applications to give patients access to test results.

The rising prevalence of new COVID-19 strains like the delta and omicron variants and increased comfort with at-home testing procedures represent substantial upside for COVID-19 at-home testing in the future. We therefore expect a steady pace of COVID-19 testing for screening and surveillance, with the potential for some seasonal variance. We also expect that medtech companies will use increased consumer comfort with at-home testing as a springboard for introducing at-home diagnostic kits (e.g., immunochemical tests) for other diseases.

RPM devices

RPM devices enable patients to keep tabs on chronic conditions by collecting data that is then sent to providers, caregivers, families and patients for health updates. Market penetration of these patient-friendly and inconspicuous devices (e.g., cardiac monitoring devices) is steadily increasing (see Figure 3).



Source: MedGadget; L.E.K. research and analysis

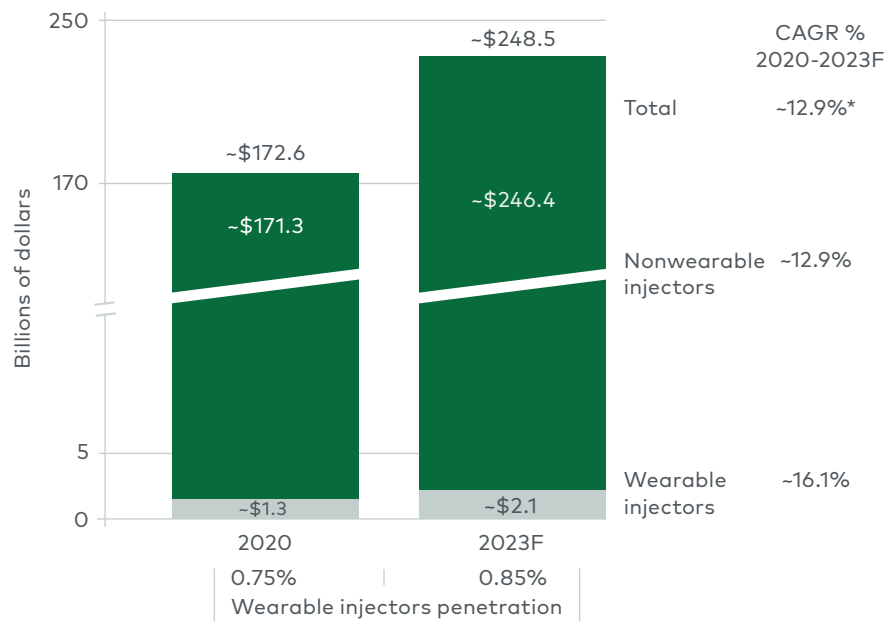
The potential to reap significant cost savings has placed healthcare providers squarely behind remote monitoring devices. Both established and emerging medtech companies have played a large role in the development of this segment, benefiting from the underlying shift to home health. Not only do these devices help optimize physician time and effort, but they can also reduce hospital readmissions by identifying problems before they become serious. From the patient perspective, the ability to receive monitoring in a comfortable home setting has helped drive adoption. COVID-19 has intensified this trend, with patients choosing remote services over doctor visits out of either necessity or desire.

As the population ages, RPM will be a key tool in addressing the more chronic, long-term healthcare needs of this demographic. Ongoing innovations in telehealth technology, connectivity and general communication infrastructure will continue to improve the viability of remote monitoring as an effective and cost-efficient healthcare option.

At-home injectable drug delivery

The home injectables market includes discreet drug-delivery devices such as insulin pens, as well as wearable drug-delivery devices that adhere to the body to administer drugs subcutaneously over an extended period of time. Adoption of these devices is growing as patients seek out easy-to-use self-administration options outside of clinical settings (see Figure 4).

Figure 4
US injectable drug delivery market (2020-2023F)



*Global CAGR
Source: L.E.K. interviews and analysis; Grand View Research; Fortune Business Insights

This sector has been around for a long time, but continued investment across various disease categories has driven innovation and resulted in a range of new injectors. Of particular note is the growth in injectable biologics: Recent improvements have resulted in lower pain and greater convenience, which has the potential to raise adoption rates for wearable injectors.

Disease prevalence across such therapeutic categories as immunology, diabetes and oncology is increasing, paving the way for wearable injectors that address a range of issues associated with these areas. Finally, advances in home infusion equipment (e.g., tubing, catheters to facilitate home infusion) are supporting growth in at-home drug delivery, as patients increasingly prefer to be treated in lower-acuity settings like the home.

A range of device suppliers provide drug-delivery devices, with business models focusing on different aspects of design, development and manufacturing. Device innovator business models differ in their value propositions to pharma; pharmaceutical manufacturers typically select a device supplier depending on the extent of that manufacturer's internal capabilities and specific product needs. Pharmaceutical companies can partner with trusted device suppliers with proven off-the-shelf drug delivery devices to minimize development risk or develop their own device for their drug asset, leveraging internal capabilities or external supplier support.

Capturing value in home healthcare

For companies and investors looking to benefit from the growth trajectory of home-health-in-a-box products, there are likely to be significant and varied opportunities to gain a piece of the action. Existing stakeholders, including home healthcare product companies, packaging converters, contract packagers and contract manufacturers, can build on their success by focusing on several important themes and market needs. Healthcare product companies operating in the clinical setting should consider adjacencies that will allow them to benefit from the home health market tailwinds.

Products that we expect to win in the marketplace are those that best meet the needs of patients, which will in turn feed into new product design requirements. These include such features as:

- Ease of use and deliverability (e.g., easy-open, intuitive design)
- Miniaturization (e.g., smaller component parts)
- Increased connectivity (e.g., providing patient monitoring and test results to patients and healthcare providers)
- Increased measuring capabilities and accuracy
- Real-time analysis of data
- Limited, easy maintenance (e.g., safe and effective storage and cleaning)

As more patients have their healthcare product needs fulfilled through direct-to-patient shipping, shipping safety and packaging become important focus areas. Packaging must be robust enough to protect products during last-mile shipping to the home and safe enough for use (e.g., sterile barrier packaging), but at the same time companies are under pressure to reduce packaging's plastic content and replace it with more ecologically friendly materials. Safe and environmentally responsible product disposal and recyclability will also be important differentiators, as the patient bears responsibility for disposal in the home health setting (versus the healthcare provider in a traditional healthcare setting). Packaging converters that are well aligned to these unique at-home healthcare product and packaging needs and have the requisite capabilities (e.g., customer codesign resources to design for ease of use, access to recycled materials, high-resolution printing suitable for self-administration instructions, proprietary molds/die-cutting equipment for high-value conversion, sterilization-compatible coatings) are expected to be significantly competitively advantaged.

Ongoing innovation in consumer-centric medical-grade products will call for new component development, customized packaging designs, and cutting-edge supply chain management and sourcing. Acquiring these capabilities or nurturing them internally is another way to play in the promising home-health-in-a-box market.

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Jeff Cloetingh is a Managing Director in L.E.K. Consulting's Boston office. As a leader in the firm's Packaging practice and broader Industrials team, Jeff has worked with corporate and financial sponsor clients globally on the development of growth strategy, go-to-market commercial strategy, investment thesis development, value creation plans and M&A transaction support. He has worked in consulting since 2006 and with L.E.K. for the past decade.



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