



INTESA SANPAOLO
INNOVATION CENTER

INDUSTRY TRENDS REPORT **HEALTHCARE, BIOTECH AND PHARMA**

*PERSONAL CARE DIGITIZATION AND
NEW MEDTECH DEVICES*





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EXECUTIVE SUMMARY

In both developed and developing geographies, the **Healthcare, Biotech and Pharma** sector is in a state of flux and being shaped by a combination of overlapping short term and long term dynamics. Here, as in almost every industry, COVID-19 has made its presence felt whilst the ongoing shift from hospital-based to patient-centric care is driving change. In parallel, technological advances are enabling the launch of new products and allowing the development of innovative business models which help care givers to address the seemingly competing aims of both delivering better outcomes and incurring lower costs.


The **Personal Care** segment is one of the areas that has been most impacted by all of these factors. Here, a shortage of physicians and reimbursement trends (that have been reinforced by the global pandemic) are supporting a move to care-at-home.

There is also an emerging multifunctional IoT-driven model for personal care which is assisting the deployment of services such as digital Point of Care Testing (POCT), Remote Patient Monitoring (RPM), virtual visits, personal emergency response systems, digital therapeutics and smart medication management as well as robotic solutions.

POCT and diagnoses, in particular, have been a focus for R&D investment. Here, the market is moving from professional to non-professional settings with emergence of lab-on-a-chip and smartphone-based tests propelling the segment forward by providing new robust and non-invasive solutions. In the longer term, the application of AI/ML will reduce development costs and facilitate next generation modalities such as CRISPR.

In 2020, the global **Imaging and Informatics** market was hit by supply chain disruption and a fall in demand as many elective procedures were postponed. The space is however bouncing back strongly and being shaped by the incorporation of artificial intelligence, the continuing development of hybrid systems and the launch of portable solutions.





Imaging and informatics, like many capital intensive industries, is also rapidly evolving from selling equipment to selling solutions to selling services. It is hoped that this will be to the benefit of the suppliers and buyers, offering recurring revenues and greater flexibility.

Players in the **MedTech** space have, similarly, traditionally positioned themselves as product vendors with quite a narrow clinical focus but this is also subject to change.

Externally, the rapidly evolving healthcare landscape is impacting set-up, access, delivery and payment whilst, internally, OEMs are focusing on their core activities and simultaneously seeking new opportunities across the care continuum to avoid falling into the commodity trap. Moving forwards, M&A will play a key role in enabling MedTech vendors to revamp their equipment portfolios and restructure their business models.

The MedTech market is also being shaped by the proliferation of data which is growing almost exponentially. Ambitious OEMs are currently exploring ways in which to monetize the information that they hold with opportunities to sell intelligence to healthcare providers, offer insights to clinical departments and, ultimately, to enable the development of intelligent devices which will support the provision of predictive and preventative care.

This paper examines each of these areas in turn with a focus on the impact of the global pandemic, a shifting care paradigm and technological progress. More broadly, it provides a guide as to how the **Healthcare, Biotech and Pharma** industry is responding to changing expectations from providers, payers and most importantly patients.



PERSONAL CARE

Increasingly, personal care is moving away from the hospital with technological change enabling acute, transitional and chronic care at home

Acute care includes short-term illnesses or medical conditions, such as infections, myocardial infarctions and fractures, requiring time-sensitive and rapid intervention whereas the primary purpose of **transitional** care is to ensure the coordination and continuity of healthcare after the transfer between different care levels. Examples of the latter include post-surgery and so-called Long Term Acute Care (LTAC) facilities.

Chronic care and rehabilitation are for health conditions such as heart disease or cancer or diabetes which last for a year or more and require on-going medical attention.

Overall, the move towards value-based hospital care and hospital-at-home models is expected to further drive demand across home healthcare categories. The market is being marked by a shift from high-cost clinicians to deploying technology together with low-cost clinicians (or even, in some cases, non-clinical staff), from urgent doctor action to planned physician action and from low patient control to high patient control.

This is driven by a shortage of physicians and reimbursement trends

A lack of qualified healthcare professionals and increasing healthcare costs are becoming major problems across the globe. There is a need for a better and more efficient model of care which will help reduce the burden and this includes home care.

In parallel, favorable regulatory and reimbursement trends (in part, resulting from the need to socially distance during COVID-19 pandemic) continue to prompt the adoption of new technologies which support the roll-out of telehealth services.

The aging population, with its high prevalence of multiple chronic conditions, notably cardiovascular diseases and diabetes, is expected to also drive the demand for home

care whilst there is also growing patient awareness of and preference for remote healthcare services. Those receiving care increasingly want to stay closer to their families whilst there is also a general move from reactive to preventive modes of care delivery.

There is an emerging multifunctional IoT-driven model for personal care

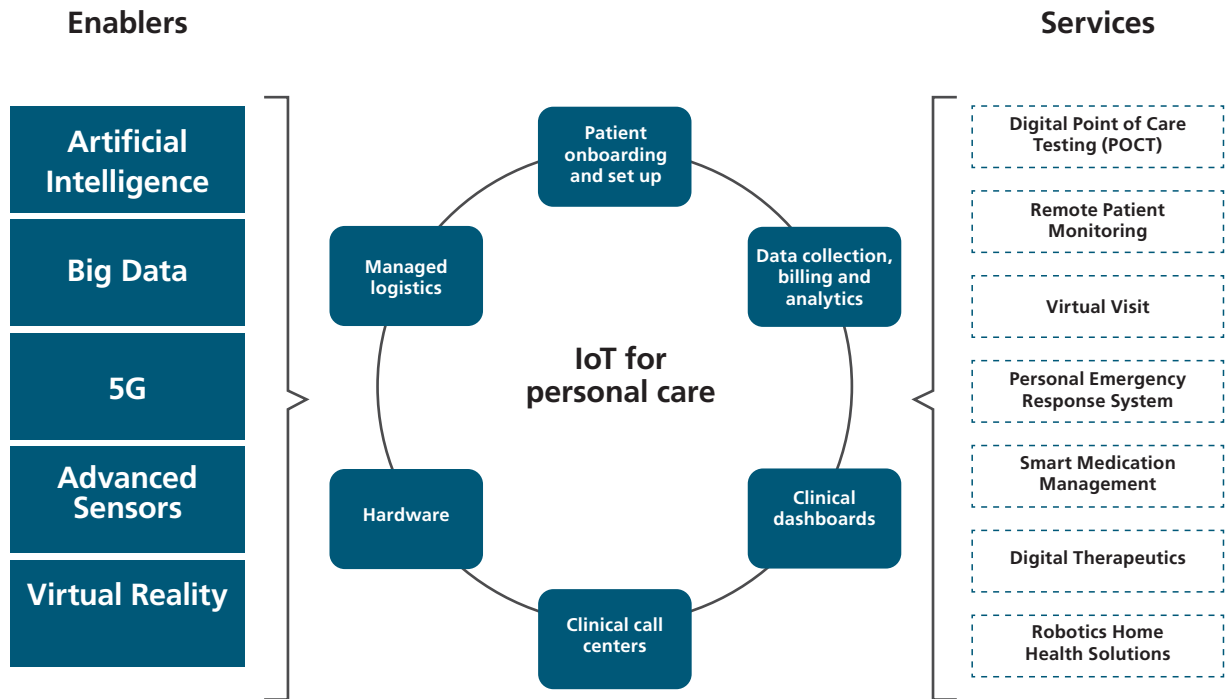
This is enabled by the advent of a number of cutting-edge technologies including Artificial Intelligence (AI), Big Data, 5G, Advanced Sensors and Virtual Reality.

The model encompasses ...

- Patient onboarding and set up
e.g., demographics intake and Electronic Health Record (EHR) integration
- Data collection and billing and analytics
e.g., predictive risk assessment and population surveys
- Clinical dashboards
e.g., software and app-based solutions for patient management and engagement
- Clinical call centers for efficient clinical support and intervention
- Hardware
e.g., mobile monitors and connectivity platforms
- Managed logistics
e.g., shipping and coordination of products, equipment and services

... and allows services such as digital **Point of Care Testing (POCT)**, **Remote Patient Monitoring (RPM)**, **virtual visits**, personal emergency **response systems**, **digital therapeutics**, **smart medication** management and **robotic solutions**.

PERSONAL CARE, EMERGING MULTIFUNCTIONAL MODEL, GLOBAL, 2021



Overall, home health management and treatment is intended to address the quadruple aims of better outcomes and lower costs ...

In addition, the market is targeting improved patient and clinician experiences.

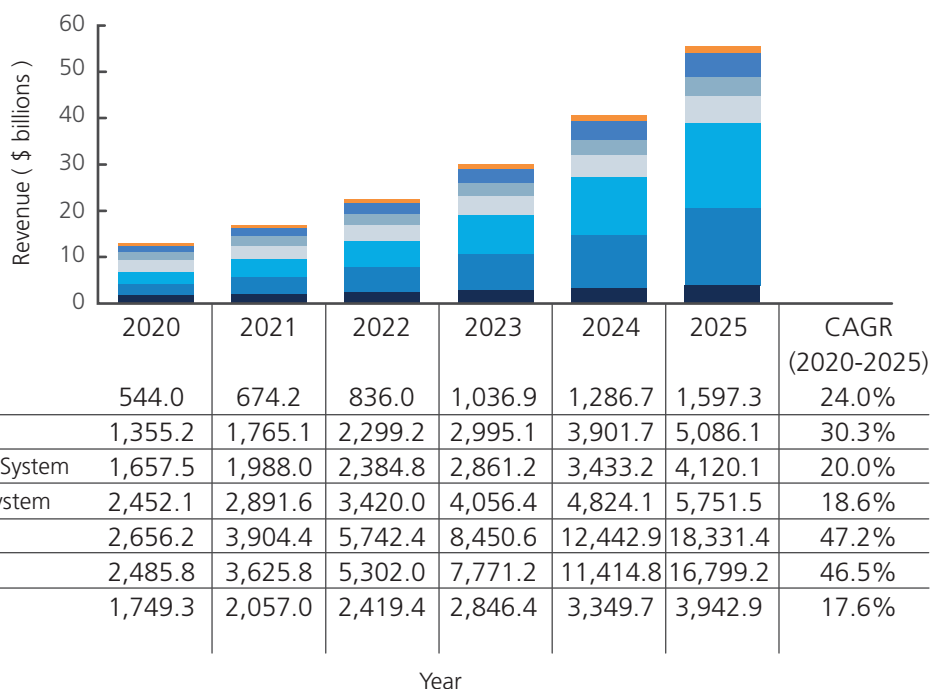
Under the new paradigm, **effective care delivery** relies on connected devices and virtual care to promote disease management and avoid exacerbations; **enhanced clinical impact** is enabled by AI-based predictive models which support better diagnosis and identify care gaps; **improved care infrastructure** leverages new technologies to allow the efficient transition of care outside hospital settings; **non-clinical efficiency** uses analytic and automation solutions to help improve non-clinical parameters such as patient experience and **low-cost personnel** deploy technology solutions to enable care managers and health coaches to interface with patients by leveraging on analytical insights.

... as well as improved clinician and patient experiences with end-users consistently appreciating the benefits that it brings them

In the US, the Centers for Medicare & Medicaid Services (CMS) regularly conduct annual patient experience surveys for both hospital and home health users. Their most recent research shows that care receivers rank the latter as preferable when considering the level of communication with care providers (87% positive for home vs. 82% positive for hospitals), medicine safety (84% vs. 66%) and the responsiveness of staff (90% vs. 70%). 80% of respondents would also proactively recommend the home care that they have received versus only 72% of those in a hospital setting.

Frost & Sullivan estimates that the personal care at home market in the US and EU was valued at \$12.9b in 2020 and will grow to reach over \$55.6b in 2025

PERSONAL CARE, NEW TECHNOLOGIES MARKET SIZE AND FORECAST, US AND WESTERN EUROPE, 2020-25



Point of Care Testing and diagnostics remain a focus for R&D investment

Here, the market is moving from professional to non-professional settings

The adoption of POCT is projected to accelerate clinical decision-making with interest and investment in the space fueled by heightened vigilance about future pandemics.

Alongside the market leaders, selected emerging players are set to transform the POCT technology landscape by deploying the power of clustered regularly interspaced short palindromic repeats (CRISPR) based diagnostic tests to develop rapid POCT which will plug the gaps that are currently hindering the molecular diagnostics market.

In the past, the POCT market was concentrated in **professional** settings with testing taking place in centralized or decentralized, hospital-based and clinic-based laboratories.

Currently, there is a hybrid approach with a POCT based in a combination of **professional** and **non-professional** settings and using both self-monitoring/home-based

solutions and hospitals, clinics and laboratories, rapid POC tests and, increasingly, real-time PCR techniques with portable MDx devices featuring multiplexing capabilities.

In the future, the POCT market will be concentrated in **non-professional** settings with testing reliant on wearables for monitoring and rapid POC diagnostics based on CRISPR gene editing as well as host biomarkers for the early diagnosis of infectious disease.

Alternative care sites will also come to the fore.

The emergence of lab-on-a-chip and smartphone-based POCTs will propel the segment forward by providing new robust, non-invasive and portable solutions

Integrated lab-on-a-chip devices and smartphone-based diagnostic solutions are emerging as ideal platforms in the development of POCTs for the analysis of infectious diseases via inexpensive, robust and portable solutions.

Abbott Laboratories (US), for example, offers the i-STAT Analyzer whilst **Biomensio** (Finland) provides biosensing technology.

PRINCIPAL ABBREVIATIONS

| | | | |
|----------------|---|----------------|---|
| AI | <i>Artificial Intelligence</i> | OCT | <i>Optical Coherence Tomography</i> |
| APAC | <i>Asia Pacific</i> | OEM | <i>Original Equipment Manufacturer</i> |
| ASC | <i>Adult Social Care</i> | OpEx | <i>Operating Expenditure</i> |
| B | <i>Billion</i> | PACS | <i>Picture Archiving and Communication System</i> |
| BAT | <i>Biochip Array Technology</i> | PAYG | <i>Pay-As-You-Go</i> |
| CapEx | <i>Capital Expenditure</i> | PCA | <i>Pulse Controlled Amplification</i> |
| CMM | <i>Comprehensive Medication Management</i> | PET | <i>Positron Emission Tomography</i> |
| CPM | <i>Continuous Passive Motion</i> | POCT | <i>Point of Care Testing</i> |
| CRISPR | <i>Clustered Regularly Interspaced Short Palindromic Repeat</i> | QUASR | <i>Quenching of Unincorporated Amplification Signal Reporter</i> |
| CT | <i>Computed Tomography</i> | R&D | <i>Research & Development</i> |
| EHR | <i>Electronic Health Record</i> | RoI | <i>Return on Investment</i> |
| ESRD | <i>End-Stage Renal Disease</i> | RPM | <i>Remote Patient Monitoring</i> |
| EU | <i>European Union</i> | RT-LAMP | <i>Reverse-Transcription Loop-Mediated Isothermal Amplification</i> |
| HMI | <i>Human Machine Interfaces</i> | SPECT | <i>Single-Photon Emission Computed Tomography</i> |
| IVD | <i>In-Vitro Diagnostic</i> | TCO | <i>Total Cost of Ownership</i> |
| LTAC | <i>Long Term Acute Care</i> | UK | <i>United Kingdom</i> |
| M | <i>Million</i> | US | <i>United States</i> |
| M&A | <i>Merger and Acquisition</i> | VNA | <i>Vendor Neutral Archive</i> |
| ML | <i>Machine Learning</i> | | |
| MRI | <i>Magnetic Resonance Imaging</i> | | |

ABOUT INTESA SANPAOLO INNOVATION CENTER:

Intesa Sanpaolo Innovation Center is the company of Intesa Sanpaolo Group dedicated to innovation: it explores and learns new business and research models and acts as a stimulus and engine for the new economy in Italy. The company invests in applied research projects and high potential start-ups, to foster the competitiveness of the Group and its customers and accelerate the development of the circular economy in Italy.

Based in the Turin skyscraper designed by Renzo Piano, with its national and international network of hubs and laboratories, the Innovation Center is an enabler of relations with other stakeholders of the innovation ecosystem - such as tech companies, start-ups, incubators, research centres and universities - and a promoter of new forms of entrepreneurship in accessing venture capital. Intesa Sanpaolo Innovation Center focuses mainly on circular economy, development of the most promising start-ups, venture capital investments of the management company Neva SGR and applied research

For further detail on Intesa Sanpaolo Innovation Center products and services, please contact businessdevelopment@intesasnpaoloinnovationcenter.com

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