Market Impact of COVID-19 On the Healthcare Industry

April 2020

The Growth Pipeline™ Company
Powering clients to a future shaped by growth
# Understanding the Impact of COVID-19 on the Healthcare Industry

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COVID-19 has been a disruptive catalyst across every industry. Our research has uncovered the following top of mind issues:

**Short Term Focus:**
- Business continuity
- Cash & Liquidity Crisis
- Employee Morale & Productivity
- Diminished Sales Pipelines
- Disrupted Supply Chains
- Cost & Operations Optimization

**Long Term Focus:**
- Digital Maturity
- Revisiting Established Business Models
- Changing Customer Engagement Models
- Preparing for the Rebound

**Long Term Focus: Growth Opportunities**

Source: International Energy Agency (IEA); U.S. Energy Information Administration (EIA); Frost & Sullivan
WHY IS GROWTH BECOMING INCREASINGLY DIFFICULT TO ACHIEVE?

THE STRATEGIC IMPERATIVE 8™: THE CHALLENGES CAUSING POSITIVE AND NEGATIVE PRESSURES ON GROWTH

Compression of Customer Value Chain

Innovative Business Models

Transformative Mega Trends

Industry Convergence

Internal Challenges

Disruptive Technologies

Competitive Intensity

Geopolitical Chaos

Source: Frost & Sullivan
YEAR-LONG RECESSION FOR THE UNITED STATES AND EUROPE; POSITIVE GDP GROWTH FOR ASIA-PACIFIC IN Q4 2020

United States

GDP Growth (%)

Q4 2019 Q1 2020 Q2 2020 Q3 2020 Q4 2020

Europe

GDP Growth (%)

Q4 2019 Q1 2020 Q2 2020 Q3 2020 Q4 2020

Asia-Pacific

GDP Growth (%)

Q4 2019 Q1 2020 Q2 2020 Q3 2020 Q4 2020

South Asia

GDP Growth (%)

Q4 2019 Q1 2020 Q2 2020 Q3 2020 Q4 2020

Middle East

GDP Growth (%)

Q4 2019 Q1 2020 Q2 2020 Q3 2020 Q4 2020

China

GDP Growth (%)

Q4 2019 Q1 2020 Q2 2020 Q3 2020 Q4 2020

Source: IMF; Worldometer; Frost & Sullivan
COVID-19 IMPACT—PREDICTIONS FOR HEALTHCARE

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<table>
<thead>
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<tr>
<td><strong>Medtech manufacturers adopt patient engagement, virtual, innovative health management tools and techniques to support non-COVID19 patients at home. Clearing the procedure backlog will be crucial.</strong></td>
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<td><strong>Hospital capacity for critical care to be designed based on principles of agility, with ease of switching between modes akin to hybrid ORs.</strong></td>
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<td><strong>Telemedicine becomes new standard of care to remotely assess populations of patients, driving a large increase of service providers and need for service standardization across the continuum of care.</strong></td>
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<td><strong>Interoperability and resulting analytics jumps to critical in clinical decision support, predicting hot spots and providing timely interventions to reduce population impacts.</strong></td>
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<td><strong>Increasing workload for radiologists in a post-COVID scenario will increase the demand for Teleradiology infrastructure and services, enhanced used of AI to pre-read and decrease backlog.</strong></td>
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<td><strong>The black hole in provider budgets will lead to the acceleration of new customer engagement models across MedTech, to XaaS and innovative funding methods.</strong></td>
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<td><strong>Biopharma manufacturing pivots to become more resilient, driving new investments in twin supply chain features: transparency and flexibility.</strong></td>
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<td><strong>Rise of diagnostic testing at retail clinics will persist post-pandemic to triage low to moderate risk patients.</strong></td>
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COVID-19 IMPACT ON HEALTHCARE SEGMENTS & GROWTH OPPORTUNITIES
COVID-19: IMPACT ON THE HOSPITAL INDUSTRY

Regional and local hospitals likely to come under command and control of Pandemic Response leadership.

Pandemic hospital logistics may be required to house real-time replacement medical supplies for 4 months on site.

Hospitals will be required to isolate Pandemic positive patients in a secure and pathogen free upon diagnosis – CODE.

Pandemic response will require each hospital to assume a unique role (Trauma, ICU beds, Testing).

Pandemic response will require ambulatory sites to transition to neighborhood Pandemic virus test sites.

Hospital industry will lobby AMA and CMS for specific Pandemic DRG and CPT codes to enable real-time reimbursement.

Source: Frost & Sullivan
GROWTH OPPORTUNITIES IN THE HOSPITAL INDUSTRY

Hospital Bed Configuration for ICU
bed expansion will be a focus

- Hospitals will be required to store medical equipment to expand ICU beds in 96 hours
- Hospital construction efforts will expand rapidly to reconfigure hospital ICU bed capacity with renovation and addition of whole isolation floors to double ICU beds

Supply chain driven by Defense Logistics Agency (DLA)

- Demand for portable oxygen generators to grow
- Demand for fully mobile ICU field hospitals will grow
- Medical device companies and medical supply consumable manufacturers secure GSA Schedule to feed DLA strategic reserve

Increased demand for AI and Cloud Platforms

- Access to worldwide CDC databases for tracking Pandemic patient data
- Regional patient flow platform moving all hospitals on one platform
- Expanded and sophisticated Population Health platform for tracking patients exposed or symptomatic by address, contacts, and patient acuity

Source: Frost & Sullivan
COVID-19: IMPACT ON THE MEDICAL TECHNOLOGY INDUSTRY

- **Isolation measures, shut down of manufacturing sites impacting production and delivery**
  - Bio-surveillance and screening technologies’ demand in public places, transit hubs and hospital ERs to rise

- **On-hold elective surgeries led to reduced consumption of medical devices, and consumables**
  - Ventilators and monitoring devices for covid-19 patients in high demand

- **Adoption of infection control tools and technology receives boost, including disinfection robots**
  - Future preparedness policies drive demand for technologies allowing hospitals to boost critical care capacity at short notice

Source: Frost & Sullivan
GROWTH OPPORTUNITIES IN THE MEDICAL TECHNOLOGIES

Untapped & Rising Demand for Patient Engagement

- Patient engagement not fully addressed
- COVID-19 isolation increases demand for engagement at home
- Chronic disease cases and backlog of elective procedures will give OEM’s the opportunity to partner with providers on new patient management models

Rising Hospital Demand for Operational Efficiency Solutions

- Healthcare personnel shortages
- Hospital resources constrained
- Increasing patient pool, more complicated patients will accelerate the adoption of technology platforms that enable efficiency. This is now a need

Adoption of Innovative Approaches for Resilience

- Tariff wars, government policies
- Natural disasters, pandemics
- Fluctuations in demand / capacity
- 3D printing, automation and other technology availability, on-demand technologies, miniaturisation, autonomous technology platforms

Source: Frost & Sullivan
COVID-19: IMPACT ON THE DIGITAL HEALTH INDUSTRY

- **New strategic imperatives focused on speed to market and rapid solution proofs:**
  - MED
  - POSITIVE

- **Tenuous investment climate Driving enhanced due diligence efforts:**
  - HIGH
  - POSITIVE

- **Telemedicine offers the largest and most obvious potential for upside impact:**
  - HIGH

- **Healthcare cloud may rapidly expand or be delayed dependent on level of interoperability:**
  - HIGH

- **Advanced data analytics will be required to support need for immediate patient data:**
  - POSITIVE

- **Demand for digital health solutions that can deliver enhanced patient outcomes:**
  - MED

Source: Frost & Sullivan
GROWTH OPPORTUNITIES IN THE DIGITAL HEALTH INDUSTRY

- **Need for Real Time Data Interoperability, Platform Agnostic**
  - Access to data by all legitimate stakeholders is open and in secure environments now table stakes
  - Privacy and security will face new threats from global hackers; data security becomes key

- **Burgeoning Demand for Health Care Advisory & Disaster Planning Expertise**
  - Exponential demand for expertise in Incident Command management, SCM, RCM & clinical workflow process management
  - Enhanced Clinical Decision Support Systems (CDSS) integration and expertise become “must have” platform capability

- **On-Demand Access to Care Drives Unprecedented Demand for Telemed**
  - Remote Patient Monitoring (RPM) and Virtual visit providers will be stressed; and will require adequate supplies of providers to match need
  - The “true” 360 degree view of the patient becomes an imperative for care
  - Behavioural healthcare burgeons, with significant focus on “whole health” wellness

Source: Frost & Sullivan
COVID-19: IMPACT ON THE MEDICAL IMAGING INDUSTRY

Delaying of elective imaging procedures to lead to surge demand post covid-19

Supply chain disruption to impact imaging equipment shipments in Q2 2020

Collaborative and coordinated care technologies will see increased demand during crisis

Remote diagnostics to emerge as a strong services proposition

Technology innovations will see increased adoption to meet the new requirements

Reduced capex investments in imaging to lead to higher demand for partnership models

Source: Frost & Sullivan
GROWTH OPPORTUNITIES IN THE MEDICAL IMAGING INDUSTRY

**Adoption of Teleradiology and AI in Imaging**
- ▲ Post–COVID Imaging Volumes
- ▼ Radiologist Capacity
- ▲ Radiologist Burnout
- ▲ Backlog in interpretation, workflow orchestration, pre-read technologies to filter out noise / errors

**Supply chain optimization by large OEMs**
- ▲ China lockdown impact
- ▼ Imaging unit shipments in H1
- ▲ Export controls
- ▲ Opportunities in ex-China markets, LatAm, East Europe etc. as hubs for components and assembly

**Increasing demand for managed models in Imaging**
- ▼ Capital Expenditure
- ▲ Ageing of imaging equipment
- ▲ Need for modern equipment
- ▲ Outsourced models in imaging, report as the output, managed services, fee per scan, platform as a service

Source: Frost & Sullivan
COVID-19: IMPACT ON THE LIFE SCIENCES INDUSTRY

- Resource constraints to reduce volume of elective IVD testing
- Clinical trials hit gridlock as COVID-19 storm persists
- Domino effects in API supply gather pace amidst increase in drug prices
- Demand for new modalities of POCT diagnostic solutions
- Drug repurposing well positioned by AI/ML
- Supply chains pivot to become more resilient

Source: Frost & Sullivan
GROWTH OPPORTUNITIES IN THE LIFESCIENCES INDUSTRY

Small Volume & Agile Bio Manufacturing

▲ Advanced manufacturing technologies offer smaller footprints & flexibility to adjust volume in real-time
▲ Mandate to keep 5-6 months of inventory
▼ Broken API supply chains

Virtualization of Clinical Trials

▲ mHealth enabled remote trials reduce costs by 15-22%.
▲ Direct-to & from- patient clinical trial supplies logistics services alleviate operational challenges
▼ Majority of trial sites challenged with Phase 3 recruitment & SOP deviations.

Point of Care Testing Services

▲ Testing services at retail clinics, airports with EHR integration after the pandemic subsides.
▲ Adoption of novel home based testing modalities
▼ Postponement of non COVID-19 testing puts chronically ill and elderly at risk.

Source: Frost & Sullivan
COVID-19 IMPACT SUMMARY

• Our Strategic Imperative framework looks at various factors that are critical to our ability to take advantage of growth opportunities

• COVID-19 has been a disruptive catalyst across every industry. Our research has uncovered the following top of mind issues:
  – Cash and Liquidity Crisis
  – Employee Morale, Motivation and Productivity
  – Diminished Sales Pipelines
  – Disrupted Supply Chains
  – Cost and Operations Optimization
  – Revisiting Established/Traditional Business Models
  – Changing/evolving Customer Engagement Models
  – REBUILDING OF THE GROWTH PIPELINE – PREPARING FOR THE REBOUND

Source: Frost & Sullivan
# QUESTIONS TO THINK ABOUT

<table>
<thead>
<tr>
<th></th>
<th>Stage 1 (REACTION)</th>
<th>Stage 2 (STABILIZATION)</th>
<th>Stage 3 (REBOUND)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Short-Term (3-6 months)</td>
<td>Medium-Term (6-9 months)</td>
<td>Long-Term (9-15 months)</td>
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<tr>
<td>1</td>
<td>Which business functions within your company are most impacted or will be re-structured to enhance your company’s performance?</td>
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<td>2</td>
<td>Have you established a rapid response team? What are information needs of this team?</td>
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<td>3</td>
<td>Which customer groups (MedTech Suppliers, Providers, etc) are you most focused on to make a significant impact?</td>
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<td>4</td>
<td>Which existing solutions will best fit needs of your customers at various stages of the crisis?</td>
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<td>5</td>
<td>How is your company positioned to enhance/build new XaS models to serve your customers in new virtual world?</td>
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Key: [Color Scale]

Source: Frost & Sullivan
HOW CAN OUR TEAM HELP YOU?

**Risk Mitigation Planning**
Support in Risk Mitigation planning

**Revise Forecast & Growth Plans**
We will bring clarity to your prior market assessments and ensure business plan continuity

**Focus on Growth Pipeline**
We will power your focus on growth through turbulent times, identifying the Growth Opportunities that will emerge

**M&A and Investment Support**
Support in M&A, Valuation and/or Finding Investment Partners

**Develop your digital strategy for growth**
Develop and support in implementation of your digital, marketplace and platform strategy
YOUR NEXT STEPS

1: Take the Growth Pipeline Diagnostic to assess your current growth capabilities

https://ww2.frost.com/growth-pipeline-diagnostic/

2: Reach out to your team to act

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