



Whitepaper

COVID-19 Containment and Mitigation Strategies

Enabling Social Distancing with
Telemedicine & Telehealth Services

COVID-19

In our previous article 'Why Empowered Patient Care with Empathy and Efficiency Is Not an Option but an Urgent Necessity¹', we explored why technology-enabled patient care needs quicker adoption to better manage patients during outbreaks and communicable diseases.

This cannot be more true now, as the world battles COVID-19, the infectious disease caused by the most recently discovered coronavirus. This new virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019. On March 11, 2020², the World Health Organization (WHO) declared COVID-19 as a pandemic (a global outbreak of a disease³) after the virus had spread to more than 114 countries.

SPREADING EXPONENTIALLY

In his article 'Coronavirus: Why You Must Act Now'⁴, Tomas Pueyo provides a detailed analysis of the total worldwide cases of the virus and how the number of cases grew exponentially.

The first epicenter was Wuhan in the Hubei province of China.

The density of cases then shifted to Iran and South Korea, rapidly followed by Italy and Spain. On March 13, 2020, US President Trump declared COVID-19 as a National Emergency. On the same day, WHO declared Europe as the new epicenter for the coronavirus pandemic

Italy has reported⁶ the highest number of deaths, taking the toll to over 10,000 and the US has the highest number of positive cases in the world at 125,313⁷ (both figures as on March 29, 2020).

As on March 29, 2020, the numbers show a grim picture⁵:

More than 634,835 positive cases

More than 29,900 confirmed deaths

203 countries

IMPACT ON HEALTHCARE SYSTEMS

Fact is, even countries with sophisticated healthcare systems were burdened before the pandemic. According to usnews.com, the estimated shortage of primary care physicians in America will be between 8,700 and 43,100 physicians by 2030. In the UK, NHS shortages⁸ mean one doctor will have to care for 11,000 patients and 1.3 million women in the UK have no access to a regular female GP.

If this was the scenario before the pandemic-caused patient surge at hospitals, the impact on healthcare systems with COVID-19 cases growing exponentially has been alarming, to say the least.

Italy's collapsed healthcare system serves as a stark example. Despite having world-class healthcare facilities, doctors, nurses, supporting healthcare workers, beds and ventilators were greatly outnumbered as the number of positive cases needing immediate attention grew at a frightening pace. So great was the challenge that the Italian medical authorities had little choice, but to issue guidelines for doctors and nurses to

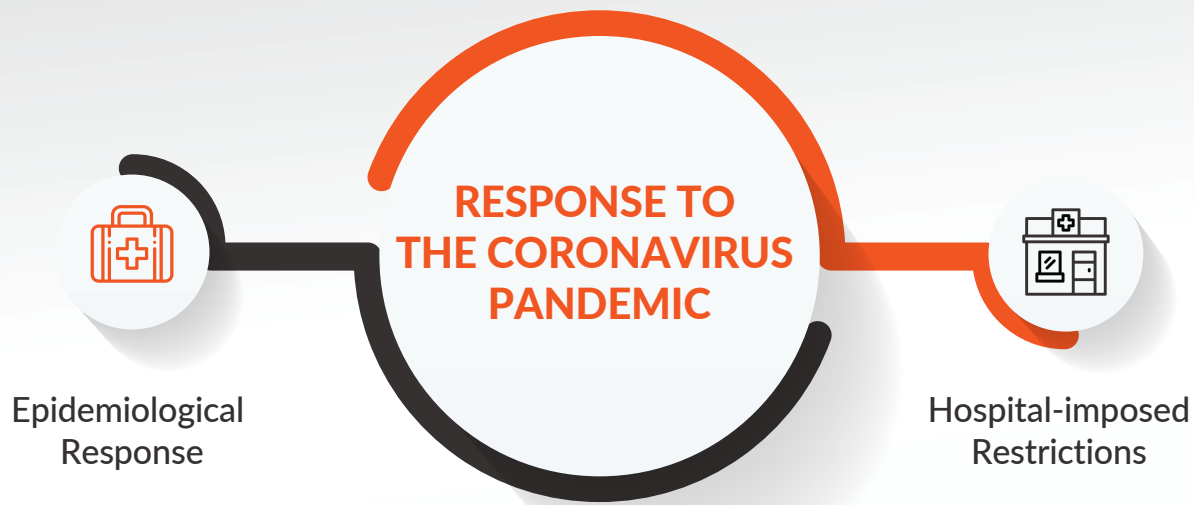
prioritize treatment for patients with a higher chance of recovery⁹. For medical practitioners, there cannot be a more painful dilemma.

"But if Italy is in an impossible position, the obligation facing the United States is very clear¹⁰: To arrest the crisis before the impossible becomes necessary, says Prof. Yascha Mounk, (contributing writer at The Atlantic and an associate professor at John Hopkins University) in his article 'The Extraordinary Decisions Facing Italian Doctors'⁹.

In the US, hospitals are rushing to evaluate their emergency-preparedness. "As we project outward with the potential for this to be a much longer situation, one of the things that we're actively working on is projecting the long-term needs for our health care system," said Dr. Nancy Messonnier, Director of Center for Disease Control and Prevention's National Center for Immunization and Respiratory Diseases¹¹.

Even as the Coronavirus outbreak continues to spread with the rapidity it has in regions like Iran, Italy, Spain, and the US, it is not hard to imagine the impact on hospitals and healthcare workers. Hundreds and thousands of healthcare workers will need to be mobilized to attend to the sick. Demand for ventilators, waiting rooms, beds, and personal protective equipment (PPE) has already far exceeded supply. The urgent question we therefore ask is - what measures can be taken to prevent healthcare systems from collapsing under the strain? Where and how can technology play a role in alleviating the burden and delivering an improved patient care response system?

Before we explore answers to these questions, let's first look at measures that are being implemented to limit the virus spread. In these responses, technology can find a place of true intervention.



EPIDEMIOLOGICAL RESPONSE TO A PANDEMIC

Biocontainment experts, data scientists and epidemiologists have recommended containment and mitigation as key response strategies to limit the number of cases during a pandemic. Dr. Anthony Fauci, the director of the National Institute of Allergy and Infectious Diseases, told members of Congress that “if we are complacent and don’t do really aggressive containment and mitigation,” the number of Covid-19 cases “could go way up and be involved in many, many millions¹².”

Containment works better when the number of cases is confined to a specific region and typically at the start of the outbreak. The key method in the containment strategy is contact tracing or contact surveillance, to identify and isolate people who have been infected or exposed. Singapore, Taiwan and Hong Kong demonstrated success with early and rigorous containment by swiftly identifying and isolating infected cases, and simultaneously quarantining their contacts. However, contact-tracing is resource-intensive and can become ineffective when the number of people infected and exposed increase exponentially.

When gaps in contact tracing increase and public health workers are unable to establish all links between the infected and the exposed, then mitigation as a strategy will have to be deployed. Public health leaders invoke mitigation to halt or limit new transmissions of the virus, while it gives time to hospitals to strengthen capacity for testing and attending to existing cases. Efforts to mitigate the spread of COVID-19 have seen social distancing and government-enforced lockdowns as the key strategies. The lockdown measures imposed in Hubei province did indeed demonstrate success when cases in China began to drop and the number of recoveries started to improve.

These efforts to mitigate and prevent a peak in cases have also been called ‘Flatten the Curve’. The most critical strategy now adopted globally to mitigate the spread of the coronavirus is social distancing. Guidelines issued for practicing social distancing can be viewed on the CDC (Centers for Disease Control and Prevention, US) website¹³.

HOSPITAL-IMPOSED RESTRICTIONS

With the COVID-19 outbreak, the struggle to find large spaces to hold people, interact and educate them can come at a colossal cost of precious medical resources. “Only about 10 percent of patients who have coronavirus need to come to the hospital, and we want to educate these patients on whether they need to come here or not,” said Michael Palumbo, executive vice president and chief medical officer¹⁴. The danger to doctors, nurses and support staff who could contract the virus through in-person patient interaction cannot be undermined either.

In a bid to stem the chaos, respond better and to protect patients, several hospitals in the US started to impose heavy restrictions on hospital visits.

While social distancing, lockdowns and hospital-imposed restrictions become the need-of-the-hour, we cannot ignore the fact that they come with their own challenges in effective patient engagement

It is here that telemedicine and telehealth services via remote patient engagement platforms can play a crucial role.

To tackle the coronavirus pandemic more effectively, the Trump administration expanded access to telemedicine in Medicare¹⁵, a federal program for seniors and the disabled. To reduce the burden on hospitals, public health officials in the US are also urging people to access telehealth and telemedicine services.

While almost 80 percent of hospitals in the US offer some form of telemedicine, pandemic response management requires considerable scaling to deliver services effectively to more people.

CHALLENGES FOR PATIENT ENGAGEMENT DURING A PANDEMIC

1. Surge in anxious callers

- Denied with the luxury of movement or hospital visits, people will turn to hotline numbers for information. Medical hotline staff will be overwhelmed with anxious callers
- Telephone lines will get jammed at worse or will experience long call-waiting queues at best
- As infected cases surge in ERs, hotline staff may get re-deployed to address on-site administrative issues
- People will need frequent updates about their families and friends admitted in hospitals for various illnesses and not just for coronavirus
- Fears and anxieties over imagined or real symptoms of coronavirus will need to be allayed especially when people are told not to visit their community hospital, nursing home or their local GP. Inadequate medical literacy among patients and the public will only serve to drive panic calls to hospital hotlines
- Patients with existing co-morbidities need constant reassurance that their medical attention or support is not being compromised

2. Lack of patient understanding

- Frontline response staff, especially on hotlines, may not have access to the patient's full medical history as it requires interacting with multiple siloed systems. This will result in delays and first-response errors, while also leading to a severe burn-out of the care team
- With thousands of callers wanting to check about their symptoms, and each caller having a unique medical profile, the **one-response-fits-all approach would be disastrous**

3. Continuum care cannot be disrupted

- Patients who have recovered and been discharged from coronavirus infection or from other illnesses and procedures will require constant post-discharge updates. While their post-recovery visits to the hospital cannot be stopped, their re-visits will only add to the patient volume at hospitals during pandemics

4. Increased risk for frontline medical staff

- Doctors, nurses and caregivers are extremely vulnerable to infection during a contagion. Several health-care workers have fallen ill with Covid-19, and more are quarantined after exposure to the virus. With shortages in PPE, this threat becomes even bigger.

LEVERAGING TELEMEDICINE SERVICES DURING A PANDEMIC

When pandemics like COVID-19 overwhelm and cripple hospitals' capacity to respond effectively, the need to strengthen and leverage telemedicine/telehealth for effective remote patient engagement cannot be over-emphasized.

With telemedicine/telehealth, patients can:

- Access FAQs that address all possible questions that people may have
- Use in-built tools like questionnaires to decide whether they need to visit the hospital or can manage less severe symptoms from home
- Talk or chat with medical support staff to address more specific concerns they may have
- Update symptoms through patient self-care engagement and get accurate advice on next steps
- Receive push notifications on developments and announcements related to the pandemic

For senior citizens who are at a higher risk of coronavirus infection, virtual engagement will be a boon. With telemedicine and telehealth, hospitals and healthcare staff can:

- Disseminate information more effectively to patients and non-patients, thereby preventing unnecessary visits to the hospital
- Re-direct patient inquiries depending on criticality, to phone or chat through seamless omnichannel support
- Provide a personalized response to patients, based on a 360-degree patient view that comes integrated with all EHRs, EMRs, lab and radiology systems
- Schedule call-backs to urgent inquiries, based on details fed into patient questionnaires
- Stratify patient risks using a cohort-based approach with equal weightage on the event of interest as well as a single risk score
- Perform or support medical triage remotely to determine, advise and support patients based on the severity of symptoms – (e.g., visit hospital, stay-at-home, doctor-call-back, e-visit, etc.)
- Screen and monitor population health via specifically designed screening questions and questionnaires
- Capture patient travel history to support contact surveillance (a unified patient view can be integrated with state and federal registries with ease)
- Share data, analysis and insights with public health authorities
- Provide evidence-based care across the continuum
- Deliver regulatory reporting with accuracy



The emergency-response at Center for Disaster Medicine at Massachusetts General Hospital, US, led by Dr. Paul Biddinger said that expanding remote virtual care to reach patients who could stay at home would be one solution, (to help contain and mitigate COVID-19), in addition to limiting elective surgeries and establishing pop-up clinics¹⁶.

Remote patient engagement platforms have massive and yet untapped potential for supporting pandemic containment and mitigation strategies. Hospitals and public health leaders should look at leveraging this technology and work closely with platform design architects to build tools and features that can be leveraged during outbreaks, epidemics and pandemics. Some of these tools should focus on leveraging data analytics for contact tracing/surveillance, patient travel history and community infection patterns. We appreciate that leveraging technology to help contain and mitigate a pandemic will be a continuous process of discovery, and analysis and requires close collaboration with all stakeholders of public health.

A NEED FOR GLOBAL ADOPTION

While the US has now expanded telehealth to Medicare to fight coronavirus, virtual hospital care needs aggressive adoption in other countries as well.

Remote patient engagement needs to be an on-going strategy even during non-pandemic times. Healthcare systems cannot wait for an outbreak or a pandemic to implement remote patient care.

A growing geriatric population, doctor burnouts, growing mobility issues and democratization of information all call for leveraging virtual patient engagement programs.

HEXAWARE'S CARROT CUBE

Hexaware's CarrotCube is a single-care collaboration platform built on Salesforce Health Cloud that allows for a unified patient view and a better ability to manage gaps in-patient care.

The application allows care managers to perform all their clinical activities, stay on top of their patient's health and communicate with each other.

Physicians can collaborate with the extended care team, perform virtual patient follow-ups and get patient health updates, including vitals.

Cohort-based risk stratification can provide invaluable insights into health events.

The modular architecture of the interface holds granular data in a way that metrics surfaced in the visualization layer always allow drill down, often to the order level.

A drilled-down functionality can often point to the "why" behind a piece of data, which allows physicians and other clinicians to implement appropriate interventions to improve the metric.

Richer data mining helps to categorize patient populations into high-risk, low-risk, and the ever-important rising-risk groups. This becomes a critical function during outbreaks and pandemics.

With these and continuous improvements through analysis and insights, we are committed to collaborating with healthcare stakeholders to support them in their enormous task to contain and mitigate the COVID-19 pandemic. Towards this, our communication lines remain open. Please reach out to us on marketing@hexaware.com

REFERENCES

1. 'Why Empowered Patient Care with Empathy and Efficiency Is Not an Option but an Urgent Necessity'
<https://carrotcube.com/resources/why-empowered-patient-care-with-empathy-and-efficiency-is-not-an-option-but-an-urgent-necessity/>
2. WHO classifies COVID-19 it as a pandemic:
<https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
3. Pandemic Definition: <https://www.who.int/news-room/q-a-detail/q-a-coronaviruses>
4. Tomas Pueyo's article - 'Why you must act now'
<https://medium.com/@tomaspueyo/coronavirus-act-today-or-people-will-die-f4d3d9cd99ca>
5. Coronavirus disease (COVID-19) outbreak situation - Number of cases
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

6&7. Italy and US situation

<https://coronavirus.jhu.edu/map.html>

8. NHS shortages in the UK

<https://www.thetimes.co.uk/article/gp-crisis-nhs-shortages-mean-one-doctor-has-to-care-for-11-000-patients-v25nt2cdl>

<https://www.thetimes.co.uk/article/gp-crisis-third-world-conditions-at-surgeries-with-no-female-doctor-jgkqb8wcp>

9. English translation of the triaging guidelines developed by the Italian College of Resuscitation and Intensive Care in response to the corona crisis [shared by (shared by Prof. Yascha Mounk, contributing writer at The Atlantic, an associate professor at Johns Hopkins University, on his Twitter page @Yascha_Mounk)

https://livejohnshopkins-my.sharepoint.com/personal/ymounk1_jh_edu/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fymounk1%5Fjh%5Fedu%2FDocuments%2FSAARTI%2Epdf&parent=%2Fpersonal%2Fymounk1%5Fjh%5Fedu%2FDocuments&originalPath=aHR0cHM6Ly9saXZlam9obnNob3BraW5zLW15LnNoYXJlcG9pbmQuY29tLzpiOi9nL3BlcnNvbmFsL3ltb3VuazFfamhfZWR1LOVYT1VmRjc5MGFKSmpwVUJMZEhmMG9BQjNBV1h6dWVvOEtzdllExYZoR2tVU2c_cnRpbWU9R2c5Sk96ZksxMGc

10. The obligation facing the United States

Retrieved from - <https://www.theatlantic.com/ideas/archive/2020/03/who-gets-hospital-bed/607807/>

11. Quote by Dr. Nancy Messonnier, director of Center for Disease Control and Prevention's National Center for Immunization and Respiratory Diseases evaluation of emergency preparedness on the US' evaluation of emergency preparedness

Retrieved from - <https://www.statnews.com/2020/02/07/hospitals-harnessing-resources-brace-spike-coronavirus-cases/>

12. Dr. Anthony Fauci briefing the Congress

Retrieved from - <https://www.cnn.com/2020/03/11/top-federal-health-official-says-coronavirus-outbreak-is-going-to-get-worse-in-the-us.html>

13. CDC guidelines for practicing social distancing

<https://www.cdc.gov/coronavirus/2019-ncov/community/index.html>

14. "Only about 10 percent of patients who have coronavirus need to come to the hospital"

<https://www.washingtonpost.com/business/2020/03/14/hospital-doctors-patients-coronavirus/>

15. The Trump administration expanded access to telemedicine in Medicare

https://www.wsj.com/articles/trump-administration-expands-medicare-telehealth-program-11584461973?mod=article_inline

16. Massachusetts General Hospital, US, said that expanding remote virtual care to reach patients

https://www.washingtonpost.com/investigations/a-look-inside-coronavirus-preparations-at-a-major-us-hospital/2020/03/09/9169d156-5f64-11ea-9055-5fa12981bbbf_story.html

About CarrotCube:

www.CarrotCube.com by Hexaware is the first of its kind omni channel healthcare solution offering technology and analytics services. The digital and remote patient services on the platform seamlessly integrate clinical workflows on every connected device to manage patient health more efficiently. Built on Salesforce Health Cloud, it provides a 360° view of the patient's medical profile, making continuous care delivery and collaboration possible from the time a patient walks into the hospital and throughout the continuum of care.

About Hexaware

Hexaware is the fastest growing next-generation provider of IT, BPO and Consulting services. Our focus lies on taking a leadership position in helping our clients attain customer intimacy as their competitive advantage. Our digital offerings have helped our clients achieve operational excellence and customer delight. We are now on a journey of metamorphosing the experiences of our customer's customers by leveraging our industry-leading delivery and execution model, built around the strategy— 'Automate Everything™, Cloudify Everything™, Transform Customer Experiences™.' Hexaware services customers in over two dozen languages, from every major time zone and every major regulatory zone. Our goal is to be the first IT services company in the world to have a 50% digital workforce.

Learn more about Hexaware at <http://www.hexaware.com>

NA Headquarters

Metro 101, Suite 600,101
Wood Avenue South, Iselin,
New Jersey - 08830
Tel: +001-609-409-6950
Fax: +001-609-409-6910

India Headquarters

152, Sector - 3
Millennium Business Park
'A' Block, TTC Industrial Area
Mahape, Navi Mumbai - 400 710
Tel : +91-22-67919595
Fax : +91-22-67919500

EU Headquarters

Level 19, 40 Bank Street,
Canary Wharf,
London - E14 5NR
Tel: +44-020-77154100
Fax: +44-020-77154101

APAC Headquarters

180 Cecil Street,
#11-02, Bangkok Bank
Building, Singapore - 069546
Tel : +65-63253020
Fax : +65-6222728

Australia Headquarters

Level 26, #44, Market
Street Sydney,
NSW 2000, Australia
Tel : +61 2 9089 8959
Fax : +61 2 9089 8989