Connected Patients in Light of Big Data

Clinical Care Management

Pivoting to Manage a Pandemic: Flexibility and Creativity in Teams

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The COVID-19 pandemic presented a frequently changing situation for health systems, and successful management required a flexible and creative approach within a team.

☑ Key Points

- Lessons from Stanley McChrystal's "Team of Teams" were very helpful in adapting to COVID-19 as a health system.

- Flexibility was a key tenet in our health system's response as the threat COVID-19 posed was variable over time.

- In COVID-19, the strategies our health system used historically were no longer options. We had to be creative to solve problems as the environment changed.

Introduction

As a new virus, SARS-CoV-2, appeared in Wuhan, China, we saw images of healthcare workers in Personal Protective Equipment (PPE) and watched as the city shut down. As the newly described COVID-19 spread across the world, healthcare systems rapidly established task forces to prepare for an inevitable change in how we delivered care to our patients.

When I began work on the COVID-19 pandemic in early 2020, I had recently finished a palliative medicine fellowship, which I had completed while working part-time as a clinical faculty member and a full-time mother of young children. I was struggling to understand how to measure what I contributed on any given day. A friend and mentor suggested that I keep a bullet journal, and at the end of each day, I should write three things that I did. This would allow me to look back and understand that even the things that feel small can add up.

Now, two years into the pandemic, I still do this. On the first and second anniversaries of COVID-19 arriving in the hospital where I work, I read back through my journals and reflected on my experience as a leader, physician and parent. I write this piece on managing future pandemics as a distillation of those 700 entries, where three themes emerged: teamwork, flexibility and creativity.

Teamwork

In Team of Teams, General Stanley McChrystal describes the difference between complicated and complex (McChrystal 2015). To paraphrase, in a complicated system, there are a number of parts that interact in a predictable way. In a complex system, the multiple parts move in an unpredictable way. In the book, McChrystal describes that a complex system is inherently uncertain, and success in this type of environment requires agility. That agility is more commonly seen in small teams rather than large organisations, but McChrystal argues that by empowering teams to form with shared information and common parameters, even a large organisation can achieve the agility needed to succeed in a complex environment.

At University of Utah Health, our COVID-19 journey started in March 2020. We listed all of the resources that could become limited during a pandemic. As things were rapidly unfolding, we realised the importance of a single source of truth. We could not make decisions quickly if there were three different values for any given data point. We developed a "Daily Huddle Management Report" that listed staff illness callouts, medication availability, equipment availability, and COVID-19 rates in the community. The DHMR, as it came to be known, was published daily on the University intranet, allowing anyone in the health system to easily see the data driving our decisions.

At this point, no particular area of expertise seemed especially relevant. In line with the disaster management structure, we appointed roles such as "Planning Chief" and "Operations Chief". Our data management specialists teamed with

epidemiologists to become COVID modelling experts. Seeing Seattle and New York manage an influx of patients with COVID-19 made us realise that the most limited commodity in the pandemic was a staffed intensive care unit (ICU) bed. University of Utah Health is the only academic medical centre in the Intermountain West. It provides care to the most complex patients across a vast geographic area that covers from the United States border with Canada to Arizona and from Nevada to Wyoming. It is approximately equivalent to one

Contingency and Emergency (Ryan 2013). "Primary" describes a usual day situation, "Alternate" describes a less-optimal situation without any compromise or change in the outcome, and "Contingency" describes a condition where to be able to deliver care, resources must be stretched. "Emergency" refers to the last resort when a system lacks the resources to provide care for patients. In any emergency, resources and workflow vary by the level of emergency. For example, in "Primary," clinical staff work in the area of their expertise with normal ratios of staff

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million square kilometers, or the areas of Spain and France combined. To fulfill our mission, we needed more ICU beds. Our physician leaders partnered with nursing leaders, Infection Prevention and Control, Pharmacy, and Facilities & Engineering, to rapidly transform an acute care unit into a 24-bed Intensive Care Unit (ICU). This newly created ICU remained open for 8 months, caring for 20 additional critically ill patients per day. This ICU allowed to provide care to a few hundred additional patients during the pandemic.

Teamwork became critical throughout the next two years, as we rapidly formed teams across our system to determine how we would care for increasing numbers of sick patients. Conversations ranged from transferring patients between our psychiatric, cancer, and rehabilitation hospitals to pulling ventilators from ambulatory operating centres. Later in the pandemic, with the release of vaccines for COVID-19, we again needed a rapid and flexible team to provide our 20,000 employees two doses of mRNA vaccines in just a few months. This took the expertise of pharmacy and nursing, plus volunteering faculty and non-clinical staff.

Flexibility
The COVID-19 pandemic brought many different challenges. The shutdowns and social distancing from March of 2020 are unforgettable for all of us, as we saw schools close and empty grocery store shelves. From the very beginning, flexibility was a critical piece of the University of Utah Health pandemic response. One example of this was during the shutdown, when the system's food service team had a full order of supplies but no visitors to cook for, they pivoted to selling staff groceries and take-home meals. Food was not wasted and University of Utah Health staff were able to obtain necessary supplies for their homes.

In disaster preparedness, a common approach is the PACE plan. PACE is an acronym representing Primary, Alternate,

to patients. As a situation changes sequentially, resources are more stretched. In an "Emergency" state, staff are working in different areas with more patients than usual. One example of an "Emergency" state would be field hospitals erected in many cities, staffed by military personnel. Throughout the pandemic, University of Utah Health utilised the PACE planning method. Our goals were two-fold; to best assess our resources and to stay out of an "Emergency" situation as long as possible. Our PACE plan had several different versions, one for each surge in the pandemic.

From March 2020 to January 2021, our enemy was primarily the Alpha variant of SARS-CoV-2. During this time, COVID-19 vaccines were unavailable to the public. Hospitals were caring for patients with respiratory illness, and ICU resources were strained. However, as this was early in the pandemic, many hospitals were well-staffed. Later, the ongoing pandemic began to take its toll and we saw staff members leave healthcare entirely. In Utah, the Delta surge spanned from July to December of 2021, and was only beginning to taper off when Omicron took hold in the United States. Now, while COVID-19 is less of a concern in the United States, we are managing its indirect effects – including the mental health needs and more severe illness after nearly two years of deferred health care.

Reflecting on his experience in World War II, in 1957, Dwight Eisenhower observed, "Plans are useless but planning is everything". In COVID-19, as in wartime, the situations are complex and the best course of action often cannot be determined ahead of time. This is where flexibility is essential – by using the information available in the planning phase to generate and implement a new plan. When the Omicron surge affected Utah, we rapidly had to pivot to creating capacity for acute care rather than ICU. The least damaging option for our patients was to postpone scheduled surgeries. However, as the Omicron surge waned, we were left with hundreds of cases in a backlog. With slim staffing, we were unsure how to address

this. Reflecting on options used across the US through the pandemic, we applied for federal support. In March of 2022, a team of Navy medical personnel arrived to support the University. two largest healthcare systems, Intermountain Healthcare and University of Utah, partnered with Latter-Day Saints Charities for a five-week volunteer initiative that created 5,000,000

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sity. In a few weeks, we were able to complete about 25% of the surgical backlog, or more than 100 additional surgeries, and reduce our ED wait times. Our staff received a much-welcomed reprieve and were able to take their planned days off instead of working extra shifts.

Creativity

Creativity can be defined as the ability to discover novel ideas and solutions to problems (Hennessey and Amabile 2009). During the COVID-19 pandemic, much of what we recognised as the normal state of being was disrupted. In this environment, maintaining a functional high quality healthcare system required new ways of delivering care to keep both staff and patients healthy. University of Utah health implemented telehealth and virtual visits in a number of weeks – where these types of visits had been rarely done pre-pandemic. We developed ways to offer virtual consultation for patients with COVID-19, using iPads for specialists and patients to prevent transmission of SARS-CoV-2. Prior to the COVID-19 pandemic, U Health performed less than 10,000 virtual visits. In 2020 and 2021, over 300,000 virtual visits were completed per year.

Creativity was key in our ability to protect our staff from COVID-19. Early in the pandemic, many hospitals were unable to purchase PPE. Masks, gowns, and Powered Air Purifying Respirators (PAPRs) were in short supply. In 2012, the University of Utah established the Center for Medical Innovation, offering a platform for faculty and students in engineering, healthcare, law and business to partner. The result is an ecosystem that has developed hundreds of new medical devices in its fairly short life span. In early 2020, when health systems were low on PPE, University of Utah Health partnered with colleagues at the Center for Medical Innovation to develop its own PAPRs.

In addition, when masks were difficult to come by, Utah's

masks that were processed, sterilised, and delivered to heath care systems. These masks remain in use throughout Utah.

Conclusion

The COVID-19 pandemic was a life-changing event felt across the world. Suddenly, we had to reimagine how we delivered healthcare. At University of Utah Health, our response to the pandemic was variable over time and necessitated teamwork, flexibility, and creativity. In the more than two years since COVID-19 entered our lives, University of Utah Health has cared for thousands of patients affected by the virus and vaccinated hundreds of patients.

These three attributes were how so many of us survived the pandemic as parents and as physicians. We were placed in situations that were complex and challenging outside of the hospital as well as in it; sometimes working from home while our children were on virtual school. We had to find ways to keep ourselves and our loved ones safe as the pandemic roared around us. In two years, we had five different childcare strategies. No single plan worked on any given day and very few of us were able to live through the pandemic alone. It took teamwork, flexibility, and creativity.

I was recently asked whether I felt ready for another surge, should BA.5 cause an increase in cases and hospitalisations in Utah. In case we see another surge, we are now more experienced than at any point during the pandemic. We have learned how our healthcare systems can and must pivot when things change. My hope is that the teamwork, flexibility, and creativity we used will help us re-invigorate healthcare in the future.

Conflict of Interest

None. ◼

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