COVID-19: The dark side and the sunny side for patient safety

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The COVID-19 crisis has placed an enormous strain on our hospitals and health systems. Caring for the rapidly evolving needs of patients has triggered radical changes in the organization and delivery of services. Some hospitals transformed into huge pulmonary critical care units. Most drastically curtailed the usual elective procedures and preventive care to accommodate the flood of patients requiring intensive care for coronavirus disease.

The terrible consequences of the pandemic are obvious, with millions infected, and hundreds of thousands dead, many of them spending their last days separated from their families and loved ones. The injuries to society may be even deeper, with businesses closed, some permanently, and hundreds of millions out of work. Education and entertainment have been shuttered. Economies have suffered a body blow, as in the US, which in the second quarter of 2020 had the steepest drop in economic output on record. Food and personal protective supplies are imperiled. The health and economic burdens have been borne disproportionately by the poor and vulnerable.

This pandemic has also created new problems with patient safety and health care quality at multiple levels of the system. Examples are missed and delayed diagnoses, caused by clinicians' cognitive biases or patients' reluctance to seek care for urgent problems. Another is medical errors made by inexperienced practitioners. A third is failures in infection prevention and control practices

On the other hand, as suggested in 1959 by then Senator John F. Kennedy in an address to the United Negro College Fund, crises can create important new opportunities.[1] In general, they inspire rapid problem solving and innovation. New talent can emerge and assert itself. Unprecedented levels of cooperation can develop, even among rivals. Barriers are lowered and changes in policy and systems can muscle in. All of these developments can lead to increased resilience for the next event. And there have been early signs that the response to the pandemic has had some benefits for patient safety.

To explore this, we consulted with safety experts on our international editorial board. We asked them to report on the threats to safety and health care quality that they have identified. We also asked them to report on any silver linings they have observed, and to provide advice about the ones most important to preserve.

The dark side

The novelty of the new disease led to uncertainty and chaos in health care systems. The sheer volume of patients strained hospitals, which often lacked enough workers trained to care for critically ill patients with contagious respiratory illness. New processes motivated by the response created new problems. For example, the decision to cohort patients hospitalized with COVID-19, and limit the number of health care workers in contact with them, led to overwork and exhaustion among clinicians. This is likely to have caused errors. Many workers were reassigned to new settings and required to perform unfamiliar tasks with little formal training. Attempts to provide rapid, just-in-time training did not always succeed. The rapidity of changing protocols also threatened implementation. In addition, desperation for effective treatment has led to attempts to treat the virus with empirical and sometimes dubious medication regimens. For example, as COVID patients have been noted to have high rates of venous thromboembolism, rapidly changing recommendations for higher doses of prophylaxis have been suggested based on scant evidence, but may be associated with higher risk of bleeding.

There have been prominent failures in infection prevention and control. Most dramatic have been deficiencies in knowledge and competence on infection control in nursing homes. In too many of these facilities, the virus broke through to infect both patients and workers, due to non-compliance with safe practices and poor surveillance protocols. In hospitals, the physical plant – such as space available for patient care, and worker offices – was insufficient to guarantee physical distancing. Most staff break rooms are too small to

accommodate clinical providers needing respite and a place for a quick meal while observing social distancing recommendations. This pointed out the need to redesign health care facilities to facilitate isolation and to prevent cross-contamination.

Even the proper use of personal protective equipment (PPE) can breed new safety risks. One example was an outbreak of multidrug-resistant bacteria in a COVID-19 ward due to transmission on the gloves of health care workers wearing PPE all the time. Physical barriers like masks, face shields and powered air purifying respirator hoods can interfere with communication between patients, clinicians and others, leading to misdiagnoses or non-adherence. This poses a uniquely important threat for patients with hearing impairment. Similarly, telemedicine can also create new opportunities for ineffective communication.

Delays in care and new types of diagnostic errors are harming patients.[2] Some of these wounds are caused by patients who are unable to obtain care, due to the shutdown of ambulatory clinics or suspension of elective procedures. Others are caused by patients afraid to seek care due to fear of contagion. There have been delays in reporting symptoms while they are still reversible, and preventive screenings for cancer are also falling behind schedule.[3,4] These collateral damages also affect patients with other conditions such as trauma.[5]

Like all laboratory tests, the accuracy and use of COVID testing can lead to delays or misdiagnoses. False negative tests can delay diagnosis and expose others to the risk of infection. An uncommon presentation of symptoms may lead to a test not being performed. False positives can lead to the failure to diagnose another, treatable condition, such as pulmonary embolism. Cognitive bias related to COVID-19 can prevent or delay other diagnoses from being considered.

The demands in time and effort needed to keep up with the new and changing requirements of COVID can compete with other safe practices. For example, redundant checks of infusion pump settings may be foregone in an effort to preserve PPE or to minimize staff exposure to infected patients. Some patients with COVID have reported getting very few visits in their rooms from health care workers. Similarly, many promising and beneficial quality improvement projects have been stalled because of the pandemic. Numerous reports of hospital-wide initiatives such as those for 100% mortality review or to decrease infections below a prevalence of 5% – had to be stopped and will be delayed because of the pandemic work. Quality improvement staff including physicians and nurses at many institutions have been pulled from operational and administrative roles back to the bedside for an "all hands on deck" approach to treating patients, leaving their other effort uncovered.

The pandemic has had an unprecedented psychological impact on health care workers.[6,7] COVID-19 places workers at personal risk for infection, inspires worry about transmitting infection to family members, creates insecurity about unfamiliar work requirements, and causes anguish over difficult decisions and deaths. Disruption of team structure due to changes in work schedules and redeployment deprives workers of their support networks, and depletes their effectiveness. These factors can accelerate burnout and exacerbate existing mental health problems. All of these psychological issues, as well as disturbances in workers' personal lives, can interfere negatively with health care processes and outcomes.[8]

Policies to prevent the spread of the virus have restricted the physical presence of families and loved ones. Severing those connections has threatened recent advances in patient centered care, and the role of families as key partners for safety. To reduce contacts and preserve PPE, an increased portion of care is being delivered outside of the patient's room, which further reduces patients' participation in their own care.

The effect on medical training has been immense. Medical students had their in-person lectures and didactics turned into remote learning, while those on clinical rotations were taken away entirely from seeing patients in the hospital. Trainees in residency and fellowships were redeployed to treat COVID-19 patients, rather than focusing on their specialty training. Others were asked to provide care for general medical patients, to backfill for others who were treating COVID-19 or were out sick or on quarantine. Fellows in one-year subspecialty surgery fellowships have had their experiences slashed with the cessation of elective surgery.

An indirect effect of the pandemic is the financial impact on health care. In the US, hospitals are estimated to have lost $200 billion in revenue as of June 2020, and many risk going out of business.[9] Even among hospitals that survive, this is already causing layoffs, furloughs, and decreased funding for innovation, all of which impact negatively on patient safety.

The sunny side

For an historic moment, health care has been united against the singular enemy of COVID-19. There is a shared commitment to respond—and to flatten the pandemic curve before it flattens us. There has been powerful alignment to a common goal, to develop and implement new solutions and rapidly learn from failures. We have seen the courage and conviction of health care workers to take care of patients. Workers of all kinds have adapted quickly at every level—providers,

hospitals, health systems, and at times governments – producing fresh cross-disciplinary teams.

We have been jolted out of our comfort zones, but at the same time freed from old routines and constraints. The requirement to think more and work with new people has been liberating – think of infection control, supply chain, and psychiatry talking and working together. It is as if after withstanding an initial insult, the institution's 'neural network' has created a myriad of new synapses. People from isolated corners of the hospital now interact on almost a daily basis.

The resulting changes have improved the coordination and quality of care. Some changes were made to systems that had resisted change for decades. Examples have included supply chain working with a local distillery to produce hand sanitizer, US physicians being allowed to deliver care by telemedicine across state lines, psychiatry increasing their capacity to provide timely appointments, and rapid organization of large multisite clinical trials. Connections across hospital borders have also sprung up. Weekly talks have become commonplace among competitor hospitals in a region, as well as with policy bodies.

There is a new willingness by health care workers to accept changes to longstanding clinical habits and routines. Organizations are proving more capable of achieving "high reliability" than we might have imagined. The velocity of learning has accelerated to previously unimaginable levels, with new procedures and policies adopted nearly overnight.[10] This had occurred to a lesser extent 20 year ago, when the smaller international community of HIV practitioners avidly adopted rapidly changing treatment guidelines. Some of the changes have simply been to embrace procedures previously followed with less enthusiasm, like team debriefings. The strangeness and uncertainty around COVID-19 has increased the appetite of clinicians for expertise and guidance. For instance, the leaders of the Johns Hopkins Incident Command used a model on the phases of psychological response to disaster – and the trajectory it predicted for hospital staff – to help organize efforts to support the workforce.[11] The Hopkins Office of Well-being organized training for crisis leadership that has been delivered to hundreds of frontline managers and leaders.

Infection prevention is having a moment. These days everyone seems to do infection prevention and control, and professionals in hospital epidemiology and infection control draw new admiration and respect. They are in daily contact with incident command and top hospital leaders, who are interested in building in infection prevention early, reducing the cost of having to fix things later. The 2020 word of the year may be "PPE." Standard precautions have been upgraded – everyone wears a mask and face shield or goggles when seeing patients. One of our coauthors reports that a one-and-half year outbreak of vancomycin-resistant enterococci has ended in his hospital as a result of decreased transmission.

With telemedicine as the only option for ambulatory care, health information technology-based (IT) solutions have been embraced with open arms.[12] Some IT solutions for infection prevention that were sitting on the shelf for years have now been handed to the rapid response IT group and are being quickly realized. New ideas have cropped up for how to diagnose patients remotely, in their homes.[13]

A high priority has been placed on supporting the safety and well-being of health care workers. It is unsurprising that health workers are demanding protection against the virus. But this demand has been mirrored by an increased willingness to accept help. Physicians and other clinicians have an entrenched resistance to seeking help. However, when everyone around you is worried about contracting COVID-19, anxiety seems the norm rather than a sign of weakness. The current crisis has mitigated that sense of shame associated with getting support. It helps health workers feel okay about being more open and honest about their feelings. The formal offer of psychological first aid and support for trauma is new in most settings, but has been hailed by hospitals for promoting resilience and supporting the pandemic response. In this issue of the Journal, LeCraw and colleagues describe their efforts to support workforce well-being across the state of Georgia in the United States.[14]

Awareness of new problems has led to some new solutions. For example, the anguish caused by the need to isolate patients and restrict family visits has led to the provision of iPads for patients and families to communicate, and family meetings via video conferencing. Limitations in the design of hospital rooms to control infection has led to heroic efforts to renovate hospital units to reduce disease transmission such as high level filtration and negative pressure exhaust systems. The potential for improper use of PPE by health workers inspired a cadre of patient safety officers to monitor and support appropriate infection control measures. The need to rapidly adapt to new patient safety incidents caused by COVID-19 led to the development of a process to harvest the health systems event reporting system for lessons – in close to real time – as described by Kasda and colleagues in this issue.[15]

There are some silver linings with a broader impact on health care. Several of our health systems reported a decrease of workplace violence against health care staff. Fear by patients to go to the hospital because of COVID-19 may help restore primary care to its fundamental role in directing the use of services.

Members of the public can understand how in a pandemic it is important to dedicate limited acute care space to those with the most serious illness. The effective rationing of ambulatory care visits may decrease the overuse of some health services that convey only marginal benefits. This could also accelerate acceptance of delivering more health care in the home, supported by IT based monitoring and treatment, as well as integrated care teams of doctors, nurses, and social workers. Health care workers have newfound respect for their less visible colleagues – such as workers in environmental services, laundry, food service, facilities, security, and patient transport. These workers perform crucial tasks at personal risk, and in so doing have earned greater respect from their professional colleagues, and increased the sense that we are all in this together.

Additional papers in this issue of the journal relate indirectly to the pandemic and its consequences for patient safety. Former British Secretary of State for Health Jeremy Hunt writes that the 2020s should be a decade for patient safety.[16] It is possible that pandemic could help to make this possible. Disaster mental health expert George Everly writes about psychological first aid as a form of acute crisis intervention designed to foster human resilience.[17] In the past 4 months, peer support based on this method has proved useful in over 2000 encounters with health care workers at Johns Hopkins. In her personal essay, communication scientist Annegret Hannawa writes about the dehumanizing consequences of ineffective communication for hospitalized patients.[18] This brings to mind the plight of hospitalized patients during the era of COVID-19, and unintended consequences of well-intentioned visitor restrictions.

Nurturing the new normal

Lungfish must have felt like this when they first ventured out of the marshes and onto dry land.

COVID-19 has given the health care system its first breaths in an unfamiliar and hostile new ecosystem. For the moment, there is a "new normal." That includes trusting evidence and expertise and direction from leaders, as well quickly adopting policies and best practices. Health care workers have lowered the walls of silos and welcomed more collaboration. They have become more humble, more willing to accept help, and more respectful all of their colleagues.

Although reopening has begun, COVID-19 isn't done with us yet. The number of infections continues to rise, and there are rumblings about future surges. Still, is there something on the other side? Something that when we do come out of this, is even better than what we had before?

When we re-emerge from the last of our COVID-19 lockdowns, desirable changes will disappear if we do not take deliberate action. The reassuring daily communications from hospital leaders will recede to monthly if not scheduled. Old habits die hard, and when we return to our accustomed context, those old habits will be reactivated to compete with the recent improvements. The routines that served well during the quarantine are going to be challenged, and many of them will change. As Don Berwick asserted "Fate will not create the new normal – choices will."[10]

What can we do to stay on the sunny side? A place to start is to begin taking note of which new practices have worked, and which have not. Imagine the impact if they continue, and then begin to plan. Policies will need to be established and procedures codified to nurture these fragile new processes. Another period of adapting is about to begin.

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