CORRECTIONAL HEALTH CARE REPORT®

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Nursing Essentials

Managing Stressors During COVID-19

By Catherine M. Knox

The wellbeing and emotional resilience of front-line staff in correctional facilities is a key component in maintaining essential health care and custody services during the COVID-19 virus outbreak. Therefore, we all need to anticipate the stressors associated with this work and put in place institutional supports and individual practices that will help mitigate the adversities, trauma and challenges experienced during this pandemic.

Stressors for Correctional Workers During the Outbreak—These include the demands of normal daily activity in the workplace that compete with measures necessary to identify and manage people potentially infected with COVID-19, fears about the probability and consequences of infection and subsequent implications for self and family, scarcity of supplies- particularly personal protective equipment, constant vigilance regarding infection control practices, physical strain of wearing personal protective equipment, extraordinary efforts to reduce transmission in correctional settings that challenge control of communicable disease and the isolation of social distancing.

Employers should be proactive and encourage initiatives to assist employees experiencing these stressors and prevent fatigue and burnout. Burnout and fatigue are major factors in accidents and avoidable error. Correctional facilities should develop capacity to monitor stress, burnout and fatigue among frontline workers, provide easy access to help with stress reduction, ensure that staff schedules include time for breaks away from the immediate worksite and adequate time off. It is also important to anticipate and plan resources to support employees' families so that employees are not distracted when at work. These might include transportation, assistance with children who are at home, grocery shopping etc.

The following four practices have been identified as ways to support coping of healthcare and other frontline staff during the stress of responding to disasters.

Supportive Work Relationships—Creating and maintaining social support among co-workers has been found to build resilience, increasing the sense of safety, reducing interpersonal tension and staff conflict. Shift report or the team huddle is one way to build and maintain social support for team members. This should include time for each staff to clarify their role for the shift and to confirm reporting lines (especially as staff become sick and are replaced). Use of a buddy system is also recommended. A buddy is someone who has had some of the same experiences and provides support during the shift and off-duty. Examples of behaviors that are supportive of co-workers include:

- being friendly and respectful,
- asking how the co-worker is and paying attention to their answer,

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'We Don't Talk In Terms of Supply Numbers, We Talk In Terms Of Days'

By W. Graham Carlos, M.D.*

Brown paper bags line the windowsill of the COVID-19 intensive care unit at Eskenazi Hospital in downtown Indianapolis. The bags are filled with the N95 masks we're reusing, labeled with the handwritten names of my staff: Patrick, Angela, Brittany. They are mothers, fathers, brothers and sisters.

As of this writing, we are caring for more than double our average number of ICU patients and using more than triple our average number of ventilators. We expect those numbers to keep climbing.

To prevent exposure to coronavirus, we use gowns, gloves, goggles and masks. The N95 mask in particular is critical because it protects front-line hospital staff from aerosols emitted during high-risk procedures, such as placing someone on life support.

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One of my roles as the chief of internal medicine and an intensivist working in the ICU is to teach my staff why we are taking steps that we wouldn't ordinarily take, such as saving their N95 respirator masks in paper bags.

Supplies of protective gear are dwindling. We are worried about the number of ventilators we have available for patients. We don't talk about supplies in terms of numbers anymore; we talk in terms of days. And I need a way to talk to my staff about this that is both truthful and calming.

My team of nurses, physicians and therapists are selflessly serving patients afflicted with a deadly and highly contagious virus. I need words that work.

Communicating decisions like this is difficult, and I know that what I say and how I say it has never been more important. I prepare myself.

Rationing Supplies

"What do we do when we run out?" I am asked frequently, regarding personal protective equipment and ventilators.

Given the effect that SARS-CoV-2 has on the lungs, many patients require mechanical ventilators to infuse enough oxygen into their bodies to keep them alive. These machines use hospital supplies of oxygen and deliver air into the lungs under pressure to open them up.

Ventilators are used all of the time in surgery and critical care, but they are expensive and strictly limited in supply. Ventilator allocation describes a process in which a committee, typically comprised of three people including an intensivist, follow a predetermined algorithm taking into account a patient's age, underlying illness and severity of current illness to determine who should get priority to receive a ventilator when there are none left. The idea is that we would make decisions in advance based on objective data, so we aren't influenced by bias and emotion when tough decisions have to be made.

Hospitals all over the country are preparing their allocation teams (Truog) and documents, and it is terrifying. We are encouraged to see factories ramping up production of ventilators, but we are still worried. Will they be here in time, or will it be too little too late?

On a national level, I serve the American Thoracic Society as chair of the Section on Medical Education. I have been working on documents (Jamil)to rapidly communicate important information to patients and providers, including two Twitter chats. These serve to increase awareness and share vital information to health care systems and providers worldwide. In addition to interviews on local and national news outlets, I am using social media to share the truth about the virus and advocate for communities to keep social distancing to slow the spread of COVID-19.

I am saying, prepare, but don't panic.

Now that the virus is endemic with community spread, we are seeing hospitals fill up. Systems to conserve protective equipment, cohort patients with the virus together and keep hospital staff educated are vital.

We should prepare for the "just in case," in the event that the ventilator supply runs low, by creating allocation teams and electronic medical records that extract data for those teams.

We need to prepare for this to continue. Early estimates considering how the virus acted in China mean we could be looking at surge capacity for hospitals well into April.

We also need to prepare our staffs mentally. Celebrate "wins" when patients get better. Take time to reflect on all that is good.

I look at the brown paper bags lined up next to each other as a symbol of solidarity in mission and purpose. We are all in it together. We have never needed each other more.

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How Does The Coronavirus Test Work? 5 Questions Answered

By Maureen Ferran*

The U.S. government is fighting to contain and slow down the spread of the coronavirus. Testing is central to these efforts. Molecular biologist and viral researcher Maureen Ferran answers some basic questions about how these diagnostic tests work—and if there are enough to go around.

Who Gets Tested for the Virus?

Currently there are two main reasons someone would be tested for the coronavirus: having symptoms or exposure to an infected person.

The main symptoms of COVID-19, the disease caused by the coronavirus SARS-CoV-2, are fever, dry cough and shortness of breath (CDC). These look a lot like the flu and the common cold, so it takes a physician to determine if testing for the virus is necessary.

Initially, the Centers for Disease Control and Prevention recommended testing only people with symptoms and who had potentially been exposed to the virus. But to the surprise of public health officials, several of the first people in the U.S. who tested positive for the virus had no obvious exposure. This development suggested that the virus was being transmitted locally, meaning it was spreading from person to person easily and/or that people may have been transmitting the virus without experiencing serious symptoms.

In response, on March 4 the CDC changed its recommendations to allow anyone with COVID-19-like symptoms to be tested (CDC2) as long as a doctor approved the request. Since the number of available tests is limited, the CDC is encouraging physicians to minimize unnecessary testing and consider a patient's exposure risks (CDC2) before ordering tests.

As of writing this, there are no specific treatments available for COVID-19, but that does not mean testing is pointless. Perhaps most importantly, testing is done so that infected patients can be quarantined and the spread of the virus slowed. Another benefit of testing is that it lets public health workers build a more accurate picture of the number of cases (Trotochaud) and how the virus is spreading in the population.

What It is Like to Get Tested?

For a patient, the process of being tested for the virus is easy and can potentially be done almost anywhere. It typically involves taking a swab from deep in a patient's nasal cavity to collect cells from the back of the nose (CDC3). The sample is then sent to a lab, where it will be tested to determine if the patient's cells are infected with the virus. The same process is used to collect a sample from a patient who is tested for flu (Lab).

How Does the Test Work?

While collecting a sample is easy, actually determining whether a person is infected with the coronavirus is much more complicated. The current method looks for the virus's genetic material (RNA) in a patient's cells.

In order to detect the presence of RNA in the patient's sample, labs perform a test called reverse-transcription polymerase chain reaction (Geggel). This method first converts any viral RNA to DNA. Then the DNA is replicated millions of times until there are enough copies to detect using a specialized piece of equipment called a quantitative PCR instrument.

If genetic material from the virus is found in the sample, then the patient is infected with the virus.

It takes 24-72 hours to get the results of a test (Nogrady). During the early ramp-up of testing, there were some concerns about the test's accuracy (Gallagher) after one study found 3% of tests in China came back negative when the samples were actually positive. But this type of genetic test is generally very accurate—more so even than rapid flu tests (Saey)—and the benefits of testing outweigh the risk of an error.

Does the US Have Enough Tests?

The availability of tests has been a big issue. Prior to Feb. 29, the CDC was the only place approved by the FDA to develop, produce and process tests. However, as the number of suspected cases climbed and doctors approved more people for testing, demand to be tested soared.

The test for the coronavirus requires a kit, specialized equipment and specially trained personnel (Geggel). Faulty and slow development of test kits and the initial requirement that all tests be processed at the CDC contributed to the slow rollout across the U.S.

As pressure on the federal government to make tests available increased, the FDA announced a new policy on Feb. 29 that made it easier for commercial and academic laboratories to develop their own tests and allowed other certified labs to test patient samples.

Integrated DNA Technologies, a CDC contractor, shipped 700,000 tests to commercial, academic and health care laboratories on March 6. Quest Diagnostics and LabCorp, two large commercial test manufacturers, started making their own test kits, which became available on March 9. Many companies, hospitals and other institutions are now racing to develop more tests to diagnose COVID-19 (Loftus).

On March 10, Alex Azar, secretary of Health and Human Services, announced that 2.1 million testing kits are now available and more than 1 million have shipped to certified labs for testing. Millions more are expected to ship out this week (Firth).

Does Everyone Really Need to be Tested?

Realistically, it isn't feasible to test everyone who is sick in the U.S. Therefore, most health officials believe it is important to prioritize the testing (Rabin) of people who need it the most: those at high risk such as health care workers who have been in contact with COVID-19 patients; symptomatic people in areas with high infection rates; and people 65 years of age and older with chronic health issues, such as heart disease, lung disease or diabetes.

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As more tests become available, it will be possible to test more people.

There's also a need to develop faster tests that do not require special equipment and personnel. Testing allows experts to better understand how the outbreak is progressing and try to predict the impact the virus will have on society.

As with all outbreaks, this pandemic will end. In the meantime, however, people need to wash their hands and try to minimize their risk of exposure. There is much to be learned about this novel coronavirus. Only time will tell if it disappears from the human population, as SARS did in 2004, or becomes a seasonal disease like flu (Hamblin).

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- acknowledging a job well done by a co-worker,
- looking for ways to assist a co-worker as time allows,
- thanking a co-worker for their assistance, and
- being compassionate with a co-worker's experiences.

Self-Care–Being healthy is a basic tenet of resilience. Both healthcare and correctional workers are well known to neglect themselves. This makes us vulnerable to burnout and fatigue. Facility commanders, the facility health authority, chief medical officers, mental health directors and others in leadership positions should model self-care, promote this with staff and schedule employees so they have time to care for themselves. Healthy habits and lifestyle behaviors include those that attend to physical, psychological, spiritual and social needs. Healthy habits and lifestyle behaviors include:

- maintaining balance between work and home life,
- mindfully transitioning to and from work,
- taking breaks to disconnect from the front line,
- prioritizing free time to be with significant others,
- engaging in pleasant activity-having fun,
- regulating negative emotions (emotional intelligence),
- establishing a regular and healthy sleep schedule.

Confidence and Self Efficacy—These behaviors build competence handling complex or challenging circumstances at work. All facilities should have a disaster plan that anticipates the types of internal and external disasters most likely to be experienced. These plans include input from all areas of the facility, including the health care program. The plan anticipates all the things that are likely to happen and what the facility will do to address the problem. The more comprehensive the plan is, the better it's guidance during an actual disaster, such as COVID-19. In addition to the plan, facilities should conduct a drill at least annually; this allows staff to practice their roles and responsibilities under various scenarios. When staff have learned their role and responsibilities, they are more confident and effective in a disaster. Disaster planning should also include exercises for individual employee preparedness such as a developing a family communication plan and preparation of personal disaster or "go" bags. Confidence and self-efficacy should be modeled by leadership and includes:

- completing tasks even those that are difficult,
- motivating oneself and others to persevere in the face of adversity,
- rehearsing and repeating training so that it becomes more automatic and built in,
- being flexible, open and adaptive to change, and
- being ethical and acting with integrity.

Logical Problem Solving—What we think, changes the way we feel, which changes our behavior. Thinking logically about situations means considering more than one possible cause and weighing possible responses before choosing

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Coronavirus: A New Type of Vaccine Using RNA Could Help Defeat COVID-19

By Sanjay Mishra and Robert Carnahan*

A century ago, on July 26, 1916, a viral disease swept (CPP) through New York. Within 24 hours, new cases of polio increased by more than 68%. The outbreak killed more than 2,000 people in New York City alone. Across the United States, polio took the lives of about 6,000 people in 1916, leaving thousands more paralyzed.

Although scientists had already identified the polio virus, it took 50 more years to develop a vaccine. That vaccine eradicated polio in the U.S. (CDC) in less than a decade. Vaccines are one of the most effective modern disease-fighting tools (CDC2).

As of this writing, the fast-spreading COVID-19 has already infected more than one and a half million worldwide, and has killed over 90,000 patients (CSSE). There is an urgent need for a vaccine to prevent it from infecting and killing millions more. But traditional vaccine development takes, on average, 16 years (Tahamtan).

So how can scientists quickly develop a vaccine for SARS-CoV-2?

As immunologists, we are trying to expedite development of vaccines and antibody therapeutics. We're currently developing novel vaccine candidates for Zika, and have successfully developed a potential protective antibody-based treatment—in 90 days—to stop that viral disease (Snyder). Fast-track "sprints" like these are part of the Pandemic Protection Platform Program (Jenkins) run by the Defense Advanced Research Agency of the U.S. Department of Defense to help us identify and deploy protective antibody treatments against viral outbreaks, such as SARS-CoV-2. Now other colleagues of ours are working on expediting a new type of vaccine for COVID-19.

A Primer on Vaccines

A vaccine trains the body's immune system to recognize some signature viral protein called an antigen. SARS-CoV-2, like other coronaviruses, is named for the crown-like spikes on its surface. There are three proteins on the surface of these viruses (Du): the envelope, membrane and spike, which encapsulate a strand of RNA. This RNA molecule holds the genetic instructions that make up the virus.

But viruses do not make their own components. Instead, a coronovirus enters into the lung and possibly other respiratory track cells by attaching through to them via its spike protein (Hoffman). Once inside, the viral RNA becomes part of the host cell's protein production machinery, and produces new copies of viral proteins and RNA which then assemble into thousands of new viruses to spread the disease (Corum).

So one way to stop a disease is to block the virus from entering the cells. Vaccines do that by training the body to identify and attack the virus before it can infect healthy human cells.

A vaccine is essentially a pure preparation of one or more key components of the virus—such as the envelope, spike or a membrane protein—that is injected in the body to give the immune system a preview of the virus without causing disease. This preview tells the immune system to seek out and attack the virus containing those specific proteins if the real virus ever shows up.

However, developing vaccines based on viral proteins takes anywhere from years, such as for the human papilloma virus, to several decades (Rauch), such as for rotavirus. Protein-based vaccines require mass production of viral proteins in facilities which can guarantee their purity. Growing the viruses and purifying the proteins at medically acceptable pharmaceutical scales can take years. In fact, for some of recent epidemics, such as AIDS, Zika and Ebola, to date there are no effective vaccines.

How to Make a New Type of Vaccine Quickly

To make an effective vaccine more quickly against never-before-seen, fast-spreading viruses such as SARS-CoV-2, researchers at Vanderbilt and elsewhere are using alternate approaches. In one approach, instead of proteins, a new generation of vaccines, called mRNA vaccines, will carry the molecular instructions to make the protein.

Instead of the standard vaccines where viral proteins are used to immunize, an mRNA vaccine provides a synthetic mRNA of the virus, which the host body then uses to produce the viral proteins itself.

The biggest advantage of the mRNA vaccines is that they can bypass the hassle of producing pure viral proteins, sometimes saving months or years to standardize and ramp up the mass production.

The mRNA vaccines basically mimic the natural infection of the virus, but they contain only a short synthetic version of the viral mRNA which encodes only the antigen protein. Since the mRNA used in vaccination cannot become part of the person's chromosomes, they are safe to use. Such mRNA vaccines would also be safer than the weakened viral or protein-based vaccines because they do not carry the risk of the injected virus becoming active, or a protein contamination.

An mRNA Vaccine for COVID-19 to Undergo Trial

Using this strategy, biotechnology firm Moderna Inc. announced on Feb. 24 that it had rapidly developed an experimental COVID-19 mRNA vaccine called mRNA-1273, ready for clinical trials in humans (NIAID). This vaccine candidate is funded by the Coalition for Epidemic Preparedness Innovations (CEPI), in collaboration with the National Institute of Allergy and Infectious Diseases. The mRNA-1273 encodes for a stable form of the SARS-CoV-2 spike protein.

The idea of using mRNA to ask the human body to read the instructions and manufacture the viral proteins is not new. Researchers (Wolfe) almost two decades ago demonstrated that externally supplied mRNA is translated into the encoded protein. However, mRNA is not a very stable molecule, which prevented those mRNA vaccines from becoming a reality. The

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mRNA-1273 vaccine being developed today uses chemical modifications to stabilize the mRNA and packages it into an injectable form using liquid nano particles.

RNA-Based Antibodies

Besides using mRNA as a vaccine, scientists are also using mRNA as a drug that can be given intravenously. In this case the mRNA encodes an antibody protein that is known to attack the virus. So instead of giving the patient a delivery of protein antibodies, physicians could instead give them the mRNA infusion for instructions to make their own copies of disease-fighting antibody proteins.

Effective antibodies can be quickly identified (Setliff) by screening the survivors of a disease. But producing such antibodies for therapy often faces hurdles of poor yields, inefficient purification and incorrect protein modifications.

The effectiveness of such strategy has already been demonstrated by James Crowe's team here at Vanderbilt. In animal studies, an antibody previously isolated from a survivor of Chikungunya, an emergent, mosquito-borne tropical viral infection that causes chronic and debilitating joint pain and arthritis was encoded as an mRNA (Kose) and given to mice. The mRNA encoded antibody protected mice against infection and virus-associated arthritis, and also created protective antibodies in macaques. The mRNA based antibody is now undergoing clinical trials.

Similarly, specific antibodies against SARS-CoV-2 are being isolated (Snyder2) from COVID-19 survivors. The genetic instructions for the most effective anti-coronavirus antibodies can be encoded as mRNA. These mRNA encoded antibodies can be used to treat patients needing urgent care.

While there are several promising new approaches, all of these are still experimental. Our best protection against COVID-19 currently remains prevention and containment of the disease. Until we have a good vaccine against SARS-CoV-2, social distancing and vigilance is our best weapon.

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system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country." Then, in 1997, in concurring in a landmark aid in dying decision, Supreme Court Justice Souter said it was "highly desirable" for state legislatures to experiment in this area and, prophetically, experimentation would be "attempted in some of the States." It is believed that states' varied laws have an added benefit of allowing a mobile population to move from one state to another with different approaches.

Of course prisoners are not mobile, and underlying many court decisions is a recognition that, "because incarceration status strips the individual's right to move freely and to live in certain jurisdictions that are amenable to his views of morality, healthcare, and more, then the prison has an obligation to provide for the individual what he cannot provide for himself." Although opinions on aid in dying vary, it appears that the public has become more accepting. Thus, it may not be long before a court acknowledges that "terminally ill incarcerated individuals are not afforded the same compassion, nor the same opportunities to end-of-life care" and decides that the status quo "is a violation of the Constitution's prohibition on cruel and unusual punishment because it is unnecessarily punitive and exacerbates the pain of individuals already suffering." ■

Telehealth

IDSA Urges Greater Use of Telehealth

Infectious Diseases Society of America Position Statement on Telehealth and Telemedicine as Applied to the Practice of Infectious Diseases

By Jeremy D. Young, Rima Abdel-Massih, Thomas Herchline, Lewis McCurdy, Kay J. Moyer, John D. Scott, Brian R. Wood, and Javeed Siddiqui, 68 *Clinical Infectious Diseases* 1437 (2019).

Reviewed by Margaret Moreland

The goal of the Infectious Diseases Society of America (IDSA) in developing this position statement was "to educate its membership on the use of telemedicine and telehealth technologies." The organization "supports the appropriate and evidence-based use of telehealth technologies to provide up-to-date, timely, cost-effective subspecialty care to resource-limited populations." The authors of this paper are all active in the field. Dr. Young is Assistant Professor of Clinical Medicine, Division of Infectious Diseases, Immunology & International Medicine, at the University of Illinois at Chicago; Dr. Abdel-Massih is Director of Telemedicine, Division of Infectious Diseases, Department of Medicine, at the University of Pittsburgh; Dr. Herchline is Professor of Internal Medicine, Boonshoft School of Medicine at Wright State University, Dayton; Drs. McCurdy and Wood are associated with the Division of Infectious Diseases at Atrium Health, Charlotte NC; Dr. Wood is also associated with the Department of Medicine and Division of Allergy and Infectious Diseases, University of Washington, Seattle; Moyer is Program Officer, Clinical Affairs Committee of IDSA; Dr. Scott is Associate Professor of Allergy and Infectious Diseases and Medical Director for Telemedicine, University of Washington, Seattle; and Dr. Siddiqui is Co-Founder and Chief Medical Officer of TeleMed2U.

They begin by defining telehealth and telemedicine, remote monitoring and mobile health (mHealth), originating versus distant sites, and synchronous and asynchronous telemedicine. A graphic telehealth toolkit illustrates considerations in designing and implementing a telehealth program.

It is widely accepted that telemedicine can increase access to care, boost patient satisfaction, improve outcomes, and reduce costs. The authors present brief explanations of how it has been used in relation to specific conditions and circumstances. For HIV patients, studies have shown improved adherence to antiretroviral therapy and better outcomes when care is provided by experienced clinicians with formal training in HIV management. Their use of synchronous telemedicine in a large prison system was further shown to improve adherence and virologic suppression and raise CD4+ T-cell counts. In treating TB, use of electronic directly observed treatment (eDOT) has reduced the time and travel required for in-person DOT. Synchronous programs provide real-time assessment of symptoms, allowing for more immediate responses to patient questions. In 2017, 42% of tuberculosis programs were already using eDOT and another 36% planned to implement it within a year.

Telemedicine can increase access to care, boost patient satisfaction, improve outcomes, reduce costs, and support EBPs such as antimicrobial stewardship programs and outpatient parenteral antibiotic therapy.

Antimicrobial Stewardship Programs (ASPs) are systematic efforts toward evidence-based prescribing of antimicrobials in order to stem antibiotic overuse and resulting antimicrobial resistance. Telehealth can be useful in conducting ASP-related activities with community hospitals so they may participate despite limited resources. It can allow the sharing of tools and best practices, case consultation, review of antimicrobial use, review of patients' electronic health records, and access to educational programs.

Outpatient parenteral antibiotic therapy (OPAT) is a generally cost-effective alternative to prolonged hospitalization for patients requiring intravenous antimicrobials. Practice guidelines stress the need for ongoing patient communication and ascertaining their ability to get to appointments and emergency services. Follow-up visits with infectious diseases (ID) physicians within 2 weeks of hospital discharge is recommended because of an established association with reduced readmission rates. Telemedicine can be used to conduct virtual home visits (tele-OPAT) with interactive communication, reducing travel time for patients and costs for both patients and providers, improving outcomes, reducing no-shows, and improving patient satisfaction. Telemedicine can be crucial in low-income areas, eliminating travel and monetary barriers to care. It should also be attractive to providers because of its association with fewer clinic visits and hospital readmissions. Nevertheless, adoption of tele-OPAT has been limited and larger studies are needed to demonstrate its cost savings and outcome improvements.

Telehealth is also an effective tool in infection prevention and control (IPC) and the IDSA encourages its use in IPC programs lacking specialists. Infections are a leading cause of morbidity and mortality in the U.S. and, every year, an estimated 1 to 3 million persons in long-term care facilities contract healthcare-related infections. IPC specialists, usually present in acute care settings, are seldom available to develop and manage IPC programs in community hospitals and long-term care facilities. Telehealth can connect IPC specialists, ID physicians, and other experts with local providers, providing them with assistance in policy development, infection recognition and surveillance, investigation of outbreaks, and antibiotic use

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A Small Trial Finds that Hydroxychloroquine Is Not Effective for Treating Coronavirus

By Katherine Seley-Radtke*

On March 29 the Food and Drug Administration approved the use of two antimalarial drugs, hydroxychloroquine and a related medication, chloroquine, for emergency use to treat COVID-19 (HHS). The drugs were touted by President Trump as a "game changer" for COVID-19.

However, a study just published (Molina) in a French medical journal provides new evidence that hydroxychloroquine does not appear to help the immune system clear the coronavirus from the body. The study comes on the heels of two others—one in France and one in China (Grady)—that reported some benefits in the combination of hydroxychloroquine and azithromycin for COVID-19 patients who didn't have severe symptoms of the virus.

I am a medicinal chemist who has specialized in discovery and development of antiviral drugs for the past 30 years, and I have been actively working on coronaviruses for the past seven. I am among a number of researchers who are concerned that this drug has been given too much of a high priority before there is enough evidence to show it is indeed effective.

There are already other clinical studies that showed it is not effective against COVID-19 as well as several other viruses. And, more importantly, it can have dangerous side effects, as well as giving people false hope. The latter has led to widespread shortages of hydroxychloroquine for patients who need it to treat malaria, lupus and rheumatoid arthritis, the indications for which it was originally approved.

The idea that the combination of hydroxychloroquine with an antibiotic drug, azithromycin, was effective against COVID-19 gained more attention after a study published on March 17. This study described a trial of 80 patients carried out by Philippe Gautret in Marseille, France. Although some of their results appeared to be encouraging, it should also be noted that most of their patients only had mild symptoms. Furthermore, 85% of the patients didn't even have a fever – one of the major telltale symptoms of the virus, thus suggesting that these patients likely would have naturally cleared the virus without any intervention.

In another study, posted on medRxiv, which has not yet been peer-reviewed, Chinese scientists from Renmin Hospital of Wuhan University, in Wuhan, China, gave hydroxychloroquine to patients with only mild infections who were free of medical issues, similar to the Gautret study. The results showed that the 31 patients who received the drug showed a lessening of their symptoms 24 hours earlier than patients in the control group. In addition, pneumonia symptoms improved in 25 of the 31 patients versus 17 of 31 in the control group. As noted in several of the comments associated with the manuscript, there are issues related to the translation of the paper, thus clouding interpretations of some of the results. The paper also appears to focus more on pneumonia than COVID-19. However, these issues may be cleared up or addressed once the paper finishes the peer-review process.

But two other studies have conflicting results.

A second French group, led by Jean-Michel Molina, has now tested the hydroxychloroquine-azithromycin combination treatment in 11 patients at the Hôpital Saint-Louis in Paris, France, and their results were strikingly different (Molina).

Like the Marseille study, the Molina trial was also a small pilot study. Molina and colleagues used the same dosing regimen as Gautret. In contrast, however, to the Gautret study, eight of the 11 patients had underlying health conditions, and 10 of 11 had fevers and were quite ill at the time the dosing began.

These Paris researchers found that after five to six days of treatment with hydroxychloroquine (600 mg per day for 10 days) and azithromycin (500 mg on day 1 and 250 mg on days 2 to 5), eight of the 10 patients still tested positive for COVID-19. Of these 10 patients, one patient died, two were transferred to the ICU and another had to be removed from the treatment due to serious complications.

In addition, a similar study in China (Chen) also showed no difference in viral clearance after seven days either with or without the hydroxychloroquine with the patients in the trial. This supports Molina's findings.

Thus, despite the recent approval of this drug for use against COVID-19, questions remain as to the efficacy of this treatment. As Molina and colleagues note: "Ongoing randomized clinical trials with hydroxychloroquine should provide a definitive answer regarding the alleged efficacy of this combination and will assess its safety."

*Katherine Seley-Radtke is Professor of Chemistry and Biochemistry and President-Elect of the International Society for Antiviral Research, University of Maryland, Baltimore County.

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Infection Control Case Study

Learning from Past Infectious Outbreaks

Influenza Outbreaks at Two Correctional Facilities—Maine, March 2011

61 *Morbidity and Mortality Weekly Report* 229 (2012)

Reviewed by Margaret Moreland

Although this report was written some years ago, the description of how these influenza outbreaks were handled might shed some light on what is occurring presently. On a single day in 2011, the Maine Center for Disease Control and Prevention (Maine CDC) learned of two possible cases of influenza. A 55-year-old male inmate in facility A, with history of diabetes, congestive heart failure, and chronic obstructive pulmonary disease, had been admitted to its intensive-care unit with acute respiratory illness. He tested positive for influenza A but negative for pneumonia. Maine's medical examiner notified Maine CDC of the death of a second patient, a 29-year-old previously healthy male inmate in facility B with rapidly progressive respiratory symptoms. Testing and an autopsy revealed he was suffering from influenza B and methicillin-resistant Staphylococcus aureus pneumonia. Neither patient had received a flu vaccine. The following day, the health services provider at both prisons, Correctional Medical Services (CMS), notified Maine CDC that more inmates and staff members at the two facilities were believed to have influenza. More troubling was the fact that vaccination of inmates was very low (<10%) and was also thought to be low for staff members.

Facility A, a medium to maximum security prison, housed up to 916 inmates and employed up to 410 staff members. It was divided into three units with up to six pods per unit. Each pod housed up to 112 inmates in single or double cells. Facility B, a minimum security prison, housed up to 222 inmates and employed up to 65 staff members. It was divided into two units. The facilities were about six miles apart but under the same organizational structure. Staff members might work at either facility but work hours were not documented by site.

CMS, Maine's Department of Corrections (DOC), and Maine CDC began an epidemiologic investigation to gather more information, initiate case finding, and implement control measures. This included "emphasizing respiratory hygiene and cough etiquette, closing both facilities to new admissions and transfers, and offering vaccination and antiviral drugs to inmates and staff." This report contains details of the public health response, emphasizing the importance of the collaboration between public health and corrections officials in quickly identifying and mitigating disease in environments where influenza can spread rapidly through large, concentrated populations.

Within a few days, about 40 inmates from at least six different pods in facility A and several from both units of facility B were ill with respiratory symptoms. CMS did not have the resources to determine the extent of contagion by screening all inmates and staff. Nor was it able to ascertain the degree of contact between non-ill inmates and staff with the original two patients. Neither was solitary so could have interacted with many other inmates while ill. CMS was able to report the high prevalence of comorbid medical conditions among inmates in both facilities. However, the lack of electronic medical records (EMRs) made it too onerous to determine if those in contact with the original two ill inmates had high-risk conditions indicating a need for prophylactic treatment. The lack of EMRs also made it difficult to determine which inmates had been vaccinated during the facilities' annual influenza clinics. Staff members could also take advantage of those clinics but there no workplace records were kept as to who had been vaccinated.

Maine CDC public health nurses (PHNs) assisted CMS in establishing temporary clinics at both facilities in order to identify influenza-like illness (ILI) among inmates and staff. The criteria were fever ≥100.0°F with cough and/or sore throat. Nasopharyngeal swabs from those with symptoms were sent for testing. All inmates and staff were offered vaccinations and antiviral drugs and those with symptoms received treatment doses of oseltamivir. Inmates who were ill were isolated and ill staff members could not return to work until fever-free for 24 hours. Unfortunately, neither facility had sufficient supplies of vaccine and antiviral drugs. Maine CDC and the state stockpile stepped in and supplied what was needed.

In Facility A, CMS and the PHNs screened all 802 inmates within a two-day period. The 2.1% of inmates with ILI symptoms began treatment courses of oseltamivir and 80.8% asymptomatic inmates were given prophylactic courses. The remaining asymptomatic inmates refused antiviral prophylaxis. Nine of the ILI patients, ranging in age from 24 to 57, were tested and six were positive for influenza A. Only one of the nine had been vaccinated previously. CMS and the PHNs also vaccinated 333 inmates in close and medium housing units.

Cases of acute respiratory illness were reported at two correctional facilities on the same day.

CMS and the PHNs screened 184 staff members from facility A and vaccinated 68. The 16 staff members with ILI started treatment courses of oseltamivir and 166 those who were asymptomatic started prophylactic courses. No staff member was tested for influenza.

In Facility B, all 193 inmates were screened by CMS and the PHNs for symptoms. The 2.1% with ILI began treatment courses of oseltamivir and 82.4% asymptomatic inmates began prophylactic courses. The remaining asymptomatic inmates refused antiviral prophylaxis. Two ILI inmates were tested, with one positive for influenza B. It was not known if he had been vaccinated. CMS and the PHNs also vaccinated 88 inmates in Facility B.

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Fifty-one staff members from facility B were screened and 13 were vaccinated. The 9 with ILI started oseltamivir treatment courses and 42 of those who were asymptomatic started prophylactic treatment. The six symptomatic staff members tested for influenza were all negative. Their vaccine status was unknown.

In less than two weeks, no new illnesses were reported and both facilities opened for new admissions and transfers. Antiviral prophylaxis was ended after 10 days, rather than the recommended minimum of 14, and oseltamivir packages containing 10 doses were distributed to inmates to self-administer. CMS determined that repackaging and distributing four more doses would be a major disruption to routine work.

The report recommends that "[c]orrectional facilities should strongly consider implementing the following measures during each influenza season: 1) offering influenza vaccination to all inmates and staff members, 2) conducting education on respiratory etiquette, and 3) providing accessible documentation regarding vaccination status of inmates and staff members.

An Editorial Note to the report notes that "]t]hese outbreaks emphasize the importance of collaboration between public health and correctional officials to overcome the challenges in managing influenza outbreaks in prisons and jails." At the same time, it recognizes that the unique challenges in correctional environments, including high turnover of inmates and staff, makes it difficult to conduct routine disease surveillance and promptly identify infectious diseases. During outbreaks, prisons and jail must also deal with insufficient staff, lack of easily accessible medical records, insufficient amounts of vaccine and antiviral drugs, and a deficit of skilled personnel to administer vaccine and antiviral drugs swiftly. In the Maine outbreak, the collaboration between Maine CDC and Maine DOC meant that they were able to screen and offer vaccination and antiviral drugs to about 1,000 inmates and 200 staff members.

Those who are incarcerated are likely to be poor, undereducated, and/or homeless before entering prison or jail, and often suffering from substance disorders, mental illness, and/or infectious and chronic diseases. Preexisting comorbid conditions and close housing add to the heightened risk of contracting influenza. If an outbreak occurs, the lack of EMRs adds to the difficulty of containment as "[d]etermining which inmates have underlying conditions without EMRs requires a labor-intensive manual review, thereby delaying the provision of vaccine and antiviral drugs." It is also recommended that vaccinations against communicable diseases be provided to both inmates and staff in correctional facilities, and that vaccination status of both be documented.

The ability to call for assistance from other agencies is critical during a disease outbreak, especially if a correctional health provider lacks sufficient staff and resources for an adequate response. These types of relationships should be in place well before any outbreak occurs.

The Editorial note points out that the Correctional Facilities Pandemic Influenza Planning Checklist from the U.S. Department of Health and Human Services recommended routine influenza surveillance, but without any guidance on how to carry it out or suggestions for dealing with an outbreak. Similarly, the CDC's guidance on use of antiviral drugs in institutions contained no specific guidance for correctional facilities. Today, the linked article from the CDC, "Clinical Practice Guidelines by the Infectious Diseases Society of America: 2018 Update on Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenza," from *Clinical infectious Diseases*, https://www.ncbi.nlm.nih.gov/pubmed/30834445, still has provides no particular guidance for correctional environments.

The contributors to this report were: Brian Castonguay, Correctional Medical Services; staff members at Facilities A and B, Maine Dept of Corrections; Megan Kelley, Anne Sites, and Jennifer Gunderman-King, public health nursing staff, Maine Immunization Program, Maine Dept of Health and Human Services; and John Tegeris, Office of the Assistant Secretary for Preparedness and Response/Biomedical Advanced Research and Development Authority, U.S. Department of Health and Human Services. ■

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the one that is most likely to have the effect you are seeking. This way you maintain control and composure in frustrating or disappointing circumstances. Practical ways to practice logical problem solving and self-control include:

- divide complex problems into parts and tackle one component at a time,
- identify people and resources that provide accurate information,
- detach emotionally from challenging situations and avoid over-identification with traumatic events,
- view mistakes as learning opportunities,
- regulate fear and other negative emotions while acting constructively,
- accept that you cannot always be in control.

These four behaviors, supportive workplace relationships, self-care, confidence and self-efficacy, and logical problem solving reduce the effects of stress experienced during a disaster, such as COVID-19, and will mitigate fatigue and burnout. Be mindful of these four practices as you go about your important work protecting lives and remember, managing through COVID-19 is a marathon, not a sprint.

Catherine M. Knox, M.N., R.N., C.C.H.P.-R.N., has more than thirty years of experience in correctional health care. Ms. Knox is a recipient of the "Distinguished Service Award" from the American Correctional Health Services Association as well as the "Bernard Harrison Award of Merit" from the National Commission on Correctional Health Care. She is coeditor of the Essentials of Correctional Nursing, the first text specifically about the practice of correctional nursing, published by Springer and available at http://www.springerpub.com/essentials-of-correctional-nursing.html#.UDqoiNZlQf4. Ms. Knox recently co-authored a short guide for nurses titled Quick Start for Correctional Nurses: Medication Management which is available through Amazon. ■

From the Courts

By Ken Kozlowski

Kentucky Prisons' Hepatitis C Treatment Policies Survive Lawsuit

The Plaintiffs in Woodcock v. Correct Care Solutions, LLC are inmates incarcerated with the Kentucky Department of Corrections. Each of them had been diagnosed with the Hepatitis C virus. The Defendants are various official and nonofficial entities, all sued in their individual capacities, charged with managing the HCV treatment plan for and providing care to inmates. Defendant James Erwin was the former Commissioner of the KDOC, responsible for its operations, policies, and employment. Defendants Rodney Ballard and LaDonna Thompson were former Commissioners of the KDOC. Defendant Doug Crall, M.D., was the Medical Director of the KDOC, responsible for policies, procedures, and employment concerning the inmates' medical care. Defendant Cookie Crews was the Health Services Administrator of the KDOC. Defendant Frederick Kemen, M.D., was responsible for managing the HCV treatment plan for KDOC inmates. Defendant Denise Burkett was the medical director of the KDOC. Defendant Correct Care Solutions, Inc. provided medical services to inmates of the KDOC.

The Plaintiffs believed that they had not been provided constitutionally adequate treatment for their HCV infections. According to their complaint, the Defendants had not employed qualified individuals, did not adequately train those employees, and had not created or enforced necessary policies and procedures to ensure proper care. Plaintiff Brian Woodcock was housed at the Kentucky State Penitentiary. In December 2011, a biopsy indicated the fibrosis in his liver had advanced from Stage 1 to Stage 2. Under Dr. Steven Shedlofsky's standards, he was first told he qualified for antiviral prescription medication. However, Dr. Shedlofsky then left KDOC, and KDOC found that Woodcock did not qualify for medication. Four years later, after his infection further progressed, he began receiving treatment. Plaintiff Ruben Rios Salinas was also housed in KSP and had been denied testing and treatment of his HCV infection. Plaintiff Keath Bramblett, another inmate at KSP, contracted HCV during incarceration. He had been denied both participation in any program working with food and treatment for his condition. Bramblett had been ordered to share razors with other inmates. Plaintiff Jessica Lawrence had been diagnosed with HCV but did not receive any treatment.

The Defendants did not contest the facts surrounding the care the Plaintiffs had received, but disagreed that such care was inadequate. The Plaintiffs sued the Defendants on four separate theories. First, Plaintiffs sued Defendants under §1983 for violations of the Eighth and Fourteenth Amendments to the United States Constitution. Also, the Plaintiffs claimed that the Defendants had violated the Americans with Disabilities Act and the Rehabilitation Act of 1978 for failure to reasonably accommodate their infections. Based on the failure to meet the standard of care, the Plaintiffs also believed that the Defendants had acted with negligence and gross negligence. Finally, the Plaintiffs sued for Intentional Infliction of Emotional Distress. They sought both injunctive relief for care and damages for lack of treatment.

In particular, the Plaintiffs challenged whether the failure of the current Kentucky Department of Corrections policies and protocols to timely provide Direct Acting Antiviral drugs (DAA) to treat all HCV inmates constituted deliberate indifference to their serious medical needs in violation of the Eighth and Fourteenth Amendments, or otherwise constituted negligence or gross negligence. In response, the Defendants contended that the KDOC's HCV treatment policies and protocols were objectively reasonable and the result of subjective medical judgment. The Defendants moved for summary judgment on the Plaintiffs' claims.

In Woodcock v. Correct Care Solutions, LLC, 2020 WL 556391 (E.D.Ky. Feb. 4, 2020), the court granted the Defendants' motion as to the claims under the Rehabilitation Act and American with Disabilities Act and the § 1983 Eighth Amendment claim and remanded the Plaintiffs' remaining state law Negligence and Intentional Infliction of Emotional Distress claims for further consideration by the state court.

The court first stated that the Eighth Amendment required medically adequate care, not "best practices" recommended by professional medical groups, and that the Kentucky corrections officials had not demonstrated deliberate indifference to the inmates' serious medical needs when developing and implementing policies and protocols for treating hepatitis C-infected prisoners with direct acting antiviral drugs.

According to the court, the Department of Corrections' treatment plan, which prioritized DAA treatment based on the severity of an inmate's symptoms, wasn't "so grossly incompetent, inadequate, or excessive" as to violate their Eighth Amendment right to receive adequate medical care. The court then reiterated that under the Eighth Amendment, the government must provide inmates with adequate medical care, but need not provide the best care possible. An inmate's displeasure with the care received, or a desire for different or additional treatment, did not give rise to a constitutional violation.

The inmates had alleged that the department's policy was constitutionally inadequate because it did not comply with guidelines for HCV treatment developed by the American Association for the Study of Liver Disease and the Infectious Disease Society of America.

The AASLD/IDSA guidelines recommended using DAAs to treat every person with chronic HCV, while the department's policy prioritized treatments based on the severity of an inmate's symptoms. The department's policy delayed treatment for some inmates, which could cause life-time damage even in inmates who were later cured, according to the inmates.

The court found that the even the AASLD/IDSA policy recognized that there may be barriers to treating all HCV patients that necessitate a priority system, such as the fact that inmates who began

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DAA treatment while in prison might be released before it was completed.

In looking at the medical treatment received, it was found that the Plaintiffs had not presented any proof that Dr. Kemen nor any of the other medical providers acted with a culpable state of mind equivalent to criminal recklessness. The Defendants showed that Dr. Kemen and other providers had exercised their medical judgment to provide reasonable care for KDOC HCV inmates by updating KDOC policies and treatment protocols for HCV inmates and providing treatment where such resources were limited. Changes in the treatment protocol used by KDOC and the decision of which specific patients should be treated first were all processes that involved reasoned medical judgment.

The KDOC medical staff had carefully monitored and evaluated HCV patients on a consistent basis. According to Dr. Kemen, "When a patient tests positive for the antibody, additional testing is conducted to determine whether the HCV virus is active. After identifying patients with an HCV infection, treatment with direct acting antiviral therapy is prioritized based upon the virus's progressions and the exercise of independent medical judgment." However, the Defendants claimed that prisoners should receive HCV treatment of DAA drugs as soon as possible to remove the HCV infection, no matter what the level infection. The court found that a decision to not administer a certain form of medical treatment did not represent cruel and unusual punishment. Because the record reflected and Plaintiffs had not presented any evidence in opposition, Dr. Kemen, along with the other medical providers had consciously exercised KDOC's HCV treatment policies and protocols and the Court could not conclude that the KDOC medical providers had acted or would act with a culpable state of mind regarding the inmates' HCV treatment.

Comment

The takeaway here is that just because treatment received in prisons has to sometimes be prioritized or is not in lockstep with treatment recommendations of other organizations, the actions do not rise to deliberate indifference or cruel and unusual treatment. We have not seen the last of this case as the Plaintiffs filed an appeal with the United States Court of Appeals for the 6th Circuit on February 13, 2020.

No Immunity for Officer Over Medical Delay

James Adkins's detention at the Morgan County Jail (Tenn.) began on April 28, 2016, when he was sentenced for a probation violation. Starting in early June of that year, Adkins began experiencing minor back pain. In July, that pain intensified to the point where he required medical attention, which he received at a hospital on July 15, 2016. After being examined by medical professionals, Adkins was prescribed medication to be taken four times per day to address the back pain and discharged. Upon his return to the jail, however, Adkins's pain did not subside. He was temporarily transferred to a different jail cell where jail officials might be better able to address the pain before being ultimately returned to his normal cell.

When Adkins returned to his normal cell, his pain intensified, spreading to his stomach and causing him difficulty with moving his legs. Adkins also testified that he spent an entire night unable to sleep as a result of the pain. James Bridges, a fellow inmate, testified that Adkins became unable to walk and was incontinent shortly after returning to his cell on July 17, 2016. Bridges testified that, using the jail's intercom system, he advised an officer of Adkins's condition and stated that Adkins needed to be taken to the hospital. Bridges further testified that the officer responded to this information by saying that Adkins was "faking it" and did not take any additional action to address Adkins's medical condition at that time. When asked to identify the officer to whom he spoke, Bridges testified that he was not positive, but that he believed it might have been an officer named Kyle. Bridges also testified that he informed the same officer of Adkins's condition face-to-face.

When Adkins awoke the following morning, his legs were "completely numb" and he was unable to move them. At that point, a jail officer brought Adkins to the hospital. At the hospital, doctors determined that he was "critically ill" and diagnosed him with a spinal abscess. Adkins was then transferred to a different hospital for acute treatment. Doctors initially predicted that Adkins would never walk again, but after a two-month hospitalization, Adkins was once again ambulatory.

Following the above events, Adkins sued several jail guards, including "Kyle" Schubert, and Morgan County. He asserted claims against the various jail guards under 42 U.S.C. § 1983 for violation of his constitutional rights by exhibiting deliberate indifference to his serious medical needs and asked for attorneys' fees. All defendants moved for summary judgment and requested that the district court grant qualified immunity. The district court granted qualified immunity to all defendants except for Schubert. With regard to Schubert, the district court determined that the record reflected genuine disputes of material fact as to whether Schubert was entitled to qualified immunity. The district court found that the testimony from Bridges detailing his reports of Adkins's condition to an officer named "Kyle" and the officer's response that Adkins was faking his condition created a genuine dispute of material fact as to whether Schubert was entitled to qualified immunity. Schubert appealed.

In Adkins v. Morgan County, Tennessee, 2020 WL 113910 (6th Cir. Jan. 8, 2020), a federal appeals court found that Schubert did not have qualified immunity from the claims that he allegedly caused a delay in medical care for Adkins.

Schubert offered arguments concerning the reliability of Bridges' testimony and criticized the district court's decision to credit that testimony for the purpose of its qualified immunity analysis. The appeals court, however, stated that they were not permitted to engage with any attempts to litigate factual disputes, and had to view the testimony in the light most favorable to Adkins.

The court identified their central inquiry as whether, given the facts viewed in the light most favorable to Adkins, the district court erred in denying Schubert qualified immunity. Qualified immunity is a personal defense that applies to government officials in their individual capacities, which shields the officials "from personal liability for civil damages insofar as their conduct does not violate clearly established

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From the Literature

Worth Reading

By Margaret R. Moreland, JD, MSLS

Financial Barriers and Utilization of Medical Services in Prison: An Examination of Copayments, Personal Assets, and Individual Characteristics

By Brian R. Wyant and Holly M. Harner, 2 *Journal for Evidence-Based Practice in Correctional Health* Article 4 (2018).

Spiraling health care costs for the U.S. correctional system, a result of the increasing size of the inmate population, especially the proportion of aging inmates, is the justification for implementing a mandatory "fee for service" or co-payment system in federal and most state correctional systems. Some studies suggest that this practice reduces inmates' use of medical services without creating substantial monetary returns. The study reported in this article addressed the following specific questions:

- To what extent do inmates view medical co-payments fees as barriers to obtaining medical care?
- What factors are associated with viewing a copayment as prohibitive when seeking medical care?

The authors contend that "[u]nderstanding the complex relationship between mandatory co-payment fees and utilization of correctional healthcare is important, as incarcerated persons have higher rates of pre-incarceration illness than the general population and, due to the nature of confinement, are at greater risk of exposure to infectious disease than their non-incarcerated counterparts." Delaying vital medical care, or choosing to skip it entirely, can cause conditions to worse—adversely affecting both inmate and institution. Furthermore, public health concerns arise because inmates with untreated communicable diseases may infect others in their communities, both inside an institution and outside after release.

After reviewing the existing literature, Wyant and Harner designed a study "broadly related to financial needs and concerns of incarcerated men." Dr. Wyant is an Associate Professor in the Department of Sociology and Criminal Justice at La Salle University, Philadelphia. His current research interests include examination of financial stressors for incarcerated individuals. Dr. Harner is Associate Provost for Faculty and Academic Affairs and an Associate Professor of Public Health at La Salle University. Her research interests include gender-related health disparities with an emphasis on incarcerated women.

Study participants were from a maximum-security prison. Forty-five males volunteered to take part. A questionnaire with about 60 questions was developed with input from several sources including former inmates. Results were confidential and no names or identification numbers were recorded. The questions addressed demographics, financial status, and financial concerns. Whether or not an inmate avoided seeking out health care because of a required copayment was measured by the answer to one question: "Have you ever not gone to medical because you have to pay a co-pay". If "yes," he was then asked "how many times have you not gone to medical in the past 3 months because of the co-pay fee?" The approximately 30-minute interviews were conducted by Dr. Wyant over a two-week period in a semi-private area outside the listening range of staff and other inmates. He read questions aloud and recorded answers by hand.

Do mandatory "fee for service" and co-payment systems reduce inmates' use of medical services?

Participants had a mean age of 39 and the majority were non-white. On a scale of 1 to 10, with 10 for very good health, the average was 8.2 for mental health and 7.3 for physical health. About two-thirds of the participants had prison jobs at the time of the interview, generally working the maximum 30 hours a week earning 19 to 42 cents an hour. Most had some financial support from non-incarcerated friends and family, but amounts placed into their accounts were sporadic and varied greatly.

Analysis of qualitive data showed that 80% of participants said that, because of the copayment, they had not sought medical care at least once during their current incarceration. Seventy-one percent had not sought to meet with a health professional at least once in the 3 months before the interview because of the co-payment. Of those, over 62% said this had occurred more than once.

Data indicated the only evaluated socioeconomic indicator associated with self-initiated health care was education. Those with higher educational levels were less likely to avoid seeking medical care requiring a copayment than those with lower educational levels (some high school or less). In fact, all ten participants without a high school degree or GED said the copayment was a barrier preventing them from seeking medical care. Using binominal regression models to predict the number of times an inmate did not seek medical attention because of a copayment, it was found that only education level was statistically significant. Some variables related to personal assets (e.g. lower account balances) also supported the hypothesis but did not reach conventional levels of statistical significance.

Further analysis indicated that white inmates and those 37 and younger were slightly less likely than their counterparts to avoid seeking medical care because of the copayment. Those incarcerated for 10 years or less were more likely to avoid medical care in the three months prior to their interview than those incarcerated for 11 or more years. Additionally, participants reporting lower self-rated physical and mental health were more likely to say the copayment was a barrier to seeking treatment compared to other participants.

No variable was statistically significant for financial assets. However, participants with account balances of $30 dollars or less were more likely to avoid medical care because of the co-payment.

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The same was true for participants without a prison job or outside financial support, but these results were statistically negligible as were those regarding current possession of tobacco products or having cable TV. Interestingly, the study did find more differences between those reporting recent purchase of personal snacks from the commissary and those reporting they had not. Those with no snacks in their possession during the study stated that the medical fee was a barrier.

Overall, Wyant and Harner the study results indicated that copayments were a financial barrier for many and deterred inmates from seeking medical care, especially those with less education. Because working participants earned only 19 to 42 cents an hour and could generally only work 30 hours a week, the researchers remarked that "it is not surprising that many might find paying five dollars prohibitive."

Outside of the prison context, somewhat related research has shown that individuals with more formal education are healthier. It has been suggested that this may be indirectly linked to better economic conditions, social-psychological resources, and health routines. It also may be that those with more education understand and make use of health-related information more effectively and have a greater trust in medical science.

Acknowledging the small sample size was a limitation and that such studies generally lack statistical power, Wyant and Harner nevertheless expressed confidence that "a number of the associations were in the anticipated direction and deserved further discussion." Participants with 30 dollars or less in their accounts might understandably hesitate to pay a five-dollar copayment, especially since inmates are also charged between five and ten dollars for each prescription. About a third of the sample participants did not even have five dollars in their accounts and were certainly not purchasing snacks or paying for cable TV.

Copayments clearly discourage inmates from seeking medical attention. Thus, Wyant and Harner insist that "policymakers and administrators need to weigh some of the possible negative consequences of reduced treatment such as increased misconduct … disease or illness transmission/outbreak, and related costs compared to potential saving due to reduced usage." Further study is needed on health consequences of imposing copayments. Correctional administrators must find other methods of cost saving, especially since the income from copayments is only modest. In re-thinking copayments, they must take into account the fact that "incarcerated persons who have jobs are earning approximately 20 to 50 dollars a month" and must find "some very small fee [that] could still lower unnecessary use of services without establishing a barrier to those who need the care."

Death with Dignity for the Seemingly Undignified: Denial of Aid in Dying in Prison

By Kathleen Messinger, 109 *Journal of Criminal Law and Criminology* 633 (2019).

This is a comprehensive legal comment on the legal and procedural elements of dealing with individuals' end of life within and outside of correctional institutions. The review does not cover many of the more specialized issues directed at lawyers and law students, including philosophical and religious history related to the aid in dying debate, court treatment of issues such as the withdrawal of medical support outside the prison environment, refusing medical care, force feeding, and aid in dying, and how U.S. Constitutional provisions are or should be applied to these issues. However, the article, written by a 2019 graduate of Northwestern Pritzker School of Law, addresses some major concerns for medical professionals.

The Supreme Court has ruled that neither one state's statute banning assisted suicide nor another state's prohibition against aid in dying violated the due process rights of terminally ill patients. On the other hand, the Court left open the question of whether states could experiment with new protocols and whether they could legislate to permit such practices. Since those decisions, at least seven states and the District of Columbia have enacted laws that, in one way or another, enable terminally ill individuals to have aid in dying.

The situation in prisons has not changed. Even correctional institutions in states that allow aid in dying have prison policies that expressly prohibit inmates with terminal illnesses from accessing the same assistance. If these policies were to change through court action, it would be by means of the Eighth Amendment's prohibition against "cruel and unusual punishment." Interpretation of this phrase and the duty to provide medical care for the incarcerated has changed over the years as it has necessarily "draw[n] its meaning from the evolving standards of decency that mark the progress of a maturing society." The implication is that standards of decency will be shaped by public opinion.

One Pew Research Center study found that support of the idea that "there is a moral right to suicide when a person... [i]s suffering great pain with no hope of improvement" increased from 55% to 62% between 1990 and 2013. Another found that support increased from 45% to 56% between 2013 and 2015. Changing views on patient autonomy and self-determination seem to be behind the changes. In 2013, 49% of those polled by the Pew Research Center agreed that "[b]eing able to talk/communicate" was most important for good quality of life when old, with "[b]eing able to feed oneself," and "[g]etting enjoyment out of life" next in order. Interestingly, "[l]iving without severe, lasting pain" was only fourth. A 2008 study by the Oregon Public Health Division showed that only 5% of individuals in Oregon who died by aid in dying were concerned with pain or experienced physical pain.

Views of those in the medical community vary significantly. The American College of Physicians and the American Medical Association remain opposed to legalization of aid in dying. However, the American Academy of Family Physicians has dropped its opposition and, while nurses are still ethically prohibited from administering medication to aid dying, the American Nurses Association now advises nurses to remain objective when patients are exploring this end-of-life option. Additionally, several state medical societies, including Massachusetts, Maine, Vermont, and California, have rescinded their objections.

The last major section of this paper is "States as Laboratories: Why Aid in Dying Should Be Available to All Prisoners." This is not a new concept. In 1932, Supreme Court Justice Brandeis stated: "It is one of the happy incidents of the federal

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Coronavirus Research Done Too Fast Is Testing Publishing Safeguards, Bad Science Is Getting Through

By Irving Steinberg*

It has been barely a few weeks since the coronavirus was declared a pandemic (WHO). The pace at which the SARS-CoV-2 virus has spread across the globe is jolting, but equally impressive is the speed at which scientists and clinicians have been fighting back (Walker).

I am a pharmacotherapy specialist and have consulted on infectious disease treatments for decades. I am both exhilarated and worried as I watch the unprecedented pace and implementation of medical research currently being done. Speed is, of course, important when a crisis such as COVID-19 is at hand. But speed—in research, the interpretation and the implementation of science—is a risky endeavor.

The faster science is published and implemented, the greater the chances it is unsound. Mix in the panic and stress of the current pandemic and it becomes harder to make sure the right information is communicated and adopted correctly (Vlessides). Finally, governing bodies such as the World Health Organization, politicians and the media act as sources of trustworthy messaging and policy making. Each step—research, interpretation, policy—has safeguards in place to make sure the right information is acquired, interpreted and implemented. But pace and panic are testing these safety measures like never before.

Unprecedented Pace

The process of taking an idea from theory through testing and eventually toward implementation has been refined in modern times to make sure medical studies and publications are truthful and accurate.

Once research is completed, investigators analyze their results and write a manuscript. They then submit it to a journal, where it is reviewed (Shaikh) by experts in that field who assess whether the methods, analysis and conclusions are sound. If the paper is accepted, it is then further edited and published in a journal.

From there, groups like the WHO, medical societies and government agencies evaluate this and other evidence-based information to decide whether to establish new recommendations or change previous ones. It normally takes from several months to more than a year (Editage) to go from submission to publication. But the rush to publish during this pandemic has shortened the time from submission (Kupferschmidt) to online publication to one to two weeks in numerous cases.

There has also been a huge increase in preprint publication—publishing studies online before they are adequately peer-reviewed—and these are a good example of the risk that comes with the rapid release of data.

On March 17, French investigators posted a prepublication clinical paper online (Gautret) touting the successful use of hydroxychloroquine in COVID-19 patients. Despite the media and government attention, the study was described by director of the National Institute of Allergy and Infectious Diseases Anthony Fauci as "anecdotal" (Fauci) due to the poor study design.

On April 3, the International Society of Antimicrobial Chemotherapy, the sponsoring organization of the very journal posting this prepublished article, agreed and stated "….the article does not meet the Society's expected standard," and "Although ISAC recognises it is important to help the scientific community by publishing new data fast, this cannot be at the cost of reducing scientific scrutiny and best practices." (Voss). The debate over the usefulness of hydroxychloroquine (Baker) will likely continue until well-designed trials are completed.

The deliberate steps of scientific investigation, followed by editorial scrutiny, are guardrails. When these are disrupted there is a real risk that policy organizations may make consequential mistakes in spite of good intent.

When Pace Meets With Panic

Nothing better illustrates how trusted institutions can make misinformed recommendations than the recent fiasco over ibuprofen.

The most common early symptom of COVID-19 is fever, and ibuprofen is one of the most widely used drugs in the world to treat fever. In a letter (Fang) published in The Lancet Respiratory Medicine, European researchers raised concerns that ibuprofen use could worsen COVID-19 symptoms. The idea is that since ibuprofen increases the quantity of ACE2 in human cells—the protein that the coronavirus uses to enter lung cells—the virus could infect lung cells more easily if a person was on ibuprofen. This was not a study nor did it present sufficient experimental evidence; it was simply a theoretical concern based on a mechanism.

Three days after the letter was published, the French health minister tweeted a message (Veran) urging people to avoid ibuprofen for coronavirus associated fever based on four "cited" cases (Day) of people getting sicker after taking ibuprofen. These cases were never published in a journal. The French Health Ministry followed this with a broad ban on treating COVID-19 fever with non-steroidal anti-inflammatory drugs like ibuprofen (DGS). The WHO tweeted an essentially similar warning (Moffitt).

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Nothing better illustrates how trusted institutions can make misinformed recommendations than the recent fiasco over ibuprofen.

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The media followed with more case anecdotes, dubiously relating worsening early symptoms with ibuprofen use and referring to the letter as a "study," adding to the confusion and fear.

The Lancet letter also hypothesized that two other drugs commonly used to treat hypertension and diabetes—ACE-inhibitors (ACE-I) and angiotensin receptor blockers (ARBs)—could be problematic in people with COVID-19. However, the mechanism they put forward was incompletely described and neglected that a protein these drugs promote can be helpful in reducing inflammation and tissue damage (Kuster) in the lungs and heart.

The Response

This letter to The Lancet slipped past the safeguards in research and institutional and media interpretation, but one of science's oldest pastimes—definitively calling out the errors of others—reestablished patience and perspective.

Clinicians and scientists pushed back swiftly, supporting the use of ibuprofen in COVID-19 patients. The support was outlined in a published literature review (Russell). In response, the WHO quickly reversed its position on ibuprofen (Science Alert).

There was a similar rapid response to the statements about ARBs. Within days, three prominent cardiology groups, including the American Heart Association, released a joint statement (HFSA) urging practitioners not to discontinue ACE-I and ARBs in their patients.

The risk-benefit ratio is always a clinical factor for the use of any drug in any patient. But the risk must be more than theory for the use of a drug to be discontinued or any major policy change to be implemented.

Some Perspective

As the coronavirus rampages across the U.S., it is incredibly important to know whether commonly used drugs like ibuprofen or ARBs are risky, neutral or of therapeutic potential. There are ways to find out quickly. Researchers can look for correlations between the use of ibuprofen or ARBs and more severe infections or deaths, for example. And standard clinical trials can, should and are being done. There are several studies currently underway testing the effect and risk of ARBs for COVID-19 patients (NIH). But until the science is finished, it is foolish and potentially dangerous (Beck) to flee from tested clinically important drugs.

Scientists and policymakers must take quick steps and avoid missteps. Proper scientific method and conduct of studies, carefully reviewed publications and cogent post-release interpretations are necessary safeguards that ensure the best and safest medicines are prescribed and provided. The pressure and desperation of the moment are forcing researchers and policymakers to be innovative and act quickly, but what is done should stay within the guiding concepts of medical research.

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statutory or constitutional rights of which a reasonable person would have known." The court stated that when they are confronted with an appeal of the denial of qualified immunity, it had to decide two questions in the plaintiff's favor in order to affirm the denial of qualified immunity. First, do the facts, viewed in the light most favorable to the plaintiff, demonstrate that the defendant has violated a constitutional right? Second, was the right in question clearly established at the time of the violation? In this instance, they answered both questions in the affirmative.

The Eighth Amendment of the United States Constitution protects individuals against the infliction of "cruel and unusual punishments." Jail officials violate a post-conviction inmate's Eighth Amendment rights when they unnecessarily and wantonly inflict pain on an inmate by acting with deliberate indifference toward the inmate's serious medical needs. A plaintiff claiming that prison or jail officials have violated the Eighth Amendment by way of deliberate indifference to serious medical needs must satisfy an objective and a subjective component.

To satisfy the objective component of the deliberate indifference standard, a plaintiff must show the existence of a sufficiently serious medical need, meaning that he was incarcerated under conditions posing a substantial risk of serious harm. The testimony from Bridges brings this case within the court's previous holding that a medical need can be sufficiently serious to satisfy the objective component when it was so obvious that even a lay person would recognize the need for medical attention. Based on the testimony that Bridges informed Schubert of Adkins's condition, a jury could find that Schubert was made aware of Adkins's severe back and stomach pain, inability to walk, and incontinence and declined to take action until Adkins awoke completely unable to move his legs.

Turning to the subjective component, Adkins had to show that the defendant both knew of and disregarded a substantial risk to the plaintiff's health. The evidence showed that Schubert was made aware of Adkins's difficulty walking and incontinence prior to Adkins awakening unable to move his legs and responded that he believed Adkins was "faking it."

The facts suggested that Schubert was directly informed of Adkins's medical issues and did not act upon that information to ensure the provision of adequate medical care, and were sufficient to satisfy the subjective component.

Schubert offered several arguments to counter the conclusion that the record viewed in the light most favorable to Adkins could support a finding of a constitutional violation, none of which the court found persuasive. First, Schubert argues that he could not have been deliberately indifferent to Adkins's serious medical need because Adkins was taken to the hospital on July 15, 2016, after complaining of back pain. Adkins was prescribed medication to address his pain, but his condition then worsened after his return to the jail. The court declined to adopt an approach whereby an official's provision of medical care to an inmate in one instance shielded that official from liability when he or she was deliberately indifferent to a later medical need that arose for the inmate. A prior examination by a doctor who had not considered the symptoms Adkins experienced when he returned to the jail did not excuse Schubert from an obligation to act upon reports of new symptoms that indicated the escalation of Adkins's condition.

Second, Schubert argued that because the underlying cause of Adkins's symptoms was a spinal abscess and a lay person would be unable to diagnose such an abscess, his condition was not readily apparent to a lay person. The court stated that they had never held that a lay person must be able to medically diagnose the cause of obvious symptoms for a medical need to be sufficiently obvious for the objective component. To the contrary, the court stated that they had routinely found that the objective component of the deliberate indifference test could be satisfied by record evidence of the symptoms that the plaintiff was experiencing.

Third, Schubert argued that Adkins was at fault for creating his medical need because his intravenous drug use, in Schubert's view, caused the medical condition that Schubert allegedly ignored. Setting aside the lack of evidence supporting that assertion, the court said that it was irrelevant to Adkins's constitutional claim. In assessing qualified immunity, the court was asking only whether Schubert violated a clearly established constitutional right by being deliberately indifferent to Adkins's serious medical condition.

Finally, the court had to answer whether the constitutional violation at issue was of a clearly established right. For a right to be clearly established, it had to be sufficiently clear that a reasonable official would understand that what he was doing violated the right.

The court stated that they had encountered the denial of proper medical treatment to inmates on several occasions, many of which were analogous to this case. As an initial matter, it was clearly established that, generally, a failure to provide necessary medical treatment to those who were incarcerated can constitute a violation of the Eighth Amendment.

Additionally, the court has repeatedly held that an official who knows of, but does not respond to, serious medical needs similar to those exhibited by Adkins violated the Eighth Amendment. Because of the previous holding and the facts that pertained to Adkins' situation, the court found that Adkins' constitutional right to receive adequate medical care given the symptoms he exhibited was clearly established.

The court affirmed the district court's denial of qualified immunity.

Comment

The decision not to grant qualified immunity does not mean that Schubert is going to lose his case at trial, just that everything has been made more difficult for him to win. The evidence does seem stacked against him, however. The battle has already started in the lower court, with Schubert making several motions concerning hospital bills and doctors' testimony that were decided on March 9, 2020. See Adkins v. Morgan County, Tennessee, 2020 WL 1131143 (E.D.Tenn, Mar. 9, 2020). We will keep an eye on this case and report when a decision is handed down. ■

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monitoring. It requires remote access to antibiograms and EMRs, and close communication with local ASP and Pharmacy and Therapeutics committees.

The Project Extension for Community Healthcare Outcomes (ECHO) model has been used to triage and treat patients with chronic, infectious diseases, including hepatitis C and HIV, in facilities with shortages of specialists. It connects non-clinicians with other non-clinicians and clinicians for support, education, and collective problem solving. It may also help expand availability of other services such as ASP, OPAT, and IPC.

Multiple issues still must be considered as the use of telemedicine increases. Licensing, reimbursement, liability, and more vary from state to state. Providers may have to comply with licensing, credentialing, and privileging as if they were providing in-person patient care at the originating site. The IDSA supports the easing of requirements for providers to become licensed in multiple states. The Interstate Medical Licensure Compact already provides expedited physician licensing and those delivering asynchronous care are viewed as consultants and might not need to be credentialed at the originating site. However, more clarity is needed regarding state constraints and practitioners should be aware of the risks of going beyond state lines.

IDSA supports coverage and payment parity for telehealth services provided by subspecialty-trained, board-certified ID physicians meeting HIPAA and other criteria. However, providers must be current on potentially different state procedures for billing patients, billing insurers, and reimbursement through Medicare, Medicaid, contracts and grants. At the time this paper was written only a few states had true payment parity. The authors recommend consulting the following websites for the latest telemedicine reimbursement information: American Telemedicine Association (http://www.americantelemed.org/home); Centers for Medicare & Medicaid Services Telehealth (https://www.cms.gov/Medicare/-General-Information/Telehealth/index.html); Center for Connected Health Policy (https://www.cchpca.org/); and IDSA Information on Telehealth (https://www.idsociety.org/clinical-practice/patientcare/telehealth/).

Attention must also be given to the specifications for vital elements of telemedicine programs, such as: appropriate equipment and technology, quality and timeliness of clinical care, patient confidentiality, patient satisfaction, medical records storage, communication with originating site, sustainable business models, and teaching and research. The authors provide a comprehensive catalog of considerations, as well as HIPAA and FDA requirements. Finally, they caution that providers must be sure that their medical liability insurance policies cover telemedicine prior to delivering such services. The overall position is that "the clinical and ethical standards in medicine must apply, with additional consideration given to emerging issues, such as liability, licensure, reimbursement, and patient satisfaction." ■

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cells called lymphocytes in your system. These cells "remember" viruses they've previously seen and can react quickly to fight them off again. If you are exposed to a virus you have already had, your antibodies will likely stop the virus before it starts causing symptoms. You become immune (Ratajczak). This is the principle behind many vaccines (Janeway).

Unfortunately, immunity isn't perfect. For many viruses, like mumps, immunity can wane over time, leaving you susceptible to the virus in the future (PLOS). This is why you need to get revaccinated—those "booster shots"—occasionally: to prompt your immune system to make more antibodies and memory cells.

Since this coronavirus is so new, scientists still don't know whether people who recover from COVID-19 are immune to future infections of the virus (CDC2). Doctors are finding antibodies in ill and recovered patients, and that indicates the development of immunity (CDC3). But the question remains how long that immunity will last. Other coronaviruses like SARS and MERS produce an immune response (Li) that will protect a person at least for a short time. I would suspect the same is true of SARS-CoV-2, but the research simply hasn't been done yet to say so definitively.

Why Have So Few People Officially Recovered in the US?

This is a dangerous virus, so the Centers for Disease Control and Prevention is being extremely careful when deciding what it means to recover from COVID-19. Both medical and testing criteria must be met before a person is officially declared recovered (CDC4).

Medically, a person must be fever-free without fever-reducing medications for three consecutive days. They must show an improvement in their other symptoms, including reduced coughing and shortness of breath. And it must be at least seven full days since the symptoms began.

In addition to those requirements, the CDC guidelines say that a person must test negative for the coronavirus twice, with the tests taken at least 24 hours apart (Esposito).

Only then, if both the symptom and testing conditions are met, is a person officially considered recovered by the CDC.

This second testing requirement is likely why there were so few official recovered cases in the U.S. until late March. Initially, there was a massive shortage of testing in the U.S. (Thomas). So while many people were certainly recovering over the last few weeks, this could not be officially confirmed. As the country enters the height of the pandemic in the coming weeks, focus is still on testing those who are infected (CDC5), not those who have likely recovered.

To be considered recovered, a person must be fever-free without fever-reducing medications for three consecutive days, show improvement in their other symptoms, including reduced coughing and shortness of breath, and it must be at least seven full days since the symptoms began.

Many more people are being tested now that states and private companies have begun producing and distributing tests. (CDC6). As the number of available tests increases (Balmert) and the pandemic eventually slows in the country, more testing will be available for those who have appeared to recover. As people who have already recovered are tested, the appearance of any new infections will help researchers learn how long immunity can be expected to last (Mostashari).

Once a Person Has Recovered, What Can They Do?

Knowing whether or not people are immune to COVID-19 after they recover is going to determine what individuals, communities and society at large can do going forward. If scientists can show that recovered patients are immune to the coronavirus, then a person who has recovered could in theory help support the health care system (Irfan) by caring for those who are infected.

Once communities pass the peak of the epidemic, the number of new infections will decline, while the number of recovered people will increase (Brennan). As these trends continue, the risk of transmission will fall. Once the risk of transmission has fallen enough, community-level isolation and social distancing orders will begin to relax and businesses will start to reopen. Based on what other countries have gone through, it will be months until the risk of transmission is low in the U.S.

But before any of this can happen, the U.S. and the world need to make it through the peak of this pandemic. Social distancing works to slow the spread of infectious diseases and is working for COVID-19 (CDC7). Many people will need medical help to recover, and social distancing will slow this virus down and give people the best chance to do so.

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CORRECTIONAL HEALTH CARE REPORT
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What Does 'Recovered from Coronavirus' Mean? 4 Questions Answered about How Some Survive and What Happens Next

By Tom Duszynski*

The coronavirus is certainly scary, but despite the constant reporting on total cases and a climbing death toll, the reality is that the vast majority of people who come down with COVID-19 survive it. Just as the number of cases grows, so does another number: those who have recovered.

In mid-March, the number of patients in the U.S. who had officially recovered from the virus was close to zero. That number is now in the tens of thousands (CSSE) and is climbing every day. But recovering from COVID-19 is more complicated than simply feeling better. Recovery involves biology, epidemiology and a little bit of bureaucracy too.

How Does Your Body Fight Off COVID-19?

Once a person is exposed the coronavirus, the body starts producing proteins called antibodies to fight the infection. As these antibodies start to successfully contain the virus (Joseph) and keep it from replicating in the body, symptoms usually begin to lessen and you start to feel better. Eventually, if all goes well, your immune system will completely destroy all of the virus in your system. A person who was infected with and survived a virus with no long-term health effects or disabilities has "recovered."

On average, a person who is infected with SARS-CoV-2 will feel ill for about seven days from the onset of symptoms. Even after symptoms disappear, there still may be small amounts of the virus in a patient's system, and they should stay isolated for an additional three days (CDC) to ensure they have truly recovered and are no longer infectious (Esposito).

What About Immunity?

In general, once you have recovered from a viral infection, your body will keep

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