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Editorial

Cruise Ships, Nursing Homes, and Prisons as COVID-19 Epicenters: A "Wicked Problem" With Breakthrough Solutions?

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I was not surprised that some of the earliest signs of COVID-19 outside of China were outbreaks on cruise ships. Several years ago, during a month on a 500-passenger cruise ship, I learned firsthand how rapidly viral infections can travel through those floating communities. I was the trip physician; the month was December; respiratory virus season had arrived early that year; and we unknowingly welcomed several unwanted guests when our passengers boarded in Nassau. Within 2 weeks, more than half the passengers were actively coughing and the clinic was inundated. On just 1 typical clinic day, I diagnosed 3 cases of Influenza A, 8 patients with viral bronchitis, 1 case of pneumonia, and 3 cases of gastroenteritis. And this was a "small" voyage; more common are passenger lists at least 5 times larger!

News headlines soon shifted from cruise ships to nursing homes. The canary in the coal mine was a 5-star-rated home in Kirkland, WA,[1] whose staff had the misfortune of being blindsided because they had no forewarning that COVID-19 was in the area when a cluster of febrile respiratory infections hit the facility, leading within 2 weeks to 23 deaths.[2] After that, the floodgates opened, such that as of mid-April more than 7000 deaths—a fifth of all US COVID-19 mortality—were linked to skilled nursing facilities.[3] In New York, 72 long-term care facilities had 5 or more deaths each; in New Jersey, almost two-thirds of nursing homes had recorded COVID-19 infections[3]; and in Pennsylvania, 55% of COVID-19 deaths were reported to have been among residents of nursing homes or personal care homes.[4]

Next, we began to hear similar reports from prison complexes. Cook County (Illinois) jail, one of the country's largest, reported that more than 500 inmates and staff tested positive for COVID-19, with inmates constituting two-thirds of the cases and all 3 of the deaths.[5] Closer to my own home, the Neuse Correctional Institution in Goldsboro, NC, a state prison, reported that 259 inmates tested positive for the coronavirus, and that the vast majority were asymptomatic[6]; and practically in my backyard, the federal prison in Butner, NC, reported that 91 inmates had tested positive for the virus, at least 5 of whom died of the infection.[7]

Commonalities Link the 3 Settings

While at first glance cruise ships, prisons, and nursing homes are very different institutions, in fact they share many commonalities. Each is a densely populated congregate setting with cramped housing units that do not lend themselves well to sheltering in place. Each prepares meals in a central kitchen and serves them to large gatherings. Each sponsors activities that bring large groups together on a regular basis. Each has relatively large numbers of staff who have extensive contact with the residents and work under demanding conditions for modest pay. Each has medical resources that compete with other, nonmedical priorities. Each has health care regulations that, while extensive, could not possibly have fully prepared them for COVID-19; instead, in the face of an impending outbreak, rapid, nimble responses were needed, and these have proven hard to initiate and coordinate in all 3 settings. Thus, each setting can be considered high risk for amplifying infectious diseases such as COVID-19, because the conditions that prevent disease dissemination are nearly impossible to achieve.

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Indeed, so daunting are the prospects for avoiding the spread of COVID-19 in these settings that a case can be made for getting as many people out as soon and safely as possible. For the cruise ship industry, the short-term solution was to suspend all operations for 30 days, with a longer furlough likely.[8] The challenge, of course, will be whether and if so when and how operations can be safely resumed.

Reducing the prison population is a more challenging proposition and requires legal action. Nonetheless, many states have acted to reduce bookings and/or to release persons who are older, have chronic disease, or have been jailed for nonviolent crimes.[9,10] In California, noting that older inmates are at particularly high risk if they acquire the infection, a motion was filed to allow older inmates to be released even if they had been incarcerated for violent crimes.[11]

No similar movement has taken place around discharging nursing home residents, despite significant family concerns and some recommendations that families look for alternatives.[12] Instead, most experts, including the US Centers for Disease Control and Prevention (CDC), do not recommend contemplating such moves, because acceptable living arrangements are not readily apparent.[13] A few families have taken independent action, particularly to bring post-acute patients home earlier than anticipated, but this has been infrequent. More common is the opposite situation—hospitals looking to discharge COVID-19 patients to nursing homes for post-acute care, and in response some nursing home units and entire nursing homes devoting themselves to COVID-19 care. These transitions, as well as outbreaks in the nursing homes themselves, place tremendous pressure on the nursing home industry to in short order develop the policies and procedures, provide the requisite staffing, and acquire the protective equipment and testing capacity that are necessary to safely manage COVID-19 patients.

Working on the Front Lines

During my "viral" December as a cruise ship doctor, I had several advantages in comparison to nursing home or prison health care. My population was relatively healthy, educated, and health-conscious; the average age was 52. I had numerous opportunities to provide public health messages about basic hygiene, which were understood and occasionally followed. The crew—largely minorities from the developing world who worked long hours—had minimal turnover and were meticulous in their work. Furthermore, cruise ships that visit US ports are required to follow CDC policy recommendations and have their infection control processes inspected twice annually and the results posted publicly.[14,15] On the ship, I held clinic twice a day; access was on an as-needed basis; and the ship provided nurses to support the medical clinic and conduct a wide variety of prevention and surveillance activities. The clinic's on-site testing included an influenza kit, a complete blood count, and an x-ray machine, so while resources were limited, our diagnoses were immediate, and positive flu cases could be isolated within minutes after presenting to the clinic. On the other hand, the unavailability of many tests and the lack of ready access to referral resources came into sharp focus when, 48 hours away from the next port, a passenger in his 80s presented with incipient sepsis, having spent the previous 72 hours alone in his cabin awaiting spontaneous resolution of what proved to be bacterial pneumonia. Furthermore, even on that short trip I had to deal with outbreaks of acute gastroenteritis and, aware that norovirus can spread like wildfire on cruise ships, struggled to decide whether or not to isolate patients. Still, these issues were minor compared with what I would have experienced had we encountered a more deadly outbreak such as COVID-19.

In contrast, nursing home care is far more challenging. The average patient is in her or his low 80s, has multiple chronic illness and disabilities, needs hand-on care with activities of daily living, and has some degree of cognitive impairment. Post-hospitalization admissions come daily, often bringing with them such subacute problems as delirium, gastrointestinal upset, pressure ulcers, and atelectasis. Shortages and rapid turnover of nursing and personal care staff create care challenges almost daily. Medical care providers are off-site most of the time and have competing responsibilities[16]; in consequence, decisions are often made over the telephone, with nursing staff assuming far more responsibility than they do in other health care settings. Laboratory specimens are collected on site but transported to outside laboratories for processing, resulting in diagnostic delays.

COVID-19 magnifies the challenges of providing medical care in the nursing home. It brings into sharp focus the fact that infection control leadership tends to be assigned to a part-time nurse whose position turns over more than 50% per year,[17] meaning that institutional knowledge and the ability to provide leadership in the face of an infection outbreak is often compromised. And, although many staff members show tremendous loyalty and perseverance in the face of a coronavirus outbreak, a COVID-19 outbreak leads to increased staff absenteeism because of the need for isolation among persons who become ill or from fear of contracting the disease, thereby worsening an already difficult staffing situation.[4] Shortages of personal protective equipment occur rapidly, without a clear avenue to obtain more, and access to testing is limited, with results often not returning for 4 or more days.

Prison medicine is in many ways similar, with the exception that the average patient is younger, has fewer chronic illnesses, and rarely has cognitive impairment. Perhaps even more than nursing homes, prisons have difficulty keeping and retaining physicians and nurses—in my home state of North Carolina, for example, it is the norm to have as many as a quarter of prison health care staff positions unfilled [Dr E. Ashkin, Director, NC Formerly Incarcerated Transition (FIT) Program, personal communication]. Furthermore, as with nursing homes, lack of access to rapid testing is a major problem, with COVID-19 results typically taking 4 or more days to be reported.[18] A World Health Organization guide to preparedness, prevention, and control of COVID-19 in prisons advocates ready access to testing, routine handwashing, hand sanitizer access, physical distancing, availability and use of disposable tissues when coughing or sneezing, admonition to avoid touching the face if hands are not clean, use of masks for any person with respiratory symptoms, environmental cleaning measures capable of killing viruses, restriction of movement when cases present, and use of personal protective equipment for staff attending to persons with suspected COVID-19 disease. Unfortunately, these are no more than a pipe dream in many settings.[19]

Blaming Isn't Helpful

Given the many risks in and limitations of these settings, working in health care at this time has come to be considered a heroic act.[20] Efforts to recognize and support health care workers have ranged from audible displays such as howling, screaming, applauding, and beating pots and pans,[21] to fundraising and volunteer efforts to provide needed personal protective gear and mental health support.[22,23] I can only hope that the public's applause, approbation, and vocal support for hospital staff and emergency medical providers extends all the way to the staff of nursing homes and prisons, where the resources are usually far less available, the workload especially massive, and the remuneration lower.

Unfortunately, a common first reaction from the media, policy makers, and regulators to a COVID-19 tragedy has been to look for someone to blame. A perfect example of such blame was the levying of a $611,000 fine on Life Care Center of Kirkland, WA, for failing to report the outbreak, for giving inadequate care, and for failing to provide 24-hour emergency physician services.[24]

I can understand the regulators' point of view. Nursing homes have been known for years to be an especially hazardous component of the health care system, with high rates of multidrug resistance and multiple problems around infectious disease prevention.[25] Infection control issues have chronically been and continue to be the most common single reason for deficiency citations.[26] To help improve infection control practices, the US Centers for Medicare & Medicaid Services in 2016 released new requirements for long-term care facilities, all components of which were to have been initiated by November 2019.[27] So, levying a punitive fine to a nursing home that had been previously cited for infection control violations would seem a reasonable reaction.

But the COVID-19 pandemic is too unprecedented an event to expect any residential care setting to have been adequately prepared to handle an outbreak. Instead of blaming, a much more helpful approach would be to pull together as rapidly as possible to identify and address the problems and needs, and to support rather than to blame. After all, it appears that COVID-19 is going to be with us for years, and that the current short period of intense scrambling and tight isolation is going to give way to a long, arduous "dance" in which we seek to keep the disease at bay while trying to maximize restitution of our pre–COVID-19 lives and routines.[28]

Can This "Wicked Problem" Lead to Breakthrough Solutions?

In planning and policy, the term "wicked problem" is used to describe issues that are complex, intractable, and open-ended.[29] Solutions to wicked problems are neither easy nor apparent, do not lie within existing decision-making pathways, require imagination and transdisciplinary thinking, call for changes in society, are the best that can be done at the time, and need to be continually re-examined.[30]

The COVID-19 pandemic has exposed a wicked problem for the cruise ship industry, the prison system, and the nursing home industry. Because the pandemic will persist for at least a few more years and, if the virus mutates as does influenza, perhaps permanently, changes in all 3 industries are needed beyond the stopgap measures that are currently being pursued. I don't know enough about the cruise ship industry or the prison system to hazard a guess about which directions the ultimate problem-solving should take. However, by virtue of having worked in post-acute and long-term care for more than 40 years, I feel prepared to highlight a few issues that need priority attention: physical plant limitations, chronic staffing problems, poor infection control, and limited health care capacity. Together they embody the wicked problem of how to best care for older persons who have numerous morbidities and functional limitations, many of whom are near the end of life. Of course, these issues have already been pervasive in the nursing home industry; all that COVID-19 has done is to shine a spotlight on them.

Will the tragedy of COVID-19 for long-term care settings mobilize positive change, through out-of-the-box, interdisciplinary problem solving? Will it lead policy makers to eliminate multiperson rooms, shared bathrooms, and large wards, and possibly large buildings, because they increase infection risk?[31] Will it lead to real solutions to the staffing problems that have existed in long-term care for decades? Will it truly integrate the long-term care, acute care, and primary care systems in a manner that is not only seamless but in which acute care settings no longer receive most of the resources?

Given the societal ageism that has been exposed by the COVID-19 pandemic,[32] and the persistent economic problems that will follow the pandemic for the foreseeable future, I would not bet money on major changes occurring in the long-term care system in the near future. But I would be thrilled to lose that wager.

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