Why Surgeons Don't Want to Operate Right Now

A rising death toll among doctors in Italy provides a warning about the dangers of poor protection and testing.

Therese Raphael • 24 March 2020, 08:00 GMT

Getting into gear.
Source: picture alliance

Last week, the Italian government began publishing a new dataset related to the coronavirus pandemic. It features a list of names, starting with 68-year-old Roberto Stella, president of the Medical Association of Varese, in Lombardy. Stella's name tops a roll call of doctors who've died from Covid-19 since March 11 alone. It had grown to 24 when I checked while writing this column — more than double the reported rate of medical deaths in China.

The numbers confirmed what many doctors in the U.K. have suspected for some weeks: Those on the front lines are most at risk, not simply of catching the virus, but of getting its most severe form. So far, however, the very countries that have been slow to enact measures to suppress transmission in the community also lag behind in understanding and responding to the threat Covid-19 poses to doctors.

The problem for medical professionals is often portrayed as simply one of sourcing extra masks, goggles and plastic gowns — or personal protective equipment (PPE). But this is only part of it. There are three other layers of complication.

First, the issue isn't only PPE shortages, it's that the kind of equipment that's used commonly isn't appropriate for all medical practitioners, such as many surgeons. Second, the absence of adequate testing, including routine checks of patients, increases the chance that doctors will fall ill. And third, it seems that, when exposed, some doctors are at greater risk of being among those who get the most serious form of the disease, like those unfortunate names on the Italian list.

The problem getting the most attention — basic PPE supplies — is in theory the easiest to solve: Simply produce and ship more kit. After health care workers in the U.K. raised the alarm about shortages, U.K. Health Secretary Matt Hancock said Monday that the government was distributing millions of face masks and other protective items, though he acknowledged there have been "challenges" in getting the right equipment to the right hospitals.

While those efforts are welcome, they haven't alleviated the concerns of at least one group: those who perform surgeries. Alister Hart, chair of orthopaedics at University College London and a surgeon at one of Britain's largest orthopaedic hospitals, has been working with colleagues Anna di Laura and Johann Henckel, and Francesco Benazzo, a professor of orthopaedics in Lombardy, to understand the impact of Covid-19 in a surgical setting. Their findings, which have just been submitted to The Lancet medical journal and were explained to me in phone and email conversations, are alarming. If their concerns prove correct and aren't addressed, operating rooms will soon be like "viral labs in a wind tunnel." The result will be long lists of casualties among the medical profession.

Heightened Risks During Surgery

Covid-19 is transmitted primarily through aerosols — that is, particles or droplets in the air that contain the virus. This is one reason that anaesthetists are thought to be particularly at risk of contracting the disease when they intubate a patient for surgery. It's also thought to be why two ear, nose and throat specialists are currently on ventilators in Britain, suspected of contracting the virus through contact with asymptomatic Covid-19 patients.

But Hart says the risk is not limited to those specialists. Nearly all orthopaedic surgery requires power tools, hammers and other implements. Not to get too graphic, but lots of material gets spread around, which could facilitate the virus's transmission. Though blood and gore may not be its favored route, research into airborne transmission (such as SARS and MERS) supports the idea that Covid-19 is an opportunistic invader. Blood donors are now screened for the virus in Wuhan.

To protect the patient, surgical team and himself, Hart wears a surgical hood along with the usual scrubs. It's not the full hazmat get-up as seen in videos of Wuhan's lockdown, but it looks pretty insulating. And yet Hart says this isn't enough to keep the virus out. Aerosols can leave the virus pretty much everywhere — on plastic, metal, cardboard — and they can linger. Researchers have found that the virus can remain for up to several days on some surfaces.

Operating rooms are sterilized environments, but Hart says that's no guarantee against infection. Especially if you consider the fan that sucks in and circulates the air in the operating theater. If a patient happens to have Covid-19, even if they're not showing symptoms, the combination of power tools, high-velocity blood splatter and ventilation systems can produce the viral wind tunnel Hart refers to.

"If the theater has had anyone with the virus in it during the previous 72 hours the airborne aerosol could have landed on some surface," including the ceiling, says Hart. Protecting against that, even with stringent cleaning, is almost impossible. The implication, says Hart, is that "very soon all our operating theaters will be covered in Covid-19. And then you switch on the ventilation and you blow it all over the place."

What makes all this more difficult is that Covid-19 is a stealth virus; it can be transmitted even by those without symptoms — and face masks don't provide sufficient protection. One patient undergoing surgery in Wuhan infected 14 health care workers before a fever was even registered, according to a recent Lancet article. And yet there's no unified hospital protocol for managing the coronavirus within surgical settings. The March 20 National Health Service recommendations for those performing "aerosol generating procedures" on patients who might have Covid-19 come nowhere near what Hart and his colleagues say is needed.

Ricardo Petraco, a consultant cardiologist at Imperial College, is responsible for creating a protocol for how surgeons treating cardiac emergencies protect themselves. The problem, he notes, is that "there is no definition of what full PPE is." What the Chinese call full PPE is really full-body, light plastic protection with goggles and face shields, which means there's very little surface area of the body that can receive aerosol droplets.

Discussions on what's best are active on Twitter and various other platforms. "We are learning from China and teaching other countries that are behind us," he says. Ideally, the U.K. would mimic the heavy-duty protection China put in place. In practice, there are very few hazmat suits like these available. It's also bad in the U.S. Some U.K. doctors expressed alarm at hearing that the Centers for Disease Control and Prevention has advised American doctors that they could use bandanas or scarves as a last resort.

Petraco, who is staying in a hotel since his nine-year-old son developed a fever, agrees that it's the combination of asymptomatic transmission and the fact that the virus survives on surfaces that makes it so dangerous for medical staff. He says that not only are surgeons more likely than others to get hit by an airborne virus, but the "viral load" may be greater too.

It's a point Hart and others made as well. Those who pick the virus up in the community — say, from touching an infected surface and then touching your face — are generally exposed to a lower viral load; the great majority don't get a severe case of the disease. Doctors repeatedly treating Covid-19 patients, however, are exposed to much more of the virus, which triggers a specific type of immune response called cytokine storms, in which the body's own defenses overreact, cause inflammation and wreak havoc in the lungs. This would also apply to aerosol-generating surgical procedures on even asymptomatic patients.

In Search of Leaders

Many surgeons are reluctant to speak out, but they don't like the mounting evidence that they're being exposed to a high-risk environment without proper protection. "We're all talking about it amongst ourselves," says Hart. But without better equipment and tests, he adds, there isn't much they can do. I ask him about reports (and stories I've heard) of doctors and other medical staff threatening to stay away. "I have no problem going to work if it includes as hazmat suit. I don't think any doctor will say no to going to work if they are properly protected."

The need for equipment and tests is obvious. But both require leadership from national health authorities that has been lacking.

In an ideal virus-response world, hospitals would be testing medical staff daily so that their Covid-19 status is clear and those who are transmitters can be isolated. But the availability of tests is still limited, so patients with symptoms are prioritized. A surgeon I spoke to in New York on Sunday, who didn't want to be identified, notes there's also a problem of false negatives with many tests. "The fact is, no one really knows how infectious this is in the setting of surgery. Everything is being figured out on the fly," he says. He notes that the surgeries being performed now are the most desperate cases and can't wait for certainty. He thinks that eventually hospitals will introduce a testing protocol. An antibody test — which can tell if a doctor or patient has had the virus and therefore has theoretically developed a degree of immunity — would be enormously helpful.

Hart says the right model here is the protocol that was adopted for HIV: All patients, unless proven otherwise, are assumed to have it and surgeons take the appropriate precautions. A surgeon who accidentally draws his own blood during surgery is immediately put on anti-virals for HIV and sent off for a period.

Meanwhile, surgeons in the U.S. are operating on Covid-19 positive patients with only basic face masks. That's also been happening in Italy. A surgeon in Bergamo, Italy — who answered my questions via an Italian-speaking colleague — says he has operated on Covid-19 patients and that Italian doctors don't even have the recommended type of mask and are using regular surgical masks instead. He says it's too late for Italy to do extensive doctor testing; most of them have had or will get the virus, and taking them out of circulation would collapse the health system. How many more will die is unclear, but the list has grown quickly since it was first published.

"What's happening in Italy is that they didn't protect the doctors. Now there are fewer doctors." Hart says. "The sad thing about all of this is that it is avoidable through testing and through protection."

— With assistance by Elisa Martinuzzi

(This column was updated to correct the spelling of Ricardo Petraco's name.)

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