Dr. Richard Davey
Behind the Mask
May 13, 2021

Barr: Good afternoon. Today is May 13, 2021. My name is Gabrielle Barr, and I'm the archivist for the Office of NIH history and Stetten Museum, and today I have the pleasure of speaking with Dr. Richard Davey. Dr Davey is the Chief of the Clinical Research Section, which is part of the Laboratory of Immunoregulation at the National Institute of Allergy and Infectious Diseases where he is also the Deputy Clinical Director. Today he will be speaking about some of his responsibilities during COVID. Thank you for being with me.

Davey: Thank you for inviting me.

Barr: My first question is what was your role in implementing COVID-19 research at the NIH Clinical Center during the pandemic, including responsibilities that others may not think about or associate with your position?

Davey: When we first—"we" being the community of infectious disease physicians here at the Clinical Center—when we first heard about the outbreak of this particular coronavirus in China and then the likelihood of spread, we as a group became increasingly concerned that we might soon be seeing cases in the U.S, and of course, if they came to the U.S, then it might affect us here at the Clinical Center as well. So I worked with a group of physicians and administrators here at the Clinical Center including the Hospital Epidemiology Service, including the Clinical Center leadership, including colleagues within the Infectious Disease Group within NIAID and within the Critical Care Medicine Department here at the Clinical Center to develop a strategy for accepting such patients here should we be asked, or it became important for us to see those patients here. That happened starting really at the end of January and obviously continuing into February. Those number of meetings, informal meetings, and then more formal meetings happened with the members of that group to look at our capacity to deal with those patients in the Clinical Center and what changes we would have to make as an institution in order to care for those patients safely and also to keep our other patients safe. As you know, we have a large group of immunocompromised patients here so we had a number of strategy meetings to talk about things that would have to be looked at to be sure that they were optimal, and really that carried into February of that year. We had already in place a high-level patient containment isolation unit called the Special Clinical Studies Unit, which we decided preferentially would be the place we would put such patients initially unless the number of patients became too large for that particular unit—as in fact later became the case. We had a series of those meetings and looked at the capacity.

Barr: You had different contingency plans early on in case this happened or that happened?

Davey: Right. The Special Clinical Studies Unit or SCSU is a seven-bed unit consisting of 3 double rooms and one larger single room. Since we wouldn't ordinarily double up patients with contagious diseases, with 4 rooms that means that we could handle up to 4 patients in the unit at any given time. We realized that if we were to get a larger number, we'd have to put them elsewhere in the hospital and didn't have a comparable isolation unit with all the safeguards in place. So one of the early discussions was how could we turn other units in the hospital into developing that capacity, really working with the engineering group here under ORS under Dan Wheeland and Donna Phillips, for example. We were able to turn some of the other units that were conventional med[ical] surg[ical] units into the isolation units as well.

This all came to, or looked like it might be coming to, a head in the end of February when we heard about the Diamond Princess patients who were on that cruise ship with a large percentage of infected individuals. [There was] some initial discussions amongst the Federal government about where to place those infected patients or exposed passengers once they were brought back to the U.S., and one of the early considerations is whether we should bring them, those individuals, or a portion of them, to the Clinical Center. That sort of ratcheted up our level of concern and level of planning. That did not happen as it turned out because it was much safer for those individuals to be treated on the West Coast where they were entering the country, but we certainly focused our attention on the need to be prepared even in advance of getting such patients here.

Barr: Another one of my questions is did you have to amend any of your guidelines or strategies as the pandemic has persisted and more information has become known about the disease?

Davey: We always took a very conservative approach towards handling patients with COVID-19. We, like other infectious disease groups, were well aware that their primary route of transmission was respiratory with more limited transmission via direct contact, so we knew we had to have in place strategies for respiratory isolation of these patients and very rapid diagnosis and isolation of those patients. One of the early efforts here through the Department of Laboratory Medicine (DLM) in the Clinical Center was to develop the diagnostics to help identify those patients early, and it was a major effort to develop or to optimize the polymerase chain reaction (PCR) test that was becoming more available at that time to have it inhouse and enable us to screen patients, and then later staff, for the possibility of infection with the virus. We had to not only change in some cases the physical outlay of the hospital in order to have a larger isolation unit capacity, but also to develop diagnostics that would allow us to identify quickly individuals that have been exposed and infected with the virus because at that point the epidemic was starting to take hold in the country, and the numbers were increasing steadily on both the West Coast and the East Coast, so we knew we had to have plans in place quickly.

Barr: What was your role in getting some of that testing going?

Davey: This is obviously involving multiple individuals. In terms of the actual testing, it was the role of DLM in the Clinical Center who took the lead in in working with sister agencies like the CDC to get the primers needed to develop the diagnostic PCR assays and make sure that they were sensitive and specific and to do all the validation testing that was required. I give a tremendous amount of credit to the leadership of DLM in the Clinical Center for getting that process underway quickly and actually developing strategies for turning out what would turn out to be a large number of samples that needed to be screened both from patients but also particularly from staff. This is a very large campus where people live in the community. So they were not really concerned so much about transmission of the virus within the workplace because of the safeguards in place but coming from home in the communities. We know that we have a certain critical workforce that has to be able to come into the hospital, so we needed a means of being able to screen those individuals for the possibility of subclinical or asymptomatic infection in order to protect other staff as well as patients. I give DLM, the laboratory group, a lot of credit for working very, very quickly to develop a very fine-tuned high capacity system for doing that.

Once that was set in place, then we in the Clinical Center set up a screening process for staff to come into the actual hospital building, which involved both verbal questioning of individuals about potential exposure risk and then also offering the opportunity to be tested for the presence of the virus through nasal swabs basically on a weekly basis. The same approach was implemented with patients, although our recruitment of patients for other non-Covid-19 diseases dropped dramatically as a result of the need to have a safer environment. That test was also then used to screen potential patients who had to be here for whatever reason because of the acuity of their illness. Those processes were put in place fairly quickly and with, I think, a great deal of forethought and oversight to make sure that they were effective as well as respecting people's rights and not trying to inconvenience people as much as possible.

Barr: Have any of those sort of actions subsided a bit with the vaccine? I am not on campus, and many people listening to this are not on campus, are still at home. Does the staff even after the vaccine still have to be tested routinely?

Davey: Right. Although we didn't appreciate it at the very beginning of the pandemic that there was such a large percentage of transmissions from asymptomatic individuals, we have learned over time of course that is not true, i.e. that transmission can certainly happen from asymptomatic individuals. Once the testing was in place, it was ramped up considerably when we were in the midst of the upswing in cases around the U.S. and in the Maryland area. In the Montgomery County area, we were seeing large numbers of patients hospitalized in the community, of course, which then potentially exposed our staff just by being in those communities. We saw a large amount of testing going on over the course of the past year. I would say that since the vaccine roll-out here in the Clinical Center on campus at the end of last year and continuing through this year, those numbers have dropped off, that is the need for as large a volume of patients and staff coming through for testing. Nonetheless, it is still strongly encouraged for staff to be tested just because of the risk of an asymptomatic transmission. We assume the vaccine is providing a reasonable degree of protection, but we couldn’t say that with full confidence, hence the need to continue to have that testing made available to our staff. Definitely, there had been a drop-off

in the number of those types of exposures. We have had staff exposed and infected who've come into the campus through inadvertent exposure in the community, and we've been able to pick up those infections by this type of test.

Barr: That's really great. What was it like to transport some of the very sick COVID patients who are being studied at the Clinical Center? How were you involved in transporting them? What was that process like getting them to the Clinical Center and accommodating them correctly?

Davey: One of the things about the Clinical Center, for people who don't work here [and] may not realize, is we do not have an emergency department, don't have an ER where patients can present in the midst of their acute illness and be evaluated. That's because we are a research hospital, a referral center, so by definition we pretty much have to rely upon referrals from local hospitals for patients. And certainly at the height of the pandemic locally when local hospitals are being overwhelmed by the numbers of cases, we reached out to see if any of those hospitals could help refer patients who might be candidates for research studies here, and many of them participated in referring patients to us. In turn, it was also providing a service to them by helping decompress their inhouse census of COVID-19 cases.

Typically what would happen is that we would arrange to send our ambulance, our NIH ambulance over to the referring hospital to pick up the patient after orchestrating the transfer with the attending physician at the other institution and, of course, speaking with the patient first to ensure that they were, number one, willing to leave that hospital to participate in a research effort and two, understood that we would do our best to offer standard of care treatment in addition to anything investigational on top of that. Those transfers happened fairly quickly once we had the patient identified. We did our best to communicate with the patient and their family as quickly as possible, speak with the covering or attending physician at the other institution, and get agreement that this is a reasonable and a safe thing to do in terms of the safety of transferring a patient via ambulance to the Clinical Center. Then usually within the same day we brought them over by ambulance.

Initially, we brought them directly into the Special Clinical Studies Unit, but then a couple of things became apparent. Number one, the volume of patients and referrals we were getting was exceeding the capacity of the SCSU to handle them, and number two, we learned quickly, as did unfortunately others, that some of these patients, while seemingly safe and stable at the time of transfer, could rapidly deteriorate in terms of their respiratory status, and so having an ICU level capacity available was very important for these individuals. What we then decided to do was actually turn one wing of the intensive care unit into a negative pressure isolation unit that had larger bed capacity than the Special Clinical Studies Unit, which was actually the home base of the Critical Care Medicine staff who were experienced in handling patients with ongoing respiratory deterioration up to and including the need for mechanical ventilation. What we ended up doing is transitioning from using the Special Clinical Studies Unit as the initial place to evaluate and care for those patients to one of the ICU units that we turned into a negative pressure treatment unit and hospitalized them there. That unit we used is called the Intermediate Care Unit (IMC). The actual ambulance transfers were worked out methodically in advance. We always made sure that their safeguards were in place. We would not, for example, transfer

someone by ambulance who we felt was in the midst of severe respiratory deterioration because we didn't think it was safe. Even though it might be just a short ambulance trip across the street from Suburban Hospital, we always made sure that it was safe to do so.

Barr: No one who was on a ventilator at that time in their current hospital or in a coma or anything like that?

Davey: We usually did not take patients who were mechanically ventilated at that time. That wasn't exclusively true. There was occasionally the need to transfer patients who were stable on a ventilator for specialized care, but for most of the research protocols it was required that patients be at an earlier stage of their illness. In all cases we took people we felt would be safe for transfer and screened them over the phone for protocol eligibility prior to transport. One thing we learned is that even though some patients were stable enough for transport, upon arrival their respiratory status could deteriorate rapidly and require a higher level of respiratory support up to and including the need for intubation and mechanical ventilation. We certainly saw that happen in a number of individuals unfortunately.

Barr: Did NIH clinicians offer advice to area hospitals on how to care for some of these patients that they could not transport to the Clinical Center of possibilities of things that could be done?

Davey: Most of the referring hospitals had their own infectious disease staff intimately involved with care of those individuals so it wasn't as though we had any special insider knowledge of infectious diseases to offer these individuals. We were all as a community of physicians learning things at the same time. Nonetheless, for some of the hospitals that were more remote, we certainly made ourselves available to give our opinions as to what therapeutics might be useful in its particular situation. The Critical Care Medicine group here also participated in what's called the MIEMSS program, which was the Maryland Institute for Emergency Management Services System. That is a group based in Baltimore that orchestrated the critical care level treatment of individuals in the area and arranged for sharing of resources and in particular for allowing transfer of patients from one institution that may have been overwhelmed with cases to another institution in the area that had greater bed capacity. The Critical Care physicians here participated in that and in fact actually took shifts working at that MIEMSS Center to provide triage guidance and their expertise to handling some of the more serious cases.

Barr: Interesting. What was your role in ensuring that scientists, clinicians, and their support staff had all the materials and PPE they needed to conduct their studies when there were shortages and other logistical hurdles due to COVID-19?

Davey: The Clinical Center was a little different in the sense that we had already well in advance of the current pandemic prepared to have, or have, the ability to care for serious respiratory and other types

of emerging pathogens. We have our Special Clinical Studies Unit, which was designed to care for select agent exposures because we serve as the referral site for three BSL4 laboratories at Fort Detrick who work with select agents. So we already had in place a program to deal with PPE use and training. We have our staff trained in the use of respiratory based PPE. Again this well predated the pandemic. We had on stock a lot of the PPE we would normally use to have for those other potential needs, and we had staff trained in their use, and we continued that training throughout.

People may not realize that the Special Clinical Studies Unit here, although it became perhaps better known because of the care we provided for Ebola patients in 2014-2016, we actually built that unit based on a SARS model, that is, considering SARS to be the most worrisome agent in terms of transmissibility, dating back from the original SARS outbreak in the early 2000s. In terms of respiratory protection and having the appropriate PPE, we had been perhaps better situated as one of the national hospitals capable of caring for that level of respiratory pathogen. I'd say we were fortunate in that regard.

Barr: That is lucky. Did you face any logistical hurdles though like not having as many people as you may have liked due to social distancing in terms of unpacking samples or things of that nature, transferring things?

Davey: We shared with other hospitals even though we had our stock of PPE available in the beginning though those resources became depleted over time. Like other hospitals, we competed for availability of N95 masks and gowns and other types of things that were rapidly being consumed nationwide and certainly locally by hospitals all needing the same type of PPE. Resource reagents for PCR tests were also in some cases in short supply. Like other hospitals, we competed for the available resources to be able to have that service continue without interruption, so yes, we had to make adjustments based upon supply and demand and what we felt was essential to maintain as a functioning hospital in terms of staffing here at the Clinical Center.

Like other places, we learned that a lot of the functions could be handled through telework, but that's only to a certain degree. We have patient care responsibilities here; we had people who had to come in the hospital every day because they're patients here, and we had to make sure that they were safe and that they were appropriately screened and felt that they were comfortable with the provisions that were put in place. The Hospital Epidemiology Service working with the departments here instituted the CDC guidelines for a safe workplace environment at the laboratory level and then certainly at the clinical level, so we had to make the same adjustments a lot of hospitals had to make in that regard that affected both patients and staff.

Barr: Do you feel at all like any of the scientists' studies were impacted negatively or at all by this? What was your role in ensuring that they continued to run smoothly and that they had things that they needed?

Davey: So I think there's no question that the scientific efforts in non-COVID related areas took a dramatic hit in that regard because so much of the work and concern here was focused on COVID-19 that a lot of the non-infectious disease, non-COVID related studies had to be put on hold because it wasn't safe to bring staff here necessarily to deal with those ongoing other projects. Certainly there's no question that had a significant negative impact on the progress of some of those other areas, and I'd say we're still recovering from that to some degree as we bring more and more people back to campus. It's only now that we're starting to in some cases [see] some of those projects get back up to speed. So yes, I think there's no question that the nature of this pandemic has taken a toll in terms of those other scientific areas, and it will take a while to recover from that.

Barr: Definitely. Can you talk about some of the studies that you helped facilitate at the Clinical Center?

Davey: So early in the pandemic, there were no approved therapeutics for treating COVID-19. The landscape was pretty thin in that regard. The coronavirus infection, even though we had SARS in the early 2000s and then MERS 10 years later, there hadn't been a tremendous amount of clinical research recently devoted to that. I think a lot of us felt relatively unprepared in terms of having effective antivirals identified. One of the major efforts that the NIH did in concert with other Federal agencies is just implement programs looking at therapeutics and, of course, vaccines. You all know the vaccine story and how a success that's been, which is great, but in terms of therapeutics, it was clear that we needed to rapidly implement some randomized clinical trials looking at evaluating the potential activity of drugs to treat COVID-19.

Here at the Clinical Center one of the first studies we worked with was we served as one of the study sites for a study of the drug Remdesivir, which is an antiviral that has activity against several viruses including coronavirus. In a study that was led by the Division of Microbiology and Infectious Diseases or DMID, we became a study site of a study that enrolled over a thousand patients nationwide looking at the potential activity of that drug against the virus. We implemented that really in early February, so relatively quickly after we started hearing about the need to have those types of research endeavors here. In addition to that, there were a variety of investigators interested in the immunology of COVID-19 infection and looking at characterizing the immune response against the virus, and that would help not only in diagnostics but also in understanding the host response to infection. There were a number of investigators who wanted access to patient samples that we did our best to facilitate so that could fuel some of that research, and of course the vaccine work that was being sponsored by NIH overall.

Barr: What was your role in getting these studies sort of established?

Davey: So again for the Remdesivir study, I was the site PI [Principle Investigator] for getting that study here and implementing it here in the Clinical Center. I was one of a few physicians who were the referral source who became the individuals to whom referring docs would contact if they had patients

potentially interested in enrolling in those trials. Over the course of the year, we actually participated in four separate large trial randomized clinical trials of various therapeutics against COVID-19, and we were serving as one of the study sites—again, those were through DMID. There were other efforts going on in other institutes within the campus looking at other therapeutic type interventions, but those are the ones I was directly involved in most.

Barr: What have been some hurdles that you have faced today again?

Davey: I think as I mentioned, not being a hospital with an emergency room, we always had to rely upon referrals of outside institutions to get patients here so the patient flow could be then therefore variable or really dependent upon the ability of outside hospitals to have the time to send patients. There was some uncertainty in that regard. We're not a large hospital in that sense so we didn't have the capability of some of the larger hospitals to care for as many patients as we perhaps wanted to. There are a lot of physicians here who felt that they wanted to do more and should be doing more to help the overall effort. It was hard, for example, when we saw how New York became rapidly overwhelmed with cases. Here locally there were a fair number of cases, but at least initially we weren't overwhelmed by those numbers. So a lot of the physicians here, several of whom I know and have been privileged to work with, volunteered to serve at other hospitals in addition to continuing their work here to help relieve some of that stress and burden elsewhere.

Barr: What is something that you feel that you have learned over this past year that you would maybe implement in the future?

Davey: I think one of the most important things is that we've learned that we can adapt fairly quickly and readily to new stresses that we had not anticipated. We all think being a research institution that there will be a problem, and we'll identify it, and we'll think about it, and then we'll cogitate more about it, and at some point, we'll come up with a plan, a sort of a longitudinal approach—as opposed to this is in our face right now, we've got to work and develop a strategy now. I think working with a lot of creative people here, a lot of dedicated, hard-working people, we proved that like other institutions, we can rapidly adapt as needed to COVID with what were basically unforeseen types of circumstances and really changed the landscape of how the Clinical Center operated for that period of time. I think that's a testament to the flexibility of the group here and their willingness to contribute towards the very common goal of just trying to help eradicate this pandemic.

Barr: Definitely. How do you feel that your experience with H1N1 and Ebola influenced how you approach SARS-CoV-2?

Davey: So again the Ebola experience here prepared us to deal with very serious pathogens and also to have in place very strong safeguards against exposure of staff to infection risk. Even before the

pandemic, we had a lot of those safeguards in place. We drilled on those algorithms to protect staff as part of the requirements to maintain our unit; I felt we were in better shape than most other local hospitals, which didn't have that capacity or that experience. Nonetheless, there're obviously learning points along the way as we became more enmeshed in helping care for patients here. I think probably the most alarming thing we learned early on was just how quickly these patients could deteriorate. As I mentioned before, even though they may have come to us in a relatively stable status, literally within 12-24 hours we could see a patient go from minimal oxygen requirements to needing mechanical ventilation, and that was sort of an unprecedented phenomenon for us to have seen. That ratcheted up the level of concern we had, that we really needed a critical care or intensive care type of approach to a lot of these patients, and it's better to have that available at the beginning and then back off as opposed to having to treat them as if they're stable and then adjust down the line to increasing levels of severity.

Barr: So you said that you were very involved in some of the therapeutic trials. Have you been involved in any other Covid research or initiatives both at NIH or outside of NIH?

Davey: So you know my work has been pretty much working with the network called ACTT (or, the Adaptive Covid-19 Treatment Trial) and, to a lesser degree with the ACTIV [Accelerating COVID-19 Therapeutic Interventions and Vaccines] network, developed to study some of the therapeutics at both national and international study sites. We have also collaborated with other institutions here at the Clinical Center. There have been collaborators and colleagues with whom I collaborate working on other aspects. Again the immunopathogenesis of the infection is one of the major interests that some of the investigators here have had. We provided patient samples for them to be looking at;
we have an ongoing collaboration looking at various aspects of studying the pathogenesis of disease here, and there are a number of investigators who have outreach to other institutions. NIH has received patient samples from them, including from across the ocean, to get those types of patients. It's been both domestic and international collaborations that we've had, and I think we've bolstered science through these efforts.

Barr: What was your association with the nucleocapsid antibody to SARS-CoV-2 study?

Davey: One of the studies that was conducted through NIAID primarily was looking at the ability of a more sophisticated antibody detection test developed here to look at various aspects of the immune response. The nucleocapsid antibody when it was studied by the senior investigator, Jeff Cohen, in collaboration with other investigators including Peter Burbelo, who developed what's called the LIPS assay or luciferase-based assay, was looking at how one could dissect the immune response to the virus early on. What their work showed, and they used samples from some of our patients in developing those studies, [was] that the antibody response in the nucleocapsid actually precedes the development of the antibody to the spike protein and may be a more sensitive way of actually detecting infection early. The significance of the antibody of the spike protein is that the spike protein is the antigen that the current vaccines are based against, and so if you give someone a COVID-19 vaccine, primarily they'll

raise an antibody response against that spike protein, but there are other parts of the virus that in the course of natural infection the antibodies raised against. This assay was able to dissect that response and show that there's a differential ability to detect various antibodies against different parts of the virus, so I think it was very instructive in that regard.

Barr: That is really interesting. Quickly, I think we're going to transition to you as a person during the pandemic. What is one thing that you enjoy or have come to enjoy that has kept you centered during this turbulent time?

Davey: I think working. Although we all worked hard, when things were at the height of the pandemic, I think it was the camaraderie we developed amongst different groups who didn't necessarily work closely together all that much in prior times, and I think there was a sense of community with the other physicians and the nursing staff about the shared effort among multiple institutes contributing to that effort. I really came to appreciate how the Clinical Center can pull those groups together in a way that I think is a testament to the dedication of the people here. I thought we'd worked in that way with the Ebola outbreak, for example, years ago. I really saw it become even more important and visible during this pandemic, and again I think it was a tremendous effort by so many people, some of whom had family members who were infected, to come to work every day and work on these projects. The dedication they showed—I think that to me was affirming of the good in the medical community's response to this pandemic and the selflessness of a lot of individuals involved in this effort, and I think that was very sustaining for me.

Barr: Definitely. How did the pandemic affect you personally both in terms of challenges and as well as opportunities?

Davey: It affected me the way it has affected every other person which is: what we considered normal went out the window, and to my knowledge is only still partially returning, but yeah, all the restrictions that put aside normal, out-of-hospital type events, of course affected me just like everyone else. I think within the hospital, it was the fact that we now had to laser focus on a specific disease instead of doing a variety of different investigations and really put some of that other work on hold while we were all focusing on this one primary effort. That was obviously a change in the way we're used to conducting business. I'm not saying that it was always the easiest thing to do, but I think really having that very strong focus on one area brought the science along very quickly in a way that I probably would not have imagined was possible in the earlier times.

Barr: Yes definitely. This is a thought-provoking question. It's really easy to look at these studies and forget about the individuals that make them run either as participants or practitioners. What is one encounter or memory that you have had with either a colleague or a patient that really resonated with you during the pandemic, and why? You can pick more than one if that really stands out.

Davey: Sure. I think harkening getting back to the very early days of when we were bringing patients here, I recall one of the first two or three patients we brought in for the Remdesivir study. We took two patients pretty much back-to-back from the same referral, the Washington Hospital Center, and they were both about the same age, in their late 50s or early 60s, very similar comorbidities, other illnesses that they had, were both from groups that had been heavily affected by the pandemic. One was African-American; one was Latino, but again other than some of those differences, they looked very similar in terms of their presentation here. They came in on stable amounts of oxygen, two or four liters of bi-nasal cannula, which was considered a moderate dose of oxygen, and then really as soon as we admitted them here, within 24 to 48 hours, both of them rapidly deteriorated. Both of them developed very severe progressive respiratory failure despite all the best efforts we had at the time to deal with respiratory illness, and one of them unfortunately ended up developing cardiac disease, a cardiac arrhythmia, and dying within the course of about a 12-hour period. Whereas the other person also deteriorated [and] required mechanical ventilation, but for whatever reason was able to be sustained over that period of time, then slowly recovered. So it's that dichotomy between two people who looked about the same at the time of presentation. One deteriorates quickly and unfortunately dies, and the other for whatever reason, and I'm not confident that we will ever will figure it out, whatever reason was able to be sustained. That struck me very much at the time; you both as a physician and just as a person see that this is a person who a week ago was healthy, normal, full of life, and then suddenly they're dying in front of us. Again in the unusual circumstance of COVID, dying without any family being able to be present, I think that really stuck with me about just how serious this disease was and how quickly life can be fleeting, and I think that definitely had an emotional toll on us.

Barr: Definitely. Is there anything else that you would like to add either as a clinician and scientist but also as an individual living through this pandemic like everybody else in the world right now?

Davey: Just that although it's a cliché to say, it takes a village. It really did take a community of nursing staff, respiratory therapists, physicians, ancillary staff, social workers and other groups really to provide the comprehensive care we needed for these individuals who again were brought into the hospital, had to be kept separate from their usual support mechanisms, family, friends, whatever, and trust their care to us, and we did our best to sustain them and help them improve. But it really took a communal effort to do that. And along the way, the many other sacrifices other people in the hospital had to undergo whose research was put on hold, whose lives were put on hold, because in some cases research was their major endeavor at the time. All of that took a shared commitment to trying to put this pandemic behind us. I think that's the major thought I have in reflection.

Barr: Well, thank you very much for your service, and I hope that you and those that you work with continue to stay safe.

Davey: Thank you. Thank you very much.