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Vitals

DEPARTMENT OF INTERNAL MEDICINE



UNIVERSITY OF IOWA
CARVER COLLEGE
OF MEDICINE

University of Iowa Health Care

Department of Internal Medicine

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Some photos included in this publication were taken before COVID-19 PPE practices were implemented.

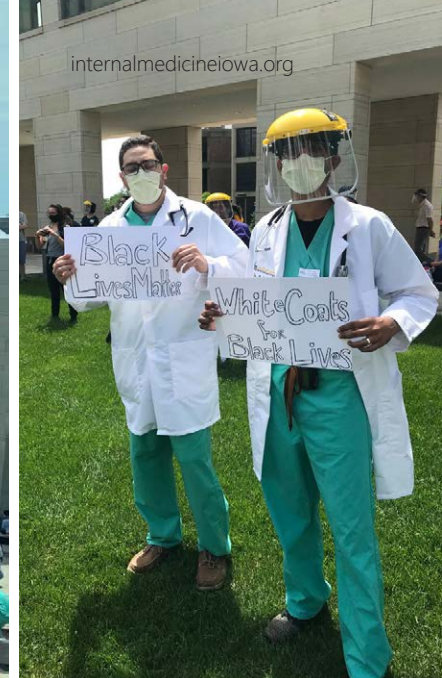
On the cover

Microscopic image of a mouse lung expressing human ACE2, the receptor for SARS-CoV2. The blue staining represents the normal mouse lung, the brown is where the human ACE2 is expressed.

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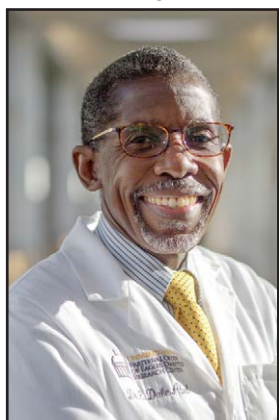
David K. Meyerholz, DVM, PhD
 Director, Division of Comparative Pathology
 and Professor of Pathology
 University of Iowa
 Roy J. and Lucille A. Carver College of
 Medicine
 Department of Pathology

Dr. Meyerholz has research interests in diseases of the lung (e.g. influenza, MERS-CoV, RSV, SARS-CoV) as well as comparative pathology, cardiovascular disease, cancer and neurofibromatosis-1. Dr. Meyerholz is well-published and serves in editorial roles at several peer-reviewed scientific journals. For more detailed and current information, please see his profile at Researchgate (https://www.researchgate.net/profile/David_Meyerholz).



From the chair

It is safe to say that 2020 did not present us with any of the challenges we had anticipated facing in 2019. What you will discover in these pages is a department that proved extraordinarily nimble and resilient. We created a way to keep people testing positive for COVID-19 home for as long as possible until they recovered or needed a higher level of care.



Our talented medical ICU had remarkable success in saving the lives of even those needing intubation. We retooled our Grand Rounds to make sure everyone, whether on campus or halfway around the world, had the most up-to-date information. We continued to secure extramural funding and publish high-quality, peer-reviewed manuscripts. In some instances nothing new was required except a belief in ourselves and each other.

But there was another crisis (not a new one) that invaded our collective consciousness. We have risen to face deeply embedded racism, impossible to ignore or sweep past. I was proud to kneel with so many of my colleagues in June as part of the global recognition that racism is real, and we are committed to eradicating it in all its forms. I continue to be proud of the steps we are taking within the Carver College of Medicine at the University of Iowa to correct these injustices.

The path we are on in the Department of Internal Medicine, both to end this pandemic and to ensure that racial inequities are ameliorated, stretches out before us. Although their endpoints remain shrouded, we believe we know which direction we must move. The stories you will read in this issue of VITALS should convince you that our confidence is well founded.

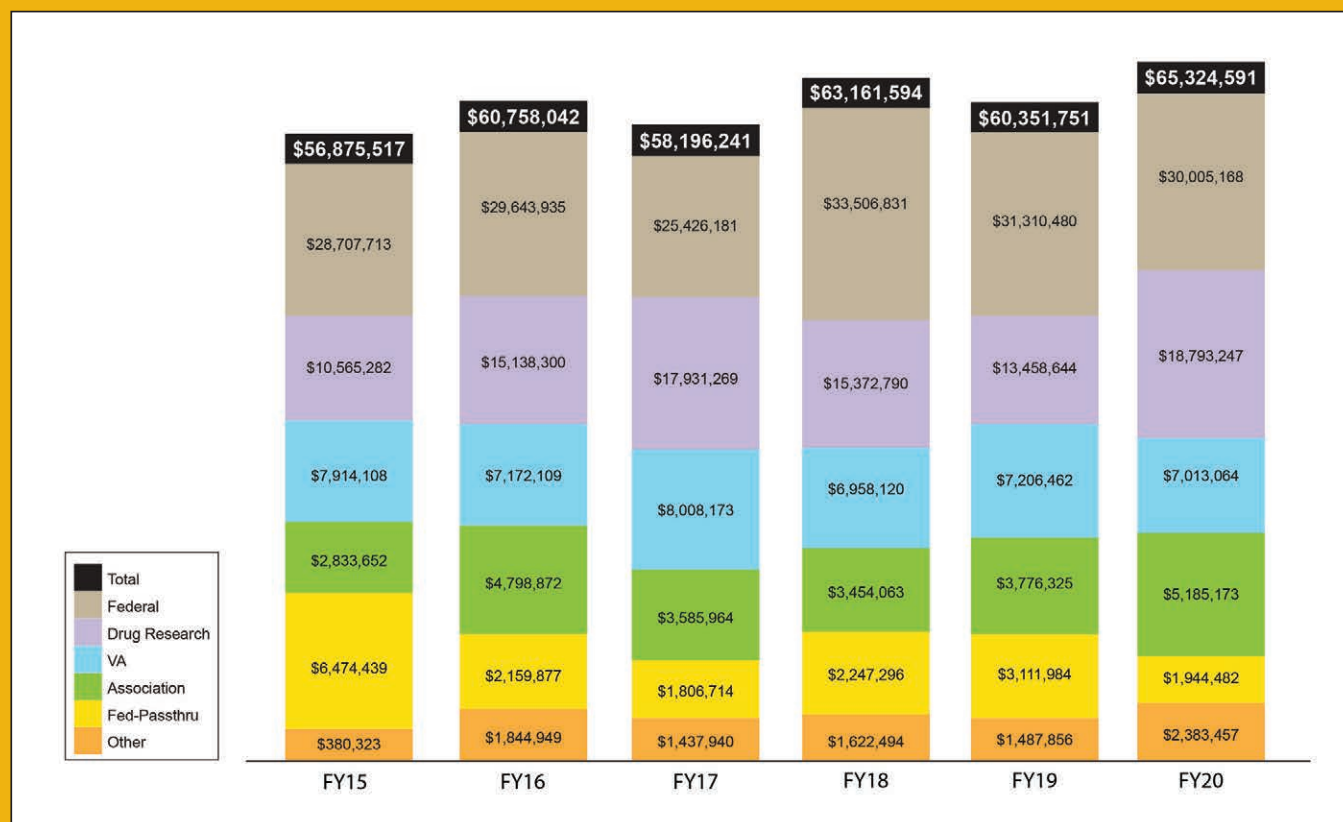
*E. Dale Abel, MD, PhD
Chair/Department Executive Officer, Department of Internal Medicine
Director, Fraternal Order of Eagles Diabetes Research Center
Professor of Endocrinology and Metabolism
Professor of Biochemistry
Professor of Biomedical Engineering (BME)*

Research

Dilek Ince, MD, Clinical Associate Professor of Internal Medicine and an infectious diseases specialist, led the UI portion of an international clinical trial of remdesivir, an intravenous antiviral drug that's shown the potential to shorten recovery time and reduce deaths in COVID-19 patients.

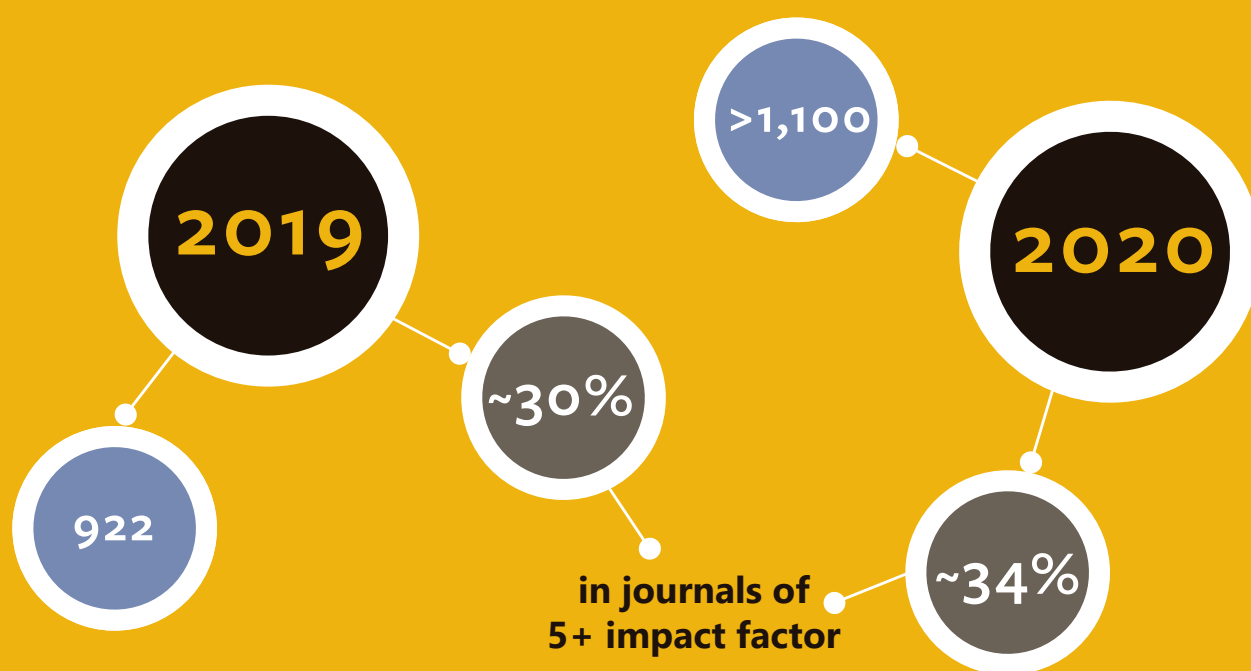


Internal Medicine research funding sources FY15-20



Represents UI fiscal year data, FY20 data lags Blue Ridge

Internal Medicine research publications



UI nephrologists collaborate on new textbook

Urinalysis is one of the most common clinical tests ordered in adult and pediatric patients. However, understanding of the appropriate collection methods, analysis and interpretation of results is essential for all clinicians.

Lisa Antes, MD, clinical professor, and Lee Sanders, PhD, MD, clinical assistant professor, both in the Division of Nephrology, co-edited the recently published textbook *Urine Tests: A Case-Based Guide to Clinical Evaluation and Application*.

Co-edited with Victoria Sharp, MD, professor of urology and family medicine, and Gina Lockwood, MD, clinical assistant professor of pediatric urology, the book is a comprehensive resource aimed primarily at general practitioners. Using a case-based approach, readers are guided through detailed medical reasoning for ordering various tests as well as interpretation of results and next steps in

clinical management.

The collaborative text draws on the expertise of urologists, nephrologists, primary care providers, and administrators.



Lisa Antes, MD



Lee Sanders, PhD, MD

Phadke leads pilot study into “chemo brain”



Sneha Phadke, DO, assistant clinical professor in Hematology, Oncology and Blood & Marrow Transplantation and a breast medical oncologist at the Holden Comprehensive Cancer Center (HCCC), is investigating the cognitive deficits that occur following chemotherapy, which has often been called “chemo brain.” Phadke and associate

research scientist Kanchna Ramchandran, MS, PhD, were awarded an Institutional Research Grant from the American Cancer Society (via the HCCC) to learn more about it.

“Patients will often say they feel old or they feel like their brain has aged in some way,” Phadke said. “They can no longer multitask. They can’t remember things as well. They just have trouble functioning even at work. Chemo brain is a catchall term for these symptoms.”

With these pilot grant funds, the team is working to identify what a chemo brain diagnosis means and what criteria is required for the diagnosis based on objective changes.

“One of the tough parts about diagnosing chemo brain is there aren’t any diagnostic criteria,” Phadke said. “Things like anxiety, sleep deprivation, fatigue, and lots of other issues can confound that diagnosis, making it really hard to know if someone truly has chemo brain or if there are other issues contributing.”

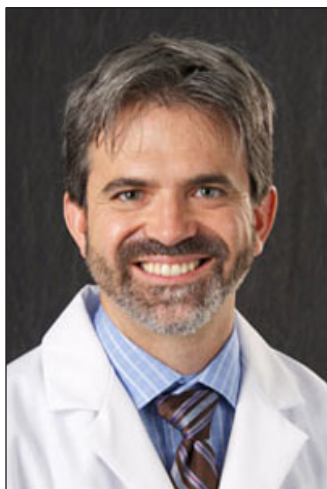
In addition to observable changes indicating the presence of chemo brain at the cellular level, the researchers will look at potential treatment options. “Or even better,” Phadke said, “preventing it.”

“As a nephrologist, urine examination is a key element to kidney disease diagnosis and management. Understanding that urine tests can be practically used by more than just nephrologists, we set out to publish a comprehensive guide for the use of urine tests in clinical practice,” Sanders said.

A number of residents and fellows from various fields also contributed to the text, allowing them to not only delve more deeply into clinical topics but add to their scholarly experience. Nephrology fellow Lewis Mann, MD, is first author on a chapter on urine dipstick use for proteinuria. “Working with Dr. Antes and Dr. Sanders to write the chapter was one of the highlights of my fellowship so far. Researching, deciding what to include, and how to organize it really helped me to solidify my own understanding. It’s a topic that comes up relatively frequently in nephrology and we wanted to create a useful resource that a general practitioner could quickly refer to,” Mann said.

Other contributors include current Internal Medicine faculty members Ben Appenheimer, MD; Aubrey Chan, MD, PhD; Wendy Fiordellisi, MD; and Carly Kuehn, MD, and former resident Jeremy Steinman, MD. The book is available from Springer in e-book (individual chapters or full text) or softcover print.

Gehlbach, Richerson to investigate carbon dioxide role in SUDEP



Brian Gehlbach, MD

Brian Gehlbach, MD, clinical professor in the Division of Pulmonary, Critical Care, and Occupational Medicine, and George Richerson, MD, PhD, professor and chair of the Department of Neurology, received a five-year, \$3 million R01 grant from the NIH's National Institute of Neurologic Disorders and Stroke (NINDS). The funding will support research into Sudden Unexpected Death in Epilepsy (SUDEP) and the role central CO₂ chemosensation plays in the pathogenesis of seizure-induced respiratory depression.

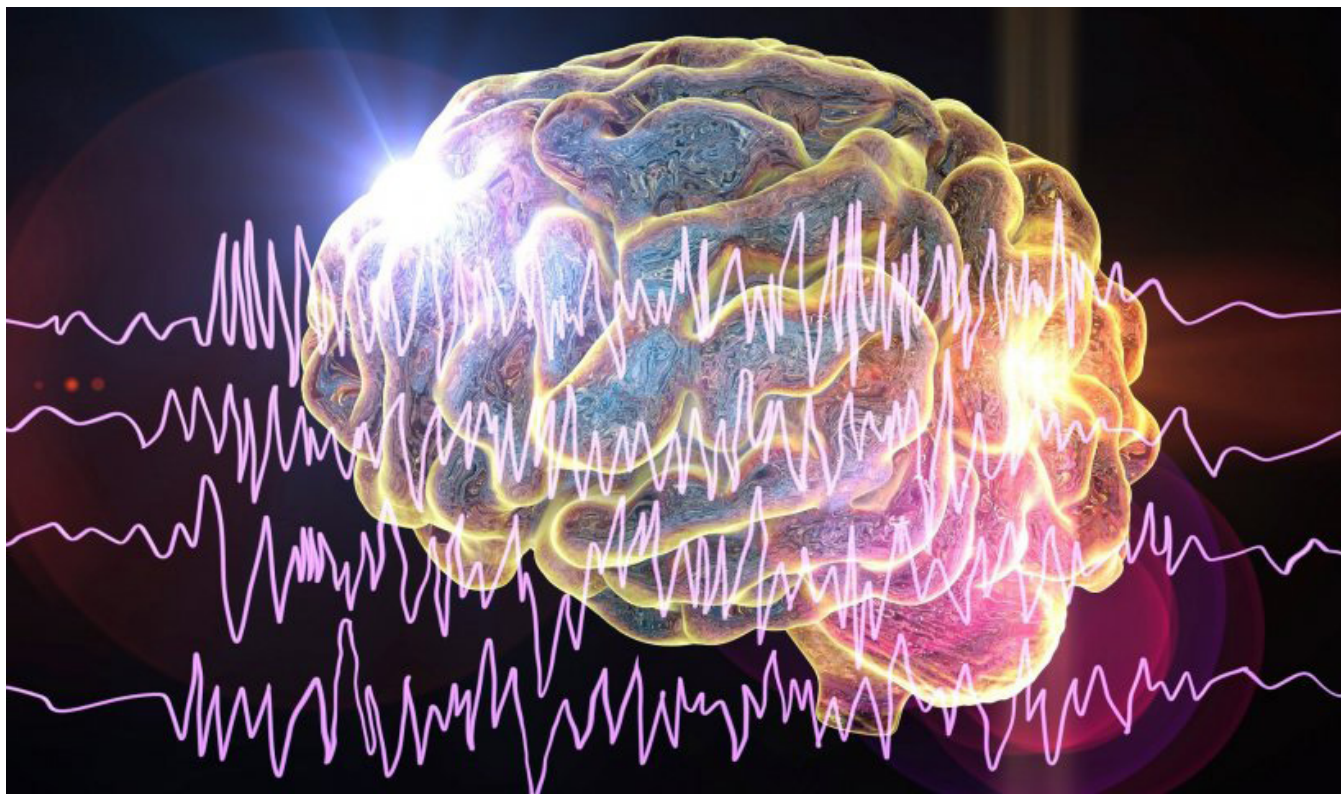
SUDEP is the leading cause of death for people with refractory epilepsy, which usually occurs after a period of severe seizure-induced respiratory depression. The mechanisms responsible for intense decreases in breathing during the period following a seizure have not been clearly defined, but may involve an inability of the brain's central chemoreceptors to respond appropriately to carbon dioxide.



George B. Richerson, MD, PhD

Gehlbach and Richerson hope to identify novel candidate biomarkers for SUDEP risk, which could lead to the development of new preventive treatments. "We hypothesize that postictal hypoventilation will be more severe in patients with low interictal or postictal CO₂ chemosensitivity." Their study aims to enroll 335 patients with epilepsy over a five-year period.

The project builds upon clinical and basic work conducted by the University of Iowa SUDEP Research Program, a part of the NINDS-funded Center for SUDEP Research, for which Dr. Richerson served as a PI. In addition to Gehlbach and Richerson, the research team for the project includes UI epileptologists Rup Sainju, MBBS, and Mark Granner, MD, as well as Deidre Dragon; Harold Winnike, RRT; Patrick Ten Eyck, MS, PhD; and Chaorong Wu, PhD.



Abel to lead one of four AHA research networks

E. Dale Abel, MD, PhD, has been awarded a four-year \$3.8M grant from the American Heart Association (AHA) to investigate mechanisms that increase the risk of cardiovascular disease in people with type 2 diabetes. Abel will oversee a Strategically Focused Research Network (SFRN) of three projects in partnership with other UI departments and the Massachusetts General Hospital. The team will examine the relationship between novel secreted molecules from the liver, adipose tissue, and skeletal muscle that may directly or indirectly lead to damage of the heart and blood vessels in individuals with diabetes.

Abel and his network will compare molecules secreted from obese mice and obesity-protected mice to identify those that can mediate cardiovascular injury. The Massachusetts group will examine the release of specific cargo called exosomes (extracellular vesicles) from fat tissue biopsies obtained before or after bariatric surgery. The team will characterize these cardiovascular damaging molecules by characterizing the content of these vesicles and determining their impact on cardiovascular cells using a novel organ-on-chip technology.



"These studies will identify new risk factors for cardiovascular disease in high-risk individuals with obesity, insulin resistance, and type 2 diabetes," Abel said. "The knowledge gained from these studies will enable physicians to specifically determine the risk for cardiovascular disease in individuals with pre-diabetes and type 2 diabetes to ensure that personalized therapies can be offered."

Using serum samples from the Coronary Artery Risk Development in Young Adults (CARDIA) large-scale study, the population study team will measure the concentrations of more than one hundred proteins to find correlations between circulating metabolites and the distribution of body fat in the abdomen and heart.

Abel serves as the overall Center Director and PI on this project and is joined by Training Director Kamal Rahmouni, PhD, of the Department of Neuroscience and Pharmacology and Basic Project PI Ethan Anderson, PhD, of the College of Pharmacy. These three University of Iowa researchers are also members of the Fraternal Order of Eagles Diabetes Research Center. The clinical and population projects will be led by colleagues from Massachusetts General Hospital, including Clinical Project PI Saumya Das, MD, PhD, and Population Project PI Ravi Shah, MD.

This award was received after a national competition in response to a specific call for applications from the AHA. Three other institutions also received grants to generate independent SFRNs to address similar questions related to diabetes and cardiovascular disease. These will be located at Johns Hopkins, New York University, and Brigham and Women's Hospital. The four SFRNs, including the one at the University of Iowa, will form a research consortium.

Model developed to calculate patient risk for NAFLD decompensation

Non-alcoholic fatty liver disease (NAFLD) is one of the most common liver diseases worldwide and is associated with conditions such as obesity and metabolic syndrome, which can lead to diabetes, stroke, and heart disease. Although common, identifying people who could be at risk for NAFLD decompensation can be challenging for physicians.

"We needed a way to easily identify patients with NAFLD who are at increased risk of developing hepatic decompensation before they develop clinically obvious cirrhosis and portal hypertension," Arvind Murali, MBBS, said. "A simple-to-use objective score that all clinicians can easily use would be an ideal answer to this question."

Murali, clinical assistant professor, and Antonio Sanchez, MD, clinical professor, both in the Division of Gastroenterology and Hepatology, worked with a team of researchers to develop a risk score calculator, the Iowa NAFLD Decompensation Risk Model, that will identify patients with NAFLD at increased risk of development of hepatic decompensation. The team published their findings in the May 2020 Journal of General Internal Medicine.

In a sample of about 700 patients with NAFLD, the Kaplan-Meier time to development of hepatic decompensation was 4.8%, 10.6%, and 11.3% at 5, 10, and 12 years from the time of diagnosis of NAFLD, respectively. This data was used to develop the risk score. The investigators then validated these scores across 250 more patients.



Arvind Murali, MBBS



Antonio Sanchez, MD

"Our Iowa NAFLD Decompensation Risk Model is a novel and easy-to-use clinical tool, validated in different populations, that incorporates simple variables (age, platelet count, and presence of diabetes) to identify patients with NAFLD at a higher risk of progression to cirrhosis and development of hepatic events," Sanchez said.

"Clinicians can now use this score to determine which of their patients are at high risk for developing cirrhosis and hepatic decompensation and offer aggressive intervention and/or referral to liver clinics," Murali said.

The Iowa NAFLD hepatic decompensation risk score calculator can be accessed online, <https://uihc.org/non-alcoholic-fatty-liver-disease-decompensation-risk-score-calculator>.

Murali and Sanchez worked with UI's Patrick Ten Eyck, MS, PhD, assistant director for Biostatistics and Research Design in Iowa's Institute for Clinical and Translational Science. Other collaborators include Heidi Ahmed, MD, former Iowa internal medicine resident and current gastroenterology fellow at Boston University Medical Center; Natalie Pedersen, MD, another former resident and now internal medicine physician at UnityPoint Clinic Primary Care in Peoria, Illinois; and Manju Bengaluru Jayanna, MD, former UI hospitalist and current cardiology fellow at the Lankenau Institute for Medical Research in Philadelphia.

Clinical trials in cancer at Iowa barely lose a step

In May, the American Society of Clinical Oncology (ASCO) released a special report titled “A Guide to Cancer Care Delivery During the COVID-19 Pandemic.” It details an approach for oncologists and other care providers to ensure their own safety and those they treat, given the higher likelihood of a patient’s immuno-compromised status.

***“Some places just closed everything.
We did the opposite.”***

—Mohammed Milhem, MBBS
Oncology Section Chief
Associate Director for Clinical Research, HCCC

For providers at University of Iowa Health Care in the Holden Comprehensive Cancer Center (HCCC), these guidelines were welcome but they did more to confirm what has already been a settled routine for a couple months. Strict care precautions within the HCCC and throughout the rest of UI Health Care allowed a significant portion of care for people with cancer to continue. When most clinical trials around the country had to halt because of worries over the availability of protective equipment and other safety concerns, more than 95 percent of all therapeutic clinical trials within the HCCC were able to continue.

Oncology Section Chief Mohammed Milhem, MBBS, is associate director for clinical research in the HCCC and a principal investigator on more than 20 open clinical trials. He marveled at the difference between what Iowa





Mohammed Milhelm, MBBS

achieved versus what other institutions were forced to do. "Some places just closed everything. We did the opposite." Iowa had a plan and support for keeping as many of the trials going as possible. Discussions between HCCC leadership and J. Martin Scholtz, PhD, UI Vice President for Research, were productive. "[Scholtz] told us, 'If you can say it's life-saving therapy, you can keep the trial open.'" And for almost everyone whose cancer brings them to Iowa City for care, Milhem explained, participation in trials really is essential. "I felt we could keep going, and we did it. Very nicely."

But just putting a stamp on a trial that read "essential" was not enough. Calling the initial work in that period of transition "labor intensive," Milhem acknowledges and is grateful for the work of many to ensure compliance, that every contingency had been addressed. "Coordinators, PIs, the pharmaceutical companies sponsoring some of these trials, everyone had their own regulations, the FDA. But everyone was consulted." With so many stakeholders, he says, a comprehensive plan was established and agreed upon in an unusually short period.

Milhem also allows that a lot of variables broke in Iowa's favor to make continuing trials safe. A relatively slow rise in COVID-19 cases in the region early on gave providers time to prepare. In addition, the main campus of University of Iowa Hospitals & Clinics is spread out, and a carefully monitored entrance near the cancer center reduced patients' time and exposure on site. The patients themselves were unconcerned about the risk; few hesitated making the trip onto campus. "They have a bigger fear," Milhem said. "They tell me, 'I'm already fighting for my life.'"

One challenge that providers did have to overcome was the hospital's restriction on visitors, imposed mid-April. But hospital administration was willing to make exceptions for many patients coming to the HCCC. With cancer, especially a new diagnosis or a change in treatment strategy, Milhem said, "You need to have someone present. More ears in the room." If that additional set of ears could not be there in person, patients often opened up a video call on their phone or tablet to bring support into the room.

Similarly, telemedicine was another tool in the HCCC's ability to maintain continuity in their trials. After initial "intense" visits at the beginning of an investigational drug, which often requires blood tests and close monitoring for hours after administration, many trial participants do not need to keep returning to campus. Instead, regular check-ins over phone and video help trial participants stay out of any public spaces at all. And, Milhem points out, many travel to Iowa City from far away just to participate in these trials. Preventing their need to travel and helping them remain with their families is good under any circumstances, but especially in a pandemic.

As people return to their primary care providers and new diagnoses begin to increase again, Milhem sees a similar increase in the number of new trials making their way to HCCC. "We have been opening trials at our regular pace," but he finds an environment now more conducive to resolving typical bottlenecks. This discovery, that hard things do not always have to be hard, combined with the return of biospecimen, observational, and translational research may leave cancer research at Iowa even stronger than before.



Education

Manish Suneja, MD
Vice Chair for Education,
Department of Internal Medicine

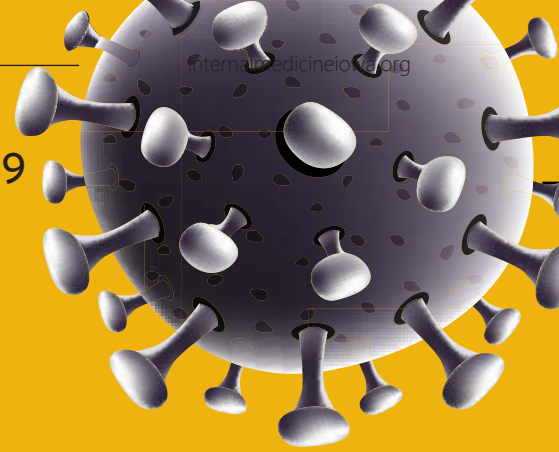
Director, Internal Medicine
Residency Program

Clinical Professor of Internal
Medicine - Nephrology

Recipient of one of four
University of Iowa President &
Provost Awards for Teaching
Excellence



Grand Rounds presentations related to COVID-19



Jorge Salinas, MD
Stanley Perlman, MD, PhD
Coronavirus Disease 2019
(COVID-19)

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Jorge Salinas, MD
Daniel Diekema, MD, MS
Bradley Ford, MD
Dilek Ince, MD
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Christine Gill, MD
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Neurological Complications
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Back to the Basics:
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Barry London, MD, PhD
Ferhaan Ahmad, MD, PhD
Saket Girotra, MBBA, SM
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Zuhair Ballas, MD
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Daniel Diekema, MD, MS
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Gregory Schmidt, MD
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Gregory Schmidt, MD
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Usha Perepu, MD
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Arwa Aburizik, MD
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Janette Taylor, PhD, RN
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Lama Nouredine, MD
Martha Carvour, MD, PhD
Always a "Hot Spot":
African American Health
in the Time of COVID-19

Rolando Sanchez, MD
Eleanor Lisa Lavadie-Gomez, MD
(Family Medicine)
Claudia Corwin, MD, MPH
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Jason Barker, MD
Elise Barlow
Christopher Benson, MD
Patrick Hartley, MD, MPH
Richard Hoffman, MD, MPH
COVID-19: What Is It Like to
Be the Patient

SEPT.

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Loreen Herwaldt, MD
Patients' Experiences with COVID-19

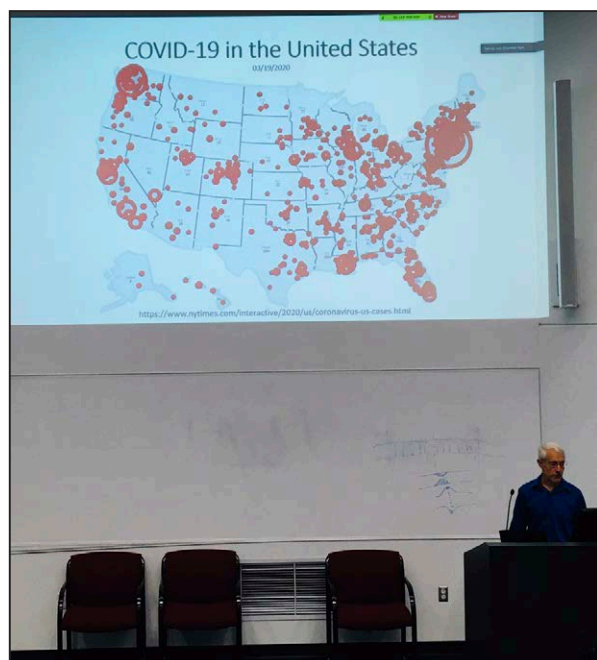
Grand Rounds expands its reach



It was midday on a Thursday in early March when the message from collegiate leadership arrived. In an effort to prevent the spread of COVID-19 within University of Iowa Health Care and the Carver College of Medicine: a ban on gatherings of more than 10 people in a room. This included all departmental Grand Rounds presentations.

At that same moment, Jorge Salinas, MD, Hospital Epidemiologist for University of Iowa Hospitals & Clinics, was explaining what we had learned so far about the novel coronavirus and its clinical presentations. Most of the data available was from the Wuhan outbreak; the first confirmed cases in Iowa had only just appeared. Salinas was followed by Stanley Perlman, MD, PhD, a world-renowned expert on many different kinds of coronaviruses.

He explained how they typically behaved, what therapeutic strategies had proved successful in the past, and how this novel coronavirus seemed to differ. Although the information was of critical importance, this session of Grand Rounds was in violation of the new, and understandable, institutional restrictions.



Gregory Schmidt, MD, prefaces his April 16 COVID-19's clinical presentation with some data on its spread.

Epidemiologic history lessons were given on SARS in Toronto. Critical care physicians shared their findings on the pulmonary impact and the differences from ARDS. And, as successes within UI Health Care mounted, presentations from innovative providers on the front lines were delivered. Information was as much a weapon in the fight as the scarce boxes of N95 masks.

Each week the live link would go out to thousands within the institution and across the state. Hundreds would watch live at noon and submit their questions via chat. Thousands more would watch in the days that followed. Our department has been proud to serve as an ongoing and vital source of knowledge for the academic medical community.

Fortunately, the department had a system in place that we could expand. For years, our weekly Grand Rounds sessions were streamed live to our colleagues at the clinics at Iowa River Landing in nearby Coralville and a few other locations. Our Medical Alumni Auditorium was equipped with cameras, microphones, and screen-sharing capabilities that were compatible with Zoom, the video conferencing platform suddenly everywhere. Attendance numbers flipped overnight. When normally a couple dozen might watch online, now fewer than ten filled seats in person.

Under the direction of Loreen Herwaldt, MD, professor in Infectious Diseases, the Grand Rounds calendar was retooled to focus only on this emerging health care crisis. Cardiologists presented on the impact COVID-19 was having on the cardiovascular system.



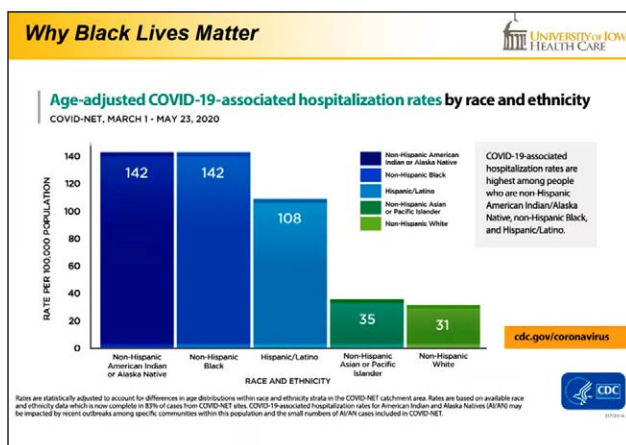
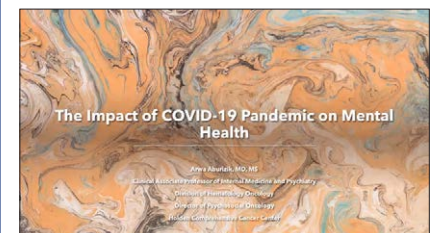
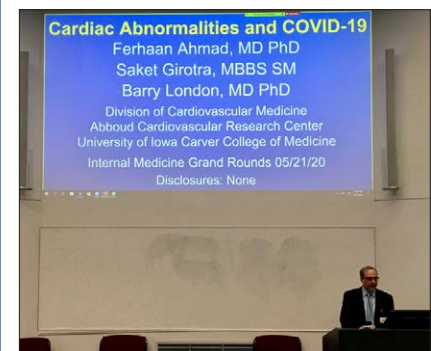
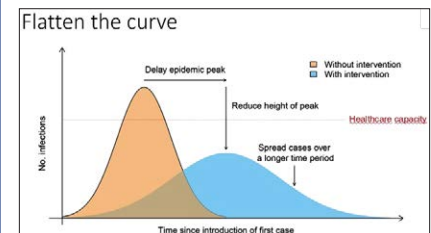
Loreen Herwaldt, MD

The patients' perspectives

In addition to experts in virology, epidemiology, or all of the subspecialties this pandemic has touched, Loreen Herwaldt, MD, felt that the Grand Rounds audience should also hear from those who had experienced COVID-19 firsthand. In July, audience members heard from members of UI Health Care who had experienced varying levels of intensity of disease course—some who had to be hospitalized and others who were able to remain in home isolation throughout.

In late September, Dr. Herwaldt arranged for three other stories to be presented at Grand Rounds, this time from community members. Each of them described their experience while infected and how their lives have changed since. One man, after spending weeks on a ventilator had his story supplemented with testimony from his spouse, as she described the emotional toll of his hospitalization. Others described the lethargy and cognitive impairment still lingering long after the infection was cleared.

These patient stories provided our attendees with useful, even if anecdotal, reminders of how much still needs to be learned about the novel coronavirus and the importance of listening closely to every individual.



Residency committees spotlight

For more than 80 years, the Internal Medicine Residency Program has focused on equipping residents with the skills and experiences they need to succeed as physicians. As part of the ongoing drive for excellence, the



A 2018 visit from some canine friends

residency program, directed by Manish Suneja, MD, has resident-led committees to provide avenues for feedback and improvement. Committees such as the Resident Liaison Committee, the Program Evaluation Committee, the Wellness and Humanities Committee, the Scholarship Committee, and the Clinical Competency Committee are some examples.

"At Iowa, a core value is communication," Suneja said. "It's important to us that we build systems within the residency program that allow residents and interns to have a voice in shaping their training as well as the future of the program."

PGY-3 resident and rising Chief Medical Resident, Roger Struble, MD, was a member of the Resident Liaison, Program Evaluation, and Wellness and Humanities committees.

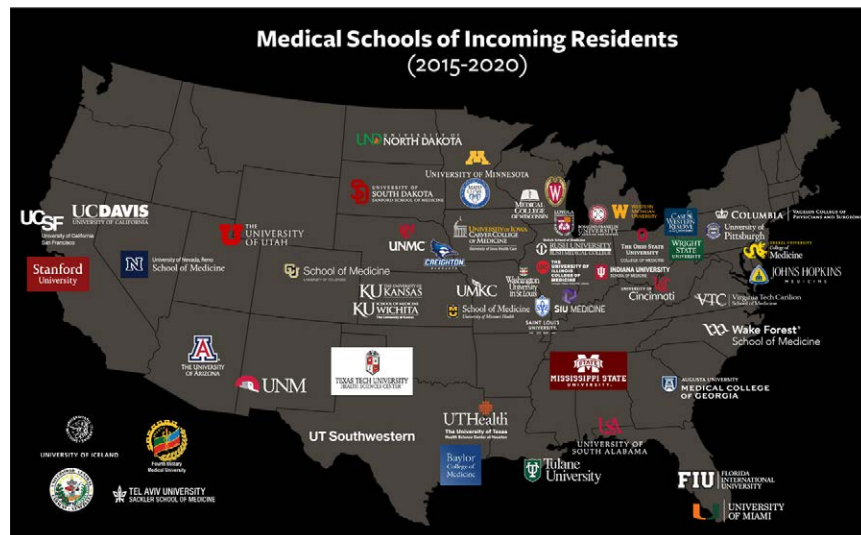
"Iowa is a special place for many reasons," Struble said. "We care about our community and champion compassion. The committees that we have in place allow us to empower residents to make positive changes to our program. These are formal settings where problems can be identified, resolutions discussed, and big ideas may come together to enact change."

As a formal channel of communication between the residents and program leadership, the Resident Liaison Committee serves as the voice for resident concerns. The committee is made up of 20 residents, and a Chief Resident and faculty also review the resident curriculum. Chair and PGY-3 Craig Rosenstengle, MD, and Vice Chair and PGY-3 Tyler Bullis, MD, help direct the committee's aims. Chief Resident Amanda Heuszel, MD, and Associate Program Director Justin Smock, MD, supervise the committee.



Incoming 2020 interns at City Park

The Program Evaluation Committee comprises 16 residents, the Chief Residents and faculty. This committee plans, designs, and evaluates educational activities and curriculum goals. Chaired by Education Development Director Jane Rowat, MS, and Katherine White, MD, MME, the committee monitors faculty development and resident performance using data from evaluations.



Although smaller than the other committees, the Wellness and Humanities Committee is just as essential to the success, and well-being, of the resident program. Chaired by PGY-3 and rising Chief Resident Derek Hupp, MD and

Associate Program Director Katherine Harris, MD, the committee works to create more cohesion in the resident programs as well as educating residents about the importance of physician health and professional satisfaction.

"The Humanities and Wellness Committee is our newest committee and we are still learning the best ways we can impact the lives of our residents," Struble said. "Residents are not just doctors in training; we are people with hobbies, families, friends. Our committee wants to forge friendship among residents with non-mandatory, fun activities both inside and outside of work where residents can bond and connect."

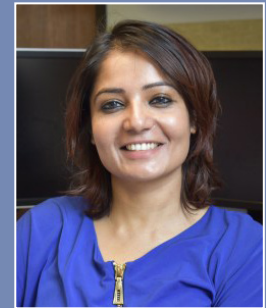
Former Chief Resident Salman Ansari, MD, now a member of our gastroenterology fellowship, agrees with Struble. "I think it is unique in striving to find innovative approaches to improve and maintain program cohesion. Although more readily understood as wellness, we think a better measure of resident well-being is actually how connected we feel to each other, and that's what we're trying to focus on. We also believe delving into medical humanities, like our recent ethics noon conference, helps to foster meaning and joy in our practices."

The committee plans pumpkin carvings, Friendsgiving events, sledding nights, gift exchanges, TV watch parties and trivia nights. Currently, the committee is planning a donation drive where all contributions will go to a local shelter.

This was written before COVID-19 and the Wellness committee has pivoted to virtual and socially distanced events.

Spotlight on Prerna Kumar

Before our social-distancing era, after a long day of being in the clinic or on rounds, transplant nephrology fellow Prerna Kumar, MBBS, always attended a 5:30 kickboxing class, whether she was feeling drained or motivated. Even if she worked late, she hustled to make the 6:30 class instead. Though Kumar had only begun kickboxing the prior year, she was able to see the large impact this mental and physical wellness routine had on her professional life. "It's more about mental peace and doing something for myself which I never did before," Kumar said. Though Kumar completed UI's nephrology fellowship and worked for a year as a hospitalist, she says she was happier once she joined the transplant fellowship program. As the only nephrology transplant fellow, Kumar says a common misconception among many physicians is that nephrology is only performing dialysis. However, transplant has opened a whole new door for Kumar.



"I've seen genuine happiness in patients in transplant. I used to do dialysis rounds. I never got the satisfaction that I was doing something for them for some reason," Kumar said. Originally from Ranchi, a small town in East India, Kumar attended medical school at Sri Devaraj Urs Medical College in Southern India before moving to New York in 2011. After completing her residency at the Albert Einstein College of Medicine, Kumar completed the University of Iowa's nephrology fellowship program. Following her departure in June 2020, Kumar joined faculty at the University of Illinois. However, she says she will miss the support system she found in her mentors and colleagues here.

Christie Thomas, MBBS, professor in the Division of Nephrology, has been one of Kumar's mentors and friends since she arrived at Iowa. "She was an asset to our program and a resource for residents and junior fellows,"

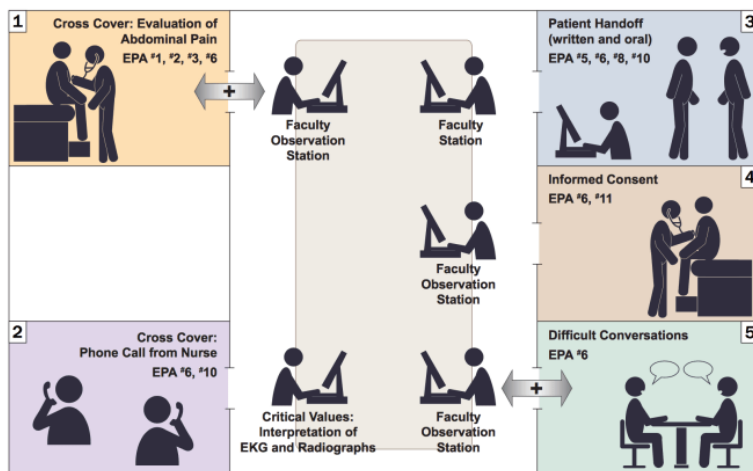
Thomas said. "She showed tremendous fortitude, which will stand her in good stead as she begins her own independent career in these uncertain times."



Kumar celebrating with co-fellows

Kumar is grateful to her parents, family and her mentors, Christie Thomas, Sarat Kuppachi and Lisa Antes, for their continued support. Kumar says she will miss the home Iowa offered her. "I've been so comfortable with the people and places here at Iowa," Kumar said. "[Iowa] grows on you. People used to say that, and now I understand what they were talking about."

OSCE gets national exposure, refines and expands again



Year Three of the Objective Structured Clinical Examinations (OSCE) in the Internal Medicine Residency Program took place in 2019 pre COVID and brought more than a few changes. The first, most important, is that this innovative exercise has now been given the stamp of peer-review. After presenting their poster at the Alliance for Academic Internal Medicine meeting last spring, Program Director Manish Suneja, MD, Director of Curriculum Jane Rowat, MS, and Clinical Assistant Professor Sheena CarlLee, MD, published their article on the OSCE in the April 2019 Journal of Graduate Medical Education.

OSCE via Zoom in 2020

Last year, the third year for the Intern Objective Structured Clinical Evaluations (OSCE) was the most successful yet. Organizers Manish Suneja, MD, and Jane Rowat, MS, had received the stamp of peer review and expanded the program to include interns from two other residency programs (Anesthesia and Family Medicine) within University of Iowa Health Care for evaluation.

But just when it seemed all the wrinkles had been smoothed out, the coronavirus hit and when the COVID-19 pandemic made it clear that it would stick around well into the new academic year, Suneja, Rowat, and other leaders within the Education Team began to strategize how essential educational activities including the OSCE could still be delivered safely. The data regarding the skill level for selected clinical tasks gleaned from the OSCE for each new intern proved too useful to abandon the OSCE experience entirely. Moreover, organizers knew that by the time June 30 arrived, these recent medical school graduates would not have had a patient interaction in close to four months.

Allowing the interns to practice core clinical skills in a simulated environment and receive feedback before they began residency would be just as important as the baseline evaluations themselves.



After careful planning and discussion with many stakeholders including Ellen Franklin, Director of Clinical Skills Assessment in the Carver College of Medicine, a hybrid plan that adhered to COVID-19 guidelines was developed. To ensure the safety of the interns, simulated patients, and faculty observers, this year's OSCE relied heavily on the use of Zoom, the video teleconferencing platform, similar to what UI Health Care uses for its telehealth visits.

"All things considered, it went pretty well. Anytime you introduce a new element, especially one that relies heavily on technology, you are bound to hit a few bumps," Suneja said. Always a difficult series of activities with so many moving parts to coordinate, certain skill evaluations this year relied on interns and faculty observers to sync up in designated "breakout rooms" via webcams instead of the traditional in-room video cameras. Organizers emphasized how adaptable the interns themselves were and how pleased they were to flex their clinical muscles again. The use of PPE, face masks and shields, also proved no great hurdle for the interns or the simulated patients. As much as anything else, the sooner they familiarized themselves with their safety equipment, the better their actual clinical experiences would be.

Trainees arrive at Iowa from many different medical schools, which may have placed varying levels of emphasis on skill development. This creates a gap between expectations of residency program directors and actual skills of entering interns. The main goal of the OSCE exercise during orientation is to assess interns' baseline clinical skills and to provide just-in-time formative feedback on these critical skills. In addition, this exercise allows the program to address identified gaps through curricular change and individualized feedback. The most valuable part of this exercise for both interns and faculty is the opportunity for them to interact directly with the faculty members after each station.



Interns await instructions on the day of their OSCE

In its first year, the OSCE surveyed the abilities of the 33 incoming Internal Medicine residents with about 20 observers. This year, with the addition of interns from residency programs in the Departments of Family Medicine and of Anesthesia, about 30 evaluators covered the 55 interns assessed in a morning and afternoon session. In order to preserve reliability, the overall structure of the sessions and the skills assessed remained the same from previous years:

- Gather a history and perform a physical examination
- Provide an oral presentation of a clinical encounter.
- Give or receive a patient handover to transition care responsibility
- Handle call from nursing
- Obtain informed consent for tests or procedures
- Interpret EKG and radiographs



During this year's OSCE, participants interacted virtually instead of face-to-face.

In five different ten- to twenty-minute scenarios in half a dozen clinical observation rooms, interns demonstrated their skills, often while interacting with simulated patients, while faculty observers watched via closed-circuit video and took notes for later conversation.

While the interns assigned to the morning session waited in one room, Suneja welcomed the educator-observers in another room down the hall. He welcomed the addition of four nurses to the evaluation team, adding to the range of perspectives and the verisimilitude of the experience. He also reminded the observers, as he would the interns themselves, that the OSCE is meant to be a formative assessment, not an intimidating exam. The results of this, he emphasized, are meant to increase interns' comfort level on day one of residency.

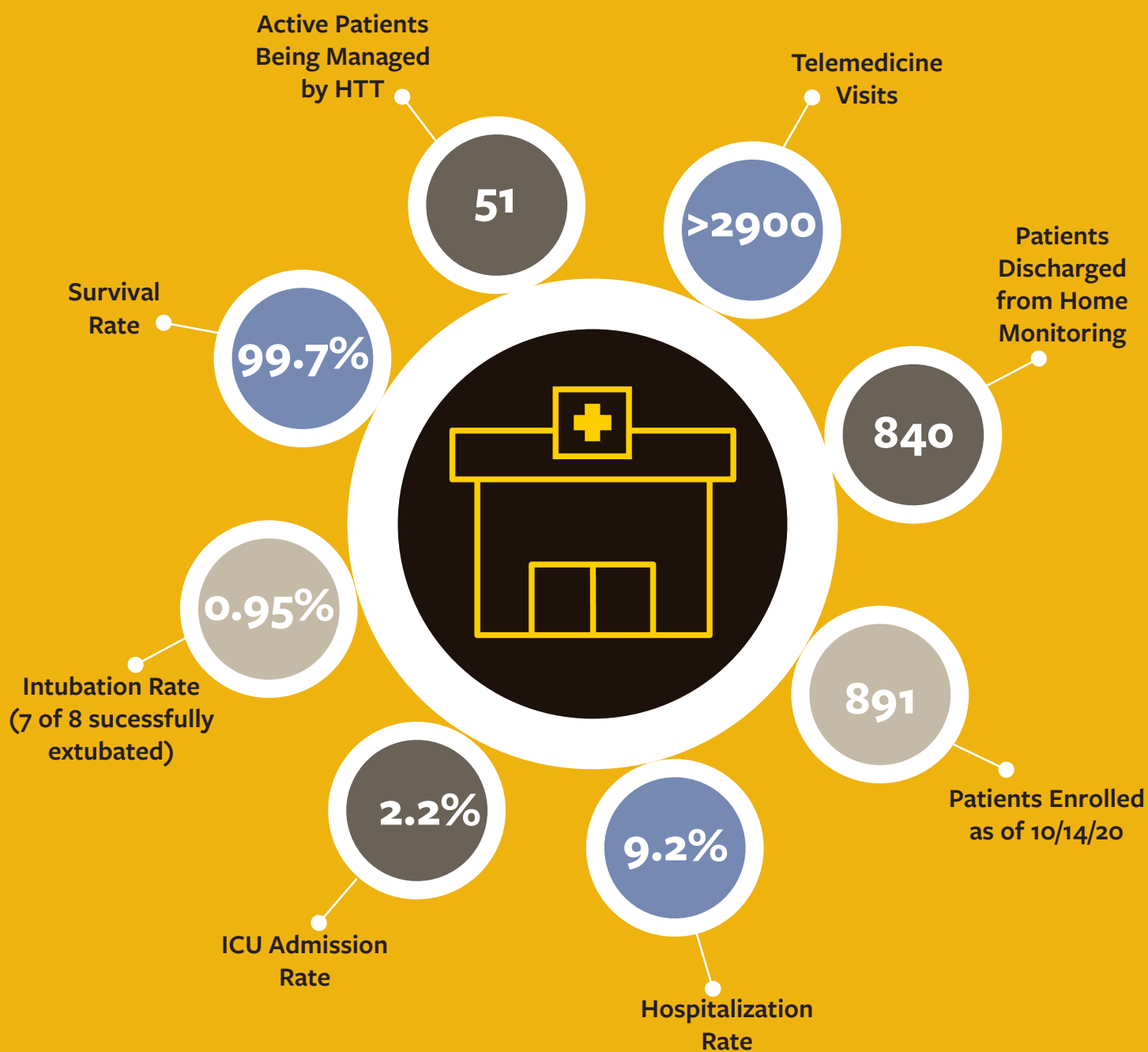
Patient Care

Jeydith A. Gutierrez Perez, MD
Clinical Assistant Professor of
Internal Medicine
General Internal Medicine

Perez has been a critical leader in the ability of University of Iowa Health Care to manage COVID+ patients in their homes. “The UIHC response to the COVID pandemic was impressive, well-orchestrated and allowed each and every one of us to assume additional responsibilities to guarantee the safety of our patients and our staff. I marveled at the quick, smart solutions that were implemented, the willingness to collaborate and the collegiality. I’m extremely proud to be part of this family.”



Internal Medicine's COVID-19 telemedicine initiative*



*Experience as of October 14, 2020

UI Hospitals & Clinics provides virtual hospital for patients with COVID-19 recovering at home

About 80% of people who are diagnosed with COVID-19 will not need to be hospitalized. But recovering at home without medical professionals nearby can still be a daunting prospect for patients and their families.

UI Hospitals & Clinics quickly developed a new initiative that provides direct daily care and support from a team of medical specialists for patients with COVID-19 who are self-quarantined at home. The Home Treatment Team (HTT) is a multidisciplinary team of nurses, physicians, pharmacists, and support staff who use telemedicine to monitor and care for these patients.

"Being diagnosed with COVID-19 is a pretty scary thing but being able to navigate it with the help of a doctor or a nurse really gives our patients the support they need," says Bradley Manning, MD, clinical assistant professor of internal medicine and a hospitalist with UI Health Care.

"It's like the doctor is rounding on you while you are in the comfort of your own home," he adds.

Patients diagnosed with COVID-19 at UI Hospitals & Clinics who are well enough to recover at home are assessed by a nurse over the phone. The same day, the patient receives a monitoring kit delivered to their home. The kit contains a blood pressure cuff and a pulse oximeter (to measure blood oxygen and heart rate), along with instructions for self-isolation and which symptoms to monitor. The patient logs their vital signs—temperature, blood pressure, and oxygen levels—and is "visited" daily by a health care provider from the HTT who contacts them by phone.



Evaluating "virtual visit" effectiveness



Working on the front line of COVID-19 treatment, health care workers are at increased risk for contracting the virus. And providers treating the head and neck are at an even greater risk of exposure to saliva, mucus, and other fluids that hold a high concentration of the virus. To protect these workers, non-essential patient care has been minimized, but plenty of people, including survivors of head and neck cancer, still need to be seen by their physicians. To ensure their continued care, University of Iowa Health Care implemented virtual follow-up meetings.

Aaron Seaman, PhD, an associate in general internal medicine, and Nitin Pagedar, MD, MPH, associate professor of otolaryngology received a one-year, \$15,000 grant from the UI's Holden Comprehensive Cancer Center to research the effectiveness of these telecommunication follow-up meetings. The impact of these meetings has not yet been investigated for head and neck cancer survivorship.

"For head and neck cancer survivors receiving care through UIHC, the COVID-19 risk mitigation processes will include transitioning to a telemedicine format, whereby follow-up encounters involve a phone or video conference between clinician, patients, and possibly caregivers," Seaman said. "In-person encounters will be scheduled only for urgent or emergent symptoms at the surgical oncologist's discretion."

To get a better idea of the possibilities of telemedicine for head and neck cancer survivorship, Seaman and the research team will analyze in-depth interviews with both patients and providers, record fieldwork observations, and collect all other relevant materials. Specifically, they will look at the transition process to telemedicine care, the challenges and successes of the implementation, and patient and provider perceptions of the telemedicine care.

Seaman and Pagedar's team also includes Nicholas Kendell, MS, an epidemiologist in the Department of Otolaryngology; Heather Reisinger, PhD, associate professor in general internal medicine; and Justin Kahler, MHA. Reisinger and Kahler are both in the UI's Institute for Clinical and Translational Science.

The phone visit allows the health care team to monitor the patient's progress in real time to prevent disease complications and quickly intervene if a patient's condition worsens. The visits are also a chance for the patient or family members to discuss concerns or ask questions.

In addition to providing a higher level of care to patients recovering at home, the approach has also revealed some important observations about how COVID-19 disease affects people. In particular, a high proportion of UI Hospitals & Clinics patients have experienced unpleasant taste and fever. Sometimes, these are the only symptoms in the early phase of the disease. These symptoms can make it difficult for patients to consume adequate food or fluids, which can lead to dehydration.

"Based on what we have seen in our patients, staying properly hydrated in the first few days of the illness really seems to be important to a patient's ability to fight the disease and lower the risk of hospitalization," Manning says. "The altered sense of taste is a really dramatic symptom and does make it very unpleasant to eat or drink. So, we really emphasize to patients the importance of staying hydrated."

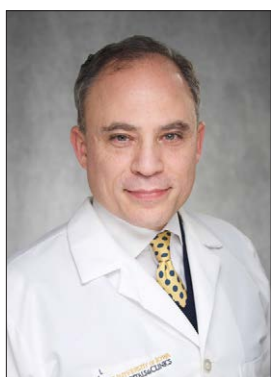
Manning says patients are told to drink enough fluids to ensure a light-yellow colored urine. The daily report of the patient's blood pressure, heart rate, and urine volume allows the team to track their hydration in real time and intervene if necessary.

UI Hospitals & Clinics is one of only a handful of hospitals across the country using this innovative approach to care for patients with COVID-19 who do not need in-hospital care.

"We are encouraged by our preliminary results," Manning says. "We would recommend that other health care systems consider this as a model, so that we may all better care for our patients and improve outcomes during this pandemic."



Dr. Bradley Manning and Dr. Andrew Bryant discuss the University of Iowa Hospitals & Clinics program that provides direct daily care and support to patients with COVID-19 who are self-quarantined.



"We established the Respiratory Illness Follow-up Clinic in June. It was the first such clinic in the state, and one of the first in the country, to provide dedicated care for patients dealing with long-term health complications from COVID-19."

***—Alejandro Comellas, MD
written in an email to The Gazette
regarding the COVID-19 follow-up clinic***

Beating the odds: behind the scenes in the MICU

A closer look at the Medical Intensive Care Unit (MICU) shows why most days are full of optimism for faculty and staff.

When Allison Wynes, ARNP, calls the family members of COVID-19 patients in intensive care, the first messages are often difficult to share. So when her updates are good news, the conversations are especially memorable. “You can hear the relief in their voice,” says the lead advanced practice provider for the MICU. “The gratefulness and the gratitude that they express is really rewarding.”

As one of UI Health Care’s units focused on COVID-19, the MICU is a challenging place, but most days are full of optimism and recovery. “Our patients are doing really well—better than expected,” says Wynes. “Time will tell if that trend continues, but we’ve been doing these amazing things. Everyone is shining. We love our jobs, and we love being able to provide this level of care to our community.”

Committed to evidence-based medicine

Learning from peers in other states who saw early surges, the MICU team is a firm believer in evidence-based critical care for COVID-19 patients.

“While this disease clearly has some differences, the similarities just far outweigh the differences in what we’re used to treating,” says Kevin Doerschug, MD, MS, medical director of the MICU. “Our management is very close to what we’ve always done in our intensive care unit. We’re careful to look for potential differences, but not change without good clinical investigations.” At a time when Twitter and other social media have been full of anecdotes on how to care for COVID-19 patients, it’s easy to see how emotion can influence recommendations for trial-and-error approaches. But when Doerschug sees this type of “expert” advice based on very limited experiences, it makes him cringe.

While the MICU is involved in institution-approved clinical trials for remdesivir and convalescent plasma, along with a few other monitoring studies, their focus is on evidence-based medicine for respiratory failure and acute respiratory distress syndrome. “We’re doing what we’ve always been doing, and we’re getting good outcomes,” says Doerschug. “We try to keep things simple and just do the simple things really, really well.”

Doerschug has always been invigorated by the challenge of helping a patient recover from the worst possible situation. It’s what attracted him to advanced critical care early in his career. He says his work with COVID-19 patients is exactly what he wants to be doing. Like so many other teams within UI Health Care, the MICU embodies the “we stand together” spirit.

New levels of collaboration



“Our interdisciplinary collaboration has always been good, but it’s been brought to a new level,” says Austin Kannegieter, BSN, RN, MBA, nurse manager in the MICU. “We really have done very well in caring for our patients. That’s been very encouraging, but we wouldn’t be able to do that without collaboration, communication, and streamlined practices.” MICU staff have gotten really good at writing backwards on windows and doors. While it seems simple, this process has helped improve two-way communication while limiting exposure in a room with a COVID-19 patient.



Allison Wynes, ARNP, serves as the lead advanced practice provider for the MICU. She teaches an American College of Chest Physicians course called Critical Skills for Critical Care to help other providers across the country better understand evidence-based practices.

In the MICU, advanced oxygen delivery devices are typically used first to try to prevent a patient from ending up on a ventilator. Really good supportive care—which often includes proning (flipping a patient on their belly to help with oxygenation), respiratory therapy, and physical therapy—also are important. “It’s very hard for people to comprehend that sick people should be moving,” says Doerschug. “Perhaps one of the most important things is that patients need to be protected from being bed bound.” If a ventilator is needed, the team recognizes the importance of good ventilator management to optimize settings for the patient and prevent further injury to the lungs.

ECMO, or Extracorporeal Membrane Oxygenation, may also be an option for some of the sickest patients who need to let their lungs rest and heal. UI Hospitals & Clinics has decades of experience in providing ECMO support for the management of life-threatening pulmonary failure, and is one of 31 ECMO Centers of Excellence in the world with gold-level standing. “It’s not uncommon for us to have patients on a ventilator or ECMO support be able to walk down the hallway,” says Doerschug.



Kevin Doerschug, MD, medical director of the MICU, has always been invigorated by the challenge of helping a patient recover from a worst possible situation. It’s what attracted him to advanced critical care early in his career. He says his work with COVID-19 patients is exactly what he wants to be doing.

A safe place

While Wynes does come to work, she’s grateful for everyone who has stayed home because the number of COVID-19 patients in intensive care has been manageable so far.

Kannegieter says that he’s personally had moments of anxiety during this pandemic, but he’s also felt emboldened and encouraged by the many amazing people around him. “We’ve been able to provide patient care at the level that’s needed, with the consistency and frequency that’s needed,” he says. “Our biggest fear is having too many patients. The amount of specialized care that COVID-19 patients need is so great. It’s important to remember that this takes highly trained nurses and providers who are comfortable doing what they’re doing.”

According to Kannegieter, one of the first steps in preparing for COVID-19 patients was working with epidemiology to build confidence in donning and doffing practices related to personal protective equipment and make it part of the workflow. “We’ve proven over the early course of things that this is a safe place,” says Kannegieter. “Despite having a very high number of COVID-19 patients, we’ve been able to maintain a zero incidence level with staff in the MICU.”

I personally feel safer at work than at the grocery store.”

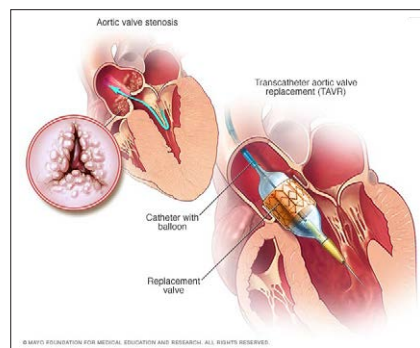
***—Allison Wynes, ARNP
and lead advanced practice provider for the MICU***

And while their work can still be emotional and scary at times, Kannegieter is proud of how the team has found ways to be vigilant and consistent. “It’s been super encouraging to see good outcomes for our patients and proven safety for our staff,” he says. “It really validates all the steps that we’ve taken, and all the hard work that we’ve put in.”

Post-TAVR risks examined in large cohort analysis

The transcatheter aortic valve replacement (TAVR) procedure replaces a narrowed aortic valve that obstructs normal blood flow using a catheter that deploys the replacement valve, obviating the need for open-chest surgery. Three years ago an estimated 300,000 TAVRs had been performed. That number has climbed dramatically since and will continue with the recent FDA approval for expansion of TAVR procedures to even low-risk patients with severe aortic stenosis. However, there are several concerns regarding TAVR and the risk of acute coronary syndrome (ACS), or blockage of coronary arteries that supply blood to the heart, following the procedure.

Using a data sample of 142,000 Medicare patients, a team of Internal Medicine researchers mostly in the Division of Cardiovascular Medicine, revealed a low incidence rate of ACS following TAVR. The study also suggested that the use of invasive management in cases of ACS post-TAVR, is associated with better outcomes. Amgad Mentias, MD; Saket Girotra, MD; Mary Vaughan-Sarrazin, PhD; Phillip Horwitz, MD; James D. Rossen, MD; and Sidakpal Panaich, MD, published their study in the *Journal of the American College of Cardiology: Cardiovascular Intervention*.



TAVR valves are implanted near the openings of coronary arteries, which within six months of procedure, can cause obstruction in coronary blood flow or ACS. Additionally, thrombi or blood clots can form on the valve leaflets. In the case of thrombosis, embolization or the lodging of a blood clot in the coronary artery can block the blood flow. "TAVR patients have high prevalence of preexisting coronary artery disease, and the implanted valve poses some difficulties in accessing the coronary arteries for future interventions in case of an emergency such as a heart attack," Mentias said.

The study also compares outcomes based on the different types of ACS. These types include ST-segment elevation myocardial infarction (STEMI) and non-ST segment elevation myocardial infarction (NSTEMI), both types of heart attack that happen when blood supply to the heart is disrupted, or unstable angina, which is chest pain that could lead to a heart attack. Only 5% of patients studied were admitted with ACS a median of 297 days after the TAVR procedure. Of those ACS admissions, 48% occurred within the first 6 months after the TAVR procedure, and the most common type of ACS was NSTEMI. Among patients with NSTEMI, which is lower risk, invasive modes of treatment such as coronary angiogram, balloon angioplasty, and bare metal or drug eluting stents, were associated with lower mortality. Patients with the higher risk STEMI were associated with higher rates of 30-day and 1-year mortality than NSTEMI, with one third of patients dying within 30 days. This is also much higher than STEMI rates in a non-TAVR setting. Additionally, the team identified precursors for ACS which included coronary artery disease, prior revascularization, diabetes, valve-in-TAVR, and acute kidney injury.

The University of Iowa team collaborated with researchers from the Iowa City VA Medical Center, the Heart and Vascular Institute at Cleveland Clinical Foundation, the Cardiovascular Institute at Warren Alpert Medical School at Brown University, the Division of Cardiovascular Medicine at University of Texas Medical Branch, the Valve Science Center at Minneapolis Heart Institute Foundation, and the Division of Cardiology at Baylor College of Medicine.



Amgad Mentias, MD

Mary S. Vaughan-Sarrazin, PhD

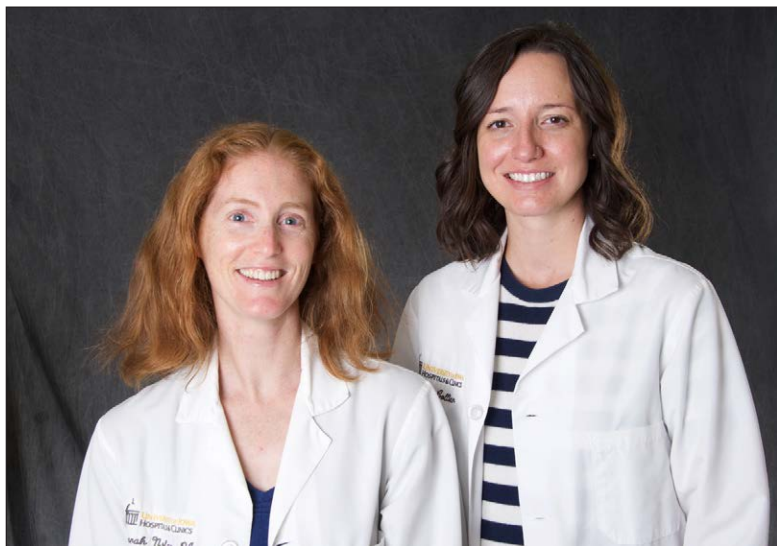
Phillip A. Horwitz, MD

James D. Rossen, MD

Sidakpal Panaich, MBBS

Endocrinology aids in SSI reduction project

An excessive amount of sugar in a person's bloodstream, or hyperglycemia, occurs most often in people with diabetes. When someone experiencing hyperglycemia has surgery, the chances of infection and other risks are also increased. However, a recent study by a team of University of Iowa Health Care specialists from eight different departments found that insulin treatments and more stringent glycemic level checks can reduce the rate of a surgical site infection (SSI) during colon surgery by 40%. Since implementation, hyperglycemia was practically eliminated and SSI rates reduced.

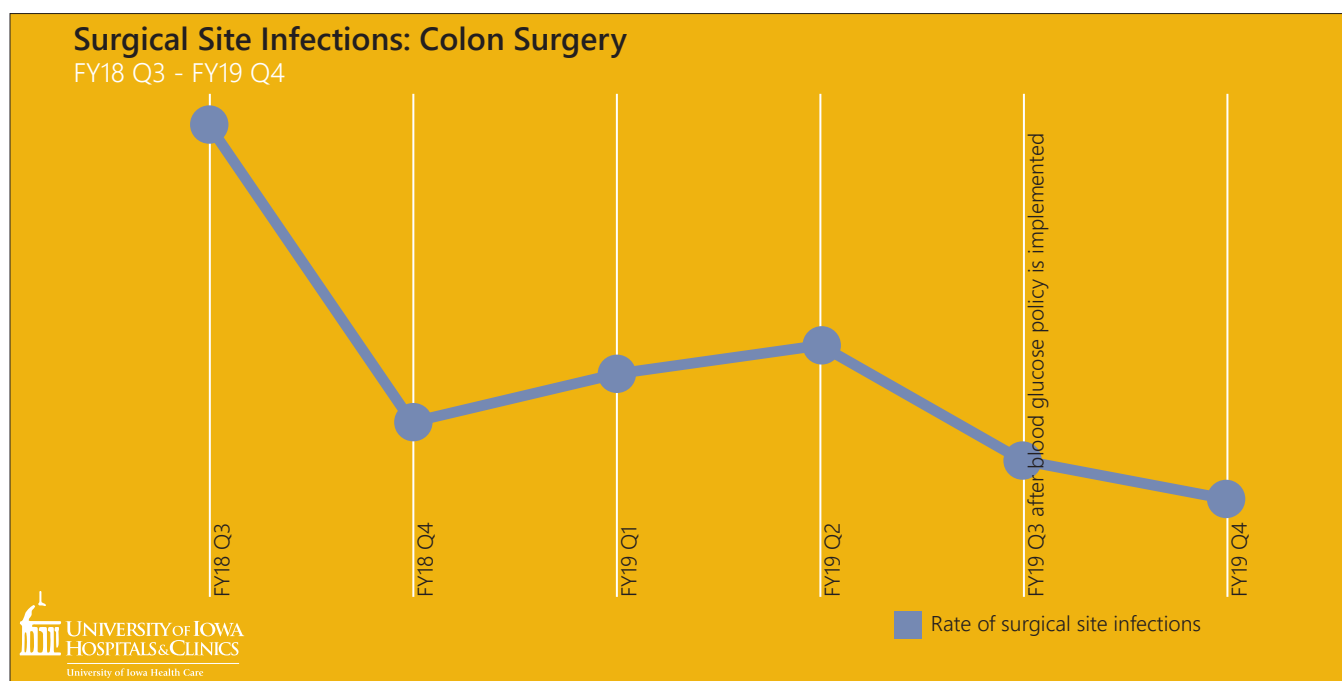


Sarah Nolan, PA and Melissa Collier, ARNP

Two members of the Division of Endocrinology were on the team that developed this new quality and safety protocol. Sarah Nolan, physician assistant, and Melissa Collier, ARNP, assisted with developing a glycemic control protocol. Based on existing CDC and ADA guidelines, as well as recommendations from colleagues within the division, Collier and Nolan constructed a protocol that required providers to monitor a surgery candidate's blood glucose levels before and after surgery, supplying insulin as needed. An iterative process, after initial tests, the team adjusted the plans accordingly.

"There have been decades of ongoing research, and it's constantly evolving. There's a lot of back and forth between very tight control and not enough control, so we're trying to find that middle ground," Nolan said.

Researchers from colorectal surgery, anesthesia, obstetrics and gynecology, pharmacy, nursing, endocrinology, cardiothoracic surgery, and the Quality Improvement Program collaborated on this study.



Philanthropy

Philanthropy enhances the activity that takes place in the Department of Internal Medicine. Research discoveries, innovative training methods, life-saving care and more emerge in part because of private gifts that flow through the University of Iowa Center for Advancement.

Vital Support



Data provided by the University of Iowa Center for Advancement

A gift from the heart: a grateful patient surprises cardiology care team with a gift of \$40,000

Grateful for the exceptional care he received from James Rossen, MD, cardiologist and interventionalist with the Heart and Vascular Center (HVC), from Kara Barquist, MSN, RN, CCRN, nurse manager in the Cardiovascular Intensive Care Unit (CVICU), and from the rest of the Division of Cardiovascular Medicine, an 88-year-old heart patient made a \$40,000 gift to support the HVC and CVICU.

"I've been here a long time and I've had many patients say thank you. I have never had a patient ask how they could support us," said Dr. Rossen.

The grateful patient wishes not to be named, but rather only to draw attention to the extraordinary care team and the exceptional treatment he received. The donor shared, "I want to write a 'little' check for \$40,000 to the cardiology department that was involved with my care. They did such a good job and I feel so good. I want to impact the team that helped with my care."



Cardiology Donor Wall



Kara Barquist, MSN, RN, CCRN, nurse manager on the Cardiovascular Intensive Care Unit (CVICU), receiving the third annual DAISY Nurse Leader Award.

SARS-CoV-2 RNA research collaboration

A gift of \$200,000 has been received from FBB Biomed, Inc., a biotech company based in Iowa City. They harness the latest advancements in genetics, bioinformatics and RNA virology to develop novel approaches in combating chronic inflammatory diseases. This gift will support the collection of blood samples to determine if blood RNA biomarkers can predict the severity of SARS-CoV-2 disease. Patricia Winokur, MD, Executive Dean, Carver College of Medicine, Professor of Internal Medicine - Infectious Diseases is collaborator of this study. Dr. Winokur also currently leads the trial of an experimental RNA vaccine against the novel coronavirus being conducted at the University of Iowa.



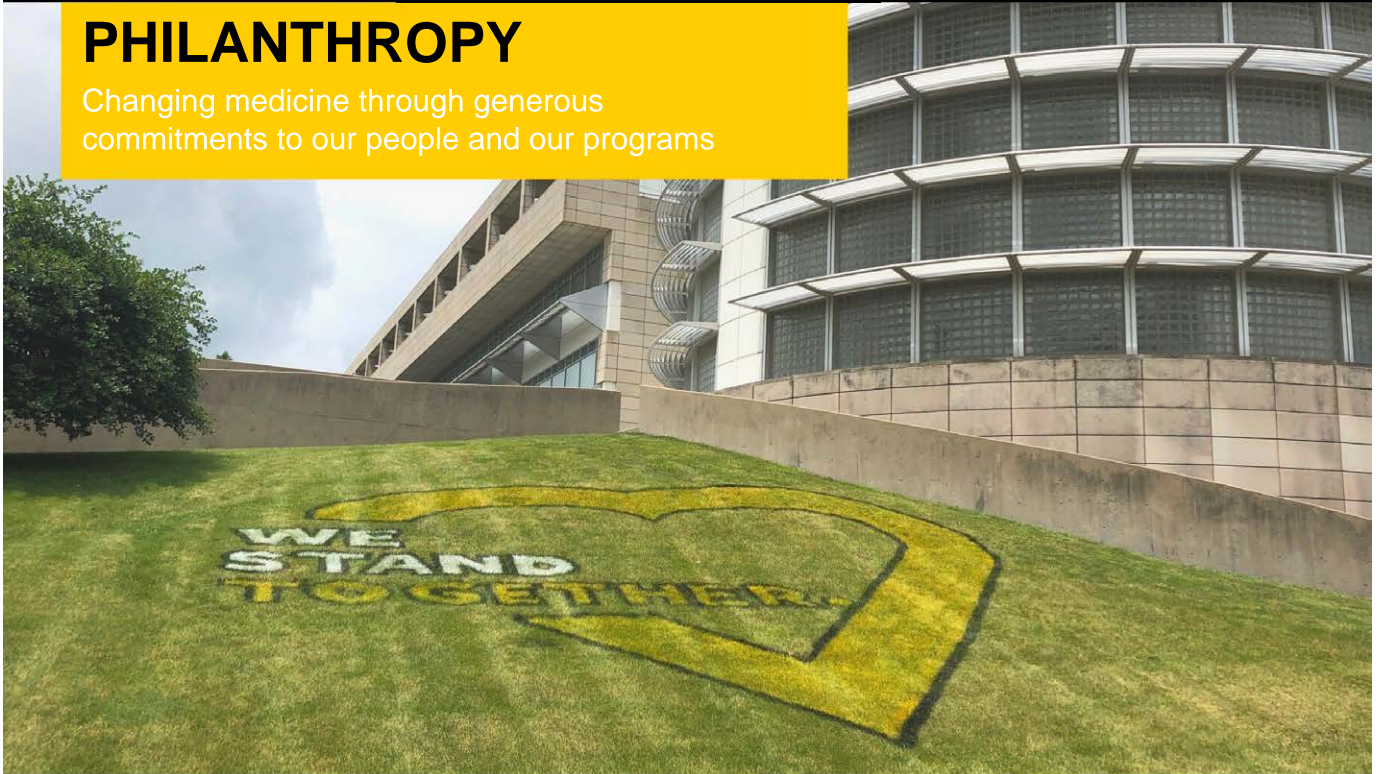
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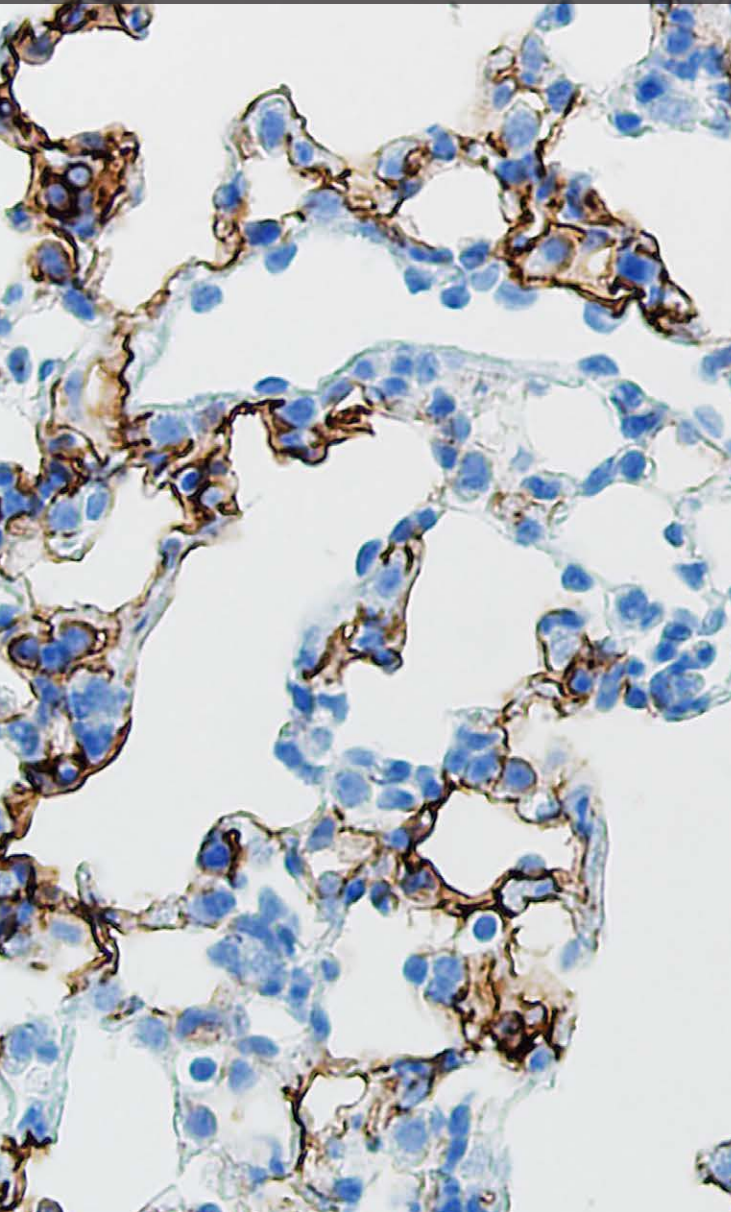
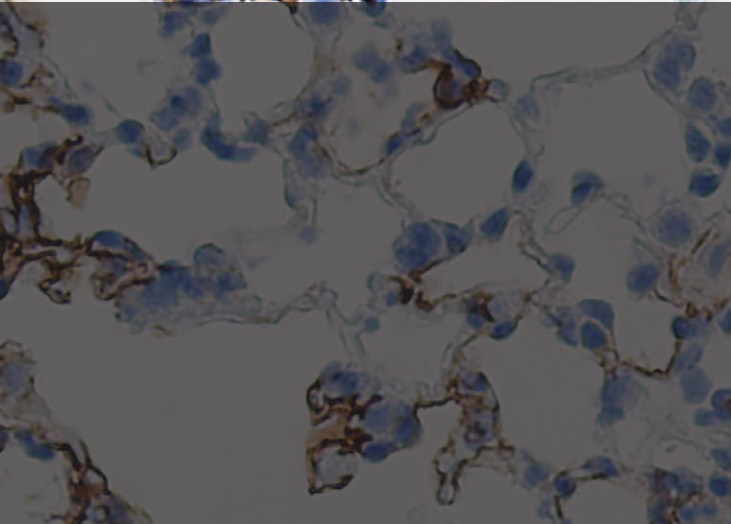
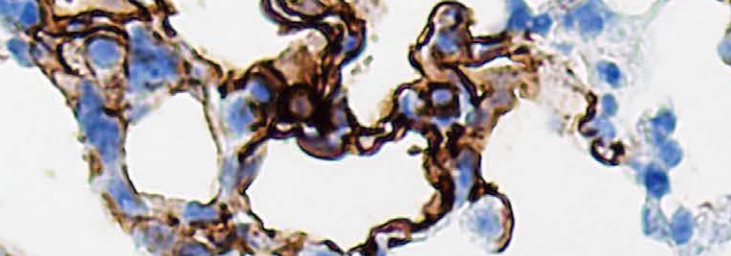
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