

breakthrough

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A Grand Alliance for
the Human Aging Project

One Size Doesn't Fit All

The Court is In Session

Tapping Data to Improve Care for COVID-19



Medicine is a public trust

THE JOHNS HOPKINS CENTER
FOR INNOVATIVE MEDICINE

breakthrough



David B. Hellmann, M.D., M.A.C.P.
Alik Perroti Professor of Medicine

GREETINGS!

These days, whenever I am asked to explain why the Center for Innovative Medicine (CIM) believes so strongly in making medicine a better public trust, I just point to the COVID-19 crisis. The three themes of “medicine as a public trust” — caring, science and justice related to health — have been at the heart of our response to this pandemic and are undoubtedly critical to overcoming it. This issue of *Breakthrough* takes you behind the scenes and reveals the key roles that multiple CIM scholars have played in Johns Hopkins’ response to COVID-19.

You will read how Brian Garibaldi, the Douglas Carroll CIM Scholar, played a critical role in creating ICU protocols for our sickest patients (and provided care for President Donald Trump when he was hospitalized at Walter Reed National Military Medical Center); how CIM Scholar Jessica Colburn mobilized to connect vulnerable older patients in our community with much-needed health information and care; how Antony Rosen, vice dean for research and the Cosner Family CIM Scholar, designed studies to understand the immune response to the virus; and how Panagis Galiatsatos, the Alik Perroti CIM Scholar, collaborated to develop a curriculum to teach schoolchildren across the country (and around the world) how to minimize their risks of getting or spreading the disease. Thanks to the work of these people and many other standout scientists, physicians, nurses, facility engineers and hospital administrators, I have never been prouder to be at Johns Hopkins and to serve as the director of the CIM.

Few could have predicted the devastation wrought by COVID-19. But there is one health care crisis that all of us know is coming: the health consequences of aging. People over the age of 65 are the most rapidly growing population in the United States and in many other developed countries. The “silver tsunami” is here and will be gathering force for several decades to come. That’s why the CIM has committed so fervently to backing the Johns Hopkins Human Aging Project (HAP), initiated by Jeremy Walston, the Salisbury Family CIM Scholar. In this issue, you will learn that the CIM is pursuing the HAP by building alliances with other talented people and programs from across Johns Hopkins — notably from the Johns Hopkins Whiting School of Engineering and the School of Nursing. Thanks to generous donors, including Sarah Miller Coulson, Charles Salisbury, Yiannis Alafouzos, and Caryl and George Bernstein, these alliances are being strengthened by the appointment of four new CIM HAP Scholars.

Stuff happens, including pandemics and aging. Pursuing medicine as a public trust ensures that the CIM will be a powerful force for the good that can come from caring, science and justice in health. Thank you for your support, and best wishes to you and yours.

David B. Hellmann, M.D.

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A Grand Alliance for the Human Aging Project

An exciting new collaboration, which is bringing together top minds from across the university, promises to make Johns Hopkins the global epicenter for healthy aging.

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WE BELIEVE

Medicine belongs to the public. Our mission is to create a different kind of academic medicine, to tear down ivory towers, share knowledge and dedicate ourselves toward one goal—making life better for patients.

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A Grand Alliance for the Human Aging Project

They may hail from varied fields — engineering, nursing and medicine — but several of the university’s top leaders have united in an ambitious undertaking: an alliance that will make Johns Hopkins nothing less than the global epicenter for healthy aging.



The Human Aging Project, led by gerontologist Jeremy Walston and based at the Johns Hopkins Bayview Medical Center campus, will bring together faculty members and students from the schools of medicine, engineering, nursing and business (among other divisions) to collaborate on projects aimed at improving the health and well-being of the nation’s rapidly graying population.

“This is an opportunity to assemble the best minds from across the university to develop advances in person-centered care for the aged — not just to optimize physical function but also to enable older people to age with dignity and remain engaged with society,” says Patricia Davidson, dean of the Johns Hopkins University School of Nursing.

“There is really no university today that is better equipped to lead in this area than Johns Hopkins,” says Ed Schlesinger, dean of the Whiting School of Engineering. “If anyone can do this, we can.”

“What we are creating with this alliance will make it possible to accomplish so much, and I think it could serve as a model across Johns Hopkins for effectively tackling other important problems.”

David Hellmann

Center for Innovative Medicine (CIM) Director David Hellmann, whose vision and tireless advocacy has been key to moving the collaboration forward, describes the new alliance as nothing short of “magical.” He says, “What we are creating with this alliance will make it possible to accomplish so much, and I think it could serve as a model across Johns Hopkins for effectively tackling other important problems.”

A POWERFUL CONVERGENCE

A powerful convergence makes the timing ideal for the Human Aging Project.

The first factor is the seismic demographic shift now impacting the United States. With the aging of the baby boomer generation and ever-increasing life expectancy, the number of Americans ages 65 and older is projected to nearly double between 2018 and 2060 — from 52 million to 95 million, according to the U.S. Population Reference Bureau. That means the sheer number of people with conditions associated with old age (notably dementia, heart disease, osteoarthritis and diabetes) will skyrocket unless something changes.

“I’m a cardiovascular nurse, and when I started 40 years ago, people in their 40s were needlessly dying from heart disease,” says Davidson. “Today, the aging of the population is a great achievement, and it reflects the beneficial impact of modern medicine. But with people living longer, it’s the great responsibility of our society, and health care providers in particular, to maximize the amount of time that aging people can live without disabilities.”

In those intervening decades, the field of engineering has also advanced at a breathtaking pace, notes Schlesinger. “Today, our ability to produce and handle data and do computation at unimaginable scales, our advances in computer networking capabilities, our innovations in artificial intelligence ... all of these tools will allow us to address complex problems that until just recently we considered intractable,” he says.

One of those seemingly intractable problems? The infirmities of old age.

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“Essentially, nurses and engineers are both problem-solvers, and we are both used to working in teams.”

Patricia Davidson

Pointing out that Johns Hopkins was the birthplace of biomedical engineering, a Johns Hopkins program that ranks number one in the nation year after year, Schlesinger notes there is strong historical precedent for building a collaboration. What’s more, he says, “our biomedical engineering program sits in both the School of Engineering and in the School of Medicine, which is really quite unusual.”

The School of Nursing also makes an apt partner for the alliance. Davidson notes many similarities between nursing and engineering. “Essentially, nurses and engineers are both problem-solvers,” she says, “and we are both used to working in teams.”

The vision for the Human Aging Project is to break down existing silos between disciplines so that clinicians can identify the health problems their aging patients face and engineers can come up with carefully tailored solutions. Co-leading the alliance is Peter Abadir, associate professor of medicine, and Najim Dehak, a professor of electrical and computer engineering who specializes in speech processing modeling.

“It’s almost as if we are connecting the brains of the brightest minds in all these different disciplines,” says Hellmann.

VALUE-DRIVEN

Students will play a vital role in the new Human Aging Project and will work in “innovation incubators” — comprising engineering students, an internal medicine resident or nursing doctoral student, and business students from Johns Hopkins Carey Business School — to tackle problems identified by clinician mentors.

So, for instance, one incubator of computer science students might tap into image recognition, machine vision and robotics tools to come up with innovative new technology to address social isolation or cognitive frailty. Another team of electrical engineering students could turn to machine learning and remote sensing to find a new method for preventing chronic wounds and pressure ulcers.

Moving promising solutions into pilot studies and clinical trials will be crucial — as will financial viability, which is where expertise from the business students (and guidance from the Johns Hopkins technology transfer office) comes in.



“We have the potential to leverage remarkable assets from across Johns Hopkins — its people and its many schools — to make quantum leaps to advance the field of geriatrics and improve the lives of older adults.”

David Hellmann

“It’s vital for these solutions to be cost-effective and available to everyone who needs them,” says Schlesinger.

Davidson points to the “medicine for the greater good” ethos that is so central to the mission of the CIM as being a bulwark of the Human Aging Project alliance. “This must be a ‘value-driven’ proposition,” she says. “We must come up with affordable solutions that can be successfully integrated into the broader health care system for the benefit of all.”

With an internal advisory board and working group now in place, alliance leaders are set to start soliciting clinician ideas and student projects early in 2021. Each partner in the alliance has committed to funding faculty members who will collaborate on the Human Aging Project. The CIM, for example, announced in October the funding of four new CIM Human Aging Project scholars:

- **Rasika Mathias**, the *Sarah Miller Coulson CIM HAP Scholar*
- **Peter Abadir**, the *Salisbury Family CIM HAP Scholar*
- **Alex Pantelyat**, the *Alafouzos Family CIM HAP Scholar*
- **Thomas Cudjoe**, the *Caryl & George Bernstein CIM HAP Scholar*

The Schools of Engineering and Nursing are also supporting faculty members dedicated to the Human Aging Project.

Hellmann couldn’t be more excited about what the future will hold. “This is a clarion call to look anew at the idea of aging,” he says. “We have the potential to leverage remarkable assets from across Johns Hopkins — its people and its many schools — to make quantum leaps to advance the field of geriatrics and improve the lives of older adults.” ■



One Size Doesn't Fit All

Over the last two decades, genetics researchers have made dramatic advances in their understanding of the human genome, which has laid the groundwork for precision medicine: therapies and preventive strategies that can be customized to an individual's unique genetic makeup.

Johns Hopkins genetic epidemiologist **Rasika Mathias** is excited by the speed with which her field has advanced. But she has long been troubled by a disturbing reality: Much of what geneticists have learned until now has been based on "interrogating" enormous sets of data on people of European ancestry. In fact, until recently, non-European participants represented less than 5 percent of research study subjects. "This has led to big gaps in our understanding of the genetic predictors of diseases in minority populations, such as African Americans and Hispanic/Latino individuals," she notes.

Mathias is committed to filling that gap. A decade ago, she led the first genomewide association study on the genetics of asthma in a population of African ancestry. Today she leads the Consortium on Asthma among African-ancestry Populations in the Americas, which is dedicated to bridging the gaps in our understanding of the health disparities surrounding asthma.

Most recently, Mathias has turned her attention to aging. Her focus? The telomere, a "cap" at the end of each strand of our DNA that protects our chromosomes, like the plastic tips at the end of shoelaces [see "Telomere Pioneer"]. Our telomeres get shorter as we age, and telomere shortening is involved in all aspects of aging at the cellular level. While the shortening process is impacted by environmental factors, such as stress, obesity, smoking and diet, genetics also plays a role. All of this holds out a tantalizing possibility for scientists: If we could somehow stop or reverse the telomere shortening process, perhaps we could slow the biological aging process and extend the number of years that people could live in good health.

Until recently, non-European participants represented less than 5 percent of research study subjects.

"But to date, there are major holes in our understanding of the genetic predictors of this dynamic part of the human genome," notes Mathias. What's more, "the field of telomere genetics is crippled by the issue of health disparities," she says.

"Telomere length differs between human populations, but there has been little science in African American and Hispanic/Latino populations in this area. This limits not only the validity and generalizability of current knowledge but also, more importantly, seriously hampers our ability to translate the research into clinical practice in an equitable manner."

So Mathias, who was recently named the *Sarah Miller Coulson CIM Human Aging Project Scholar*, has embarked upon an ambitious, multiyear study, which she hopes will bridge these gaps and ultimately lead to precision medicine opportunities for healthier aging — solutions that are ancestry specific.

Telomere Pioneer

The science of telomeres made international headlines in 2009, when Johns Hopkins molecular biologist Carol Greider received the Nobel Prize for Physiology or Medicine for her pioneering research on their structure. Together with Elizabeth Blackburn and Jack W. Szostak, Greider discovered that telomeres are protected from progressive shortening by the enzyme telomerase — an enzyme she discovered in 1984 while a graduate student in Blackburn's lab.

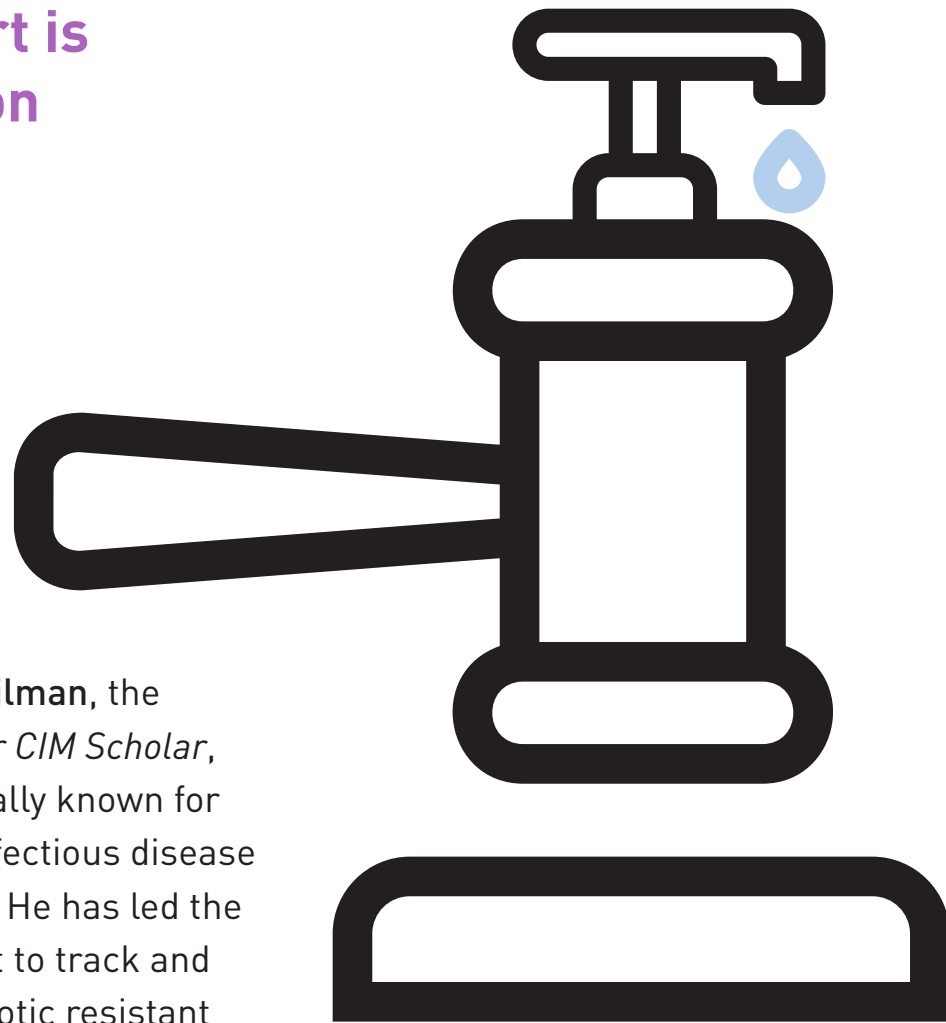
Greider joined Johns Hopkins in 1997 and served for many years as the Daniel Nathans Professor and director of molecular biology and genetics. In 2014, she was named a Bloomberg Distinguished Professor. Greider left Johns Hopkins in October to join the University of California, Santa Cruz as a distinguished professor of molecular, cell and developmental biology.

To do that, she and her team are tapping into enormous sets of genetic data made available through the TOPMed Program (Trans-Omics for Precision Medicine) of the National Heart, Lung, and Blood Institute. "We have the opportunity to leverage the information from 100,000-plus samples to evaluate the association between ancestry and telomere length — and home in on the genetic underpinnings that can explain differences," she says. "This study will be the single largest effort to examine telomere length across the most diverse representation of minority populations."

Once the scientists have identified promising genetic determinants, they will move on to generating polygenic risk scores, a crucial tool in the arsenal of precision medicine that uses an individual's genetic makeup to predict future health outcomes. "This gives us the ability to stratify patients by their risk for aging related outcomes, which will potentially make it possible to target early interventions," she says.

The bottom line: "Our patients are diverse," notes Mathias, "so it's crucial that we develop tools, like polygenic risk scores, that are designed by considering the diversity in human populations. We need to be leaders in building those tools, in an equitable manner." ■

The Court is In Session



Jonathan Zenilman, the *Lavinia Currier CIM Scholar*, is internationally known for his work in infectious disease epidemiology. He has led the national effort to track and prevent antibiotic resistant gonorrhea, and here in Baltimore, he has overseen programs to track and prevent sexually transmitted infections for many years.

So when COVID-19 descended on the United States last spring, forcing local and federal courts to shut down for in-person trials, it's no surprise that he was tapped by James Bredar, chief district judge of the U.S. District Court of Maryland, for guidance on how to reopen the courts once conditions allowed.

"The courts had been able to handle many things remotely, such as paperwork and some hearings," says Zenilman. "However, the Constitution guarantees the right to a trial by jury, and you can't get around that. The question became: How do we do this safely?"

Zenilman spent a long day in June surveying the courthouse facilities with Judge Bredar, including the public spaces, back-office areas, judges' chambers and the holding area for those awaiting trial. Informed by suggestions from Zenilman, the federal district courts in Baltimore put in place a

series of safety measures that allowed some jury trials to resume in late June. The federal district courts opened to the public at the end of September.

"We basically re-engineered all of the standard processes," says Zenilman.

That starts with symptom screening before anyone may enter the courthouse. The voir dire process to select a jury panel is now being conducted by video, and potential jurors who move on to the next round walk into the courtroom one by one. "It's all very carefully choreographed," he says.

Once a trial starts, jurors are separated from one another by six feet, to ensure physical distancing, and plexiglass shields are in place in key areas of the courtroom. Everyone in the courtroom must wear a mask throughout the day, except those on the witness stand. Those who testify enter a large plexiglass booth, which is connected to a HEPA air filter, then remove their masks and wear transparent face shields while speaking.

"The Constitution guarantees the right to a trial by jury, and you can't get around that. The question became: How do we do this safely?"

Jonathan Zenilman

"The consensus was that there is a clear interest for jurors to see the faces of those who are testifying," says Zenilman.

Judge Bredar points to this modification as being particularly valuable. "The court would never have been comfortable making that adjustment on its own," he says. "Having Dr. Zenilman on board allowed us to find nuanced solutions to our problems, where public health needs might seem to conflict with the needs of justice. He had some very clever solutions to our problems."

Zenilman adds, "We also worked with a ventilation engineer to optimize ventilation throughout the courthouse."

Bredar was so impressed by Zenilman's counsel that he asked the epidemiologist to provide expert guidance to his judicial colleagues in other parts of the country.

"I serve on the judiciary's national coronavirus task force with three other judges, and it occurred to me that it would be useful for judges in all 94 districts to hear from a panel of epidemiologists who are independent academics," says Judge Bredar. "It's not necessary that they agree with each other on every point. The idea was to have the panel address all of us, take our questions, argue about the answers in our presence and reason things out."

So Zenilman asked three other experts to join him on a four-person team: Katie Passaretti, director of infection prevention for Atrium Health in North Carolina; William Schaffner, Vanderbilt infectious disease specialist and former Tennessee State epidemiologist; and Daniel Diekema, director of the Division of Infectious Diseases at the University of Iowa, who is an expert in airborne transmission. The group has conducted a series of conference calls with judicial leaders across the U.S. and more recently for federal defenders and court administrators.

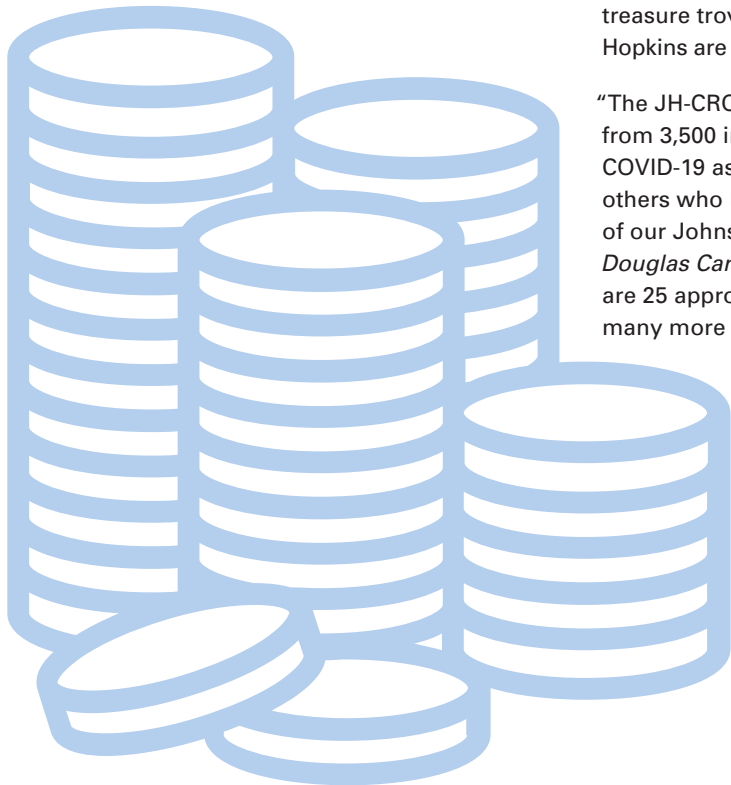
The scientists are filling an information void. "Those on the calls are eager for answers," Zenilman says. "They can ask all kinds of questions, and we are basically doing problem-solving in real time."

And that, Zenilman says, is what he finds so exciting about this line of inquiry. "It's the application of scientific principles and clinical judgment to really figure out solutions to a problem where there is no template. That's the type of stuff I really like."

For his part, Judge Bredar praises Zenilman, who is volunteering his time, "for his willingness to step forward and bring his expertise to bear as we endeavor to keep the courts open during this pandemic. He is a wonderful citizen." ■

Tapping Data to Improve Care for COVID-19

As the medical director of the Johns Hopkins Biocontainment Unit, pulmonologist **Brian Garibaldi** was among the first to care for patients coming into the hospital with severe COVID-19. Almost immediately, he began meeting with other front-line clinicians to share observations that could help shape care protocols and clinical trials — at Johns Hopkins and beyond.



“We were only about two or three weeks into the pandemic,” recalls Garibaldi, “when **Anthony Rosen**, vice dean for research for the school of medicine and the *Cosner Family CIM Scholar*, asked me a simple question: ‘What percentage of our patients have had a lab value of this particular amount?’ And I replied, ‘Gee, Antony, I can tell you anecdotally, but I can’t recall all of them.’”

“‘We don’t have a data repository?’ Antony asked. ‘We have to create one right now!’”

And so they did. In the course of a weekend, the scientists conceived and submitted a plan for what has become the JH-CROWN registry, a collection of data and information about patients having suspected or confirmed cases of COVID-19 infection. While the main source is Johns Hopkins’ electronic medical record system, Epic, the registry also includes data from other sources, such as biospecimen repositories and physiologic device monitoring systems.

The registry, which utilizes the Johns Hopkins Precision Medicine Analytics Platform, offers a treasure trove of data that scientists across Johns Hopkins are tapping into for their COVID-19 research.

“The JH-CROWN registry currently includes data from 3,500 inpatients who tested positive for COVID-19 as well as data from tens of thousands of others who have been tested for COVID-19 at one of our Johns Hopkins locations,” says Garibaldi, the *Douglas Carroll, MD, CIM Scholar*. “Already, there are 25 approved research projects in the works, and many more will be coming online soon.”

“There are some truly exciting things happening with this data set, and it is really informing how we provide clinical care.”

Brian Garibaldi

Some investigations are descriptive, offering insights into the disease trajectory of a particular cohort of patients: “For instance, we are seeing ‘X’ number of Latinx patients with COVID-19, and this is how that rate is changing over time,” Garibaldi says. Other areas of inquiry are more complex — “such as scientists who are conducting comparative analyses of various treatments.”

In a paper published in late September in *Annals of Internal Medicine*, Garibaldi and biostatistician Jacob Fiksel provided insights into the disease trajectory of hospitalized patients with COVID-19 and the risk factors associated with severe outcomes. “Progression to severe disease or death can be rapid,” notes Garibaldi, “so the hope is that these insights can help clinicians intervene effectively during the narrow window after a patient is admitted.”

A number of other scholarly papers are currently under review, and Garibaldi expects them to be published soon. “There are some truly exciting things happening with this data set,” he says, “and it is really informing how we provide clinical care.”

Data from the JH-CROWN registry is also being shared with the National COVID Cohort Collaborative, a resource that is collecting data from electronic health records of different institutions across the country and harmonizing it into a “data enclave” for use by investigators all over the nation.

“By tapping into all of these data resources,” says Garibaldi, “we are really hoping to make discoveries that will change the way we think about COVID-19 and the way we manage it.” ■

Bedside Ultrasound Proves Critical

One tool that has proved crucial to Johns Hopkins doctors in diagnosing COVID-19 — particularly early in the pandemic, when limited resources made it difficult to transport patients for X-rays — is a hand-held “point-of-care” (POC) ultrasound device. It can be used right at the bedside to examine patients’ heart and lungs.

Two years ago, Center for Innovative Medicine CIM donor and Board member Susan Immelt saw the value in this “little gadget” that Brian Garibaldi and his colleagues were pioneering to improve the quality of bedside care. To help support their efforts in improving bedside training, she funded Garibaldi as the *Douglas Carroll, MD, CIM Scholar*, in memory of her father, who launched the Department of Rehabilitation Medicine at Baltimore City Hospitals (which later became Johns Hopkins Bayview Medical Center) and who enjoyed a long and esteemed career at Johns Hopkins, where his portrait now hangs.

“Thanks to Susan Immelt’s support and funding from Dr. Hellmann and the Women’s Board of Johns Hopkins Hospital, we had these POC ultrasounds all ready to use for our patients with COVID-19. The ultrasounds proved incredibly important in our ability to gather clinical information, and their investment in our work has really benefited our patients during this pandemic,” says Garibaldi.

And the impact didn’t end there, he notes. A grateful patient, impressed by his COVID-19 care that utilized POC ultrasound, made a gift to fund additional devices, and The Johns Hopkins Hospital matched that gift.

“So now we have an entire fleet of hand-held devices,” says Garibaldi, “which not only helps patients but also boosts our ability to teach medical residents in how to use them.”

High Calling

When COVID-19 caused Donald Trump to be hospitalized in October, Johns Hopkins’ Brian Garibaldi was among the team of physicians tapped to provide medical treatment to the president. In a press briefing held the day before President Trump’s release from Walter Reed National Military Medical Center, Garibaldi noted “what an honor and privilege it is to take care of the president [and] to be part of such a talented and multidisciplinary team here at Walter Reed.”

Connecting with Seniors in Crisis

When the COVID-19 pandemic descended like a sledgehammer last winter, our nation’s senior population was impacted perhaps most severely. Virtually overnight, vulnerable older people — many coping with chronic illnesses, such as diabetes, heart disease and cancer — were confined to their homes and forced to shift to telehealth platforms for their health care.

For many older people, it wasn’t an easy transition to make. “Though a number of older adults are able to connect to video visits, accessing technology has been a big barrier for many, and some older adults do have technology, like smartphones or tablets, but may not know how to use them,” says *Center for Innovative Medicine (CIM) Scholar Jessica Colburn*, a specialist in geriatric medicine at Johns Hopkins Bayview Medical Center.

Before the pandemic hit, Colburn had been leading a series of community-based health initiatives for seniors living in communities across Maryland. Thanks in part to funding from an anonymous donor to the CIM, she and her team were able to mobilize to provide connection and health access to these seniors at the height of the COVID-19 crisis — and beyond.

“Because that funding was available immediately, we were able to respond quickly to the high needs that arose,” she says.

In one initiative, health educators Tracy Knox and Carolyn Moore reached out by phone to seniors who had previously completed a six-week course in chronic disease self-management. How can we best support you, they asked? One woman urgently needed an automated blood pressure reader because hers had broken, and it wasn’t safe for her to go out to the store. Other seniors asked for a supply of masks. The two health educators were only too happy to help.

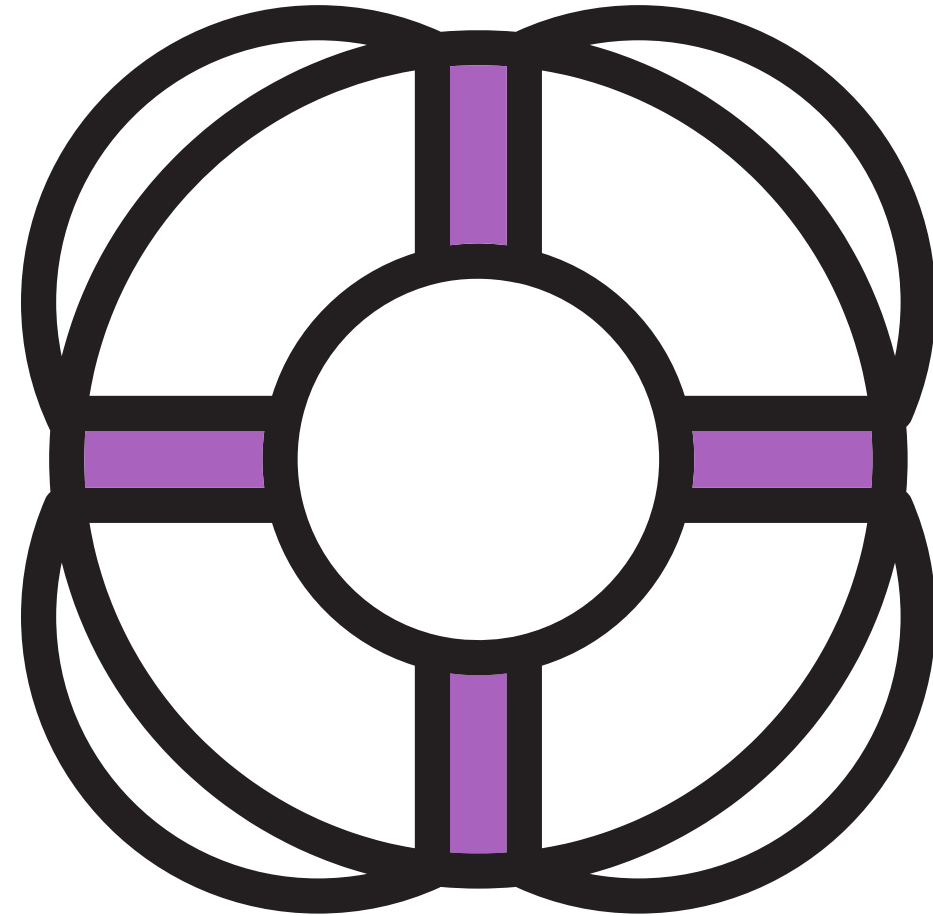
In addition to meeting those needs, Knox and Moore helped staff a caregiver service corps for the state, a telephone hotline for caregivers in

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Jessica Colburn

immediate need. “Older adults and their caregivers had so many questions and so many worries. They were really struggling,” says Colburn. Patients and caregivers who called the hotline could speak with someone to guide them. “And we were able to connect them with resources for urgent needs, such as food, medications, backup respite care and equipment, such as hospital beds,” says Colburn.

Now, more than eight months into the COVID-19 crisis, many vulnerable seniors continue to remain at home — but their health needs must be met. In a partnership with Catholic Charities, Colburn and her colleagues have embarked on a pilot program with a 94-unit senior living facility in Baltimore County. The clinicians are providing residents with electronic tablets and coaching them on how to use them so that the seniors can comfortably connect with their health care providers via video visits. The



Johns Hopkins team is using a similar strategy at a food distribution site on the Eastern Shore.

“The idea is that when seniors come to pick up food, they can do a video visit with their health care provider at the same time,” says Colburn.

For so many seniors living in the age of COVID-19, who are cut off from regular visits with friends and family and from the activities they love doing the most, social isolation has become a worrisome threat to health, notes Colburn. So she is also collaborating on a project with Johns Hopkins to assess the impact of hearing loss and social needs of older people living in senior housing. For that project, Colburn is working with Johns Hopkins ear, nose and throat specialist Carrie Nieman, who has expertise in hearing impairment, and geriatrician **Thomas Cudjoe**,

who was recently appointed the *Caryl & George Bernstein CIM Human Aging Project Scholar*.

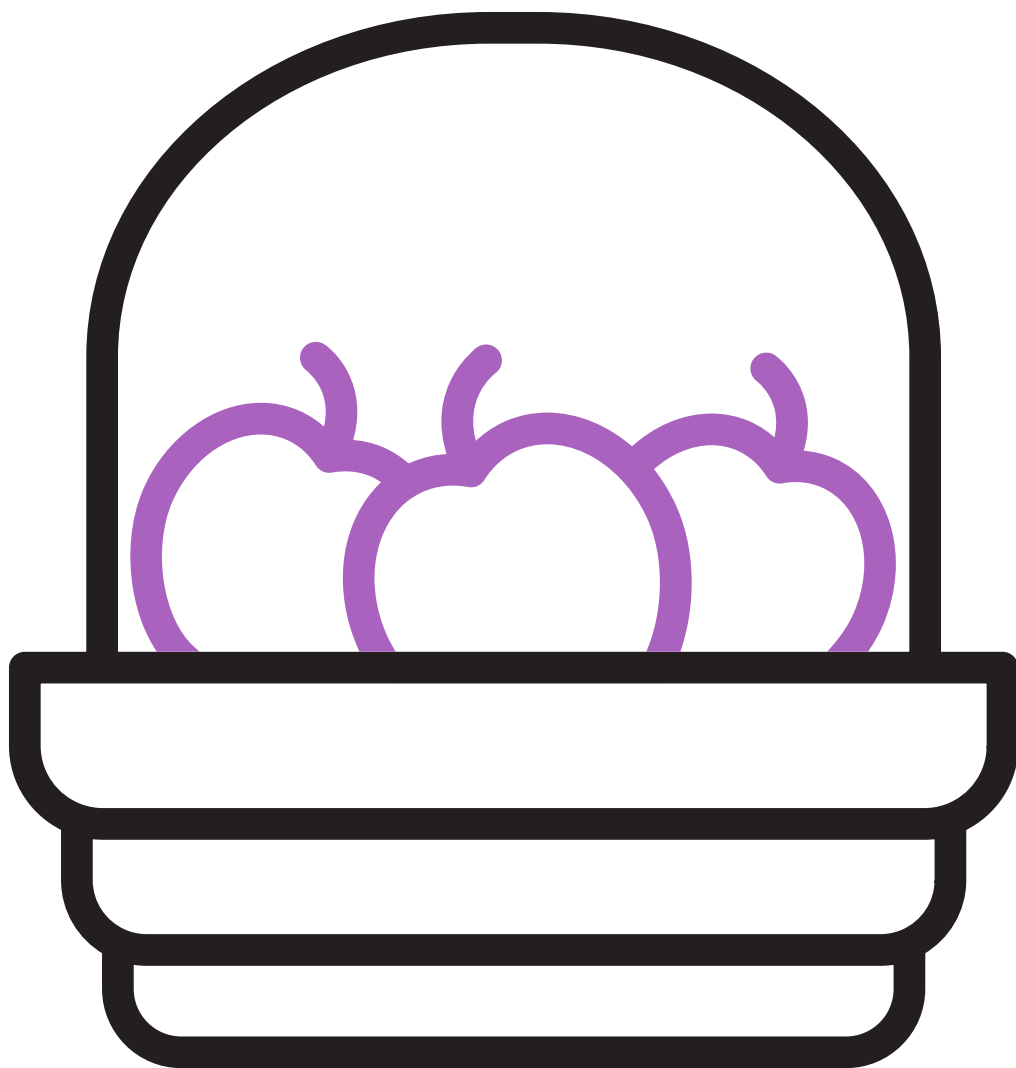
“Our goal is to work with primary care teams to come up with ways to help seniors make more effective social connections during this time of COVID-19,” she says.

“As we continue to live with the restrictions imposed by COVID-19, health outreach to older people and their caregivers in our community is more important than ever,” says Colburn. “We are grateful for the federal funding that has supported our work, but the additional money we have received from the Center for Innovative Medicine has allowed us to grow and expand in ways we could not have otherwise.” ■

Knowledge is Power for School Communities

As COVID-19 has taken its grim toll, schoolchildren across the state and around the world have been plagued with questions and worries.

“What we were hearing from our community partners is that teachers are really struggling to respond. All the kids want to talk about is COVID-19,” says **Panagis Galiatsatos**, the *Aliki Perroti CIM Scholar* and co-director of Medicine for the Greater Good, an important initiative of the Center for Innovative Medicine.



“Our partners asked: Can you please help?”

Galiatsatos didn’t hesitate. “It seemed obvious that Johns Hopkins should be the source schools turn to for reliable information about COVID-19,” he says.

So, building on school connections that Medicine for the Greater Good had already established through the Lung Health Ambassadors initiative (see *Breakthrough*, Summer 2020), Galiatsatos

“What we’re hearing from teachers and superintendents is: You guys talk about science at a level we can understand. You’re providing power at a time when we all feel powerless, and hope when we feel hopeless.”

Panagis Galiatsatos

worked with others across Johns Hopkins to create a COVID-19 curriculum for schoolchildren.

What started as a curriculum used in a handful of Baltimore City schools over the summer has now grown into a teaching series being used in 26 states (from New York to Hawaii) and in six countries, including Cypress, Guatemala, Ghana, Panama, Sudan and Tanzania. More than 90 volunteer instructors — including Johns Hopkins undergraduates; students from the schools of medicine, public health and nursing; and medical residents — have been trained to teach the classes.

Galiatsatos says the vision to create a COVID-19 school curriculum and take it beyond Baltimore schools came from Alicia Wilson, vice president for economic development at the Johns Hopkins University and Health System. “She saw the potential to bring together a cohort of the best of Johns Hopkins, experts from the schools of medicine, public health, nursing and education, to develop a curriculum that would really engage kids,” he says.

... **The reach of the COVID-19 teaching series will soon expand even further, thanks to a partnership with the Smithsonian Institution that was finalized this fall. “This will give us an even more global outreach,” says Panagis Galiatsatos, the *Aliki Perroti CIM Scholar*.**

The resulting teaching series — which is offered remotely — is tailored for both elementary school children and middle and high schoolers, with 12 modules that last for 30 minutes each. Instructors spend the first part of each class leading a lesson on topics such as the physics behind face masks, mathematical models of the pandemic, and the chemistry of handwashing and hand sanitizer. Then they move to a hands-on activity and a chance for questions and answers.

“This is Medicine for the Greater Good at its very best! The schools are so appreciative, it just melts my heart,” says Galiatsatos, who has also led town hall discussions on the science of COVID-19 for some school systems. “What we’re hearing from teachers and superintendents is: You guys talk about science at a level we can understand. You’re providing power at a time when we all feel powerless and hope when we feel hopeless.”

Sara Wallam, a second-year medical student at Johns Hopkins, has completed her training and can’t wait to start teaching her first classes. “Like many other people, I’ve been worried about how some people are not taking this pandemic, and the necessary precautions, as seriously as health educators would like them to,” she says.

The COVID-19 curriculum for schools is a win-win, she says, empowering students to become health ambassadors within their communities: “This not only engages the individual students so that they will make healthier decisions for themselves, like wearing a mask, but they will take what they’ve learned and talk about it with their friends and family,” says Wallam.

Galiatsatos elaborates: “I’m a lung doctor who has been treating COVID-19 patients, and I think calling health care workers the front line is a misnomer,” he says. “I tell the students, who want to help protect others from the virus, that *they* are the front line of defense.” ■

IN SHORT

Durso Tapped as Director

Chris Durso, a *CIM Miller Coulson Scholar* and one of the four architects of the Miller Coulson Academy of Clinical Excellence, has become the next director of the Department of Medicine at Johns Hopkins Bayview Medical Center. He succeeds Center for Innovative Medicine (CIM) Director David Hellmann, who led the department with distinction since 2000.

“Dr. Durso’s stellar leadership of the number one-ranked Division of Geriatric Medicine and Gerontology over the past decade speaks volumes, and his contributions as executive vice chair over the several months have only added to my confidence in his abilities,” noted Mark Anderson, director of the Department of Medicine in the Johns Hopkins University School of Medicine, in making the announcement. He added, “I am grateful to have someone so dedicated to JHBMC and the Department of Medicine take on this critically important leadership role — especially during this unprecedented time.”

In taking on leadership of the department, Durso steps down as director of the Division of Geriatric Medicine and Gerontology. Cynthia Boyd, the *CIM Lavinia Currier Scholar*, is now serving as interim director of the division. ■

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