A Look Back on the First COVID Year

Dalhousie University Department of Medicine

ANNUAL REPORT
2020-2021

DALHOUSIE UNIVERSITY

Vison & Mission

VISION

A vibrant department respected for its culture of collaboration and commitment to the health of its communities.

MISSION

Together, we advance patient care by fostering excellence in research and education.

DoM Forward Together

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE Department of Medicine

nova scotia health

Table of Contents

Looking Back on the Year That Changed the World

Greetings: Message from the Department Head

LOOKING BACK ON THE YEAR THAT CHANGED THE WORLD

The world today is very different than it was some 22 months ago, before the novel coronavirus emerged in force. None of us in the healthcare system could have dreamt at the time that, nearly two years later, we would still be grappling with this virus and the havoc it creates as it spreads and mutates and spreads even more.

All we could do at the beginning was respond to the emerging new reality with courage, determination, intelligence and teamwork. In so doing, we have been able to blunt the impact of COVID-19 on the population and health-care systems here in the Maritimes, while contributing to global efforts to understand and combat this virus better.

As you will see in the stories we feature in this report, the Department of Medicine and its members have played key roles in Nova Scotia's response to COVID-19—not only as physicians on the frontlines but also as leaders, advisors, supporters, educators, advocates and more. From **Dr. Shelly McNeil**, who stepped into the new role of Nova Scotia Health's senior medical director of COVID planning and implementation in the summer of 2020, to **Dr. Sharon Mulvagh**, who shone light on the impact of COVID on women's hearts, to **Dr. Lisa Barrett**, who not only informed us through her media appearances but also established a biobank of COVID samples for use by scientists all around the world—we are blessed with these and so many more exceptional department members who have not hesitated to meet the challenge head on. You will meet many more of them in this report; there are too many for me to name in this short message.

I am so proud of our department members for their willingness to be flexible, creative, collaborative and resilient as they have been forced to alter their ways of providing patient care, teaching trainees, conducting research, and running the department's programs in the midst of a global pandemic. I am amazed when I see how much they were able to accomplish in line with our departmental strategic plan, in spite of constantly shifting circumstances. It hasn't been easy. A lot of people are tired and discouraged, there is no way around it. What inspires me is how readily our members have reached out to support one another through trying times, informally and also through our now more-formalized departmental wellness initiatives.

In challenging times, people's true strength of character is tested and revealed. I can say with certainty that our members have more than passed the test. Their efforts, in collaboration with colleagues in other departments, disciplines and jurisdictions, have directly contributed to saving hundreds if not thousands of lives here in the Maritimes, while keeping our healthcare systems running.

I hope you enjoy reading about some of these efforts in the following pages. The world has changed and so have we, in some ways for the better. I invite you to learn more.

Sincerely,

Christine Short, MD, FRCP(C), FACP
Head, Department of Medicine, Dalhousie University
Central Zone, Nova Scotia Health
Associate Professor of Medicine, Dalhousie University

This report serves to highlight our successes and advances over the past year, and to provide insight into our efforts to improve patient care and outcomes. Despite the pressures of the pandemic on our healthcare system, our physicians and staff found new and innovative ways to support our patients and to continue to move the needle on key initiatives that support our **2020/2024 Strategic Plan – Forward Together**.

In the past year, we have achieved numerous successes, including the development of new protocols and procedures, the expansion of our services to better serve our patients, and the implementation of new technologies to improve patient care. We are excited to continue to advance our research, clinical care, and educational endeavors in the coming year.

The Department of Medicine is a diverse group of highly trained professionals dedicated to improving health through education, research and providing exemplary clinical care to our community.

WE ARE

201 AFP Subspeciality Physicians (plus **12** in Nephrology)
3 PhD members (Dal and NSH)
277 Dalhousie Appointments (Academic; joint/cross/adjunct, community-based specialists) – **114** in Nova Scotia, and **163** in NB, PEI, and other
141 Medical Residents (PGY1-PGY6)
95 Administrative staff

OUR SPECIALTIES

Cardiology
Clinical Dermatology & Cutaneous Science
Digestive Care & Endoscopy
Endocrinology & Metabolism
General Internal Medicine
Geriatric Medicine
Hematology
Infectious Diseases
Medical Oncology
Nephrology
Neurology
Palliative Medicine
Physical Medicine & Rehabilitation
Respirology
Rheumatology

WE PROVIDE CARE

COVID provided us with the opportunity to expand virtual care and to maintain our ambulatory patient care volumes. Despite the many restrictions we've encountered with COVID, we have been able to provide timely care to many of our patients, with a **34%** increase of visits done via virtual methods.

Description	2020-2021
TOTAL Ambulatory Care Registrations	**195,039**
In-Person Visits	**86,103**
Virtual Visits (including phone, ZOOM, Telus, MEDEO, Real Presence, Telehealth)	108,936
% In-Person	**44%**
% Virtual	**56%**
# Multidisciplinary Teams	**17**
% Inpatient Occupancy	**87%**
# Daily Inpatient Care Visits	**61,995**
# Inpatient Consults	**18,821**
# Consults by the Senior Internist in the ED	**2,280**
# IMCU/CCU patients seen	**11,642**
# Other Services (such as ECGs, Echos, Chemo injections, PFTs, transfusions, Caths, EMG, etc.)	**178,370**

WE TEACH

141 Postgraduate residents
18 External learners in Core Internal Medicine Residency Training program
39 Weeks Internal Medicine Residents who rotated to a community site for a 4-week rotation
101 Undergraduate electives
362 Undergraduate tutors for Dalhousie Medical School

WE RESEARCH

$16,379,508 Total research funding
368 Peer-reviewed publications (by **535** Department of Medicine authors)
151 Published abstracts (by **241** Department of Medicine authors)
39 Non peer-reviewed publications (by **41** Department of Medicine authors)
295 Research presentations (by **500** Department of Medicine authors)
5 Endowed chairs

RESEARCH FUNDING – DIVISION TOTALS

(Funds received by NSHA and Dalhousie, fiscal 2020-21)

Cardiology	**$3,172,340**
Clinical Dermatology & Cutaneous Science	**$447**
Digestive Care & Endoscopy	**$429,913**
Endocrinology & Metabolism	**$576,051**
General Internal Medicine	**$97,760**
Geriatric Medicine	**$543,202**
Hematology	**$6,558,815**
Infectious Diseases	**$894,970**
Medical Oncology	**$1,347,920**
Nephrology	**$1,790,647**
Neurology	**$93,771**
Research - General	**$102,850**
Respirology	**$337,114**
Rheumatology	**$433,707**

EDUCATION

Physician and Resident Burnout: Departments Collaborate to Promote Wellbeing Through Pandemic

Even before COVID-19 made its appearance on the world stage, the Department of Medicine was making moves to address the high rates of burnout among physicians and residents. With the arrival of the pandemic, these efforts kicked into high gear.

"Just two weeks before the pandemic, my colleague **Dr. Chris McKnight** and I met with our department head, **Dr. Christine Short**, to talk about physician wellness," recalls **Dr. Katalin Koller**, an assistant professor in the Division of Geriatric Medicine. "She was already interested in prioritizing physician wellness and creating a stronger wellness infrastructure in the department."

Dr. Matthew Miles, a new department member who had recently completed his residency in gastroenterology at Dal, was also keenly interested in wellness and had met with Dr. Short to discuss how he could contribute. When the pandemic hit, Dr. Short put Dr. Koller's and Dr. Miles' names forward to **Dr. Jackie Kinley**, a Dalhousie psychiatry professor and founder of the Resilience Institute, to see if they could assist with a new physician wellness initiative she was spearheading.

This physician wellness working group quickly became the hub of resource-sharing for the province. Dr. Kinley, numerous psychiatrists, psychologists, residents, Drs. Koller and Miles, and an expanding circle of other physicians from across Nova Scotia, began meeting bi-weekly to discuss ways of supporting each other and their colleagues through the new stresses brought on by a once-in-a-century social-medical crisis.

"Our goal was to create a central resource for wellness information and to support physicians in leadership positions to promote wellness more effectively," says Dr. Miles. "We began disseminating wellness information across the province and holding regular small-group meetings where people could discuss their challenges, share their experiences and feelings, and give and receive support."

Dr. Miles' and Dr. Koller's roles as physician wellness co-leads for the Department of Medicine were soon formalized and they recruited "wellness champions" from each division to assist them in spreading the word and engaging staff members in the discussion about how to protect their mental and physical wellbeing in the midst of extraordinary pressures.

"People identified," says Dr. Miles. "Residents and staff physicians were stressed by the loss of control of their schedules and the loss of contact with colleagues and family members, uncertainty about how the pandemic would play out, and by the difficulty of delivering virtual care to patients from home with their children there. They were looking for peer support on how to handle the stress."

Residents in particular felt the pinch, especially those who were training outside their home province and could not connect with family and friends in person.

"It was really hard at first, before we had adapted to the new protocols and requirements," recalls **Dr. Felix Zhou**, a third-year resident and wellness rep in the Core Internal Medicine residency training program. "Resident wellness was suffering. We were working harder than ever but didn't have access to our usual social activities and stress relievers."

With support from the Department of Medicine, Dr. Zhou and fellow members of the resident wellness committee, **Drs. Maggie McGuire**, **Alexandra Dittrich**, **Sarah Lane**, **Hayam Hamodat**, and **Alex Robin**, began organizing wellness events for residents.

"We had a trivia night, a bingo night, and many other online social get-togethers that gave us a chance to connect, have a laugh and release some of the pressure," says Dr. Zhou. "Seeing our fellow residents outside of work really helped."

The situation was similar for residents in New Brunswick, where sometimes even travel inside the province was limited. "Restrictions made it difficult for residents to build bonds with each other, which is hard because we depend on each other so much," says **Dr. Rachael Chan**, chief resident of the Internal Medicine residency training program in Saint John. "Funding from the program allowed us to organize a series of events on Zoom, including a Secret Santa, cookie decorating and games nights, that gave us a chance to connect and blow off steam."

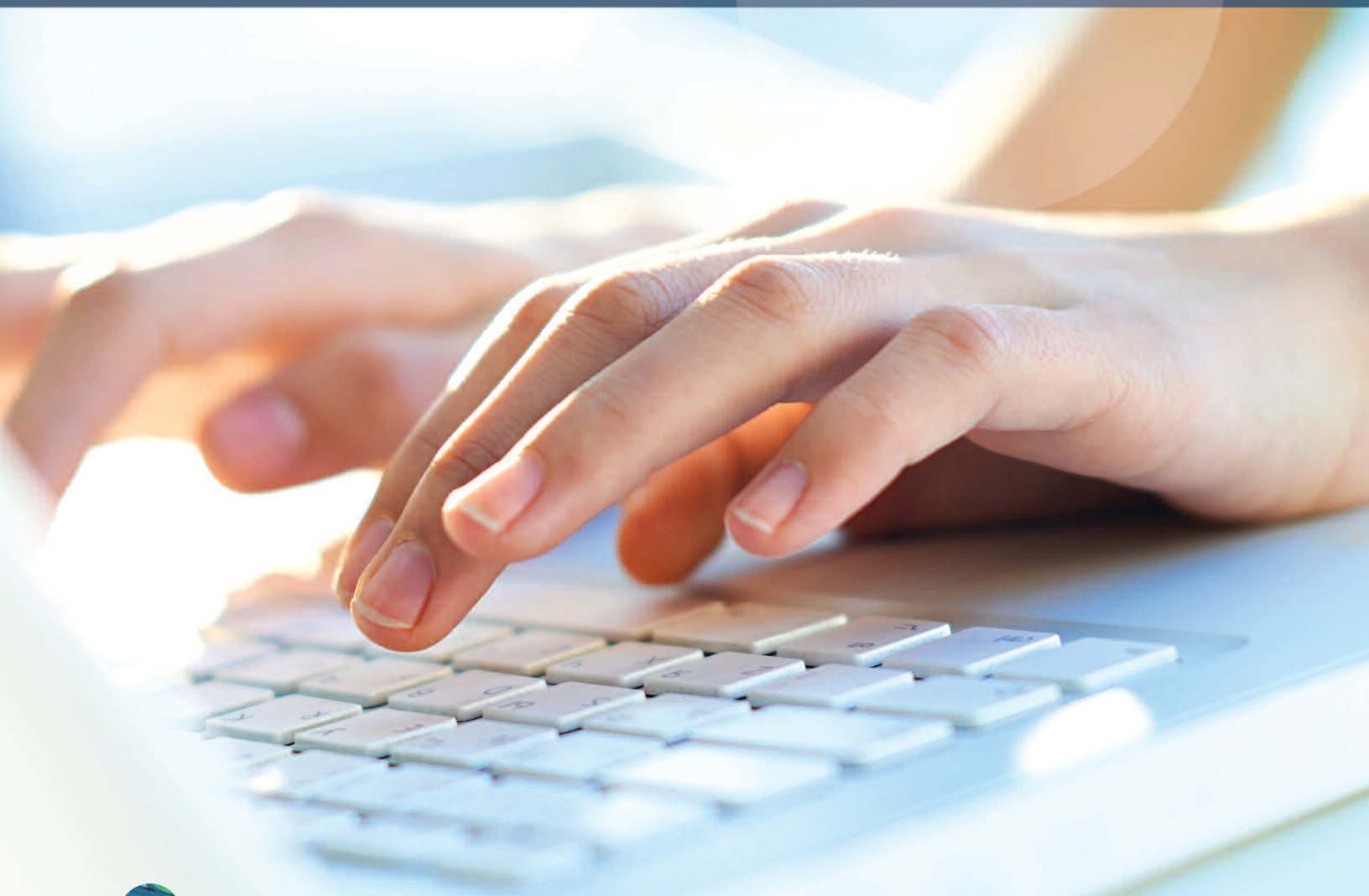
When restrictions eased off, the program provided funding and protected time to allow residents to meet regularly for "ice cream rounds," where they could see and speak with each other in person.

More than a year and a half into the pandemic, residents and staff have acclimatized, but wellness remains a focus in the Department of Medicine.

"Everyone has been giving 150 per cent since COVID began and we need to regain a sense of self and balance," notes Dr. Koller. "I'm grateful for the support of the Department of Medicine and the Faculty of Medicine in making physician wellness a priority. Now that we have a physician wellness working group and wellness champions in place in the department, we will move forward with greater momentum to create a supportive environment for wellness."

EDUCATION

Adapting to the New Normal: Continuing Professional Development Goes Virtual



On March 16, 2020, the Department of Medicine's weekly Grand Rounds were cancelled due to the pandemic lockdown. Previously, the education and research lectures had been held every Tuesday from 8 a.m. to 9 a.m. at the Halifax Infirmary's Royal Bank Theatre, drawing around 70 people. Those who weren't able to attend in person could join via a telemedicine broadcast at other hospitals.

"When we realized the lockdown wasn't going to be short term, we needed to figure out how to meet virtually," says **Dr. Trudy Taylor**, a rheumatologist and chair of the Department of Medicine's Continuing Professional Development (CPD) committee.

In 2018, CPD committee members had considered a virtual option to Grand Rounds, thinking it might boost attendance. They investigated Skype for Business but found it wasn't user friendly and dropped the idea. When COVID-19 hit, they looked at other options and chose Nova Scotia Health's Zoom platform.

Mary Synette, administrative assistant for Senior Leadership and Continuing Professional Development in the Department of Medicine, had never used Zoom before. "We were winging it," she says. "I'm not a tech expert, but we figured it out ourselves because it's a really easy program to use."

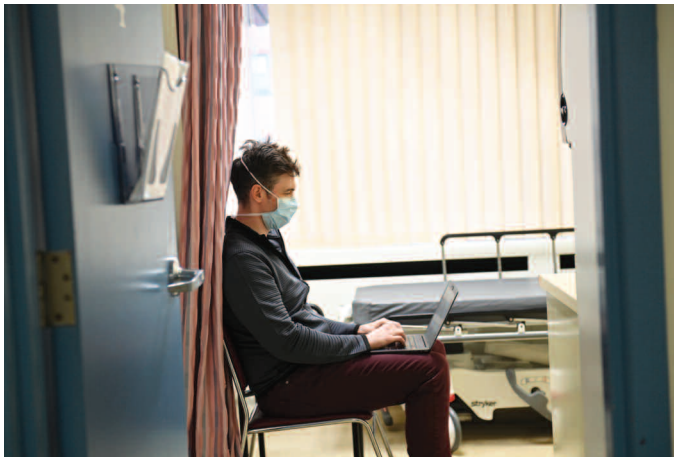
On April 28, Grand Rounds resumed virtually, with attendance climbing to between 150 and 200 per session. Since there was a need for rapid learning around COVID-19, the rounds focused on that for the rest of the year.

"We had an overwhelmingly positive response," says Dr. Taylor. "I'd get emails from people saying now they could watch from their office or their phone. We were also pleasantly surprised by the interactivity—we had good discussions in the chat boxes."

In September of 2020, the department returned to a regular Grand Rounds schedule, with attendance remaining high throughout. When everyone can meet in person again, the committee is considering offering a hybrid in-person/corporate Zoom model that will allow sessions to be recorded.

"Going virtual has knocked down barriers for people to attend," says Dr. Taylor. So much so that two annual Department of Medicine workshops—the one-day Medicine Matters and the half-day Teach the Teachers—went virtual too. "We hired an external IT company to facilitate those because the sessions had breakout rooms, which takes a fair amount of coordination," says Synette.

Perhaps the brightest spot was the annual spring party for the Department of Medicine, where awards are presented for clinical, research, quality, education and administrative achievements. "It's a fun, social event that's usually held at a hotel and is an opportunity for us to appreciate our members for the great things they do," says Dr. Taylor.



Instead, this now more inclusive party went virtual, with **Dr. Gord Gubitz** entertaining attendees as master of ceremonies with live award presentations—including a special award for the Division of Infectious Disease's work around COVID-19, presented by **Dr. Robert Strang**, Nova Scotia's Chief Medical Officer of Health—and great memories coming up in the chat box.

The transition to virtual platforms was a silver lining of the pandemic. "It made me reflect on why we didn't do this earlier," says Dr. Taylor. "Before, there wasn't that force to push us there. It's a real lesson in never giving up."

EDUCATION LEADERSHIP

- **Dr. Chris Gray** reappointed as DoM Education Director for a second term until 2025

Faculty of Medicine positions

- Dean of Medicine – **Dr. David Anderson**
- Associate Dean of Undergraduate Medical Education – **Dr. Evelyn Sutton**
- Skilled Clinician Unit Head – **Dr. Mary-Margaret Keating**
- Senior Associate Dean – **Dr. Darrell White**

COMMITTEES

- Education Committee
- Internal Medicine Program Directors' Committee
- Internal Medicine Residency Program Committee
- Core Internal Medicine Competence Committee
- MTU Education Committee
- Point of Care Ultrasound (POCUS) Committee
- Simulation Committee
- Undergraduate Medical Education Committee
- Continuing Professional Development Committee

ACTIVITIES / EVENTS

- Academic Half Days
- Rounds
- Call schedules
- Bedside teaching
- Lectures
- PGY4 Subspecialty Match
- CaRMS PGY1 Match3
- Resident Retreat
- NEJM/OSCE Exams

CONTINUING PROFESSIONAL DEVELOPMENT

- **Dr. Trudy Taylor**, Chair, Continuing Professional Development
- Teach the Teachers (annual professional development)
- Medicine Matters (annual professional development)
- Weekly Grand Rounds year round (September to June: faculty members; July and August: Residents)

UNDERGRADUATE

- **Dr. Bakhtiar Kidwai**, Undergraduate Director of Education
- **Dr. Chris Gallivan**, Clerkship Director
- **Dr. Tallal Younis**, Assistant Clerkship Director
- **Nina Nedic**, DoM Undergraduate Coordinator

Significant involvement by Department of Medicine

Med 1 Core Units (Pre-Clerkship)

- Foundations of Medicine
- Host Defense (Hematology, Infectious, Immunity and Inflammation)
- Metabolism 1 (Gastroenterology, Endocrinology, Nutrition and Oral Medicine)
- Professional Competencies I
- Skilled Clinician 1 Program
- Research in Medicine (RIM)
- Electives

Med 2 Core Units (Pre-Clerkship)

- Neurosciences
- Metabolism II (Cardiovascular, Respiratory & Renal)
- Musculoskeletal & Dermatology
- Integration
- Professional Competencies II
- Skilled Clinician II
- RIM
- Electives

Med 3 (Clerkship)

- Internal Medicine (spend 12 weeks in doing A1, A2 and A3 rotations in MTU and subspecialties)
- Electives
- Wednesday Seminar Series
- Pier 1 & 2 Program

Med 4 (Clerkship)

- Electives
- PIER 3 & 4 Program

IMU Link Program

Examinations

- Phase 1 OSCE
- Phase 2 OSCE
- Phase 3 OSCE
- Phase 4 OSCE
- MCQ Databank Quality Assurance Project

POSTGRADUATE & SUBSPECIALTY

- **Dr. Ian Epstein**, Postgraduate Director of Education
- **Dr. Aaron LeBlanc**, Associate Program Director for Core Internal Medicine Program
- **Dr. Alexa Smith**, Site Director, Saint John Core Internal Medicine Residency Training Program
- **Katie Barkhouse**, Education Manager
- **Amanda MacKay**, Regional Coordinator for the Core Internal Medicine Program
- **Isha Seth**, Education Coordinator
- **Alicia Mason**, Saint John Program Administrator

Training Sites

- Halifax (major site)
- Saint John (major site)
- Dartmouth
- Fredericton
- Moncton
- Miramichi
- Sydney
- Yarmouth
- Kentville
- Bridgewater
- New Glasgow
- Charlottetown

Chief Residents

January-December 2020

- **Dr. Rachel Sullivan**, Halifax
- **Dr. Matthew Nunn**, Halifax
- **Dr. Nicole Beckett**, Saint John
- **Dr. Elizabeth Simms**, Chief Resident-MTU

January-December 2021

- **Dr. Peter Gregory**, Halifax
- **Dr. Suzanne Boursalie**, Halifax
- **Dr. Shannon Rasmussen**, Saint John
- **Dr. Rachael Chan**, Saint John
- **Dr. Steven Morrison**, Chief Resident-MTU

Total Residents

- Halifax **46**
- Saint John **12**
- Regional **4**
- Subspecialties **79**

Program Directors by subspecialty for Undergraduate (UG) and Postgraduate (PG)

- **Dr. Andrew Moeller**, Cardiology
- **Dr. Ashley Sutherland**, Dermatology (direct entry residency program)
- **Dr. Churn-Ern Yip**, Endocrinology
- **Dr. Stacey Williams**, Gastroenterology
- **Dr. Allen Tran**, General Internal Medicine
- **Dr. Maia von Maltzahn**, Geriatric Medicine
- **Dr. Mary-Margaret Keating**, Hematology
- **Dr. Ian Davis**, Infectious Diseases
- **Dr. Alwin Jeyakumar**, Medical Oncology
- **Dr. Neil Finkle**, Nephrology
- **Dr. Gordon Gubitz**, Neurology
- **Anne Marie Krueger-Naug**, Palliative Medicine
- **Dr. Anita Mountain**, Physical Medicine & Rehabilitation (direct entry residency program)
- **Dr. Simon Houston**, Respirology
- **Dr. Elana Murphy**, Rheumatology

Program Administrators by subspecialty

- **Sharon Dunn**, Cardiology
- **Hyen Rosen**, Dermatology (direct entry residency program)
- **Tumay Boxill**, Endocrinology
- **Sarah Cooper**, Gastroenterology
- **Victoria Gilks**, General Internal Medicine
- **Ruth Ampi Kanakam**, Geriatric Medicine
- **Shelbie Stacey-Allen**, Hematology
- **Susan Brushett**, Infectious Diseases
- **Leah Day**, Medical Oncology
- **Rod MacLaggan**, Nephrology
- **Lindsay Anderson**, Neurology (direct entry residency program)
- **Jo-Ann Clarke**, Palliative Medicine
- **Alysha Nelson**, Physical Medicine & Rehabilitation (direct entry residency program)
- **Gift Madusha**, Respirology
- **Jessica Burchell**, Rheumatology

CLINICAL CARE

Steady as She Goes: Leadership Keeps Health System on Course as Pandemic Lands

As COVID-19 landed in Nova Scotia, health care leaders acted quickly to take charge, first of public health measures and then of the acute care system, which would be deeply affected in the months to come.

Dr. Shelly McNeil, head of the Division of Infectious Diseases, stepped into the new role of Nova Scotia Health's senior medical director of COVID planning and implementation in the summer of 2020, prepared to lead a concerted effort to protect the health and safety of patients and staff in the province's hospitals.

"My job is to protect the health care system… our patients, and our staff," she says. "Introducing COVID into a hospital would have huge implications if it should spread through the ranks of our staff, not to mention the patients."

Her early days on the job were incredibly stressful. "Everything was new and we had to make rapid decisions in spite of an evidence void," says Dr. McNeil. "Ideas kept changing as new information emerged. As soon as we thought we had a handle on what was happening with this virus, something changed. Our hopes for a way out of a global pandemic were dashed, as the news kept getting worse and worse."

One of Dr. McNeil's first steps was to bring together clinical and operational leaders from all four health zones into a high-level planning committee, the Clinical and Medical Advisory Committee, which later became the COVID Network, while also forming a smaller, more nimble core team involving leaders from Infection Prevention and Control, Occupational Health and Safety, Medical Microbiology, Infectious Diseases, the IWK, and Interprofessional Practice and Learning.

"We began gathering and examining data as it was becoming available, seeking the evidence and advice to help us identify best practices and make recommend-ations to Nova Scotia Health," recalls Dr. McNeil. "There were so many questions. What personal protective equipment did we need, for which staff, in which circumstances? How should we organize our COVID units? How should we handle patients showing up in emergency with known or suspected COVID? We were starting from ground zero and needed to develop standardized care pathways on the fly— what labs to order, what drugs to administer, what procedures to follow to manage patients' symptoms."

Initially, Dr. McNeil and the committees she led had jurisdiction for acute care only, but it soon became clear they would need to support long-term care, primary care and emergency health services as well. For example, they struck a long-term care task force–chaired by **Dr. Lynn Johnston**, former head of the Division of Infectious Diseases–and began providing staff with crucial information to assist them in managing the risks in their hard-hit facilities.

As the pandemic evolved, more new needs emerged. The Nova Scotia Health Research and Innovation team began providing critical support to the COVID Network, conducting rapid reviews of research evidence and scanning new developments in the clinical arena in order to inform policy.

"It's been a full-time job on top of a full-time job," she says of her role in the COVID response, "and there were so many things that kept me awake at night. It was always a struggle to ensure the utmost wellbeing of staff and patients and we had to err on the side of safety. Our decisions impacted the day-to-day work of all NS Health teams and the experience of our patients, so finding a balance that would keep everyone safe while keeping things as normal as possible was our constant challenge."

Dr. McNeil says Nova Scotia Health is maintaining stringent controls in between waves, even if disease activity is low, because that can change so quickly. "Masks will be gone from the mall long before the hospital," she says. "We are not post-pandemic yet, especially with the surge in Delta variant in the United States and parts of Canada, and vaccinations not yet at the levels we need for full protection."

As SARS-CoV-2 transitions from pandemic to endemic, Nova Scotia will benefit from the lasting legacy of the leadership team that was struck to manage an unprecedented threat.

"Never before has there been a team of clinical and operations people across virtually all disciplines and spanning the province, coming together to make major decisions," says Dr. McNeil, who hopes the COVID Network will become the Infectious Diseases Network. "There is incredible power in bringing together the people who know the evidence that's driving needed changes, with the people who understand all the implications of those changes and will actually oversee them being implemented. It has been an amazing and humbling experience."

CLINICAL CARE

One Person One Record: New Technologies Improve Quality and Efficiency of Care

It's a gargantuan task to consolidate all of the patient information platforms across Nova Scotia's acute care sector into one streamlined system, but it's a task **Dr. Ashley Miller** is eager to complete.

"COVID really put the pressure on to reveal the flaws in our information systems," says Dr. Miller, former head of the Division of General Internal Medicine and chief medical information officer (CMIO) for Nova Scotia Health and the IWK Health Centre as of January this year. "Even emailing test results was a manual process, which became almost overwhelming in the third wave. In the absence of a fully integrated IT system, it took a huge degree of effort to keep up."

But even in the midst of the demands of COVID, Dr. Miller and her colleagues have continued to press ahead with preparations for the One Person One Record initiative, in collaboration with the province's Department of Health and Wellness, Nova Scotia Health and IWK.

"Our goal is to have a single record for each Nova Scotian that captures all of their interactions with acute care," explains Dr. Miller. "The vision for One Person One Record is that all of a patient's lab results, diagnostic imaging studies, ambulatory visits, emergency room visits and inpatient stays will be accessible in a single electronic record, whether the care was received in Sydney, Halifax, Yarmouth or anywhere in between."

As CMIO, Dr. Miller works closely with Nova Scotia Health's chief nursing information officer and senior director of information management and information technology to analyze health technology needs and lead the implementation of digital solutions that facilitate care transformation.

In addition to ensuring the acute care clinical information system is fully operational, the goal is also to enhance integration with patient records in primary care (where most family practices have their own stand alone electronic medical record), emergency health services, and long-term care.

"It's a laborious process, but the payoffs will be worth it," she says. "Right now, doctors have to log in to five or more separate systems to get all of the information they need about one patient. Often, we are unable to access any information at all if the care occurred at a different hospital. So we end up working with limited information, or relying on patients to tell us what we need to know, but the patient might not know or remember or be well enough to communicate." As a result, tests get re-done, services are duplicated, and precious time and resources are lost. This is not good for anyone.

Photo: Jollymore Photos

The goal is that a new system will incorporate tools to standardize the approach to care province-wide. "We are rationalizing forms, creating templates, and streamlining clinical workflows so that there is a preferred way to do things," Dr. Miller explains, adding that the Department of Medicine is a key stakeholder in these efforts, with many members playing a role in the immense amount of preparatory work required, such as refining clinical standards. "This will ensure consistency of care, while giving providers fast access to the information they need, along with more time to spend with patients at the bedside."

At-home oximeters provide peace-of-mind in COVID's third wave

Every person in Nova Scotia diagnosed with COVID in the pandemic's third wave received a pulse oximeter, shipped to their home, within a day of diagnosis. This allowed them to monitor their oxygen saturation from the safety and comfort of home, knowing they could contact a hotline for immediate answers if their levels started to drop.

A small grant from the QEII Foundation allowed Dr. Miller to purchase 1,000 oximeters and tablets for Nova Scotia Health, and even loan some of them to Northwood, where staff used them to monitor residents with COVID.

"Things can go downhill quickly with COVID," says Dr. Ashley Miller, who heads the COVID Community Virtual Care Team in addition to her role as Chief Medical Information Officer. "The home pulse oximeters allowed us to keep patients safely at home, with the ability to transfer them to hospital quickly if their oxygen levels started to drop."

CLINICAL CARE

In the Eye of the Storm: Internists Lend a Helping Hand to Long-Term Care

As the first cases of COVID-19 hit the Northwood long-term care facility in Halifax, medical staff at Northwood and internal medicine specialists at Nova Scotia Health took heed. With their expertise in acute care medicine, frailty and care planning, they knew that a proactive and collaborative approach would be required to manage the impact of this dreadful new disease on frail, elderly people.

"We recognized early on that pandemic planning in the province had focused on preparing hospitals for expected surges of patients, while long-term care was largely underprepared to handle a crisis of this magnitude," recalls **Dr. Nabha Shetty**, head of the Division of General Internal Medicine in Dalhousie's Department of Medicine. "Stemming from our sense of social responsibility and our passion for improving the care of the frail elderly, I and several of my colleagues in the Department of Medicine decided we had to do something to help."

Meanwhile at Northwood, medical director **Dr. Barry Clarke** was reaching the same conclusion: he and his team would need support with the difficult and delicate work of helping residents and families to understand how residents' degree of frailty would influence their expected outcomes in the event of COVID infection. "I knew from the beginning that the vast majority of residents at Northwood, being extremely frail, would not tolerate a transfer to hospital to be treated for severe COVID," says Dr. Clarke, a faculty member in Dalhousie's Department of Family Medicine. "While most nursing homes in Canada sent their residents to hospital, we knew that caring for our frailest residents in place would be much easier on them."

It would be much more difficult to determine, however, which mild to moderately frail residents could benefit from a transfer to the hospital, and which would potentially be harmed by the stress, with little to no benefit. The internal medicine specialists—from the Department of Medicine's divisions of General Internal Medicine, Geriatric Medicine and Palliative Medicine—formed the MED-LTC Support Program to help.

"We created a call schedule so one of our team members would be available for consultation around the clock, and we set about systematically meeting with residents and families, via telephone and Zoom," says **Dr. Laurie Mallery**, a professor in the Division of Geriatric Medicine, noting that they performed 63 in-depth consultations in total, not just at Northwood but many long-term care facilities in Nova Scotia.

"Our goal was to make sure residents and families understood their degree of frailty and how frailty stage would affect their outcomes related to aggressive interventions such as intubation," Dr. Mallery says. "After providing them with information about their expected outcomes, we co-developed care plans with the residents and their decision-makers."

At the same time, Drs. Shetty, Mallery and their colleagues—**Drs. Paige Moorhouse**, **Anne Marie Krueger-Naug**, **Maia von Maltzahn** and **Ashley Miller**—recognized that this was a pioneering partnership between acute and long-term care and should be studied. They applied for and received $50,000 from the Nova Scotia COVID-19 Health Research Coalition to evaluate the impact of their efforts, with Drs. Moorhouse and Shetty as principal investigators.

"It took foresight and leadership to frame a research question and secure funding at such a chaotic time," reflects **Tanya MacLeod**, an evaluation specialist at Dalhousie University who is conducting the research. "We found that the specialists' involvement gave the nursing home staff the space they needed to provide the hands-on care that enhanced the lives of many residents with COVID, while the specialists handled the fine-grained task of developing updated care plans in consultation with residents and their families."

Not only did the MED-LTC team's involvement in COVID care planning help prevent unnecessary, potentially traumatizing interventions such as intubations and transfers to hospital but, according to Dr. Krueger-Naug, it provided its own therapeutic benefit. "Residents and families felt reassured knowing we had taken the time to gain a solid understanding of their medical and functional status, and were taking this as well as their vulnerabilities, values and wishes into account in developing the most appropriate care path."

Dr. Barry Clarke agrees. "We felt way more supported and were able to focus on looking after our residents who were ill with COVID, which allowed us to save many lives that might otherwise have been lost," he says. "And our residents' families felt more informed and therefore more comfortable with the decisions that had to be made."

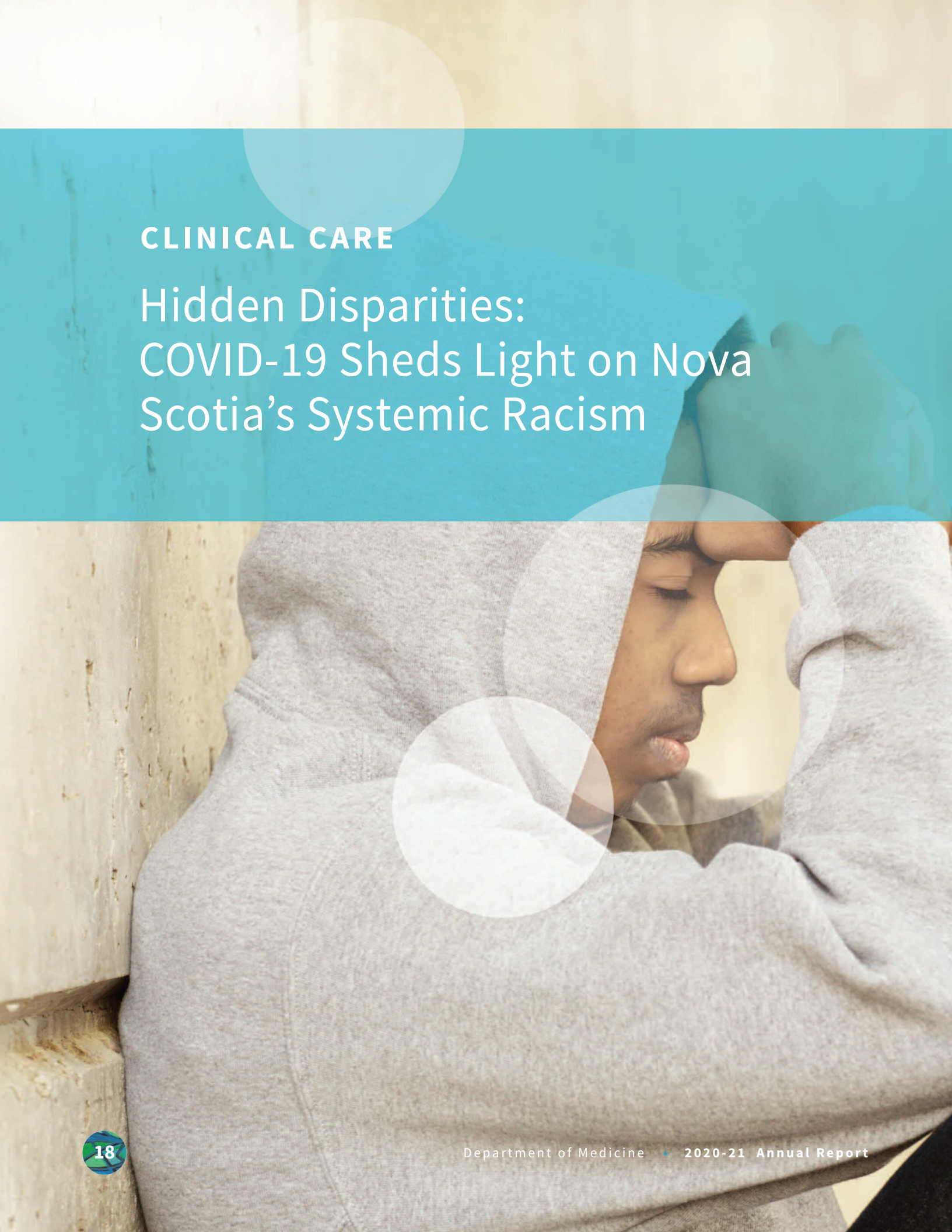
In addition to stronger relationships between providers of acute and long-term care to the elderly, this initiative has paved the way to an important legacy.

It was very intense, recalls Dr. von Maltzahn, with a strong spirit of collaboration in a time of great need: "Our team, the family doctors in long term care, nursing leads, family members, and the vulnerable residents themselves, all came together in service of ensuring the best, most compassionate care."

"We have seen how important it is to embed a person's goals of care in their medical record," says Dr. Shetty. "Especially with the advent of One Patient One Record, we have the opportunity to ensure that a patient's carefully crafted care plan does not get lost when they show up in hospital in a crisis. It is so important to break down the silos in information management so that unnecessary interventions don't happen."

CLINICAL CARE

Hidden Disparities: COVID-19 Sheds Light on Nova Scotia's Systemic Racism



Like a spotlight illuminating something hidden in plain sight, COVID has revealed Nova Scotia's structural racism and its harmful effects on people of colour, in particular the members of the province's Black communities.

"COVID has changed people's perception and ability to see what's been happening to the members of our Black communities, who have suffered disproportionately in this pandemic," says **Dr. Chadwick Williams**, a member of the Department of Medicine's Equity, Diversity and Inclusion Committee and assistant professor in the Division of Digestive Care & Endoscopy. "You can't fix what you can't see… but now the disparities and inequities are out in the open and this confirms that race is an independent risk factor for poor health outcomes in Nova Scotia."

The complete picture is still murky, because Nova Scotia's health care system had not been collecting race-based data—in part due to concerns of successive Nova Scotia governments that they would be criticized for addressing race as a factor in health and among some individuals that such data could target them negatively with respect to their care. Paradoxically, the lack of race-based data has masked inequities, allowing them to persist. But even the lack of official race-based data could not mask Nova Scotia's Black communities' evident struggle with COVID.

"We're collecting race-based data now and are very interested in what we can discover about the pandemic's impact by race," Dr. Williams says, noting that Indigenous, Middle Eastern and Asian people also face challenges accessing care.

Historic Black communities like East Preston, North Preston and Cherry Brook-Lake Loon have been heavily impacted by COVID for many reasons, including deep generational poverty resulting in large part from the lack of land titles in the area. There is also an absence of medical care within these communities, which are not well-served by public transit, making it more difficult for many people to access care. And, with multiple generations of families living under the same roof and many people holding down two or more jobs, often in service industries, social distancing and working from home aren't such viable options for staying safe.

"We are in the recognition and talking stage in the Department of Medicine, which is important," says Dr. Williams, who is also interim site lead for Internal Medicine at Dartmouth General Hospital, which serves many Black communities. "We have to ask, why are rates of diabetes, obesity, COPD and heart disease anecdotally so high in our Black communities, when in Nigeria they are not so prevalent? These are serious conditions that also make people more susceptible to poor outcomes of COVID. It's time now for the hard look, and the hard work."

Dr. David Haase, co-chair of the advisory committee for PLANS (Promoting Leadership in health for African Nova Scotians) and recently retired professor in the Division of Infectious Diseases, applauds the Department of Medicine for launching an EDI Committee.

"There is so much potential to do better," says Dr. Haase, "and the Department of Medicine has an important role to play. We need to foster the development of more Black health care providers, for example, and work harder to provide culturally competent and culturally specific care."

As Dr. Haase notes, one of the key and often-overlooked aspects of health for Black people is stress: "The stress that Black people face, due to systemic and overt racism and poverty, layered over the lingering intergenerational trauma of slavery, makes us more vulnerable to disease."

Engaging and partnering with Black communities and such advocacy groups as the Health Association of African Canadians (HAAC) and the African Nova Scotian Decade for People of African Descent is key to making progress, says **Sharon Davis-Murdoch**, co-president of HAAC and an executive member of the Dartmouth General Hospital Foundation Board of Directors. A public servant in three Nova Scotian governments, Davis-Murdoch led the development of the province's first guidelines for culturally competent care. She is pleased with the collaboration to provide culturally specific vaccine clinics to Black communities in the province.

"The vaccine clinics were very successful, because the organizers made every effort to ensure that Black people would feel welcome and comfortable," Davis-Murdoch says. "There were lots of Black nurses and other officials on site, as well as videos and public service announcements featuring Black people. So people saw a lot of people who look like them, which goes a very long way. Feedback has been excellent!"

For his part, Dr. Williams intends to keep pushing for more race-based health data and analysis in the Maritimes—not limited to COVID—and for policies and programs to remove long-standing barriers to safe, effective and culturally appropriate care for Black Nova Scotians. He is a key member of a task force struck in 2021 by the College of Physicians and Surgeons of Nova Scotia to identify systemic racism within the College and how Black Nova Scotians are served by physicians in the province.

"I'm passionate about this work," he says. "I grew up in East Preston at a time when there were virtually no Black doctors in the province, which nearly deterred me from pursuing a career in medicine. We are making progress but there is still a long way to go."

CLINICAL CARE

Women's Heart Health and COVID-19: A Perfect Storm of Risk Elevation

Cardiovascular disease is the No. 1 killer of women worldwide, and the leading cause of hospitalization and premature death in Canadian women. Add COVID-19 and "it's not been a good equation," says Department of Medicine cardiologist and clinical investigator, **Dr. Sharon Mulvagh**, co-director of the Women's Heart Health Clinic at the Maritime Heart Center.

Stress is a big part of the increased strain that COVID-19 has been putting on women's hearts. "Studies show Canadian women have been suffering disproportionately high levels of stress throughout the COVID pandemic," Dr. Mulvagh says. "This is due in part to work-related issues, such as the challenges of working from home or trying to arrange childcare when kids are not in school. There are also more women employed in health care and essential services, increasing their exposure to the virus and, as studies have noted, lockdown measures have driven an upward spike in violence against women."

All of this adds up to an increased risk of heart disease for women, whose cardiovascular systems are more susceptible to the negative effects of mental distress than men's, according to clinical studies. But that's not all. The COVID virus often has a direct effect on the heart: studies have shown that approximately 25 per cent of hospitalized COVID patients have evidence of heart damage, with possible long-term effects on the heart muscle. And when this damage is present, mortality rates are more than twice as high as when it is absent.

Even though women's hearts may be more protected than men's from the direct effects of SARS-COV-2, women are susceptible to both direct and indirect damage the virus can cause to the heart.

"COVID infection can result in an extensive inflammation, affecting blood vessels which feed the heart muscle. This can cause blood clots and heart attacks," says Dr. Mulvagh. "We have also seen that COVID-related stress can lead to a stress-induced heart attack, sometimes referred to as 'broken heart syndrome.' While generally more common in women, this has also been seen in men with COVID."

Even though some aspects of women's heart disease are better understood than they used to be, most heart-disease research has been done on men. As a result, women remain underdiagnosed, under-treated and under-supported during recovery.

To raise awareness of women's heart health issues and improve cardiovascular outcomes in Canadian women, Dr. Sharon Mulvagh founded Wear Red Day in 2018. What started as a local event in Halifax has since become a national day of recognition, sponsored by Canadian Women's Heart Health Alliance and celebrated every February 13.

In 2021, Wear Red Canada Day featured a national virtual event, with Dr. Mulvagh moderating and discussing the implications of COVID-19 on women's heart health. Halifax psychologist **Dr. Dayna Lee-Baggley** addressed COVID's mental health impact on women, **Dr. Patrice Lindsay**, director of health systems change for the Heart and Stroke Foundation of Canada, discussed the impact of virtual care, and patient advocate **Nicole Nickerson** presented the patient's perspective. They were joined by pro-PEI-born golfer and Canadian Sports Hall of Famer, **Lori Kane**, and Nova Scotia resident, global opera sensation and cardiac patient, **Meesha Brueggergosman**, who shared her insights and delivered a heart-rending performance of "Les Deux Printemps."

More information about Wear Red Canada events can be found online at www.wearredcanada.ca!

Disruptive technology for assessing the heart

Dr. Sharon Mulvagh is on the leading edge of developing and applying new technology that will make it possible for clinicians to visualize patients' heart and lung tissues quickly, at the bedside, when they present with chest pain and shortness of breath. Known as point-of-care ultrasound (POCUS), it uses a miniaturized ultrasound device that can fit in a physician's pocket.

"This technology has disrupted the way we traditionally practice medicine," confirms Dr. Mulvagh, who is director of the POCUS Internal Medicine Program at the QEII Health Sciences Centre. "There will come a day when every medical student will be graduating with a stethoscope and a POCUS device in their pockets."

While POCUS can be made available even in remote health-care settings in Canada, physicians generally lack effective training to develop expertise in this potentially life-saving skill. "POCUS is really an extension of the stethoscope," says Dr. Mulvagh. "Now we have to train people how to use it effectively so they can make the right diagnosis."

Dr. Mulvagh is a principal investigator of a national collaborative study funded by the Canadian Cardiovascular Society and Dalhousie University to explore the use of artificial intelligence and teleguidance to train novice users in POCUS.

"This is especially important during the pandemic, because POCUS presents a unique opportunity for efficient heart and lung imaging at the bedside," Dr. Mulvagh says. "Because it is so compact and can be operated by the clinician without a technician, there's no need to bring in additional people and PPE, or spend extra time sanitizing a larger standard ultrasound machine."

RESEARCH

From Local Action to International Advocacy: Supporting Persons with Disabilities Throughout the Pandemic

The arrival of the pandemic struck fear into the hearts of many people with spinal cord injuries, neurodegenerative diseases and other conditions that affect mobility, breathing, communication and independence in daily living.

"Our patients were afraid of losing access to their caregivers, needed medical supplies and other supports they rely on," explains **Dr. Colleen O'Connell**, research chief at the Stan Cassidy Centre for Rehabilitation in Fredericton, N.B., and an assistant professor in the Division of Physical Medicine & Rehabilitation in Dalhousie's Department of Medicine. "And many were worried that if they did have to go to the hospital to be treated for COVID, their needs would not be understood or met, or that their care might even be deprioritized."

As Dr. O'Connell explains, a person with a spinal cord injury or muscular dystrophy, for example, may already have problems with their breathing, for example, putting them at risk of serious complications of COVID.

Thanks to Dr. O'Connell's leadership and the enthusiastic participation of stakeholders—including the New Brunswick Department of Health, patients, advocacy groups, respiratory therapists and others—patients' concerns were addressed early on.

"As part of a national spinal cord injury community network, we set up a virtual forum to start with, where patients and caregivers could ask questions and air their concerns, and where experts could provide them with the latest information, including what we were learning about respiratory issues" Dr. O'Connell explains. "We then went on to develop a portal where patients could enter vital information about their respiratory and associated care needs, such as devices, medications and nutrients they require to survive, communicate and function. When they send their information, they receive back a printable PDF summary to carry with them, so that hospital staff can see what they need in the event they ever end up in emergency or admitted to hospital."

Known as the "Personal Respiratory Management Record" and hosted by the Government of New Brunswick, the portal is accessible to anyone in Canada who needs it, at https://hpspub.gnb.ca/CC/VCCI/Pages/virtual-care-in-practice.aspx?lang=en-US).

In gratitude to Dr. O'Connell for her work, Muscular Dystrophy Canada recently named her "Outstanding Health Care Partner for 2021."

Dr. O'Connell, through her role with the International Spinal Cord Society, has joined an international initiative to gather and analyze data about COVID-19 in people with spinal cord injury. "It became apparent that people with spinal cord injury may present differently and face higher risks and different complications," she says. "The platform was recently completed and clinicians and patients around the world can enter their data, so we are learning from each other globally how best to prevent, diagnose and treat COVID in this vulnerable group of people."

Ensuring appropriate access to vaccines not just for her client base but for all New Brunswickers was also a major focus for Dr. O'Connell, who worked with the provincial Public Health department for six months as a consultant assisting in the vaccine rollout for vulnerable populations, as well as monitoring of adverse events.

"It's been a very intense time," she says. "Fortunately, our clients have fared well through the pandemic and we have helped people in other jurisdictions manage better as well."

Emergency Global Outreach

In August 2021, the Caribbean nation of Haiti was struck by a massive earthquake (7.2 on the Richter Scale) and then two days later by a tropical storm. Although she couldn't go to Haiti in person, Dr. Colleen O'Connell stepped in to help, along with other members of Team Canada Healing Hands, an international aid organization she founded in 2002 to provide rehabilitation education, training, equipment and care to areas in need.

"We worked with Haiti and a host of grass roots and international agencies to get wheelchairs from Walkabout Foundation to the newly injured, and to get essential equipment, supplies and support to people with spinal cord injuries and other mobility issues who were in crisis due to these natural disasters," says Dr. O'Connell. "The pandemic added another layer of complexity to our efforts, but we were still able to provide this crucial support, although this is still ongoing with the challenges of gang violence, lack of transport and fuel shortages. Our colleagues who live and work in Haiti are the strongest people I know."

An outbreak of COVID at a spinal cord injury rehabilitation centre in Nepal also captured Dr. O'Connell's attention, inspiring her to re-direct $5,000 in funds earmarked for research toward providing the centre with equipment and supplies needed to keep residents and staff in the facility safe while allowing for data collection and reporting. As one of the first rehabilitation centres with an outbreak, the centre staff made a phenomenal effort which resulted in no deaths or serious illness, which we can learn from. She later collaborated with the centre on a paper about the outbreak, how it was handled and lessons learned, published in Springer Nature's Spinal Cord Series.

RESEARCH

Research in a COVID Year: Department of Medicine Supports Research Teams Through First Waves

At the onset of the pandemic, much of the research that wasn't directly related to COVID was shut down throughout Dalhousie University, Nova Scotia Health and the IWK Health Centre. This included clinical studies underway through the Department of Medicine.

"Enrolment in clinical studies was halted, funding from sponsors was pulled back, and our research coordinators and other research support staff were sent home, initially," reports **Dr. Melissa Andrew**, director of research for the department. "We quickly pivoted our internal research funding in order to support research teams to continue to pay their research staff and support operating costs, so that we would not lose our research teams over the course of the pandemic."

As Dr. Andrew explains, the Department of Medicine was able to draw upon its University Internal Medicine Research Fund to provide four months of salary support to research staff and graduate students.

As new research projects specific to COVID emerged, colleagues across the department worked together to find new roles for the sidelined research teams to play. "We knew that if our research staff could volunteer to help with COVID studies, it would be a win-win for the department and society at large," Dr. Andrew says. "For example, one of our cardiology clinical research team staff ended up assisting with a COVID immunology study, so we were working across divisions in new ways."

While most research teams had resumed their usual clinical research duties after the initial shutdown, there will be a lasting benefit to their temporary redeployment. "COVID has shown us how we can work across disciplines and share resources to address common challenges," Dr. Andrew says. "Now we are discussing how we can carry this spirit of collaboration forward and embedding it in our strategic planning processes for the department."

Exploring frailty in the context of COVID

As the first wave of COVID tore through long-term care facilities across Canada, members of the Department of Medicine knew it would be important to study the effect of the virus on elderly people. Who, among the very old and very frail, would become most sick, and how would their immune systems react to the virus? And would vaccines generate an effective immune response to SARS-CoV-2, also known as the novel coronavirus, in very old, frail individuals?

Over the course of the pandemic to date, researchers in the department—including **Dr, Kenneth Rockwood**, **Dr. Samuel Searle**, **Dr. Melissa Andrew**, **Dr. Lisa Barrett**, and **Dr. Shelly McNeil**—have conducted a host of studies exploring these and other issues related to age, frailty, immune response and COVID.

"In our assessments of frailty and outcomes, we have found that frailty is a much stronger predictor of poor outcomes than either age or obesity," notes Dr. Andrew. "We have also found that, similar to influenza, frail individuals present with atypical symptoms that can be missed. For example, they may have delirium and fatigue, but have no fever, or their physical and cognitive abilities may decline, but they have no other obvious symptoms. This makes it more challenging to identify, treat and track cases."

Earlier in the pandemic, the researchers studied how the virus affected extremely old, frail individuals—including several centenarians—who survived COVID. With the advent of vaccines, they have been studying how degrees of frailty affect vaccines' ability to generate a robust immune response to COVID.

One of the more common outcomes of frail people surviving COVID is reduced function, even in such simple tasks of daily living as walking, eating or getting dressed. Dr. Samuel Searle, a member of the Division of Geriatric Medicine, was the driving force behind the COVID "rehab hotel," which helped recovering long-term-care residents regain their strength and functional abilities after COVID. This clinical implementation and evaluation project showed clearly that concerted rehabilitation efforts significantly improved frail individuals' day-to-day function. "Overall, we are learning how important it is for all kinds of studies to include frailty in their analyses," says Dr. Andrew. "We are slowly gaining ground in our advocacy efforts to include frail individuals in clinical trials for treatments and vaccines against COVID."

Examining COVID's impact on the immune system

As a clinician scientist with a focus on infectious diseases, Dr. Lisa Barrett wants to understand how the human immune system responds to SARS-CoV-2, and how the virus affects the immune system. Thanks to her foresight in securing initial research funding from the Nova Scotia COVID Health Research Alliance, she has been able to amass a biobank of samples from more than 150 patients who were hospitalized with COVID, along with their detailed clinical data. "This is an incredible resource that we can learn from for years to come," says Dr. Barrett, an assistant professor in the Division of Infectious Diseases and Department of Pathology. "Because we were able to gather samples from patients who had never encountered COVID-19 or a vaccine for it ever before, we will be able to study the initial immune response to a brand new pathogen. This is a very rare opportunity."

Although analysis of the samples is still underway and will take some time, Dr. Barrett has made some preliminary observations. "SARS-CoV-2 triggers the immune system to respond intensely, and then it just crashes," she says. "It's incredible to watch under a microscope. You can see B and T cells that generate virus-specific immunity dying very fast, very hard, until they are all but destroyed. We want to know if they can regenerate and how this plays into both natural immunity and vaccine-generated immunity."

RESEARCH

In Memory: Dr. Arnold Mitnitski, a Pioneer in the Mathematics of Frailty

The Department of Medicine lost a unique and valued member in 2021, **Dr. Arnold Mitnitski**, who passed away in May after a brief illness.

Professor Emeritus of Medicine and Dalhousie University Research Professor of Medicine, with cross appointments in the Department of Mathematics & Statistics and Department of Community Health & Epidemiology, Dr. Mitnitski was a mathematician who made a difference. Over his 20 years at Dalhousie, he worked closely with geriatric medicine professor, **Dr. Kenneth Rockwood**, to develop and refine the frailty index, a tool for measuring and monitoring health status that has transformed the care of the elderly in Canada and around the world.

An established mathematician and scientist in the former Soviet Union, Dr. Mitnitski came to Canada in the late 1990s, working in Montreal before coming to Halifax to join the Department of Medicine in 2002. He brought with him his expertise in applied mathematics and a strong interest in creating an empirical method of quantifying individual aging rates.

Over the years, Dr. Mitnitski's research in the mathematical modelling of fitness and frailty in relation to biological age received three successive operating grants from the Canadian Institutes of Health Research. He published more than 100 peer-reviewed papers that have been cited more than 25,000 times, served as peer reviewer for more than 30 journals, and presented his work at countless national and international scientific meetings. The frailty index he developed in collaboration with Dr. Rockwood is now being applied not only in clinical medicine but also in epidemiology, biology and even macroeconomics.

Beyond his academic accomplishments and recognized brilliance, Dr. Mitnitski was known to be a kind and humble man with a deep appreciation of music, loved by his family, friends and colleagues.

"I was privileged to know Arnold, to work with him most of my career, and to be his friend," wrote Dr. Rockwood in a tribute to Dr. Mitnitski. "He was honoured to have been acknowledged as Professor Emeritus of Medicine. He had a special love for Dalhousie, and especially the opportunities afforded him by the Department of Medicine, in hiring him (a mathematician!) for which I will forever be grateful."

Dr. Mitnitski leaves behind his wife, Larissa, daughter, Julia, and many other family members. His beloved grandchildren, Ida and David, have followed his footsteps into medicine and science.

Donations in Dr. Mitnitski's memory may be made to the QEII Research Foundation or Dalhousie Medical Research Foundation, both long-time supporters of his work to improve our understanding of the complexities of aging and frailty.

RESEARCH

Department of Medicine researchers continued to grow their reputations as leaders in their areas of expertise and strengthen their ability to attract funding support. In 2020-21, Department members received more than $16.3 million in research funding. The funding supports ground-breaking research projects that are changing care and improving lives for many. The success has been grounded in an expansion of the Department's research mandate and purposeful investment in its research capacity. The Department's organizational structure as well supports research with a departmental Research Committee and Resident Research Committee.

INVESTING IN DEPARTMENT RESEARCHERS

Securing funding is the foundation to any research team's success. With that in mind, the Department has dedicated funds to invest in its researchers, with a large part of that funding provided by the Department's own University Internal Medicine Research Foundation (UIMRF). UIMRF funding allows the Department to be strategic and responsive to the needs of our researchers, giving them a competitive edge. The Department has been able to offer support to its members through a variety of grant and fellowship competitions, including: internal and external research fellowships (including the Dalhousie Clinical Investigator Program (CIP) for residents), bridge and pilot funding, and investing in junior investigators. The Department also continues to offer matching funds to help secure local, national and international grants. In 2020-21, the Department as well launched the resident research funding pathway and UIMRF Resident Research Funding application form, to assist resident research projects with small amounts of funding (such as for publications or software fees).

UIMRF approved the following awards in 2020-21:

UIMRF INTERNAL FELLOWSHIP AWARD – CLINICIAN INVESTIGATOR PROGRAM

- **Dr. Thomas Brothers** | second year CIP sponsorship PGY4 Internal Medicine / Supervisors: **Drs. Andrew Hayward** and **Duncan Webster**
- **Dr. Jasmine Mah** | third year CIP sponsorship PGY3 Internal Medicine / Supervisor: **Dr. Melissa Andrew**

UIMRF INTERNAL RESEARCH FELLOWSHIPS

- **Dr. Elizabeth Blundon** |$60,000 "Describing aspects of brain function at end of life"
- **Dr. Erica Kelly** | $45,000 "Tumor thrombus: A single-centre prospective registry study" [partial funding in conjunction with CanVECTOR]
- **Dr. Mohammad Pulok** | $60,000 "The impact of retirement on health care utilization in Canada: The role of frailty
- **Dr. M. Ulises Pérez-Zepeda** | $55,000 "Frailty in Countries of the American Continent" [renewal of fellowship for a second year]
- **Dr. Shanna Trenaman** | $17,250 "Uncovering how medication use moderates dementia neuropathology and how to improve medication use among older adults" [partial funding approved, but alternate funding accepted in preference of UIMRF]

UIMRF EXTERNAL RESEARCH FELLOWSHIPS

- **Dr. Alexandra Legge** | $92,762 "Using administrative health data to construct and validate a frailty index as a measure of susceptibility to adverse outcomes among patients with systemic autoimmune rheumatic diseases"
- **Dr. Samuel Searle** | $61,250 "Prognosticating Adverse Outcomes in Acutely ill Hospitalised Frail Patients" [partial funding]

UIMRF JUNIOR DEPARTMENT MEMBER AWARD

- **Dr. Janet Roberts** | $49,430 "Prospective study of rheumatic immune related adverse events during or following immunotherapy for cancer and the impact of immunotherapy on pre-existing rheumatic disease: Establishing a Prospective Nova Scotia cohort"

UIMRF PILOT FUNDING AWARD

- **Dr. Chris Blanchard** | $25,000 "Dyadic Physical Activity and Sedentary Time in SOT Recipients"

UIMRF RESIDENT RESEARCH FUNDING

- **Dr. Thomas Brothers** | $3000 "Implementation and evaluation of a novel, unofficial, trainee-organized hospital addiction medicine consultation service" [publication fees]

In early 2020, the COVID pandemic evolved into a pressing issue for all health services, with tremendous ramifications for research. Many DoM researchers were quick to pivot their work to address the COVID challenge, launching research projects to address systems issues (e.g. virtual care provision), challenges for vulnerable populations (e.g. Long Term Care and dialysis), robust

hospital-based surveillance for COVID and discovery science on immune responses to the novel coronavirus.

In June 2020, The Department launched the UIMRF Special Circumstance Grant. This grant was created with the goal of supporting departmental research activities in light of the postponement or cancelation of other grant competitions due to COVID.

UIMRF SPECIAL CIRCUMSTANCE GRANT

- **Dr. Kevin Chen**, Division of Endocrinology & Metabolism (working with Dr. Ali Imran) | $25,000 "Exploring the Impact of Arthropathy in Acromegaly Patients and the Associated Changes in Joint Biomechanics Compared with Able-Bodied Individuals"
- **Dr. Amanda Vinson**, Division of Nephrology | $24,976 "C-Peptide and Kidney Transplant Outcomes"

ENDOWED RESEARCH CHAIRS

In 2020-21, the Department of Medicine had five endowed research chairs. As leaders in their fields, the research chairs had a critical role in increasing knowledge of their area of expertise through research and teaching.

- **Dr. Leah Cahill**, Howard Webster Department of Medicine Research Chair
- **Dr. Jafna Cox**, Heart and Stroke Foundation Endowed Chair in Cardiovascular Outcomes
- **Dr. Sultan Darvesh**, DMRF Irene MacDonald Sobey Endowed Chair in Curative Approaches to Alzheimer's Disease
- **Dr. Kenneth Rockwood**, DMRF Kathryn Allen Weldon Endowed Chair in Alzheimer's Research
- **Dr. Karthik Tennankore**, QEII Foundation Endowed Chair in Transplantation Research

DEPARTMENT OF MEDICINE RESEARCH COMMITTEE

- **Dr. Melissa Andrew** (Chair)
- **Dr. Amir Abdel Wahab**
- **Dr. Lisa Barrett**
- **Dr. Chris Blanchard**
- **Dr. Leah Cahill** (Howard Webster Department of Medicine Research Chair; Co-chair, Resident Research Committee)
- **Dr. David Clark**
- **Dr. Sultan Darvesh**
- **Dr. Ali Kohansal**
- **Dr. Natalie Parks**
- **Dr. Ravi Ramjeesingh** (Co-chair, Resident Research Committee)
- **Dr. Michael Stewart**
- **Dr. Olga Theou**
- **Dr. Christine Short** (Department Head; ex officio)
- **Heather Fraser** (Administrative Coordinator)

DEPARTMENT OF MEDICINE RESIDENT RESEARCH COMMITTEE

- **Dr. Leah Cahill** (Howard Webster Department of Medicine Research Chair; Co-chair, Resident Research Committee)
- **Dr. Ravi Ramjeesingh** (Co-chair, Resident Research Committee)
- **Dr. Mahmoud Elsawy**
- **Dr. Ian Epstein** (Director, Postgraduate Training Program)
- **Dr. Jordan Francheville** (Resident Representative)
- **Dr. Ali Imran**
- **Dr. Jasper Johar** (Resident Representative)
- **Dr. Tasha Kulai**
- **Dr. Robyn Macfarlane**
- **Dr. Magnus McLeod**
- **Dr. Jacques Van Wijk** (Resident Representative)
- **Heather Fraser** (Administrative Coordinator)

Research Week 2020

The Department held its first virtual Research Week in November 2020 (postponed due to COVID from in-person event originally scheduled for April 2020) – 125 people attended the virtual presentation sessions to learn more about the research taking place in the DoM. The event featured 10 virtual podium presentations and 110 online abstracts/posters from Department members, under-graduate students, residents, research fellows, graduate students, and research associates.

The keynote presentation was provided by **Dr. Robin Urquhart**, Canadian Cancer Society Endowed Chair in Population Cancer Research and Associate Professor at Dalhousie's Department of Community Health and Epidemiology, on the topic of "Using Implementation Science to Improve Care Delivery and Patient Outcomes."

RESEARCH WEEK 2021

The second Virtual Research Week took place in April 2021, with over **180** people joining the virtual sessions to learn about research taking place in the department. The sessions made use of the virtual format to showcase **29** "short snapper" presentations, and **74** online abstracts/posters from Department members, undergraduate students, residents, research fellows, graduate students, and research associates. **Dr. Joanne Langley**, Professor of Pediatrics and Community Health and Epidemiology at Dalhousie, Head of the Division of Infectious Diseases at IWK Health, and CIHR–GSK Chair in Pediatric Vaccinology, provided the keynote presentation on the topic of, "COVID–19 vaccines – the Canadian story so far."

RESEARCH AWARDS

Department of Medicine Research Lifetime Achievement Award

- **Dr. Michael West**, Division of Nephrology

Department of Medicine Research Excellence Awards

- **Dr. Peter Hull**, Division of Clinical Dermatology & Cutaneous Science
- **Dr. Karthik Tennankore**, Division of Nephrology
- **Dr. Ciorsti MacIntyre**, Division of Cardiology

Department of Medicine Resident Research Excellence Awards

- **Dr. Lindsay Cho**, PGY1
- **Dr. Thomas Brothers**, PGY4 and CIP

Department of Medicine Resident Research Publication Awards

- **Dr. Joshua Goodwin**, PGY2
- **Dr. Jasmine Mah**, PGY3 and CIP

NEW RESEARCH AWARDS

To recognize the invaluable contributions of research staff working on DoM research teams and research excellence of cross-appointed faculty members who contribute to fostering collaborations with other Departments and Faculties, three new awards were established this year. These recognize research excellence of a cross-appointed faculty member, and exceptional contributions by junior and senior research staff.

Department of Medicine Cross Appointed Faculty Research Excellence Award

- **Dr. Susan Kirkland**, Department of Community Health and Epidemiology, cross appointment to Division of Geriatric Medicine

Department of Medicine Research Staff Excellence Awards

- **Gillian Schraefel**, Junior Research Staff, Division of Cardiology
- **Sherri Fay**, Senior Research Staff, Division of Geriatric Medicine

WE RESEARCH

$16,379,508	Total research funding
368	Peer-reviewed publications (by **535** Department of Medicine authors)
151	Published abstracts (by **241** Department of Medicine authors)
39	Non peer-reviewed publications (by **41** Department of Medicine authors)
295	Research presentations (by **500** Department of Medicine authors)
5	Endowed chairs

RESEARCH FUNDING – DIVISION TOTALS

Funds received by NSHA and Dalhousie, fiscal 2020-21

$3,172,340	Cardiology
$447	Clinical Dermatology & Cutaneous Science
$429,913	Digestive Care & Endoscopy
$576,051	Endocrinology & Metabolism
$97,760	General Internal Medicine
$543,202	Geriatric Medicine
$6,558,815	Hematology
$894,970	Infectious Diseases
$1,347,920	Medical Oncology
$1,790,647	Nephrology
$93,771	Neurology
$102,850	Research - General
$337,114	Respirology
$433,707	Rheumatology

CELEBRATING OUR PEOPLE

The Department awards below were recognized at the Awards Extravaganza on June 30, 2021—a virtual event. We'd also like to congratulate the many members who also received awards outside the Department which are too numerous to include here. Most of the awards below are normally presented at the Department of Medicine Spring Party. The virtual event was more inclusive in terms of awards and invitees.

SERVICE

5-Year Service
Meghan Patterson, Digestive Care & Endoscopy
Raelene Kucyk, General Internal Medicine

10-Year Service
Katie Crosby, Clinical Dermatology & Cutaneous
Susan Brushett, Infectious Diseases
Laura Ring, Infectious Diseases
Margaret Burns, Neurology
Wendy McPhee, Neurology
Heather Fraser, DoM Research
Sarah Cooper, Digestive Care & Endoscopy

15-Year Service
Sharon Dunn, Cardiology
Elena Wilkinson, Cardiology

20-Year Service
Michelle Henneberry, Cardiology

25-Year Service
Kelly Harnish-Mowery, PM&R and Rheumatology
Dr. Graham Bishop, Respirology, Saint John
Dr. Daniel Carver, Geriatric Medicine
Dr. Bruce Colwell, Medical Oncology
Dr. Jafna Cox, Cardiology
Dr. Sultan Darvesh, Neurology
Dr. Paul Hernandez, Respirology
Dr. Pamela Jarrett, Geriatric Medicine, Saint John
Dr. Ronald MacCormick, Medical Oncology, Sydney
Dr. Kevork Peltekian, Digestive Care & Endoscopy
Dr. Ewa Sadowska, Rheumatology, Saint John

30-Year Service
Dr. Richard Crowell, Cardiology
Dr. Catherine Kells, Cardiology
Dr. Robert Tremaine, Clinical Dermatology & Cutaneous Science
Dr. Michael West, Nephrology

Retirements
Dr. Glen Ginther, Division of Geriatric Medicine (June 2021)
Dr. Chris MacKnight, Division of Geriatric Medicine (April 2021)
Dr. Ellen Jost, Division of Geriatric Medicine (March 2021)
Dr. Wanda Hasegawa, Division of Hematology (March 2021)
Connie Tone, Manager, DoM Physician Services (March 2021)
Dr. R. Mark Sadler, Division of Neurology (December 2020)

Professor Emeritus
Dr. Arnold Mitnitski, Mathematician and Research Scientist (July 1, 2020)

Promotion to Associate Professor effective July 1, 2021
Dr. Penelope Poyah, Division of Nephrology
Dr. Heather Rigby, Division of Neurology
Dr. Ferhan Siddiqi, Division of Endocrinology
Dr. Robert (Robbie) Stewart, Division of Cardiology
Leah Cahill, PhD, Research Scientist, Howard Webster Department of Medicine Research Chair

AWARDS

Outstanding Divisional Leadership Contribution to the COVID-19 Pandemic Response
Division of Infectious Diseases

Outstanding Leadership Contribution to the COVID-19 Pandemic Response
Dr. Shelly McNeil, Division of Infectious Diseases
Dr. Lisa Barrett, Division of Infectious Diseases
Dr. Lynn Johnston, Division of Infectious Diseases
Dr. Ian Davis, Division of Infectious Diseases
Dr. Todd Hatchette, Division of Infectious Diseases
Dr. Paul Bonnar, Division of Infectious Diseases
Dr. Glenn Patriquin, Department of Pathology

Recognition of Exemplary Service in COVID-19 Pandemic Response for Supporting Care in the Community
Dr. Ashley Miller, Division of General Internal Medicine
Dr. Nabha Shetty, Division of General Internal Medicine
Dr. Melissa Andrew, Division of Geriatric Medicine
Dr. Katalin Koller, Division of Geriatric Medicine
Dr. Laurie Mallery, Division of Geriatric Medicine
Dr. Paige Moorhouse, Division of Geriatric Medicine
Dr. Samuel Searle, Division of Geriatric Medicine
Dr. Kenneth Rockwood, Division of Geriatric Medicine
Dr. Maia von Maltzahn, Division of Geriatric Medicine
Dr. Anne Marie Krueger-Naug, Division of Palliative Medicine

DoM Achievement Award
Dr. Laurie Mallery, Division of Geriatric Medicine

Excellence in Leadership Award
Dr. Steven Gruchy, Division of Digestive Care & Endoscopy

Clinical Excellence Award
Dr. Volodko Bakowsky, Division of Rheumatology

Dr. George Majaess, Division of Physical Medicine & Rehabilitation
Dr. Miroslaw Rajda, Division of Cardiology
Dr. K. Sue Robinson, Division of Hematology
Dr. Maia von Maltzahn, Division of Geriatric Medicine

Excellence in Quality & Innovation Award
Dr. Daniel Smyth, Division of Infectious Diseases (Moncton)

Brian M. Chandler Lifetime Achievement Award in Medical Education
Dr. Catherine Kells, Division of Cardiology

Faculty Excellence in Medical Education Award
Dr. Stephen Duke, Division of General Internal Medicine (Dartmouth)
Dr. Andrew Moeller, Division of Cardiology
Dr. Bakhtiar Kidwai, Division of Cardiology
Dr. Elana Murphy, Division of Rheumatology

Stephen Couban Outstanding Faculty Award—Residents' Choice
Dr. Allen Tran, Division of General Internal Medicine

Academic Advisor of the Year Award in Internal Medicine
Dr. Stephanie Carpentier, Division of Digestive Care & Endoscopy (Saint John)

RESEARCH AWARDS

Research Lifetime Achievement Award
Dr. Michael West, Division of Nephrology

Cross-Appointed Faculty Research Excellence Award
Dr. Susan Kirkland, Department of Community Health & Epidemiology (Cross with Division of Geriatric Medicine)

Research Staff Excellence Award
Gillian Schraefel, Junior Research Staff, Division of Cardiology
Sherri Fay, Senior Research Staff, Division of Geriatric Medicine

Resident Research Excellence Award
Dr. Lindsay Cho, PGY1 Internal Medicine
Dr. Thomas Brothers, PGY4 General Internal Medicine & Clinician Investigator Program

Resident Research Publication Award
Dr. Joshua Goodwin, PGY2 Internal Medicine
Dr. Jasmine Mah, PGY3 Internal Medicine & Clinician Investigator Program

DOM GRAND ROUNDS AWARDS

Overall Excellence Award
Dr. Shelly McNeil, Division of Infectious Diseases, "Update on COVID-19 Vaccines"

Guest Speaker Award
Dr. Michael Dunbar, Division of Orthopedic Surgery, "Doctor, My Hip is Trying to Kill Me – Tales from the Front Line"

Award of Merit
Dr. Iqbal Bata, Division of Cardiology, "Medical Management of ACS Patients and Long Term Treatments for Secondary Prevention"
Dr. Alex Nelson, Division of Respirology and **Dr. Lynn Johnston**, Division of Infectious Diseases, "CPC Rounds"Team Lead Award
Dr. Kerri Purdy, Division of Clinical Dermatology & Cutaneous Science, "Tales from the Dermatology Consult Service"
Dr. Janet Roberts, Division of Rheumatology, "Cancer Immunotherapy: A Double-Edged Sword?"

ADMINISTRATIVE STAFF AWARDS

Administrative Assistant Award
Jo-Ann Clarke, Division of Palliative Medicine

Program Administrator Award
Sharon Dunn, Division of Cardiology
Kelly Harnish-Mowery, Division of Rheumatology

RESIDENT AWARDS

Chief Medicine Residents 2020—Halifax
Dr. Matthew Nunn, PGY3 Internal Medicine
Dr. Rachel Sullivan, PGY3 Internal Medicine

Chief Medicine Resident 2020—Saint John
Dr. Nicole Beckett, PGY3 Internal Medicine

MTU Chief Resident 2020
Dr. Elizabeth Simms, PGY3 Internal Medicine

Excellence in Undergraduate Teaching
Dr. Nicole Beckett, PGY3 Internal Medicine

Excellence in Summer Grand Rounds
Dr. Matthew Nunn, PGY3 Internal Medicine
Dr. Zachary Shaffelburg, PGY3 Internal Medicine

Outstanding Consultant Trainee Award
Dr. Eric Pond, PGY5 General Internal Medicine
Dr. Alexandra Legge, PGY5 Rheumatology

Outstanding Academic Performance Award
PGY1—**Dr. Alex Nachman**, Core Internal Medicine
PGY2—**Dr. Jasper Johar**, Core Internal Medicine
PGY3—**Dr. Matthew Nunn**, Core Internal Medicine

Outstanding Resident Award
PGY1—**Dr. Hayam Hamodat**, Core Internal Medicine
PGY2—**Dr. Mary Purcell**, Core Internal Medicine

Angie McGibbon Outstanding Resident PGY3 Award
Dr. Jonathan Gale

GRADUATING RESIDENTS

PGY3 Core Internal Medicine
Dr. Sulaiman Alamro (Halifax)
Dr. Nicole Beckett (Saint John Chief)
Dr. Jordan Francheville (Halifax)
Dr. Jonathan Gale (Halifax)
Dr. Amye Harrigan (Halifax)
Dr. Daryush Kiamiri (Halifax)
Dr. Evan Losier (Halifax)
Dr. Shiyu Lu (Saint John)
Dr. Emily MacAdam (Halifax)
Dr. Ceilidh MacPhail (Halifax)
Dr. Eric Manuel (Saint John)
Dr. Matthew Nunn (Halifax Chief)
Dr. Zachary Shaffelburg (Halifax)
Dr. Lior Shirnin (Saint John)
Dr. Elizabeth Simms (MTU Chief)
Dr. Rachel Sullivan (Halifax Chief)
Dr. Michael Sun (Halifax)

PGY6 Cardiology
Dr. Edwin Bamwoya
Dr. Kate MacEachen
Dr. Ahmed Mokhtar

Fellow, Interventional Cardiology
Dr. Ahmad Alkharaza
Dr. Adil Al Jabri
Dr. Wan Cheol (Joseph) Kim

PGY5 Dermatology
Dr. Alia Cloutier-Bosworth

PGY5 Endocrinology
Dr. Kevin Chen

PGY5 Gastroenterology
Dr. Larry James
Dr. Dennis Lim
Dr. Marica Reise-Filteau

PGY4 General Internal Medicine
Dr. Ahmed Alshammari
Dr. Bethany Woodrow

PGY5 General Internal Medicine
Dr. Jillian Kaulbach (Regional)
Dr. Sylvia Lymburner (Regional)
Dr. Stuart McAdam
Dr. Eric Pond

PGY6 General Internal Medicine
Dr. Iain Arseneau

PGY5 Geriatric Medicine
Dr. Alison Dixon

PGY5 Hematology
Dr. Rachelle Blackman
Dr. Shannon Murphy
Dr. Ron Yan

Fellow, Thrombosis
Dr. Erica Kelly

PGY5 Neurology
Dr. Jessica Dawe
Dr. Caitlin Jackson-Tarlton

PGY5 Palliative Medicine
Dr. Caitlin Lees

PGY5 Physical Medicine & Rehabilitation
Dr. Alex Whelan
Dr. Mary Halpine

PGY5 Respirology
Dr. Jennie Parker
Dr. Teresa Rodriguez

PGY5 Rheumatology
Dr. Alexandra Legge
Dr. Julie Mongeau

Forward Together

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