

Marshfield Clinic Research Institute

2020 Year in Review: Altering the course for the future

COVID-19 OUTBREAK



RESEARCH + TESTING



VACCINES



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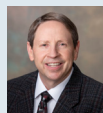
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Oversight Board

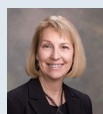
The 13-member Marshfield Clinic Research Institute Oversight Board oversees the research activities of the Research Institute.

Marshfield Clinic

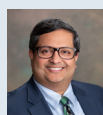
Health System Physicians



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Pediatric Nephrologist
Executive Committee



Jill R. Meilahn, D.O.
Physical Medicine and
Rehabilitation Specialist
Chair, Executive Committee



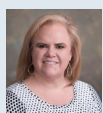
Narayana S. Murali, M.D.
Exec. Dir., Marshfield Clinic
EVP Care Delivery &
Chief Strategy Officer, MCHS



**Adedayo A. Onitilo,
M.D., Ph.D.**
Medical Oncologist/
Hematologist

Marshfield Clinic

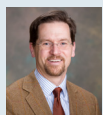
Health System Leaders



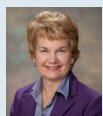
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Chief Clinical Officer,
Security Health Plan
Executive Committee



Scott J. Hebbring, Ph.D.
Research Scientist,
Center for Precision
Medicine Research



Matthew J. Jansen, M.D.
Medical Director,
Division of Education
Vice-Chair, Executive Committee



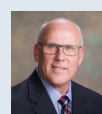
Tammy Simon, R.N., M.S.N.
Vice President,
Institute for Quality,
Innovation and Patient Safety

Community

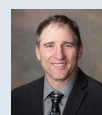
Members



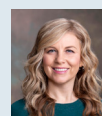
Brent F. Bergman
President/CEO, RevCycle, Inc.



Matt Berrier
Owner, Associated
Sales and Leasing
Executive Committee



Brian Forrest
Owner, Maple Ridge Dairy



Ashley E. Fredrick, M.B.A.
Owner/Realtor,
NextHome Hub City



Martin J. Loy, Ph.D.
Dean, College of Professional
Studies, University of
Wisconsin-Stevens Point

A moment of promise and possibility

Dr. Ben Lawton, one of the legendary physicians in Marshfield Clinic Health System history, was addressing congressman John Fogarty and the House Committee on Appropriations in 1964 when he made a statement that would prove prescient.

“The future of medicine without research is no future at all,” he said.

At that time, Marshfield Clinic Research Institute was only a few years old, though research has been part of our organization in some way since our founding in 1916. Today, the Research Institute is a crown jewel of our Health System, and the largest private medical research institute in Wisconsin.

This past year will be remembered as the year of COVID-19, and our teams at the Research Institute played a critical role at the local, state and national levels responding to the pandemic.

Our research and lab teams were an essential part of a massive COVID-19 testing operation across Wisconsin. In addition, because of our expertise in epidemiology, we became a well-recognized and sought-after voice on many issues related to the pandemic.

As we move past the pandemic, Dr. Lawton’s words will remain ones we live by. The potential of our Research Institute is truly boundless, and it will continue to grow and evolve as it has throughout its history.

Lastly, I would be remiss if I did not recognize the person who helped deliver the Research Institute to this moment of promise and possibility. Dr. Amit Acharya’s passion for discovery, his leadership and vision, and his relentless focus on helping people took the Research Institute to new heights. We wish him the very best in this next chapter of his career.

I am deeply grateful to all of you who support our research efforts, and to our brilliant team of researchers, providers and staff who do this groundbreaking work each day.



Dr. Susan Turney
CEO
Marshfield Clinic Health System

Leaving a legacy: Thank you Dr. Amit Acharya

I echo Dr. Turney’s message of thanks to our amazing Research Institute teams, and wanted to say just a word more about Dr. Amit Acharya. His impact on our Health System has been immense.

During his tenure, Dr. Acharya raised the national profile of the Research Institute, launched two new research centers, created an institute-level administration team and oversaw the creation of the Oversight Board as it is today.

As a leader, Dr. Acharya set an example of kindness, respect for all and passion for helping people. Just as important as his mind for science is his heart for his fellow human beings.

We will miss Dr. Acharya as a colleague and as a friend, but we also know his impact on our organization will long outlive his years of service here.



Dr. Narayana Murali
Executive Director, Marshfield Clinic
EVP Care Delivery & Chief Strategy Officer,
Marshfield Clinic Health System

Amit Acharya, B.D.S., M.S., Ph.D.



Nationally recognized for clinical trial accruals

Wisconsin National Community Oncology Research Program (WiNCORP), a Wisconsin cancer clinical trial network, enrolled more than 630 patients from August 2019 to July 2020 in NCI-sponsored oncology clinical trials. It was one of two sites to receive two national awards by the NCI for exceptional enrollment.

Dr. Onitilo to serve on two cancer research committees

Adedayo Onitilo, M.D., Ph.D., the director for the Cancer Care & Research Center, was appointed to the American Society of Clinical Oncology (ASCO) Cancer Research Committee for a 3-year term and to the National Cancer Institute (NCI) Ad Hoc Working Group on Clinical Trials Enrollment and Retention.



Adedayo Onitilo, M.D., Ph.D.

Cancer Care & Research Center

A research center that conducts clinical trials and research to improve prevention, early detection, care delivery and patient outcomes for cancer patients.

COVID-19 changing the clinical trial landscape

Clinical research has been significantly affected by COVID-19. Despite several challenges in the delivery of and continued enrollment in clinical trials, the Cancer Care & Research Center has maintained an impressive enrollment rate in 2020. The need to minimize COVID-19 exposure to oncology patients has led to the development and implementation of several new processes.

In addition to screening for COVID-19 symptoms of all people who enter Marshfield Clinic Health System centers, the oncology departments have added lab draw stations within the department in an effort to further isolate immune-compromised patients from the public. Changes in furniture arrangements in waiting rooms and limiting visitors have been other changes implemented this year to keep patients and staff safe.

Telehealth visits have been implemented, so certain appointments can be conducted either over the phone or via videoconference software. Patients are able to remain in the safety of their homes and still receive the follow-up care they need. This has been particularly helpful to our patients in nursing homes and assisted-living facilities since their family members can participate in the telehealth visits.

The informed consent process is vital to enrolling patients in clinical trials. Processes for remote consenting have been implemented at all sites. Consents and HIPAA authorizations may be emailed or mailed to patients. Once received, the required discussion to ensure the participant fully understands and consents to participation in the trial may be conducted via telephone or WebEx, depending on the patient's preference.

Maintaining adequate staffing continues to be challenging. Employees have needed to be redeployed to the acute COVID-19 care units and for other uses. Research staff members were able to cover using telehealth and remote consenting processes. This limits the travel between centers, which also decreases exposure.

COVID-19 has presented Marshfield Clinic Health System with many challenges. We have risen to those challenges and continue to provide excellent oncology and research care to our patients.



Stephanie Engelen, R.N.
Oncology Research Nurse
Cancer Care & Research Center

Center for Clinical Epidemiology and Population Health

Research on disease occurrence, risk factors, prevention and treatment.

COVID-19 public health research and vaccine evaluation

The response to COVID-19 is guided by scientific research to understand risk factors, transmission and immune response. It also includes research to assess safety and effectiveness of vaccines authorized for emergency use.

Our vaccine research team has almost two decades of experience executing large, complex studies of vaccines and vaccine-preventable diseases. In 2020, Center investigators received federal funding to address several key COVID-19 questions.

COVID-19 Epidemiology Research

Household Transmission Study (Huong McLean, PI). This is a CDC-funded study to understand the risk of SARS-CoV-2 household transmission. A published preliminary analysis has found that COVID-19 risk is high in household members.

Community Study of COVID-19 Occurrence and Risk Factors (Huong McLean, PI). This CDC-funded study will follow participants for one year to identify new COVID-19 infections. It will provide unique information on COVID-19 risk in a rural Midwestern population. This study will also provide information on vaccine immune response.

Study of Prolonged Disability After COVID-19 (Edward Belongia, PI). COVID-19 can affect multiple organs and there have been many reports of prolonged illness. This ongoing CDC-funded study will assess prolonged symptoms in COVID-19 cases with controls.

COVID-19 Vaccine Research

Rapid Cycle Analysis of Vaccine-Related Adverse Events (Jim Donahue, PI). Continued monitoring of COVID-19 vaccine safety is important after FDA emergency use authorization. This CDC-funded study will use data collected in near-real time from the Vaccine Safety Datalink network to find out if specific adverse events occur more often than expected in COVID-19 vaccine recipients.

COVID-19 Vaccine-Mediated Enhanced Disease and Vaccine Effectiveness (Edward Belongia, PI). There is a theoretical risk that COVID-19 vaccination might increase risk for severe (enhanced) COVID-19 disease. Animal studies and human clinical trials are reassuring, but continued monitoring is planned after vaccines are approved. In 2020, CDC funded the Center's vaccine team to lead a study of vaccine-enhanced disease in the Vaccine Safety Datalink. The study will begin when COVID-19 vaccines are available, and the results will be used to estimate COVID-19 vaccine effectiveness for preventing hospital admission.



Edward Belongia, M.D.

Director

Center for Clinical Epidemiology and Population Health

Flu vaccine effectiveness encouraging during 2019-2020 season

The CDC published mid-season estimates of flu vaccine effectiveness for the 2019-20 season. Estimates were based on 4,112 enrollments at Marshfield Clinic Health System and four other U.S. sites. Vaccination reduced the risk of flu by nearly half (45%).

Stemming the tide of obesity

RE-POWER is an innovative multi-site research study comparing three obesity treatment models in primary care practices in the rural Midwest. The treatment models use varying levels of in-person and telephone appointments. The \$10 million study, funded by the national Patient Centered Outcomes Research Institute, concluded in 2020.

Statins and dementia

The PREVENTABLE study will investigate whether taking atorvastatin, a drug commonly used to lower cholesterol, can help older adults aged 75 and over prevent dementia, disability and heart disease. It will include more than 20,000 participants from 100 sites across the U.S., including here in Wisconsin.



Featured in publication on oral-medical care integration

Marshfield Clinic Health System was featured in an article published in the Journal of Dental Education about its oral-medical care integration. By using the integrated electronic health record of the Health System, our scientists have been able to conduct novel research on how oral health affects the overall health of a person.

Dental collaborative reports quality indicators

Marshfield Clinic Health System, as a member of the Wisconsin Collaborative for Healthcare Quality (WCHQ), became one of the first dental practices in the country to publicly report three oral health quality measures. Amit Acharya, B.D.S., M.S., Ph.D., executive director of the Research Institute and Center research scientist, has developed dashboards such as these that help dentists and physicians jointly monitor conditions that have an impact on overall health.

Center for Oral and Systemic Health

A research center that researches the interactions between oral and overall health, with the goal of translating actionable findings to patient care.

Providing holistic care for COVID-19 patients

In order to get a better grasp on COVID-19, researchers will need to take a holistic approach. This includes finding alternative care models and using predictive analytics to help determine the most appropriate responses to this pandemic. These are two strengths of our center.

Adding COVID-19 education to dental care

One of our associate research scientists, Neel Shimpi, B.D.S., Ph.D., is leading a research project that aims to use dental centers to provide a more holistic care delivery during the COVID-19 pandemic. The research will identify gaps in knowledge that patients may have about COVID-19. Dr. Shimpi will then use educational initiatives to promote optimized patient care.

The Health Resources and Services Administration funded this research project. Dr. Shimpi is collaborating with the Family Health Center of Marshfield, Inc. to conduct this research. The Family Health Center is a federally-funded community health center that strives to enhance community health by bringing high-quality health care services to people who cannot afford them. The Family Health Center has 10 dental centers in Wisconsin.

Responding to COVID-19 in the emergency department

Emergency departments play an important role in the COVID-19 pandemic. If a patient needs to receive a higher level of care for their COVID-19 symptoms, they often report to the emergency department.

I am serving as the lead for Marshfield Clinic Research Institute in the Wisconsin Real-time Emergency Department Surveillance and Responsive Training research project. It aims to use predictive analytics and electronic health record data to help manage the response to the pandemic.

This project will use data to determine the proper response from public health and health systems. For instance, this could help to determine how many nurses are needed to treat COVID-19 patients in the future. This would allow operations to shift staffing needs sooner to accommodate patient needs and get a better grasp on COVID-19.



Radha Nagarajan, Ph.D.

Director

Center for Oral and Systemic Health

Center for Precision Medicine Research

A research center that combines research on the human genome with biomedical informatics and applies that knowledge to health care.

Using DNA to address the COVID-19 pandemic

We have learned a great deal about risk factors and outcomes over the last 10 months for those who develop COVID-19, but much of our knowledge remains incomplete or speculative. We lack an understanding of how COVID-19 affects each person individually.

To address this, our scientists are collaborating on a national initiative to better understand the disease process and risk factors, including genetic risks that may predict outcomes.

The Electronic Medical Records and Genomics Network, commonly referred to as the eMERGE Network, will rely on electronic health record data to track the entirety of the COVID-19 disease process including first diagnosis, treatments applied and outcomes. This information can then be paired with genetic data to see if there are any DNA markers that make more personalized care possible.

For example, are there DNA markers that predispose someone to a more serious COVID-19 infection? Or is there a specific COVID-19 treatment that works better for a person with a specific genetic make-up? Our ultimate goal is to develop prediction tools so providers can give tailored, more precise care to those infected with COVID-19.

The eMERGE Network is a national network organized and funded by the National Human Genome Research Institute that combines DNA biorepositories with electronic health record systems for large scale, high-throughput genetic research in support of implementing genomic medicine. Partners in the Network include Mayo Clinic, Johns Hopkins University, Duke University and many others.

Much like this project, the goal of precision medicine research for all health conditions is to be able to provide the best possible treatments when a patient needs it. Only then can we provide the best health care possible.



Scott Hebring, Ph.D.
Research Scientist, Genetics
Center for Precision Medicine Research

Studying the genetics of aging

According to initial findings by Patrick Allaire, Ph.D., DNA can be used to predict the early disease onset of some age-related diseases. The research has found an association between telomere length and the early disease onset of some age-related diseases including type 2 diabetes and heart disease.

Chemotherapy resistance in glioblastoma tumors

Tonia Carter, Ph.D., is working on the genetics of glioblastoma tumors and patient response to chemotherapy. The project aims to analyze whole-exome sequence data from glioblastoma tumors to identify mutations that predispose patients to become resistant to chemotherapy. The insights gained can be used for developing new drugs to treat glioblastoma tumors.

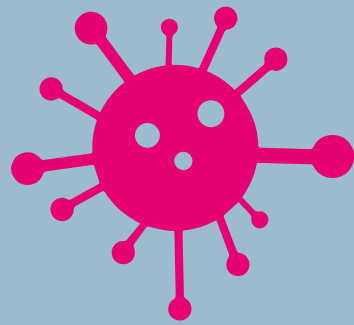
The role of the microbiome

Research projects conducted by Sanjay Shukla, Ph.D., include the role of gut microbiome on multiple sclerosis and the role of the dairy environment microbiome on dairy workers' health. Dr. Shukla mentors postdoctoral fellow Krishna Ganta, Ph.D., who is contributing to the above projects and investigating the role of host genetics in *Staphylococcus aureus* bacteremia.











Celebrating Research Week

More than 300 individuals from across the country joined the Research Institute for a virtual version of Celebrating Research Week held Oct. 19-23. This year's theme explored the possibilities of precision medicine and the meaningful research happening here. Precision medicine is health care tailored to you based on your DNA, diet, exercise and environment.



Leading the fight against COVID-19

We are leading experts in COVID-19, which is something we could not say at the beginning of 2020. Today the region, state, nation and world turn to us for this expertise. All thanks to our researchers and how we addressed COVID-19 head on.

Our expert researchers	Vaccine and Epidemiology	Testing and Laboratory	Clinical Trials and Health Care	Rural Health Care
				
Made changes to address COVID-19	 <p>Leveraged influenza vaccine and vaccine safety expertise to quickly conduct COVID-19 research.</p>	 <p>Found new ways to test for COVID-19 that returned results faster.</p>	 <p>Changed focus of grant writing to address COVID-19.</p>	 <p>Used connections with our rural community to provide fresh research perspective.</p>
That resulted in important COVID-19 research	<ul style="list-style-type: none">▶ Conducting research to understand risk of COVID-19 transmission in households.▶ Leading a national study to determine vaccine effectiveness for preventing hospital admission.▶ Selected by CDC to study adverse events after COVID-19 vaccination.▶ The <i>All of Us</i> Research Program studied the presence of COVID-19 within its communities.	<ul style="list-style-type: none">▶ Received \$22.5 million grant from CDC to be the sole reference lab for several COVID-19 studies.▶ Setup protocol that tests 10,000 people every week for COVID-19.▶ Used ultra-cold storage located within our facilities to house COVID-19 vaccine for our region.	<ul style="list-style-type: none">▶ Part of registry to better understand how COVID-19 affects health care workers.▶ Marshfield Clinic Health System was able to provide access to convalescent plasma treatments for COVID-19 because of the Research Institute.▶ Researching COVID-19 in Emergency Departments.	<ul style="list-style-type: none">▶ Children enrolled in the Wisconsin Infant Study Cohort helped researchers understand how COVID-19 spreads in children.▶ Received a \$4.8 million grant from CDC to study COVID-19 risk and vaccine immune response in a rural Midwestern population.

Landmark trial of heart failure drug

The EMPEROR-Reduced trial showed empagliflozin 10 mg reduced cardiovascular death or hospitalization due to heart failure with low ejection fraction by 25% compared to a placebo over a median follow-up time of 16 months. Our researchers enrolled participants for the trial in 2018 and followed them until the study ended.

BBS obesity findings

Our researchers published a study in the journal of Pediatric Obesity that found 80-90% of children with Bardet-Biedl syndrome had obesity by 5 years old. Bardet-Biedl syndrome is a rare genetic disorder present from birth that can cause many health concerns. Further research conducted at the Center, which was highlighted on the cover of the November issue of the journal Diabetes, Obesity and Metabolism reported on a new treatment for obesity in BBS offering new hope to the BBS community.

HERO follows staff during COVID-19

The Center enrolled more than 300 Health System employees in the HERO Registry, which invited U.S. health care workers to share their experiences in order to understand the problems faced by workers on the COVID-19 pandemic front lines. Participants could choose to participate in surveys and receive invitations to clinical trials.

Clinical Research Center

A research center that conducts clinical trials in many specialty areas.

Expanded access to convalescent plasma treatment made available for COVID-19 patients

Marshfield Clinic Health System continues to offer an investigational convalescent plasma treatment for COVID-19 patients through an FDA emergency use authorization. As one of the COVID-19 treatments available, this novel approach treats patients with COVID-19 by transfusing plasma from people that have recovered from COVID-19.

It is exciting that the Health System is able to provide convalescent plasma to our patients, which is available in all Health System hospitals. It has been a true asset to have the support of the Research Institute as we have launched this program at the Health System.

The Clinical Research Center provided regulatory support during the early stages so that we could provide this treatment option to patients. This included the use of a research coordinator to manage the program. We also collaborate with the blood center, which was instrumental in helping to identify donors and preparing the convalescent plasma.

How it works

People who recover from COVID-19 do so because their blood contains substances called antibodies, which are capable of fighting the virus that causes the illness. For some other diseases caused by viruses, giving people the liquid portion of blood (plasma), obtained from those who have recovered from the virus, leads to more rapid improvement of the disease.

Patients with COVID-19 may improve faster if they receive plasma from those who have recovered from COVID-19 because it provides passive immunity to help fight the virus that causes COVID-19. Preliminary reports from early studies using COVID-19 convalescent plasma for the treatment of individuals with severe or life-threatening disease indicate that convalescent plasma given early showed benefit for some patients.

While the results are promising, rigorous randomized clinical trials are currently ongoing to determine if this is a proven therapy for the treatment of COVID-19.

**Kathy Puca, M.D.**

Pathology
Marshfield Clinic Health System

**Martin Reriani, M.D.**

Critical Care
Marshfield Clinic Health System

National Farm Medicine Center

A research center that conducts research on human health and safety associated with rural and agricultural life.

Bringing a rural dimension to national study of children and COVID-19

We have recruited about 75 families from Wisconsin in a national study looking at the role children play in the COVID-19 pandemic. These farm families are already enrolled in our ongoing Wisconsin Infant Study Cohort (WISC) in collaboration with the University of Wisconsin-Madison.

The WISC project has been examining how farm environments and exposure to livestock can promote a stronger immune system in children, making them less likely to develop asthma and atopy.

This new study, called Human Epidemiology and Response to SARS-CoV-2 (HEROS), seeks to determine the rate of novel coronavirus infection and symptoms in children and their family members in the U.S. In addition, the HEROS study will examine whether rates of SARS-CoV-2 infection differ between children who have asthma or other allergic conditions and children who do not.

What I enjoy about this study is that it means rural people and farm families are represented in important research. The kids in the WISC study are in different environments than many other kids who will be part of the HEROS program in the fact they are largely rural.

The study is additionally novel for being conducted remotely with no face-to-face contact. Every two weeks, participating families complete nasal samples and questionnaires. A small volume of blood is obtained through the surface of the skin by patients via a new, nearly painless device.

Nationally, the research will enroll about 2,000 families. The National Institute of Allergy and Infectious Diseases (NIAID) sponsors the research. Dr. Anthony Fauci, director of the NIAID, told Congress that this study could prove to be, “very important ... when you talk about opening schools and the impact that might have.”



Casper Bendixsen, Ph.D.

Director

National Farm Medicine Center

Children's Center funding renewed

The National Institute for Occupational Safety and Health (NIOSH) announced that it has awarded our National Children's Center for Rural and Agricultural Health and Safety a five-year competitive grant renewal of \$1.2 million in Year 1, with options to add two more projects in subsequent years.

245 screened for skin cancer

We teamed up with Dermatology at Marshfield Clinic Health System to screen a total of 245 individuals for skin cancer: 130 on World Cancer Day during the Wisconsin Potato and Vegetable Growers Association conference and 115 two weeks later at the Marshfield Mall Farm Show. Skin cancer is the most common form of cancer in the U.S. Farmers and others who work in the sun are at higher risk.



Journal of Agromedicine dedicates issue to COVID-19

The December issue of the peer-reviewed Journal of Agromedicine, edited by Farm Medicine since 2004, was dedicated to COVID-19's impact on the agricultural community, including farmers, farm workers, farm families and the farm economy. Eighteen commentaries covered topics such as occupational health, personal protective equipment shortages, worker training, mental health, worker housing and child care.

COVID-19 testing

The Integrated Research and Development Laboratory worked with the Laboratory service line at the Health System to develop its COVID-19 testing process. This process can turn around test results within 24-48 hours, while also conducting more than 10,000 tests a day.

**Tick-borne diseases**

Our researchers conducted a survey to better understand what outdoor employees of the US Forest Service know about Lyme disease and what they do to protect themselves from ticks. A paper summarizing the results was published this year in BMC Public Health.

Cancer clinical trial laboratory work

In coordination with the Cancer Care & Research Center, we conducted lab work for more than 500 patients enrolled in cancer clinical trials from August 2019 to July 2020 as part of National Cancer Institute-sponsored oncology clinical trials.

Integrated Research and Development Laboratory

A laboratory that offers a unique research portfolio and diverse lab services dedicated to ensuring the success of Research Institute scientific endeavors.

History of quality leads to large COVID-19 CDC laboratory grant

We received a \$22.5 million grant to serve as the sole central reference lab in the nation to support the Centers for Disease Control and Prevention (CDC) on several COVID-19 studies for the next year.

This is an amazing opportunity for the Research Institute and our team. Our team has highly accomplished, experienced and dedicated laboratorians whose commitment to quality research for more than 20 years as a core research laboratory have led to this opportunity.

In collaboration with multiple research partners, CDC is conducting prospective cohort studies to monitor the incidence of symptomatic COVID-19 and asymptomatic SARS-CoV-2 infection throughout the U.S. These cohorts also make it possible to examine the duration of SARS-CoV-2 viral shedding and to assess the infectiousness of viral RNA among prolonged shedders.

We will focus on three objectives for this award:

- Establishing an effective means of assessing SARS-CoV-2 and influenza virus infections in the context of prospective cohort studies.
- Designing effective specimen processing and molecular testing procedures that are adapted to the needs of CDC's cohorts.
- Full implementation and refinement of high throughput molecular diagnostics.

With this award, our team has also grown rapidly over the last few months. The team we have here is truly tremendous and I continue to be amazed at how they have responded in the face of adversity during the COVID-19 pandemic.

**Jen Meece, Ph.D.**

Director

Integrated Research & Development Laboratory

Office of Research Support Services

An office that provides essential resources to support research and community outreach through a dynamic administrative environment.

Supporting development and execution of \$22.5 million CDC contract

It was a busy day when Brian Nikolai, senior grant & contract specialist, received a call from Jen Meece, Ph.D. Little did he know that for the next seven days, he would be putting together a \$22.5 million proposal for work from the Centers for Disease Control and Prevention (CDC) that would eventually become one of the most important contracts for the Research Institute in 2020.

The contract

To characterize the spread of SARS-CoV-2 and influenza, the CDC developed several observational studies. These studies required ample supplies, equipment and trained personnel to collect, process and analyze samples from individuals with suspected infection quickly and accurately. As a pre-existing site for CDC sponsored vaccine safety and efficacy studies, the Research Institute was a natural fit for this opportunity. However, the proposal needed to be submitted within the week. Under normal circumstances, projects of this size are developed over a period of weeks to months.

The process

To meet the shortened timeline, a team approach was required. While Dr. Meece wrote the technical portions of the document and developed a budget, Brian served as CDC liaison and project coordinator. He identified the necessary documents for submission, gathered information and collaborated with individuals from various departments to compile supporting documents. Krystal Boese and Steve Kaiser were instrumental in gathering shortened curriculum vitae from project members, and Michelle Wellsandt assisted with document formatting and collecting signatures. Despite technical difficulties and the extremely tight turnaround for data compilation, the solicitation was submitted with minutes to spare.

The result

Within the week, CDC notified Brian and Dr. Meece of their award decision, and Brian immediately contacted Janet Southworth, post-award grant & contract specialist. Janet notified Scott Swanson from Legal Services to initiate the process for fund receipt. From there, Dr. Meece was off and running with the research.



Elizabeth A. Buchanan, Ph.D.
Director
Office of Research Support Services

Buchanan joins as new director

Elizabeth A. Buchanan, Ph.D., has joined the Research Institute as the director of the Office of Research Support Services and staff senior research scientist. She oversees sponsored programs, IRB, scientific writing and other support services important to the Research Institute.

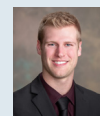
Peer-reviewed journal published three times

Clinical Medicine & Research, a peer-reviewed journal, includes original medical research relevant to a broad audience of medical researchers and health care professionals. It is owned and published by Marshfield Clinic Health System, and is edited within the Research Institute. In 2020, three issues were published including 25 original research articles.



Navigating research

Our in-house research navigator, Stephen Theis, helped 87 clinical researchers in 2020 align with research opportunities that fit their interests, and connected clinicians with the right people and resources to get their research off the ground.



Stephen D. Theis,
Research Navigator

Home to a REDCap MVP

Leila Deering was named REDCap Consortium MVP for 2020. Deering was selected due to her leadership, innovative presentations and juggling multiple concurrent sessions during the yearly REDCapCon events. Deering feels honored to be the recipient of this award. "I just wanted to give back to the community that helped me," Deering said.



Supporting the CDC reference lab with REDCap

The Office used its experience and knowledge to create a custom data entry for the lab to help with sample collection with the new CDC COVID-19 reference lab. The process saved time for the lab staff because they did not have to make and maintain Excel spreadsheets, allowing them to receive thousands of samples a day.

Supporting WISC and ECHO

The Office continued its longtime support of the Wisconsin Infant Study Cohort (WISC) and Environmental Influences on Child Health Outcomes (ECHO) studies by developing new features to address the new realities due to COVID-19 including online questionnaires, an e-Consent form and workflow checklists. WISC and ECHO follow children from birth until eight years old in order to investigate the environment and its impacts upon children's health.

Office of Research Computing and Analytics

An office that provides full service technology and data support for the research being conducted at the Research Institute.

Developing tools for COVID-19 response

REDCap development and COVID-19

Beginning in March and continuing through the COVID-19 pandemic, we utilized REDCap with custom development to solve business needs around employee screening, personal protective equipment tracking, lab sample tracking and employee surge planning. Operationalizing REDCap has proven to be a valuable tool for our organization.

- REDCap is used to screen employees to ensure they are symptom free before reporting to work.
- Personal protective equipment (PPE) was collected from Health System locations that were temporarily closed and tracked in REDCap, allowing accountability of critical supplies for the system.
- REDCap is used to track employee skillsets available so that staff can be deployed to critical areas during a surge.
- We created a custom module to easily scan COVID-19 samples to a testing plate. This allows the lab staff to quickly upload plates to their analyzer and export results. These results are then imported into REDCap where lab staff can review and export results.

Research network data model development and COVID-19

Marshfield Clinic Research Institute is a member of The Greater Plains Collaborative (GPC), a clinical research network funded by The Patient-Centered Outcomes Research Institute Program. The GPC is part of a larger network-of-networks called PCORnet, which facilitates research across nine clinical research networks across the country.

A large component of PCORnet is their common data model, which is used for standardizing electronic health record data across the network. This infrastructure enables researchers to centrally distribute queries and allows for rapid responses from each site. We maintain the common data model for the Research Institute.

At the start of the COVID-19 pandemic, our team worked to re-design the existing infrastructure to go from quarterly common data model refreshes to weekly. As a result, we were able to contribute up-to-date COVID-19 surveillance data to PCORnet weekly. This data was used to characterize patients across the U.S. with COVID-19 and compare to those with viral pneumonia and influenza.



Joseph Ellefson, M.A.T.

Director

Office of Research Computing and Analytics



Marshfield Clinic Health System Foundation

Your impact on research

COVID-19 stopped many things in 2020. But thanks to generous donors, researchers at Marshfield Clinic Research Institute were able to continue investigating life-threatening diseases, offering clinical trials for patients and shaping the future of medicine starting in our communities.

Donor support for research made it possible for patients to access comprehensive care and scientists to pursue today's most critical health care innovations. Though many of the Research Institute's studies are funded through national grants, gifts from people like you are vital to ensuring that research continues right here in Wisconsin.

Generous people like you donated more than \$1 million to support current needs in research at Marshfield Clinic Research Institute in 2020. 100% of funds donated to research through Marshfield Clinic Health System Foundation stay local to support the Research Institute's initiatives.

With the help of your donations to research...

- Brave people are still fighting cancer. Your support for the Cancer Care & Research Center funds clinical trials and research studies that support patients through their cancer journey. Many patients were forced to delay cancer care due to COVID-19, which is why it is more important than ever that people who are diagnosed with cancer can still get the care they need. Your donations made it possible for enrollments in clinical trials and participation in national research studies to continue.
- Local communities can access research targeted to rural health. Local research is just as important as national studies. Your donations help to fund research that impacts health care in our rural Wisconsin communities, including Lyme disease, blastomycosis and agricultural health and safety.
- Scientists are participating in national research to address the most critical needs in health care. This year, Research Institute scientists not only continued participating in national studies on vaccine

effectiveness, cancer, precision medicine and chronic conditions, they also began research into COVID-19 care and prevention. Your support helps enroll patients in national studies to ensure that our rural communities are represented in research to shape the future of health care.

- The Research Institute was able to welcome Krishna Ganta, Ph.D., and Cody Goessl, Ph.D., as its first two Frank R. and Betty J. Koller Postdoctoral Fellows. Each postdoctoral fellowship is a two-year appointment designed to facilitate development of a junior scientist's independent research skills and portfolio.



Pictured L to R: Krishna Ganta, Ph.D.; Jeffrey VanWormer, Ph.D., mentor; Cody Goessl, Ph.D.; and Sanjay Shukla, Ph.D., mentor.

Thank you for partnering with us to enrich lives in our communities through advancements in research. To support Marshfield Clinic Research Institute, please contact Karen Piel at piel.karen@marshfieldclinic.org or 715-389-3868.

Mission

We enrich lives through discovery, translation and application of scientific knowledge that improves health and well-being.

Vision

We will innovate and define the future of health care for generations. Our research will be the source of innovation for the future of disease and injury prevention and integrated health care locally and globally.

Values

Discovery – Will be the foundation of the overall activities of the research group.

Translation – A major effort will be made to apply our discoveries in the health care setting.

Dissemination – Results of work done will be distributed broadly on a timely basis.

Teamwork – Will be a hallmark of the research group.

Excellence – Will be the standard for all research and program activities.

Collaboration – Partnerships both internal and external will be sought and encouraged.



**Marshfield Clinic
Health System**

1000 N Oak Avenue
Marshfield, WI 54449

marshfieldresearch.org

715-387-5241 • 1-800-782-8581



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