



Research Institute

Community-Connected Research: Amplifying Our Impact



JULY 2022

Research and Innovation Driving Clinical Excellence

The COVID-19 pandemic was an undeniable reminder of the importance of medical research. The NorthShore Research Institute was a significant contributor in advancing efforts to care for COVID-19 patients, participating in many significant national trials that advanced knowledge around successful treatments. We continue to focus our efforts on studies of high impact aimed at improving outcomes and quality of life for our patients, our community and beyond.

We are pleased to share that our research successes have steadily increased over the past five years, currently with our highest amount of extramural funding and largest number of active clinical trials.

While we have a broad array of successful projects, including approximately \$40 million in total funding, we know that the depth and breadth of our research remains a well-kept secret to many.

We've made significant institutional investments and continue to back exceptionally talented physician-scientists who are focusing on driving translational research from the bench to the bedside in real time.

Personalized medicine is one of the most exciting areas where NorthShore University HealthSystem (NorthShore) has already established a leading role, and we continue to innovate in genomic and personalized medicine research. NorthShore's genomic programming has quickly become "the" national example of how to translate the potential of precision medicine directly into care.

Outcomes research is another key priority with numerous studies enhancing quality and driving the best, evidence-based practices throughout our organization and well beyond the walls of our own hospitals. We're continuing to build our infrastructure for important cross-collaboration and shared knowledge to improve healthcare delivery and the very health of the communities we serve.

And as NorthShore grows as an organization, we have the opportunity to leverage this growth—expanding our reach to Swedish, Northwest Community and Edward-Elmhurst Hospitals—and benefiting a growing number of patients across the region.

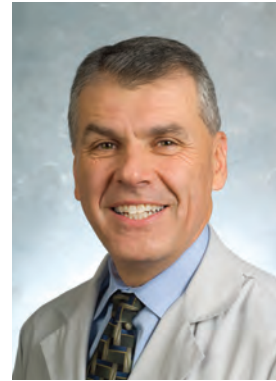
None of this would be possible without our many generous donors, and we remain extraordinarily grateful to all our philanthropic supporters. Your contributions are crucial to our continued success and our ongoing ability to pursue innovative research—research that means real hope for countless patients and families in our care.

We invite you to learn more in this report that provides a glimpse of some of our highlights and successes, and describes the ways in which that research is making a true difference in the care of the patients we are privileged to serve.

Pioneering research at NorthShore depends on the collaborative expertise of our team, the participation of our trusted patients and the generous support of many. Thank you for your involvement.



Dr. Michael S. Caplan



Dr. Joseph Golbus

Michael S. Caplan, MD

*Chief Scientific Officer,
NorthShore Research Institute
The Auxiliary of NorthShore Chair
of Pediatrics*

Joseph Golbus, MD

*President, NorthShore Research Institute
President, NorthShore Faculty Practice
Associates*

Who We Are

Research at NorthShore offers patients access to the latest technology and treatments.

The following icons highlight studies that are offered exclusively at NorthShore, as well as trials where NorthShore is the only participant in the Chicago area and the state of Illinois.



**Only at
NorthShore**



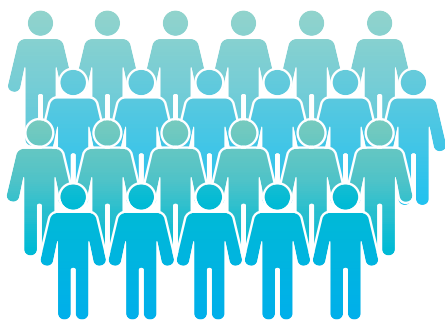
**Only Study Site
in Chicago Area**



**Only Study Site
in Illinois**

2021 | 2022 AT A GLANCE

6,600+
PARTICIPANTS

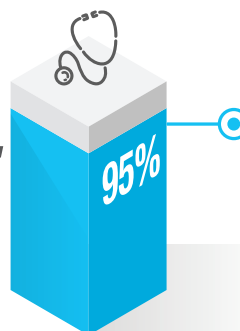


 = 300 subjects

89 EXTERNAL GRANTS
submitted in FY2021

with a
pipeline
of **\$73 million**

250+
PRINCIPAL
INVESTIGATORS



95%
ARE PHYSICIANS

HIGHLIGHTED AREAS OF FOCUS

Cardiology



Dermatology



Gastroenterology



Gynecology



Infectious
Disease



Metabolic
Disease



Neurology



Obstetrics



Oncology



Orthopaedics



Pulmonology



Surgery



Urology



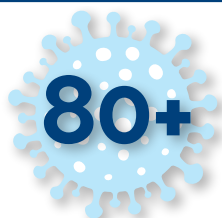
561
ACTIVE
CLINICAL
TRIALS

Combating COVID-19: Providing Hope Through Clinical Trials

RESEARCH RESPONDS TO COVID-19

When the COVID-19 pandemic reached into Illinois in March 2020, NorthShore researchers quickly sprang into action to support their clinical colleagues in identifying the best ways to prevent and treat COVID-19. Research infrastructure and review committees were quickly established to evaluate the many proposed clinical trials from the National Institutes of Health (NIH), the pharmaceutical industry, academic sponsors and private organizations reaching out to NorthShore.

The COVID Clinical Trials Scientific Review Committee, led by Associate Chief Quality Officer for Ambulatory Care Thomas Hensing, MD, MS, and composed of clinical and research experts from key areas—including Pulmonology, Infectious Disease, Pathology and Pharmacy—reviewed more than 25 proposed clinical trial protocols. Over the course of the pandemic, 15 inpatient and outpatient trials were opened for enrollment at NorthShore. To date, more than 1,000 subjects have been enrolled in COVID-19 related studies at NorthShore.



**Number of
research, registry and quality
improvement projects**



**Number of subjects
enrolled in
COVID-19 studies**

INTERNATIONAL COLLABORATION

NorthShore also played a key role in the international, multicenter DARE-19 trial that studied the efficacy and safety of the medication dapagliflozin in respiratory failure in patients hospitalized with COVID-19. Robert Gordon, MD, Division of Cardiology, served as the principal investigator of this trial.

The NorthShore Research Institute team rapidly worked through the logistics of interacting with consenting COVID-19 patients, without family members present. Colleagues from Administration, Facilities, Infection Control, Lab Services and Health Information Technology (HIT) worked together with research investigators and staff to think creatively to open the studies and enroll patients as quickly and as safely as possible.

Many of the tools, workflows and dashboards created to respond to COVID-19 have since been integrated into other non-COVID-19 clinical trials.

NorthShore joined Operation Warp Speed by participating in the Department of Defense-funded convalescent plasma trial

that created the evidence supporting the use of plasma from convalescent patients (those who have recovered from the disease and whose blood contains antibodies against SARS-CoV-2) as an early treatment for the virus. Preliminary results were published in *The New England Journal of Medicine* online in March 2022.

The trial was led at NorthShore by Giselle Mosnaim, MD, Division of Allergy and Immunology, together with a talented team of physicians, nurses and administrative staff. As a result of their collective efforts, NorthShore was the second highest enrolling site, behind the study's lead institution, Johns Hopkins University.

Under the direction of Thomas Gniadek, MD, PhD, former Director of the Blood Bank and a co-investigator for the trial, NorthShore collected over 600 units of plasma distribution nationally for the trial, as well as for emergency use for hospitalized patients at Swedish Hospital.



LIFESAVING TREATMENTS AND HOPE FOR THE FUTURE

COVID-19 brought the essential role of research and science into sharp focus, overcoming the barriers to providing critical lifesaving treatments and therapies to our patients and community. Beginning in 2020 and continuing today, NorthShore research teams have addressed the needs of our community to provide cutting-edge research trials that have provided hope and options for prevention (vaccine trials), treatment (serious and life-threatening disease), and management of early, mild disease at home.

Many of these research participation opportunities have only been available locally at NorthShore. The launch of more than 80 COVID-19 research, registry and quality improvement projects across the spectrum of research at NorthShore reinforced our dedication and ability to move swiftly to implement studies that impact patient outcomes in real time. Many of the COVID-19 treatment trials launched at NorthShore evaluated repurposed or off-label use of FDA-approved drugs using established antivirals and anti-inflammatories in new ways to battle COVID-19.

NorthShore is participating in one such trial, ACTIV-6, which is sponsored by the National Center for Advancing Translational Science (NCATS) and led by Duke University. Nirav Shah, MD, is the NorthShore principal investigator.



Only Study Site
in Illinois

ACTIV-6

“Many lessons have been imposed upon us by the global pandemic. Not the least of these is the reminder that without science, physicians, hospitals and healthcare systems are powerless to diagnose, assess risk, prevent, manage and treat with confidence the diseases that drive our mission to preserve and improve human life,” said Bernard Ewigman, MD, MSPH, Director of the Outcomes Research Network (ORN).

“COVID-19 research at NorthShore on epidemiology, prevention, virology, vaccine development, diagnostic technologies and treatment has transformed our capacity to respond, recover and transition to a place where we can live with COVID-19 in our midst like other seasonal illnesses.”



Inpatient Trials

Goal: prevent disease progression

2020–2021

Testing new drugs/monoclonal antibodies targeting the COVID-19 virus



Outpatient Trials

Goal: prevent severe disease and hospitalization

2020–today

Testing new therapies and “repurposing” FDA-approved drugs for a new disease



Vaccine Trials

Goal: effectiveness

2021–today

Is the vaccine effective (robust immune response) for patients with certain diseases and taking certain medications?



Vaccine Trials

Goal: safety

2021–today

Is the vaccine safe for highly allergic patients?



Our multidisciplinary, collaborative research efforts brought colleagues from across our entire system together with renewed dedication to serving our communities today and adding to our collective knowledge tomorrow. Our research initiatives related to COVID-19 demonstrated just how strong, resilient and nimble the dedicated physician-scientist team at NorthShore is.

Thomas Hensing, MD, MS
Associate Chief Quality Officer for Ambulatory Care

Pioneering Clinical Trials Center

An exciting new component of the Research Institute, the Clinical Trials Center, is now open at the Old Orchard Medical Group campus in Skokie. The new Center complements and expands hospital-based research capabilities for testing innovative medication and therapies and offers easier, centralized geographic access to a growing number of patients across a broad region.

NorthShore patients and the larger community now have access to the latest drugs and treatments offered as part of clinical trials designed to understand their efficacy before submission to the Federal Drug Administration (FDA), or those that have FDA approval and are now being evaluated for treating other medical conditions beyond their initial approval.

"It's an exciting expansion of space, personnel and equipment for our physicians and investigators to collaborate and further grow our clinical trials program to benefit all of us," said Clinical Trials Center Director Stephanie Mehlis, MD.

The Center is currently involved in more than 30 outpatient clinical trials involving hundreds of participants in the fields of dermatology, diabetes, cardio-metabolic conditions, infectious diseases, rheumatology and allergy. This is a subset of approximately 550 active clinical trials across NorthShore.

Patients who are interested in participating in clinical trials can email ctc@northshore.org.



Dr. Stephanie Mehlis (left) and Dr. Liana Billings

Gratitude: A Participant's Perspective

Stephanie Mehlis, MD

Dermatologist

Principal Investigator,
Alopecia Areata Trial

A new clinical trial is studying how to treat adult and adolescent participants with alopecia areata of 25% or more hair loss.

Anna Balling

Patient

"It's really been life-changing for me, and I feel fortunate."

Alopecia areata is an autoimmune condition that causes people to lose their hair, often in large clumps. To date, there are little to no treatment options other than large doses of steroids. NorthShore is part of a multicenter, long-term study helping to change that, and 29-year-old Anna Balling was the first patient enrolled. The Chicago physical therapist has had great results with the new medication and is grateful for the opportunity to be part of the study.



After researching the pros and cons of participation and talking at length with her dermatologist Stephanie Mehlis, MD, who is the principal investigator of the study, Balling was excited to join the trial. "My appearance and my hair were occupying a lot of space in my mind," she said.

"It's really been life-changing for me, and I feel fortunate."

"I've done a lot of trials, and this is so exciting," said Dr. Mehlis. "Most of our patients have seen a dramatic improvement on the medication. When I have the opportunity to offer my patients medications that they couldn't get otherwise, it's very gratifying."

Study Volunteers: Our Patients Make It Possible

Dean Honda watched his father go through dialysis for years, and he knew that was a fate he wanted to avoid. Honda has Type 2 diabetes, high cholesterol and related kidney disease, and the 62-year-old was immediately interested when endocrinologist Liana Billings, MD, MMSc, introduced the possibility of a clinical trial for a new medication.

"My ultimate goal was to help myself, but I also hoped that I could be helping others in the community," said Honda, who is now participating in his second trial with NorthShore, the FLOW study designed to examine whether a specific GLP-1 receptor agonist (GLP-1RA) medication reduces the risk of worsening diabetes-related kidney disease.

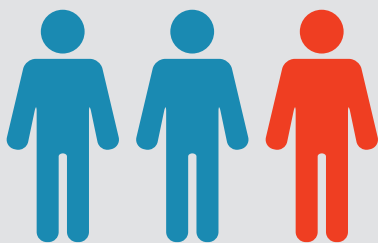
"I'm pretty sure I'm not in the placebo group," said Honda. "I started losing weight, and my numbers were better almost right away." Volunteers like Honda often sign on to be part of a study not knowing if they'll be assigned to receive the test medication or placebo. Their physicians are also "blinded" not knowing which patients are in the medication or placebo group until the clinical trial has been completed.

Dr. Billings, who serves as the principal investigator for the FLOW trial, is grateful to patients like Honda. "It's so incredibly valuable for science to have people participating in these studies," she said. "Their involvement in clinical research is impactful and essential in expanding our knowledge about how we can best take care of patients with diabetes or other medical conditions. We are so thankful for every single one of them." The FLOW study is very novel as it's one of the first to specifically look at renal outcomes with this class of medications.

"Our clinical trials really complement our care," said Dr. Billings. "Just by participating in the study, patients have more touch points with our team and more education, which can be especially valuable for diabetes patients."

"Because we conduct clinical trials at NorthShore, we have the opportunity to investigate new medications and we have a head start once they're approved," explained Dr. Billings. "We're better clinicians because of that."

"One of our strengths at NorthShore is that we're nimble enough to implement studies quickly and effectively," added Dr. Billings. "As clinicians, we understand the clinical relevance to our patients, so it's rewarding to see somebody like Dean doing so well and giving back at the same time."



1 in 3

Approximately one in three adults with diabetes may have chronic kidney disease.

Liana Billings, MD, MMSc

Endocrinologist

Principal Investigator,
FLOW Trial

The FLOW study is designed to examine whether a specific GLP-1 receptor agonist (GLP-1RA) medication reduces the risk of worsening diabetes-related kidney disease.

Dean Honda

Patient

"I started losing weight, and my numbers were better almost right away,"

Personalized Medicine

TRANSLATING FROM THE BENCH TO BEDSIDE: GENETIC RISK SCORES

A major research priority for personalized medicine at NorthShore is to develop and understand the clinical utility of polygenic risk scores for risk stratification of common diseases. Led by Jianfeng Xu, DrPH, Ellrodt-Schweighauser Family Chair of Cancer Genomic Research, the NorthShore research team has published multiple papers in high-impact journals on this topic and is considered a national leader in this field.

Over the past year, Dr. Xu's research team has made significant progress in translating genetic research to the clinic by developing several polygenic risk score tests that are now available from laboratory partners. Notably, these tests are applicable for multiple racial groups, including African-American and Latino populations.

One of the tests was developed to personalize prostate cancer screening strategies by stratifying prostate cancer risk among men. It can also be used to identify a patient's need for a prostate biopsy based on their individualized risk assessment. Co-developed with Brian Helfand, MD, PhD, the Ronald L. Chez Family and Richard Melman Family Chair of Prostate Cancer and Division Chief of Urology, this is the first orderable polygenic genetic test for prostate cancer in the country.



Another test provides a polygenic risk score for both Type 1 and Type 2 diabetes and was co-developed with Liana Billings, MD, MMSc, an endocrinologist and Vice Chair of Research and Education for the Department of Medicine. This test provides additional information for differentiating between these two types of diabetes.

The aim of personalized medicine is to improve the quality of care by placing an emphasis on not only precision-based treatments, but equally importantly, early detection and prevention. The collaborative efforts of our researchers and clinicians to implement polygenic risk scores in clinical care place our institution at the forefront of translational, personalized care.

NEW GENETIC COLLABORATIONS MEAN BETTER CARE

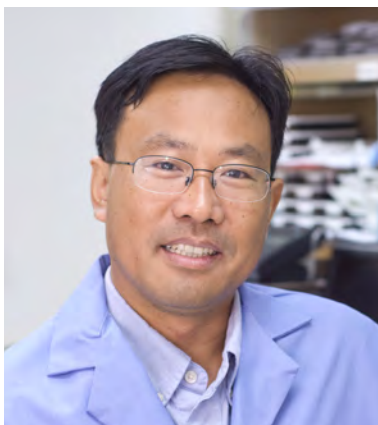
Personalized medicine has strengthened the foundation of integrating genetic data into routine patient care at NorthShore by entering into a new partnership with Sema4, a patient-centered health intelligence company. Because of this partnership, NorthShore has been able to increase the annual number of patients receiving genetic testing by more than 20% over previous years.

Genetic testing is only one part of the partnership; developing novel health insights and other advanced analytic approaches are key to the expansion of personalized medicine and this partnership.

Through artificial intelligence and machine learning techniques, Sema4 and NorthShore will be able to discover new disease models that better understand a patient's progression. This will allow NorthShore to predict who is likely to develop a disease before the disease manifests, and intercede to deliver risk-reducing care keeping the patient healthier, longer.

To bring innovation to the front lines of care, the personalized medicine team will continue to engage in implementation science research. Integrating multiple streams of data into care will be challenging, but by focusing on four phases of implementation—development, delivery, measuring and scaling—we'll bring health insights across the continuum of care. As a result, NorthShore will be the institution that takes care of our patients better because we *know* our patients better.

GROUNDBREAKING RESEARCH ELEVATES INTERNATIONAL PRESENCE



Dr. Jubao Duan

With three NIH R01 grants, Jubao Duan, PhD, is recognized among the top tier of researchers in the country. Dr. Duan, the Charles R. Walgreen research Chair and Director of Functional Genomics in Psychiatry at the Center for Psychiatric Genetics, and his team are developing new stem cell models for Alzheimer's disease and schizophrenia to determine how these devastating diseases develop and whether their genetic makeup can be manipulated by CRISPR gene editing to reverse the course of the disease.

The key approach in Dr. Duan's work is to convert a patient's blood cells into induced pluripotent stem cells (iPSCs) that can then be turned into brain cells. The stem cell approach was initially supported by a NorthShore pilot research grant in 2011, which ultimately enabled him to secure critical NIH funding.

Dr. Duan is now collaborating with the Department of Neurology to create a human iPSC bank of neurodegenerative disorders (iBoND), aiming to add translational neuroscience research to support NorthShore's personalized medicine efforts.

PREVENTING BREAST CANCER IN HIGH-RISK PATIENTS

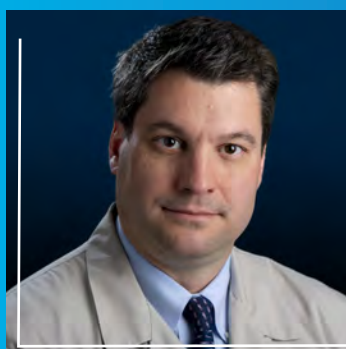
Medical Oncologist Allison DePersia, MD, a program director in NorthShore's Outcomes Research Network, is leading several collaborative clinical research studies related to novel risk assessment and prevention for patients at high risk of developing breast cancer. She is the NorthShore principal investigator for "Clinical Application of Refined Risk Estimates," an ongoing study through The Ohio State University.

The goal of the study is to provide refined genetic risk predictions based on BRCA1/2 genetic risk modifiers in a clinical setting and assess the impact of risk stratification on genetic knowledge, risk perception and risk management-related decisional conflict.

Another randomized, double-blind, placebo-controlled, multicenter international, Phase III study, "Studying the Effect of Denosumab on Preventing Breast Cancer in Women With a BRCA1 Germline Mutation," will begin at NorthShore this year. NorthShore was approved as a study site for the Alliance for Clinical Trials in Oncology study, and eligible clinic patients with a BRCA1 mutation at a high lifetime risk of developing breast cancer will have the opportunity to participate. The trial offers a novel application of the drug denosumab to evaluate breast cancer risk reduction.



Dr. Allison DePersia



NorthShore provides the unique learning laboratory to translate the theoretical to the practical.

Peter Hulick, MD

*Janardan D. Khandekar, MD,
Chair of Personalized Medicine*

COMMUNITY ENGAGEMENT AND EDUCATION



NorthShore Center for Personalized Medicine team members participated in the Dim Sum & Then Some Uptown community 5K/10K race and shared information about genomics-guided care. NorthShore and a Swedish Hospital Foundation grant sponsored this event.

To ensure that all populations benefit from genomic medical advances, it's important to not only increase awareness, but also understand how genomics is perceived and accepted by different communities. A Swedish Hospital team, in partnership with the Mark R. Neaman Center for Personalized Medicine, used community engagement and in-depth qualitative interview best practices to learn about diverse community perspectives and also to engage and educate communities about genetics and health.

The findings have informed the implementation of population genetic testing at Swedish Hospital and clinics. Community engagement research was conducted in the Uptown Vietnamese American community, where culturally sensitive genetic information and translated patient and clinician education was also provided.

The project led to new collaborations with NorthShore, Swedish Hospital and community members. With input and expertise from clinical and research team members and the Uptown community, the Swedish team was able to strategically raise awareness of genomic medicine and uptake from diverse communities. These community engagement efforts will continue to inform best practices in the delivery of genomics-guided care to all patient populations throughout NorthShore.

Evidence-Based Research Improves Outcomes and Addresses Health Disparities

ORN STIMULATES CUTTING-EDGE, TRANSLATIONAL RESEARCH

The Outcomes Research Network (ORN) at NorthShore features a diverse team of scientists, clinicians and research staff led by Bernard Ewigman, MD, MSPH, former Owen L. Coon Chair of Family Medicine and Director of the ORN. Working collaboratively to facilitate and leverage research across the entire system, the ORN works as a catalyst driving impactful research aimed at enhancing outcomes for patients in real time.

Reinforcing areas of clinical strength, biomedical informatics and technical expertise, the ORN helps engage and support clinicians committed to asking the right questions and accurately tracking responses to drive improved outcomes for patients. Many of the pioneering studies highlighted in this report advanced with the support of the ORN and its Core and Embedded Program Directors and staff.

Looking ahead, the ORN is poised to continue to stimulate new outcomes research, including implementation science, health services delivery, additional clinical trials, comparative effectiveness studies and scientific discovery.



Research plays a critical role in NorthShore's commitment to addressing healthcare disparities.

Understanding the “what” and the “why” behind these inequities will serve as a blueprint for developing impactful interventions and solutions. Dedicated research will help NorthShore achieve its mission of being the best place for ALL patients to receive care.

Sharon Robinson, MD
Assistant Dean for GME
Diversity, Equity and Inclusion

STUDYING CULTURAL SHIFTS TO IMPROVE OUTCOMES

Emily White VanGompel, MD, MPH, Department of Family Medicine and Core Program Director, ORN, was recently awarded a five-year Agency for Healthcare Research and Quality (AHRQ) Mentored Clinical Scientist Research Career Development Award (K08). The federal grant of more than \$690,000 is titled “Supporting Vaginal Birth in Illinois: the Role of Unit Culture.”

“The goal of this research is to increase our understanding of how to change the culture on labor and delivery units to be more supportive of vaginal birth. There are many places in health-care where we’re striving to achieve cultural shifts to improve outcomes, but the critical steps to actually making that change happen are still nebulous,” said Dr. White VanGompel, who also expressed gratitude for the “gift of time” and research support the grant provides.

“Mentored Clinical Research awards such as the K08 are career-transforming, highly prestigious and difficult to attain,” said Dr. Ewigman. “The unusually high score given to Dr. White VanGompel’s application reflects her demonstrated capabilities as a health services researcher, her extraordinary potential as an independent investigator and her persistence in pursuing this award.”

Dr. White VanGompel’s manuscript, “Psychometric Validation of a Patient-Reported Experience Measure of Obstetric Racism® (The PREM-OB Scale™ suite),” was also recently accepted for publication in the leading journal *Birth*. Journal editors praised her breakthrough methodology related to racism and the impact on birth outcomes noting that the study “has the potential to significantly improve the quality of care birthing people actually receive and to move us closer to birth justice.”



Dr. Emily White VanGompel



Advancing Surgical Innovations

GRAINGER CENTER FOR SIMULATION AND INNOVATION SUPPORTS SURGICAL EDUCATION RESEARCH

The Grainger Center for Simulation and Innovation (GCSI) continues to drive surgical education research. A premier surgical simulation center and sophisticated teaching resource, GCSI innovates with an eye toward less invasive procedures that reduce complications, enhance patient safety, and improve patient satisfaction and outcomes. Among the current programs are:

- Groundbreaking anti-reflux surgery research using EndoFLIP® technology to individually tailor a patient's anti-reflux operation. NorthShore maintains the largest international EndoFLIP patient database.
- Peroral endoscopic myotomy (POEM) for treatment of achalasia (swallowing disorders) caused by nerve damage in the esophagus. There are very few surgeons nationally that perform POEM surgery, putting NorthShore at the forefront of achalasia treatment.
- Bariatric surgery using endoscopic sleeve gastropasty (ESG), an innovative bariatric surgery technique that can be performed on an outpatient basis, allowing weight-loss surgery patients to return home the same day as their surgery.



Dr. Michael Ujiki
Louis W. Biegler Chair of Surgery

Katherine Kopkash, MD

Breast Surgeon

Principal Investigator,
First U.S. Clinical Trial Evaluating
Robotic-Performed
Nipple-Sparing Mastectomies

NorthShore is the only Illinois site for this landmark study. The robotic approach allows the entire surgery to be performed through a 3.5 cm incision in the armpit.

Shannon Cowan

Patient

"The recovery was a lot easier than I thought it would be."

Young Patient Makes a Big Decision

Breast cancer runs deep in Shannon Cowan's family, with her mother, grandmother and great aunt all battling the disease, so the 23-year-old opted for genetic testing and a chance to understand her risk. When her test results came back positive for a BRCA1 genetic mutation, she met with Katherine Kopkash, MD, a pioneering oncoplastic breast surgeon, who is a principal investigator in the first U.S. clinical trial of robotic-performed nipple-sparing mastectomies. NorthShore is the only Illinois site for this landmark study using the robotic approach, which allows the entire surgery to be performed through a 3.5 cm incision in the armpit.



Dr. Katherine Kopkash (left) is the principal investigator for a groundbreaking surgical trial for robotic-assisted nipple-sparing mastectomies for women who are at high risk of developing breast cancer.

at Evanston Hospital and is thrilled with the results and the fact that she still has feeling. "It's very freeing to know that I won't have to go through the regular scans every six months and all the worry and anxiety that my mom had." Dr. Kopkash added, "I'm excited to lead this trial that will provide surgeons with evidence-based data to support the expansion of this innovative new procedure."



**Only Study Site
in Illinois**

"I liked how supportive Dr. Kopkash was," said Cowan. "She said your risk is low at your age, but I've treated 21-year-olds. For me, the anxiety was hard. I had watched my grandmother get sicker and sicker, and that was my worst nightmare."

When Cowan learned about the trial, her mother was especially interested and pleased that her daughter's experience with minimal scars and the possibility of more feeling would be so much better than her own surgery decades ago.

"The recovery was a lot easier than I thought it would be," said Cowan, who was the first participant in the trial

Obstetrics and Gynecology

DRIVING NEW STANDARDS OF CARE

The Department of Obstetrics and Gynecology has a robust research portfolio and significant external funding, including two Patient-Centered Outcomes Research Institute (PCORI) grants and more than \$5 million in NIH funding to support studies aimed at improving care and quality of life for women.

Among the exciting ongoing trials are:

- Two NIH/Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)-funded studies, led by NorthShore principal investigator Ann Borders, MD, MSc, MPH, Bernard Horowitz Chair of Obstetrics: “Psychological Intervention, Maternal Inflammation, Birth Outcomes: Centering vs. Routine Prenatal Care (PINC)” and the “Stress, Pregnancy and Health (SPAH) Study.”
- Two NICHD-funded trials: “Early Menstrual Pain Impact on Multisensory Hypersensitivity (EMPATHY),” Frank Tu, MD, MPH, principal investigator, and the “Mechanistic Characterization of Uterine Pain to Improve Diagnosis and Treatment for Dysmenorrhea (M-CUP)” trial, Kevin Hellman, PhD, principal investigator.

NorthShore is a participating member in the NICHD-sponsored Maternal-Fetal Medicine Unit (MFMU) Network led by Beth Plunkett, MD, MPH, Vice Chair of Reproductive Biology Research for the Department of Obstetrics and Gynecology.



The MFMU includes only 14 sites across the country and provides our patients with access to the most innovative clinical trials. Among the current MFMU studies offered at NorthShore are:

- Randomized Trial of Continuous Positive Airway Pressure (CPAP) for Sleep Apnea in Pregnancy (SLEEP)
- Randomized Trial of Pessary in Singleton Pregnancies with a Short Cervix (TOPS)
- Randomized Trial of Pessary and Progesterone for Preterm Prevention in Twin Gestation with a Short Cervix (PROSPECT)
- Prescription After Cesarean Trial (PACT)
- Tranexamic Acid for the Prevention of Obstetrical Hemorrhage After Cesarean Delivery: A Randomized Controlled Trial (TXA)

Research Opportunity Is a Lifeline for New Mom



Lynn W. (not her real name) delivered her first child in October 2020, at the height of the pandemic. Her very painful delivery followed a difficult pregnancy, and Lynn said she was struggling to cope and felt unprepared for what she was going through.

Thanks to a regular screening survey for postpartum depression, her positive screen triggered a call from our NorthShore Perinatal Depression Program (founded in 2003). Her needs were assessed, and she was provided with resources, including information about the SUMMIT (Scaling Up Maternal Mental healthcare by Increasing access to Treatment) trial led by principal investigator Richard Silver, MD, Chief Academic Officer and The Auxiliary of NorthShore Chair of Obstetrics/Gynecology.

The study offers effective psychological treatment either in person or by telehealth. “I knew I needed to try something. This should have been a happy time for me,” said Lynn. “Within two or three Zoom sessions, I started feeling better. I had a really good connection with the counselor and was able to use the coping strategies she gave me.”

“Funded by the Patient-Centered Outcomes Research Institute (PCORI), an independent nonprofit organization dedicated to improving the quality and relevance of

evidence to drive improved outcomes for patients, SUMMIT will determine how effective psychological treatment can be delivered without the usual barriers to care,” said Dr. Silver. “We’re excited about the potential to provide more families in our communities with these critical mental health services and to share these strategies with the other obstetric providers throughout our growing NorthShore system.”



Dr. Richard Silver



DATA-DRIVEN INITIATIVE ADDRESSES MATERNAL MORTALITY

SAVE MOMS, an important initiative supported by The Auxiliary of NorthShore, is a data-driven solution to protecting and preserving maternal health. In the United States, severe maternal complications before, during and after pregnancy continue to rise.

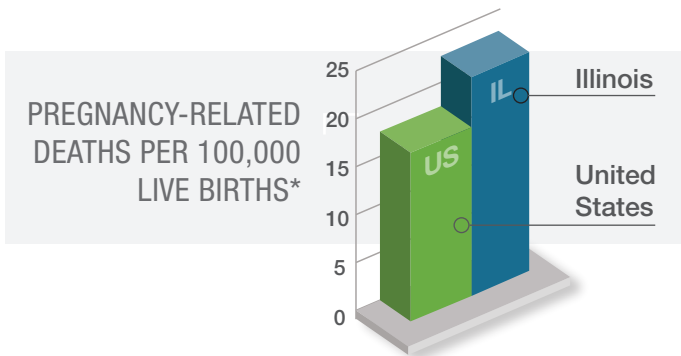


Dr. Beth Plunkett

SAVE MOMS identifies early indicators of potential risks by using Epic, NorthShore's sophisticated electronic health record (EHR) system, to continuously track the mother's maternal health before, during and after delivery. This enables the healthcare team to be alerted to monitor and provide treatment to avert a disaster.

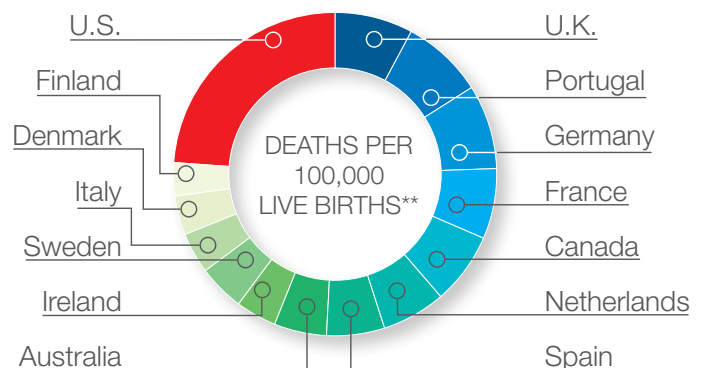
"This concept is really brand new in the field," said Project Leader Beth Plunkett, MD, MPH, NorthShore's Director of Research for OB/GYN Maternal-Fetal Medicine.

Since maternal death is often preceded by complications during pregnancy, SAVE MOMS is creating predictive models to generate automated alerts in our electronic health record to make sure each at-risk woman is recognized and treated with the appropriate care to keep our moms healthy and safe."



*Source: Illinois Maternal Morbidity and Mortality Report—2018

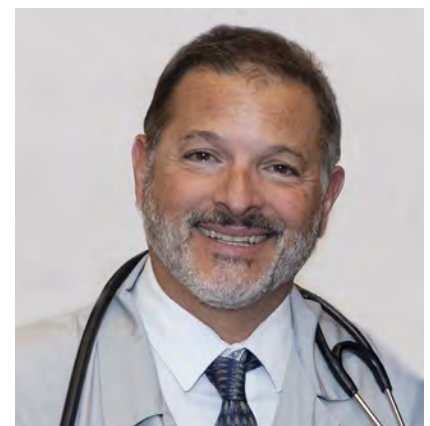
**Source: The Lancet, Credit: Rob Weychert/ProPublica



A DIVERSE PORTFOLIO OF FUNDED RESEARCH

The Division of Gynecological Oncology's research team directed by Gustavo Rodriguez, MD, the Matthews Family Chair of Gynecologic Oncology Research, and his colleague, Omar Nelson, PhD, leads NIH/NCI-sponsored pioneering studies including pharmacologic approaches for preventing ovarian and endometrial cancer.

Other industry-funded studies in the Department are looking at biomarkers in blood to diagnose endometriosis without surgery—new techniques for removing fibroids and gynecologic tissue to reduce surgery time and identifying biomarkers for preeclampsia.



Dr. Gustavo Rodriguez

NorthShore Kellogg Cancer Center



Advanced Practice Nurse Annette Sereika is a key member of the NorthShore Center for Personalized Medicine team and plays a major role in the Kellogg Cancer Genomics Initiative.

KCGI: CUTTING-EDGE ANALYSIS OF TUMOR TISSUE

The Kellogg Cancer Genomics Initiative (KCGI) is a groundbreaking study to evaluate the use of next-generation tumor sequencing in characterizing the tumor mutations in patients with advanced or metastatic cancers where tumor genetics may help determine the best course of therapy. Testing identifies DNA alterations as well as genetic translocations and includes pharmacogenomics studies.

The genomic data is used to both refine diagnoses and identify precise molecular targets for specific treatment. Patients are now being enrolled, and the feedback has been tremendous. “Our patients are very engaged and wanting to participate, and it’s been gratifying and humbling to see how passionate they are about wanting to help people in the future,” said Karen Kaul, Chair of the Department of Pathology and Laboratory Medicine and Duckworth Family Chair.

STUDYING COVID-19 ANTIBODY RESPONSE IN CANCER PATIENTS

Knowledge about COVID-19 and vaccine response in cancer patients is scant, and a team of NorthShore physician-scientists led by Janardan D. Khandekar, MBBS, MD, is leading a study to learn more. “Sequential Measurement of Immunologic Memory of Cancer Patients Following mRNA Based Vaccine Administration” has enrolled more than 100 patients with breast, gastrointestinal, lung and gynecologic malignancies. Participants are divided into two groups—the first of which is on chemotherapy and the second who may be on hormonal therapy or observation only.

Data collected will help provide critical information to guide recommendations for earlier or more frequent COVID-19 vaccine boosters for immunocompromised patients. Oncologists Bruce Brockstein, MD, Kellogg-Scanlon Chair of Oncology; Teresa Law, MD; Thomas Hensing, MD, MS; and Robert Marsh, MD; and pathologists Hong Lee, PhD, and Robert Benirschke, PhD, are serving as co-investigators.



Dr. Janardan D. Khandekar

NIH GRANT SUPPORTS IMMUNOTHERAPY RESEARCH

Research underway at NorthShore related to immunotherapy response on triple-negative breast cancer is supported by a prestigious NIH Research Project Grant (R01). Prem Seth, PhD, who served as the Director of the Gene Therapy Program at NorthShore, initiated the study and grant request before his untimely death in 2021.

The study aims to assess the effect of specific “viral oncolytics” on augmenting immune checkpoint inhibitors to generate an improved response to tumors that do not traditionally send signals to the immune system that something is wrong. Dr. Seth’s longtime colleague, Weidong Xu, PhD, will now lead this promising study that we hope will facilitate the development of novel therapeutics for metastatic breast and other cancers.

RESEARCH TO TRANSFORM BREAST CANCER CARE

Katharine Yao, MD, Vice Chair for Research, Department of Surgery, is leading several innovative research studies aimed at actively preventing breast cancer, and improving outcomes and quality of life for patients.

Novel Mindfulness Study

Anxiety and fear often follow a breast cancer diagnosis and can overwhelm some patients to the point where it makes it difficult to understand their treatment plan. Dr. Yao's mindfulness study will evaluate how to help patients best move forward and tackle their new journey. Short, educational mindfulness video modules tailored to the newly diagnosed breast cancer patient will address overcoming and coping with cancer.

Dr. Yao and her team will study the impact of the mindfulness videos on overall stress and anxiety and will collect blood samples to examine stress biomarkers. David Victorson, PhD, Associate Professor of Medical Social Sciences at Northwestern University, is a key partner in this study. This study is supported in part by a grant from the John Wayne Cancer Foundation.



Only at
NorthShore

Improving Risk Assessment

Developing a proven, data-backed risk assessment score to help women determine their individual breast cancer risk is an important strategy to help prevent breast cancer. A new initiative to improve risk assessments—"Personalized Risk Assessment at NorthShore" (PRANS Study) will help develop tailored breast screening recommendations.

Dr. Yao and her colleagues are developing a comprehensive risk assessment mechanism specifically integrated in NorthShore's EHR system. This risk assessment mechanism will generate a risk score for every patient coming in for a screening mammogram and will help identify those at higher risk who may need more than just a mammogram for screening.

NorthShore has one of the largest screening mammography programs in the region, coupled with our robust EHR system called "Epic," making our breast centers an ideal environment to study and develop best practices for personalized breast cancer screening. A Phase I pilot study of this project will use NorthShore screening sites to collect risk factors and to validate the risk model in Epic. As the study progresses, Dr. Yao's team will also measure how the risk score impacts anxiety, attitudes toward screening, risk perception and decisional satisfaction.



Only at
NorthShore



Dr. Katharine Yao leads innovative research aimed at advancing breast cancer prevention and treatment.



Dr. Mary Tilley Jenkins Vogel

STUDYING THE BENEFITS OF IMMUNOTHERAPY

Immunotherapy continues to drive major advances in treating cancer, and NorthShore remains ahead of the curve in testing and offering patients these pioneering therapies.

We are testing the addition of immunotherapy in gynecological malignancies with a trial adding immunotherapy to standard chemotherapy for patients with endometrial or uterine cancer. Patients receive standard therapy and may get either pembrolizumab or a placebo.

Mary Tilley Jenkins Vogel, MD, is the principal investigator of the study, which is designed to see if continued immunotherapy will help prevent recurrences or growth of cancer.

TEAM EFFORT CRITICAL TO RESEARCH SUCCESS

During the height of the pandemic, Cardiology Research Manager Bernardo Vargas served as the Spanish interpreter for patients considering enrollment in our COVID-19 research studies, even trials from other departments. His passion for research and dedication to our patients played a key role in our effort to enroll an inclusive and representative group of subjects.

NorthShore and Alfonso Tafur, MD, partnered with Northwell Health in New York on the HEP-COVID trial, which tested the hypothesis that treating severe COVID-19 patients prophylactically with a higher dose of heparin would lead to better outcomes, free of blood clots and other associated complications during hospitalization.

Enrolling subjects was challenging for the research team, as conversations had to happen over the phone due to pandemic restrictions, and language barriers were sometimes a bigger challenge.



Dr. Alfonso Tafur

"One afternoon, as I tried to explain the aim of the study to a Spanish-speaking person, we had a moment when the subject paused and then said in Spanish, 'Please don't let me die,'" recalled Vargas. "I was not prepared to answer that, but I was able to convey in Spanish that she was in good hands."

Three months later, on the final follow-up phone call for the study, that same patient reminded Vargas of that first encounter. "We both laughed

at the memory and shared joy that she will go on with her life," said Vargas.

The HEP-COVID study was published and presented in different forums, and every member of the team is proud to say that NorthShore was part of that experience and the critical clinical trials that will change practice, added Vargas.

NorthShore research teams have access to interpreting services and interpreters for languages most commonly used in our region, and we work collaboratively to promote a diverse and inclusive enrollment for our studies. Vargas' story also underscores that not only is NorthShore the best place to receive care, but it's also a great place to launch a career in research.

DEVELOPING THE NEXT GENERATION OF CLINICAL INNOVATORS

An outstanding group of medicine fellows have played a critical role in advancing research at the NorthShore Cardiovascular Institute (CVI). The cardiology research team was selected for five presentations at the prestigious annual American Heart Association (AHA) Scientific Sessions.



Dr. Arman Qamar

Led by interventional cardiologist Arman Qamar, MD, who was the senior author on the presentations, the NorthShore team of presenters featured Cardiology fellows who were encouraged to pursue research interests. The selected presentations not only show NorthShore's commitment to providing institutional investment in its clinical researchers, but also demonstrate the groundbreaking work done by physician-scientists at the CVI.

"It's very competitive to have presentations accepted to the Scientific Sessions, and the strong showing by NorthShore is a reflection of the great, collaborative and research-driven environment here," said Dr. Qamar, whose research is supported by a grant from The Auxiliary of NorthShore. "It's very gratifying to be part of a culture that is so committed to mentoring the next generation of clinical innovators."

Philanthropy has been an essential component of advancing CVI research and supporting fellows including Mrinali Shetty, MD, Safwan Gaznabi, MD, and Kifah Hussain, MD, all of whom have published extensively.

Among the many pioneering projects presented at the AHA conference was meta-analysis reviewing landmark trials reporting on the use of genetic testing and antiplatelet therapy in patients with acute coronary syndrome.

RESEARCH FURTHERS EXCEPTIONAL CARDIAC CARE

Principal investigator Mark Metzl, MD, and his team of electrophysiologists were among the top five sites for total enrollment and second for rate of enrollment in the ECG Belt study, which used a noninvasive diagnostic tool designed to help optimize cardiac resynchronization therapy (CRT) implants.

NorthShore's high enrollment led to our participation in the sub-study monitoring patients for an additional period of time and paved the way for additional invites for future studies and collaborations. Electrophysiologists Dr. Metzl, Alex Ro, MD, Jose Nazari, MD, Boruch Zucker, MD, and Westby Fisher, MD, each had patients enrolled in this study.

Principal investigator Justin Levisay, MD, is leading an important study titled "AGENT IDE: A Prospective, Randomized (2:1), Multicenter Trial to Assess the Safety and Effectiveness of the Agent™ Paclitaxel Coated PTCA Balloon Catheter for the Treatment of Subjects With In-Stent Restenosis (ISR)." NorthShore is the only enrolling location in the Chicago area.



Only Study Site
in Illinois



Only Study Site
in Chicago Area



Dr. Mark Metzl and his team of electrophysiologists celebrate successfully enrolling the twentieth patient in an important ECG Belt study designed to help optimize cardiac resynchronization therapy (CRT) implants.

As one of the region's preeminent providers of neurological care, the NorthShore Neurological Institute (NNI) is actively engaged in clinical trials and other research.

Research in the NNI is multi-disciplinary, with neurologists, neurosurgeons, neuroradiologists, neuropathologists and a large team of research personnel engaged in a wide array of studies, often national and international in scope.

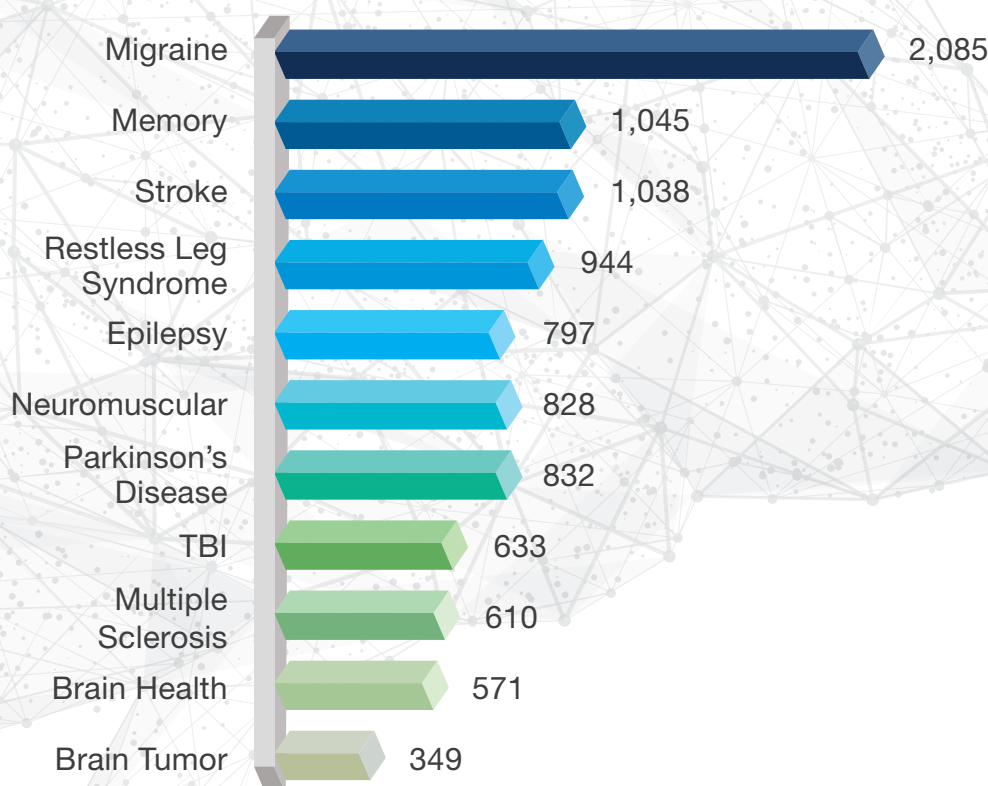
The NNI regularly launches new drug and device clinical trials in the areas of brain tumors, epilepsy, migraine, multiple sclerosis, movement disorders, neuromuscular disorders, sleep, spine disorders and stroke that allow patients opportunities to benefit from cutting-edge technology, the latest neurological treatment options and novel therapies to improve outcomes.

USING DNA INFORMATION TO PREDICT, PREVENT AND IMPROVE OUTCOMES OF NEUROLOGICAL DISORDERS

"The DodoNA Project: DNA Predictions to Improve Neurological Health" is a study that uses DNA samples and NorthShore's electronic health records to discover genetic variations that predict neurological outcomes and guide the development of disease-modifying treatments for 11 neurological disorders including brain tumors, epilepsy, memory disorders, migraine, mild traumatic brain injury (TBI), multiple sclerosis, neuropathy, Parkinson's disease, restless legs syndrome and stroke, as well as a cohort of subjects at higher risk for neurodegenerative diseases—called the brain health cohort.

The study includes a large and unique clinical and genomic dataset with data from more than 9,700 patients (see chart below), up to eight years of detailed longitudinal follow-up obtained at annual intervals, and close to 17,000,000 genotyped and imputed genetic variants. The DodoNA project is led by Katerina Markopoulou, MD, PhD, Stanley C. Golder Chair of Neuroscience Research. The study has resulted in multiple publications and presentations at national and international meetings and pursued collaborations with academic institutions, international research consortia and commercial entities, as well as other researchers within NorthShore.

Patient enrollment is ongoing, and patients are encouraged to call (847) 503-4344 if they're interested in learning more about the opportunity to participate.



As of March 1, 2022, more than 9,700 subjects have enrolled in the DodoNA project, with a target enrollment of at least 1,000 for each disorder.

TACKLING TRAUMATIC BRAIN INJURY

Researchers at the Traumatic Brain Injury (TBI) Laboratory are working on a number of projects to better understand TBI mechanisms, including the effects on neural excitability and cell calcium regulation, using electrophysiology and multiphoton calcium imaging techniques. Studies are also aimed at testing strategies to prevent brain injuries.

Co-Director of the NorthShore Neurological Institute and the Arlene and Marshall Bennett and Joseph A. Tarkington, MD, Chair of Neurosurgery Julian Bailes, MD, is a nationally recognized leader and a pioneer in the study of chronic traumatic encephalopathy (CTE) and the impact of brain injury on brain function.



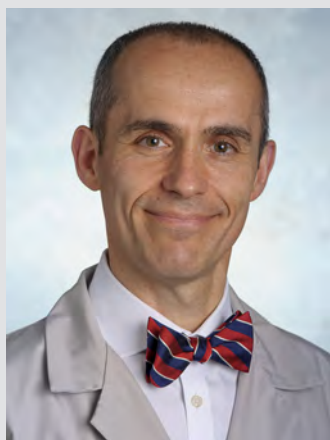
Dr. Julian Bailes

Choosing Research for New Treatment Options

“For a long time, we haven’t had anything new to offer patients with myasthenia gravis (MG), and patients have been left to live with some level of disability and sometimes serious side effects from the medications,” said Alexandru Barboi, MD. New drugs—including one that’s being studied in a Phase III multicenter, open-label extension trial at NorthShore—will literally be life-changing for MG patients.

“This will change the face of this disease,” said Dr. Barboi. “It’s so fortuitous that we’re participating in this study.”

Denise Hong was diagnosed with MG 20 years ago, and when Dr. Barboi suggested she consider the original study, her first thought was, “Finally after 20 years, there’s something out there,” said Hong, who has had a long career in nursing.



Dr. Alexandru Barboi

“I’ve been able to maintain my quality of life, and I feel very fortunate,” said Hong. “Dr. Barboi comes with quite a knowledge base and experience. I’m a science-based person and the trust I have with him is important.”

One of the main goals with the medication is that a daily injection helps keep her MG symptoms and weakness at bay around the clock where previous drugs left her feeling weak after three or four hours and she would need another dose.

“Dr. Barboi and his research team have all been very accommodating, kind and compassionate,” said Hong. “I hope this drug will help other people the way it’s helping me.”

“This would not be possible without the incredible support of the Research Institute and the dedicated work of the Neurology research staff,” said Dr. Barboi. “At NorthShore, we can move things faster than some of the bigger institutions and get things to our patients more quickly, and that’s very rewarding.”

Alexandru Barboi, MD

Neurologist

Much has been learned about myasthenia gravis during the past 20 years. What was once a relatively obscure condition of interest primarily to neurologists is now the best characterized and understood autoimmune disease.

—Myasthenia Gravis
Foundation of America

Denise Hong

Patient

“I hope this drug will help other people the way it’s helping me.”

Orthopaedic & Spine Institute

COLLABORATIVE APPROACH DRIVES IMPROVED OUTCOMES

Research at the NorthShore Orthopaedic & Spine Institute (NOSI)—the only dedicated hospital of its kind in the state of Illinois—is in a stage of rapid growth. Fostered by a collaborative and holistic team approach to orthopaedics, physician investigators, fellows, residents and medical students are driving new discoveries for tomorrow while improving patient outcomes today.

Clinical trial studies focus on advanced technology such as robotics, computer-enhanced imaging, pain management, personalized medicine and randomized clinical trials to evaluate the effectiveness of new procedures.

Among the major clinical studies currently underway are:

- NIH-funded multicenter consortium study titled “Acute to Chronic Pain Signatures” evaluating pain tolerance in total knee replacement patients utilizing in-depth patient questionnaires coupled with blood studies for pain markers, sensory testing and functional MRIs of the brain.
- Observational study of total knee replacement patients: “How Variations in Patient Pharmacogenomic Profiles Affect Pain and Narcotic Requirements Following Total Knee Arthroplasty.”
- Randomized study comparing standard gel-type injections in the knee to platelet-rich plasma (PRP) in patients with mild to moderate osteoarthritis. Patient outcomes are measured by differences in knee cartilage thickness using high-resolution MRI.
- Multicenter study titled “Justifying Patellar Instability Treatment by Early Results (JUPITER)”: Patients with patellar dislocation will be followed for 10 years to understand long-term consequences of the dislocations and treatments.

BIOMECHANICAL STUDIES

Biomechanical studies are also a major focus for NOSI and represent a transformational approach to understanding joint conditions. In fact, as part of the new dedicated hospital, a new biomechanics research lab is under construction that will focus on extensive laboratory experiments to understand orthopaedic injuries and associated interventions, specifically shoulder arthritis and rotator cuff injuries, ACLs, and minimally invasive spinal fusion procedures.

NOSI researchers are using computer modeling of musculoskeletal structures to further evaluate injuries and disease in order to develop translational approaches to patient care management.



As a destination center for orthopaedic and spine care, NorthShore Orthopaedic & Spine Institute faculty are focused on researching the next generation of surgical techniques, treatments and interventions for musculoskeletal patients. Being able to translate from the bench to the bedside continues to position NOSI as a leader in musculoskeletal medicine.

Jason Koh, MD

*Director, NorthShore
Orthopaedic & Spine Institute
Mark R. Neaman Family Chair
of Orthopaedic Surgery*

High-Impact Publications, National Recognition

Physician-scientists from across NorthShore continue to lead and innovate with sophisticated studies aimed at improving patient care today and expanding knowledge to improve outcomes globally. Researchers from across disciplines at NorthShore are regularly published in prestigious journals, underscoring the institution's commitment to pioneering research and academic advancement.

Among the many significant recent publications are:

- NorthShore researchers, along with peers from the University of Chicago and University of Wisconsin-Madison Departments of Medicine, conducted a clinical trial that was published in *Critical Care Medicine* titled "The Impact of a Machine Learning Early Warning Score on Hospital Mortality: A Multicenter Clinical Intervention Trial."

The trial involved the use of NorthShore's electronic Cardiac Arrest Risk Triage (eCART) tool, proving that the use of powerful predictive analytics is integral to developing best standards for patient care.

The NorthShore team included:

Avishek Datta, MS

Lakshmi K. Halasyamani, MD

Maureen Kharasch, RN, MSN

Patrick McNulty, BA

Urmila Ravichandran, MS

Nirav S. Shah, MD, MPH

Munish Taneja, MD, MS

Christopher J. Winslow, MD

Chi-Hsiung Wang, PhD

- Primary care physician and translational researcher **Sean P. David, MD, SM, DPhil**, is a co-author on an article about Omicron versus Delta variant COVID-19 infection and outcomes that was recently published in *The Lancet*. The article highlighted findings from the ZOE COVID Study, which was originally launched in the United Kingdom in March 2020. NorthShore Genomic Health Initiative (GHI) patients participated in the ZOE COVID Study.

- NorthShore and Vanderbilt University Medical Center researchers were featured in *JAMA Internal Medicine* for their clinical trial that focused on awake prone positioning for COVID-19 patients and its link to possible harms. The study was also part of a *BreakingMed.org* article.

The study's co-authors are:

Olga Amusina, DNP, APRN-FPA, ACNP

Shashi Bellam, MD

Megan Mattingly, APN-CNP

Also acknowledged in the study are the patients and frontline staff who endured the COVID-19 pandemic, including **Osasumwen Osayimwen, MD, MPH**, who provided frontline care; **NorthShore's COVID-19 hospitalist team and nursing staff**; and **Glenbrook Hospital's nursing administration**.

- A Department of Defense-funded convalescent plasma trial led by **Giselle Mosnaim, MD**, that showed early evidence for treatment of COVID-19 was published in *The New England Journal of Medicine* in March 2022.



Dr. Lakshmi K. Halasyamani
Davis Family Chair

The Power of Philanthropy

Philanthropy is critical to ensuring exceptional healthcare in our community and essential in driving discovery at the NorthShore Research Institute. Yet the cost of patient care and medical education is growing, and medical research—the lifeblood of progress—is never reimbursed and has become increasingly expensive. Like all medical institutions, NorthShore is experiencing declining insurance reimbursements and greater competition for diminishing government research dollars.

NorthShore relies on philanthropic gifts for the delivery of cutting-edge therapies, clinical programs, translational research, outreach to all segments of our community, medical education and the best possible patient outcomes. We are sincerely grateful to each and every individual, family and organization whose support has already made a real difference in the lives of many in our community and continues to provide hope for countless others.

Shown here are just a few examples of the tremendous power of philanthropy supporting research at NorthShore.

PREVENTING HOSPITAL READMISSIONS WITH WEARABLE TECHNOLOGY

The Daniel F. and Ada L. Rice Foundation

The Rice Foundation has been a catalyst in driving the adoption of new technologies at NorthShore. Its latest investment in the CASCADE Project led by Nirav Shah, MD, MPH, Medical Director of Quality Innovation and Clinical Practice Analytics, as well as Outcomes Research Program Director for Quality and Transformation, harnesses the power of medical-grade wearable technology to help patients and physicians understand their health in real time.

Dr. Shah's pilot project with at-home wearables showed a marked reduction in readmission associated with heart failure patients, and the study is now being expanded to patients with COPD, asthma, pneumonia, post urologic surgery and other conditions where patients are at high risk of hospital readmission and adverse outcomes.

While other health organizations have developed wearable programs within research silos that are not integrated with the rest of the healthcare system, NorthShore is integrating wearable technology into its electronic health record system to improve coordination of care and create a more comprehensive, personalized approach to care. This critical research would not have been possible without the Rice Foundation's generosity.



Dr. Nirav Shah (left) and The Daniel F. and Ada L. Rice Foundation President Peter Nolan



Dr. Jianfeng Xu (left) and Joe Hulsizer

COMMUNITY-CONNECTED RESEARCH DELIVERS NOVEL FINDINGS

A 17-year-old Lake Forest High School student with a love of numbers and an interest in using his passion and curiosity to help others was encouraged by NorthShore's Vice President of Translational Research and Director of the Program for Personalized Cancer Care Jianfeng Xu, DrPH, Ellrodt-Schweighauser Family Chair of Cancer Genomic Research, to conduct research that has already led to new discoveries related to sickle cell trait (SCT).

Joe Hulsizer approached NorthShore with a hypothesis that the SCT might be a contributing factor to African Americans in the United States dying at a disproportionate rate from COVID-19.

The partnership with NorthShore gave Hulsizer access to genetic information in the United Kingdom Biobank, which led to the discovery that SCT *does* contribute to higher infection and mortality rate of COVID-19.

The research has already been published in *The American Journal of Tropical Medicine and Hygiene*, and both Hulsizer and Dr. Xu are eager to continue the partnership and expand research efforts related to SCT and its association with many common diseases. "We're thinking about how we can translate this sickle cell news for African Americans in a population level for screening, not just for COVID-19," said Dr. Xu.

Local philanthropists supported this study and are critical to the ongoing research.

ADVANCING GENETIC-BASED PROSTATE CANCER CARE

The prostate cancer team at NorthShore has been supported by generous philanthropy and has developed unique tests based on both genomic (inherited) and somatic (tumor) DNA that allow for individualized and precise prostate cancer care. Because of this expertise, the team led by Brian Helfand, MD, PhD, the Ronald L. Chez Family and Richard Melman Family Chair of Prostate Cancer and Chief of Urology, and Jianfeng Xu, DrPH, Ellrodt-Schweighauser Family Chair of Cancer Genomic Research and Vice President of Translational Research has been invited to collaborate with the Department of Urology at Johns Hopkins University.

One of the premier institutions for prostate cancer, research and care, Johns Hopkins will partner with NorthShore to further develop and make widely available genetic-based strategies for hereditary prostate cancer care, screening and differentiating prostate cancer from benign prostate disease. New tests will refine risk-stratified prostate biopsy and differentiating indolent (non-life-threatening) from potentially lethal prostate cancer. This pioneering collaboration has the potential to truly transform prostate cancer care, leading to individualized and improved care for all men. Ongoing philanthropic support is critical to the success of this crucial endeavor.



Dr. Brian Helfand



Research Institute

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This report is a publication of the
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