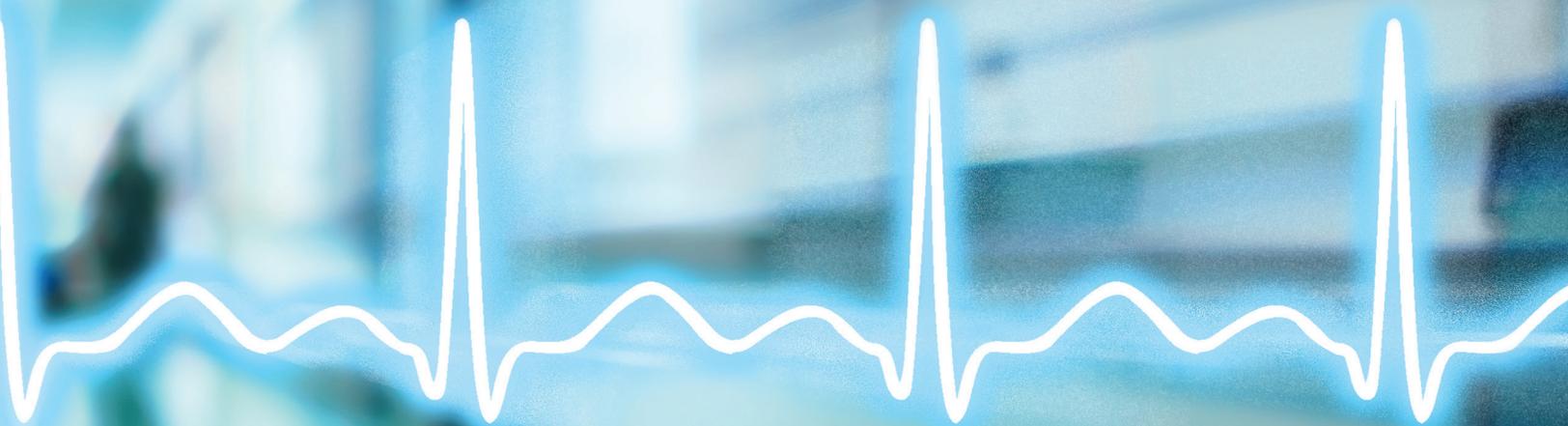




Creating the Future of Emergency Care



EMERGENCY MEDICINE
Annual Report

2016

The mission of the **Department of Emergency Medicine** at the University of Michigan is to create the future of emergency care. Our vision is an emergency care system that engages our patients and the entire health care system to provide solutions to the growing need and complexity of emergency medical care. We pursue this mission through advanced clinical practice, cutting-edge research, innovative education, and service to the health system, community, and our global partners.

2016 Residents & Fellows



EM Residents
Pediatric EM Fellows

Ultrasound Fellows
Critical Care Fellows

Annual Patient Visits

233,551 visits*

* includes Hurley Medical Center

74%
ADULTS



26%
PEDIATRICS

80%
University Hospital patients are high acuity

#1
IN NIH FUNDING

MOST HIGHLY NIH FUNDED EMERGENCY MEDICINE DEPARTMENT IN THE US 2 OUT OF LAST 3 YEARS

Blue Ridge Institute for Medical Research

***HURLEY MEDICAL CENTER**
102,695 total 34,508 peds

Michigan Service Network



MICHIGAN MEDICINE FACILITIES

University Hospital
C.S. Mott Children's Hospital
St. Joseph Mercy Health System
Hurley Hospital



PREHOSPITAL NETWORK

Survival Flight
Washtenaw/Livingston Medical
Control Authority
HEMS (Western Wayne County
Medical Control Authority)



MASSEY EMERGENCY CRITICAL CARE CENTER (EC3)

7,800 square foot critical care unit
5 resuscitation/trauma bays
9 patient rooms
Intensive physician & nursing
staffing levels

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1,277
PATIENTS
TRANSPORTED
IN 2016

Transforming Emergency Medicine

It was nearly five years ago that I began my tenure as Chair of the University of Michigan Department of Emergency Medicine. Then, as now, the department was nationally recognized for its across-the-board excellence in patient care, research, education, and outreach. Our goal since then has been to build on that excellence—and it is a goal we are achieving with notable success.

In this annual report, we reflect on the significant growth of our capabilities—and our impact—not only in 2016 but in the prior five-year period.

We look ahead to the challenges, changes, and opportunities of the next five years. And we share our strategies for creating the future of emergency medicine.





TRAINING THE NEXT GENERATION OF LEADERS IN EMERGENCY MEDICINE

Michigan Medicine has always excelled as a training ground for medical students, residents, and fellows in the specialty of emergency medicine (EM). In the past five years, every emergency unit that we staff—U-M’s Children’s Emergency Services, Mott Children’s Hospital, Hurley Medical Center in Flint, and University Hospital—has seen a steady upsurge in patient populations. That reality has given even more prominence and urgency to our educational mission, and we have expanded our programs accordingly.

Since 2012, we have enlarged the four-year residency program to its current all-time-high enrollment of 64. Likewise, we have grown our fellowship training programs to include pediatric emergency medicine, critical care, ultrasound, and sports medicine. Data-driven, patient-centered innovation continues to be a hallmark of Michigan Medicine. Our new multidisciplinary co-training program for nurses, pharmacists, social workers, and physicians incorporates this institutional mind set.

Our impact on the Medical School has been amplified by the addition of two assistant deans from our department, the appointment of Dr. Andrew Barnosky as one of four House Leads, and a significant number of EM faculty serving as mentors in the School’s innovative Doctoring Program.

DRIVING NEW DISCOVERIES AND TREATMENTS THROUGH RESEARCH

Research has long been a strength of EM, and recent years have seen impressive growth in our project portfolio. For two of the past three years, we have ranked first in the nation in NIH-funded emergency research. We can also claim the largest number of NIH-funded principle investigators of any EM department in the country.

Our broad-scope strength in research has led to high-impact initiatives such as the CDC-funded Injury Center and the Michigan Center for Integrated Research in Critical Care (MCIRCC). Among many other notable research initiatives highlighted later in this report is the NETT Network, now the nation’s main coordinating center for clinical trials in emergency medicine. Another outstanding example is the Acute and Critical Care Research Support Unit, a center recently established within the University’s Institute for Health Policy Innovations.

We also launched promising new initiatives such as the **Emergency Critical Care Center (EC3)**, a unique model of care funded by the **Massey Family Foundation** that has transformed the treatment paradigm by placing an ICU within the emergency department.

A generous gift from the Joyce and Don Massey Family Foundation is providing annual support for research in traumatic brain injury, including an annual Grand Challenge event that provides pilot grants to fund innovative studies on early-stage TBI interventions. In addition, in 2016, the department was awarded one of four NIH K12 Institutional Career Awards that creates a platform for transitioning junior EM faculty to independent careers in federally funded research.

Transforming Emergency Medicine

OPTIMIZING PATIENT OUTCOMES

Providing world-class patient care remains our top priority. In 2016, we worked to enhance team performance through initiatives such as Safety Huddles—all-staff, unit-wide updates conducted every four hours to ensure consistent care.

Our Emergency Critical Care Center (EC3) is a unique model of care. Funded by the Massey Family Foundation we have transformed the treatment paradigm by placing an ICU within the emergency department. In addition to introducing a host of new quality and safety programs, we have continued to make strategic investments in crucial ongoing services such as Survival Flight, our state-of-the-art paramedical transport service.

I extend sincere appreciation to the nearly **850 individuals** who comprise the EM team and whose passion, dedication, innovation, and skill **fuel our success each and every day.**

BUILDING EXCELLENCE THROUGH TEAMWORK

The past five years have seen important changes in both senior and general staffing within Emergency Medicine. Most notably, in 2016 we welcomed the department's new Vice Chair and Division Chief of Pediatric Emergency Medicine, Dr. Prashant Mahajan.

Across the board, we have seen significant professional growth not only among our world-class physicians, but

also our outstanding physician assistants and nursing staff. I extend sincere appreciation to the nearly 850 individuals who comprise the EM team and whose passion, dedication, innovation, and skill fuel our success each and every day.

CREATING THE FUTURE OF EMERGENCY CARE

It is both our goal and responsibility to position Michigan EM for future realities and to prepare health-care professionals who will be ready for whatever emergency medicine may look like five, 10, or even 20 years from now.

Today, the future trends are clear. Our nation's rapidly aging population is inevitably increasing the need for high-complexity, time-sensitive emergency care. On the other end of the spectrum are patients with low-acuity, unscheduled medical issues who need attention but do not necessarily require all the resources of an EM department.

Our challenge is to create a system of care that effectively and compassionately addresses both extremes.

In charting our future course, we have developed seven guiding strategies:

- M** Optimize the patient-provider experience in the emergency department.
- M** Develop alternatives to hospitalization after emergency department evaluation and treatment.
- M** Develop strategies to deliver emergency care outside the walls of the emergency department, including the patient's home.
- M** Optimize the time-sensitive delivery of advanced diagnostics and treatment to the critically ill and injured.



- M** Prevent injuries and illnesses that require emergency care.
- M** Develop global strategies to measurably improve emergency care.
- M** Train the next generation of leaders in academic emergency medicine.

By adhering to these strategies, and by leveraging our position of advantage at the interface between inpatient and outpatient care, Michigan EM will continue to lead the way in solving tomorrow's most urgent and complex issues in patient care. Through the research we conduct, the training we provide, and the care delivery systems we design, we will create the future of emergency medicine.

We invite you to join us in this extraordinary—and extraordinarily important—journey.

Sincerely,

Robert W. Neumar, M.D., Ph.D.

Professor and Chair



We Are:

A Team

Michigan's Emergency Medicine Department comprises of nearly 850 individuals. Who are they? They are gifted scientists pursuing new discoveries along the entire EM spectrum, from basic sciences to health services. They are pilots, nurses, mechanics, and dispatchers who make Survival Flight possible. They are prominent faculty. Dedicated physicians. Outstanding PAs and nurses. Hard-working residents. Medical technicians. Graduate and post-graduate researchers. Receptionists, administrators, and other vital support personnel. They

are a team — part of an interdependent, high-performance network that spans clinical care, education, research, and outreach. Whatever their expertise, whatever their position, they all share the same mission of delivering exemplary care and achieving optimal outcomes for every patient. And, together, they are changing the face of emergency medicine.



Total Employees by job classification:

- Physicians**
 - 12% Faculty
 - 7% Residents
 - 2% Fellows
- Patient Care**
 - 45% RNs & Techs
 - 10% Hospital Support
 - 8% Survival Flight
 - 4% PAs
- 12% **Education & Research Support**





Partners – Local, National, and International

In times past, the Emergency Room was just that: an isolated room tucked away in the lower level of a hospital. Those days are long gone. Today, Michigan Emergency Medicine is part of a broad-spectrum, highly integrated continuum of critical care. Like all University of Michigan units, our mission spans education, research, patient care, and outreach. Our success in fulfilling that multifaceted mission depends on our ability to forge effective partnerships with other units of Michigan Medicine. That mission also leads us to create alliances with other hospitals, with major insurance providers, with clinical research networks nationwide, with government agencies, and with leading research universities across the U.S. and beyond. Through these partnerships, we build and sustain a culture of future-forward innovation in emergency medicine.

LOCAL AND NATIONAL

Our local and regional partnerships are wide-ranging and include:

- M** Joint residency programs with St. Joseph Mercy Hospital and our Michigan Medicine affiliate, Hurley Medical Center in Flint
- M** Clinical fellowships offered in conjunction with Anesthesia, Pulmonary Critical Care, Pediatrics, Family Medicine, and Orthopedics
- M** An entrepreneurial, multidisciplinary critical care research center focused on developing new technologies for patients from infants to military personnel
- M** Agreements with hospitals throughout the state designed to streamline patient transfers
- M** MEDIC, a quality improvement research venture with BC/BS of Michigan

In addition, Michigan EM is a participating site for a number of federally funded research networks, among them:

- M** StrokeNet, dedicated to conducting stroke-related clinical trials
- M** PETAL, focused on clinical trials related to Prevention and Early Treatment of Acute Lung Injury
- M** PECARN, the Pediatric Emergency Care Applied Research Network

INTERNATIONAL

Over the past five years, we have worked to advance emergency care through global partnerships. In fulfilling our mission of service and outreach, we are reaching far beyond the boundaries of our own campus to establish initiatives around the world.

In Ghana, we have helped develop and expand that country's first emergency medical training program—which in 2016 graduated its fifth class of EM professionals. Through the U-M's Joint Institute for Translational and Clinical Research, we continue to engage in collaborative research projects with the Peking University Health Science Center. And looking ahead, we are actively exploring partnership opportunities in India and Brazil.

We Impact:

Patient Care Research Education

Patient Care Impact

THE CRITICAL CARE CHALLENGE



SINCE 2012,
ED VISITS HAVE
CLIMBED STEADILY
AS A RESULT,
PLANS ARE UNDERWAY TO INCREASE
THE NUMBER OF EMERGENCY
DEPARTMENT BEDS BY
APPROXIMATELY

10%

WHILE THE
MAJORITY OF OUR
PATIENTS ARE
DRAWN FROM
SOUTHEAST
MICHIGAN,
A SUBSTANTIAL NUMBER ARE
TRANSFERRED IN FROM
LOCATIONS AS FAR AS
MARQUETTE AND
GRAND RAPIDS.

ALMOST
1/2

OF ALL ADMISSIONS TO U-M
HOSPITALS COME THROUGH
THE EMERGENCY
DEPARTMENT



Every day, as many as **300 adults and children arrive at our facility in need of emergency care.** Their conditions range from mildly acute to imminently life threatening. They arrive by car, by ambulance, and via our Survival Flight paramedical transport service.

EM patients come from locations near and distant, as close as Ypsilanti and Manchester, and as far as New York, Florida, and California. In all, approximately one third of them travel 50 miles or more from their “home” hospitals and emergency departments, seeking the kind of advanced treatment and high-level expertise that only Michigan Medicine can provide.

In fact, nearly half of all admissions to U-M hospitals come through the Emergency Department. In 2016 alone, that number totaled over 30,000 patients.

As part of a larger system of care for acute illness or injury, EM is the first crucial starting point. Depending on their condition and prognosis, our patients move on to a variety of healthcare settings. Their next phase of treatment could be delivered in an observation unit, a hospital room, a rehabilitation center, a skilled nursing facility, or at home with supportive care.

SURVIVAL FLIGHT

Established in 1983, Survival Flight maintains a fleet of three twin-engine helicopters, two of which are used to transfer acutely ill and injured patients from across the state. A third unit is dedicated to procuring organs for transplantation. Long-distance patient transport is provided via a specially configured jet through a partnership with Metro Aviation.

patients transported in 2016: **1,277**



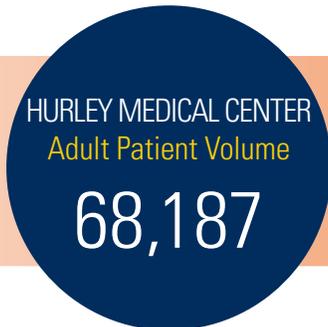
Adult Patient Care

Complex and challenging. Extending a compassionate hand.

Intensive pursuit of **delivering the best care, at the right time, in the right place, with the highest value.**

We take the challenge seriously.





The Michigan Medicine Adult Emergency Service provides world-class emergency and trauma care to our region. In the face of rising patient visits and internal capacity constraints, our clinical teams work to improve patient flow and add value to every step of our patient’s journey. Our research excellence brings innovative solutions to the bedside. Our flourishing educational environment keeps care vibrant, patient-centric, and compassionate.

In 2016, constrained hospital capacity led us to look for new and better ways to serve our patients and improve our throughput in our University Hospital site. The Operational Excellence (OPX) team, a multi-disciplinary group of EM physicians, nurses, techs, physician assistants, residents, and clerks, performed an extensive value stream map of the patient’s journey. OPX is currently focusing on improving communication within the EM, accelerating input from specialists and consultant MDs from across Michigan Medicine. We are looking forward to seeing the effects of our efforts over this year.



Situated in Flint, Michigan, The Paul F. Reinhart Emergency Trauma Center is part of the 443 bed public not for profit Hurley Medical Center that is a teaching hospital serving Genesee, Lapeer, and Shiawassee counties since 1908 by delivering the highest quality of adult and pediatric emergency and trauma care in the region. With a highly skilled staff that includes UM EM faculty, Hurley features the region’s only Level I Trauma Center and Level II Pediatric Trauma Center, offering the most comprehensive care in the area to all adults and children.



Emergency Critical Care Center (EC3)

Due to the contributions and generosity of the **Joyce and Don Massey Family Foundation**, the EC3 provides a unique resource allowing Michigan Medicine to continue to be the **leaders and best** and push the boundaries of emergency critical care across patient care, education, and research missions well into the future.

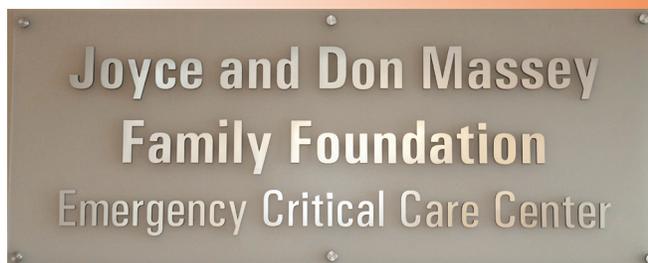


The Joyce and Don Massey Family Foundation Emergency Critical Care Center (EC3) opened its doors on February 16, 2015. The 14-bed EC3 unit is the first and largest Emergency Department based ICU in the country. The driving principle of the EC3 is that our sickest patients will benefit from early, attentive, and aggressive critical care as soon as they come under our care. We firmly believe that this approach will give us the best possible outcomes. The mission of EC3 is in harmony with the tripartite mission of the University, which includes distinction in clinical care with data-driven protocols, cutting-edge acute critical illness research, and educating future leaders in critical care. Designed in partnership with Michigan Medicine critical care medical directors and with a very generous gift from the Joyce and Don Massey Family Foundation, the EC3 provides a platform to advance multi-disciplinary critical care research and education.

Here are just a few of our major initiatives:

TRAUMATIC BRAIN INJURY research, fueled by a generous gift from the Massey Family Foundation, and in conjunction with the U. S. Department of Defense, is bringing together collaborative expertise and innovation focused on the early diagnosis and treatment of TBI during the first 48 “golden” hours post injury.

CLINICAL RESEARCH: The EC3 has given us the capability to open our own investigator-initiated clinical trials, but also to join large federally funded multi-center trial networks like NETT and PETAL. PETAL brings together the EC3, our Emergency Medicine team, as well as Michigan Medicine’s Departments of Surgery and Internal Medicine’s critical care divisions to focus on the early detection and treatment of acute lung injury. The mission of the Neurological Emergencies Treatment Trials (NETT) Network is to improve outcomes of patients with acute neurologic problems through innovative research focused on the emergent phase of patient care. U-M has served as the Clinical Coordinating Center for NETT since it was established in 2006.



EDUCATION: We have established two new Emergency Critical Care training fellowships in partnership with both Internal Medicine and Anesthesiology. With EC3 serving as a cornerstone of acute critical care education, we’ve provided clinical rotations for hundreds of medical students, residents, and critical care fellows from Michigan Medicine as well as other US and international medical schools.

The best and brightest physicians, nurses, advanced care providers, pharmacists, social workers, and respiratory therapists work together to provide the best care for our patients as well as providing a compassionate support network for the families and friends of our critically ill patients. With a generous donation from the Joyce and Don Massey Family Foundation, we are creating an EC3 family visiting center focusing on the well-being of our patient’s families and loved ones.

Overall, the EC3 care model has proven to be successful in playing a role in a reduction in ICU admission from the ED. **In its first two years of operation, EC3 has treated almost 5,000 patients.** In addition:

M UM Adult Emergency Services patient volumes are up 6.9%, however, ICU admissions from the ED are **down 16%** overall.

M ED to ICU admissions of less than 24 hours are **down 39%** and **only 31%** of EC3 patients ultimately require ICU admission.

M **92% of EC3 patients** are enrolled in an evidence-based care pathway covering a range of critical care conditions.

Pediatric Patient Care

Children's Emergency Services (CES), located within Michigan Medicine's CS Mott Children's and Women's hospital, is a 33-bed Level 1 Regional Pediatric Trauma and Burn Center. **We provide complex critical and acute care to children** and families from our region as well as around the world.

Our Pediatric Emergency Medicine (PEM) physicians, nurses and Child Life Specialists work together with a full PEM clinical team to provide world-class care around the clock. Our focus is on providing care in a child-friendly, family-centered manner while simultaneously focusing on cutting-edge research, educating the next generation of pediatric emergency providers and advocacy to enhance healthcare delivery for children locally as well as worldwide.

2016 QUALITY AND SAFETY/PATIENT CARE INITIATIVES: Our CES Team partners with our Patient Family Advisory Council to evaluate and constantly improve processes, enhance quality of care, and optimize patient outcomes. Here are some examples of our 2016 Initiatives focusing on quality, safety, and patient satisfaction and health outcomes:

- M** Development of a Multidisciplinary Unit-based Safety Huddle, which occurs every four hours, provides an "all staff" communication platform to support vigilance on safety and risk issues. This team huddle has had significant impact on creating a culture of safety for patients, families, and staff.
- M** Hand-washing hygiene overt monitoring process: compliance rose from a low of 41% to a high of 100%. We are ranked as the highest performing unit in the entire health system!

- M** Compliance with barcode medication administration, an indicator of patient safety, rose to over 95%.
- M** Early sepsis recognition, notification, and treatment protocols were successfully instituted.
- M** Reduction in start times for analgesic administration for patients with painful conditions was implemented.

To reduce variations in care among providers, new evidence-based clinical practice guidelines were instituted for many conditions including somatic symptom disorders, long bone fractures, bronchiolitis, and diabetic ketoacidosis.

ENSURING A CHILD-FRIENDLY SPACE: Working with Katherine Larson, a local muralist, we've brightened the lives of our patients and families with wall art that brings color and serenity to our facility.

OPERATIONAL EFFICIENCY AND ACCESS: In 2016, 26,637 patient/families visited CES, a 41% increase since we moved into C S Mott Children's Hospital.

- M** Our commitment to rapid assessment and care places us within the top 25% of all U.S. children's hospitals for getting our patients into a room and seen by a provider. On an average, children are placed in a room within four minutes of arrival to the emergency department and evaluated by our provider team member within 17 minutes!



M We care for children with the highest acuity of illness – 50% of our patients are severely ill. The higher acuity of illness is reflected in our 17% hospitalization rate. We also keep 7% of our ED visits “on-unit” as ED observation visits, with consistently high-quality outcomes. This simplifies the experience for our patients and reduces load on inpatient beds.

M High patient and family satisfaction scores: Despite increasing patient volumes and treating children with severe illness, CES patients and families remain highly satisfied with the care they receive. Patient satisfaction scores for physicians, nurses, as well as other team members are consistently in the 90th percentile and the overall emergency room experience is rated as very satisfying with consistently high recommendations regarding care received by patients and families.



“I wanted to pass along my thanks to you and your staff for the excellent care my grandson received. Every aspect of care was excellent. We truly appreciated how quickly he was triaged and treated. You and your staff are great.”

Research and Innovation Impact





As one of the most successful academic emergency medicine programs in the country, **our research capacity has flourished** in the last decade. U-M is the most highly NIH-funded emergency medicine department for research in the US, receiving more than 12% of the NIH's emergency medicine research funding (2015). Five of our faculty members are among the top 50 most highly NIH-funded emergency medicine researchers.



Total research project funding (including NIH, non-NIH, and subcontract funds) increased 25% (from \$15 million to \$20 million) in 2016.

U-M Emergency Medicine receives 12% of all NIH funding awarded to emergency medicine PIs.

12%

NIH funding accounts for **89%** of our research portfolio. Another **11%** comes from CDC, HRSA, NSF, DOJ, State of Michigan, foundations, and industry partnerships.

EM publications are on the rise:



Faculty published in top-tier journals in 2016, including *New England Journal of Medicine*, *Stroke*, and *Health Affairs*.

U-M Emergency Medicine is a leader in training future researchers, with four faculty currently funded with K awards.

FOUR

In addition, U-M has just landed a prestigious K12 training grant that will ensure a continuing pipeline of future EM researchers.

Impact Through Innovation

Changing the way critical care is delivered. Preventing injuries.

Advancing the science of emergency patient care.

And so much more.



University of Michigan Injury Center

Injury is the number one cause of death in people aged 1 to 44. With 250 members from 20+ institutions and faculty leadership from more than 14 departments, the U-M Injury Center brings together many disciplines to focus on injury prevention. Through funded research, educational and outreach programs, and policy work, the Injury Center brings attention to important and emerging health issues: prescription drug misuse, concussion, violence, transportation safety, and sexual violence. The results? Reduction of youth violence in Flint with an effective ED-based intervention, reduction of opioid overdose in Michigan (and beyond), safer young driver guidelines implemented across the nation, increased awareness of concussion risk in high school athletics, and much more. With a mission to advance prevention through research and education, the Injury Center is making a difference by preventing life-threatening injuries.

University of Michigan Center for Integrative Research in Critical Care (MCIRCC)

Critical illness and injury (stroke, brain injury, sepsis, cardiac arrest, and more) affect more than 5.7 million Americans each year – with enormous societal and economic toll. MCIRCC is focused on finding new and innovative ways to monitor, diagnose, and treat critically ill and injured patients. By bringing together researchers across disciplines and pairing them with industry partners, MCIRCC is advancing innovations that improve clinical decisions by harnessing the power of big data and real-time analytics. MCIRCC comprises 154 mem-



bers from 32 departments who have developed 10 medical inventions and eight patent applications. One way research is boosted is through the annual Critical Care Grand Challenge – a research funding competition that brings together the best and brightest to focus on a critical care topic in a collaborative environment and results in next-generation critical care solutions.

Acute Care Research Unit

The continuum of acute care delivery in the United States includes prehospital, emergency, inpatient, and ambulatory care. The ACUTE Care Research Unit (ACRU) applies quantitative, qualitative, mixed methods, and community-based participatory research to study intra and inter-setting dynamics and improve Access, Costs, Utilization, Transitions, and Effectiveness (ACUTE) through multidisciplinary health services research. With a goal of unifying the delivery of acute care along its continuum, ACRU conducts research, performs program and policy assessment, provides educational opportunities, and promotes interdisciplinary collaboration.

Michigan Emergency Department Improvement Collaborative (MEDIC)

MEDIC is an integrated adult and pediatric, emergency medicine-led project encompassing the full spectrum of care across diverse emergency department settings. The collaborative measures, evaluates, and enhances the experience and outcomes of patients seeking care in emergency departments across Michigan. Shared knowledge and experience of site participants combined with timely feedback on performance on quality measures help inform improved patient care. Supported

by Blue Cross Blue Shield of Michigan and Blue Care Network, the initiative is a quality-improvement program that collects/analyzes data, identifies best practices, and improves overall performance. Regular consortium meetings ensure engagement of all sites, as well as enable dissemination of new findings.

Neurological Emergencies Treatment Trials Network (NETT)

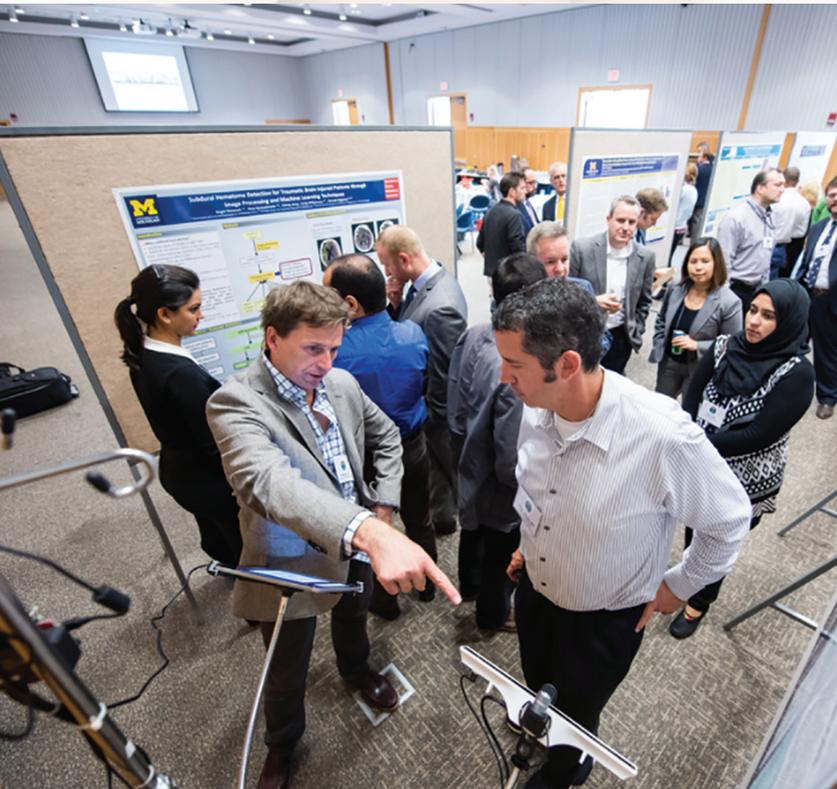
Every 28 seconds, a US patient experiences one of eight devastating neurological emergencies: stroke (three types), traumatic brain injury, status epilepticus, anoxic encephalopathy, spinal cord injury, or bacterial meningitis. As one of three clinical coordinating centers of the Neurological Emergencies Treatment Trials (NETT) Network, the U-M-based team supports network infrastructure to promote, conduct, and escalate clinical treatments that provide effective, innovative treatments to vastly improve patient outcomes. They also engage clinicians in the clinical research mission and provide training to enhance participation in clinical trials.

Michigan StrokeNet

The University of Michigan StrokeNet is a highly effective stroke research team composed of emergency physicians, adult and pediatric neurologists, neurocritical care specialists, vascular neurosurgeons, neuroradiologists, rehabilitation specialists, preclinical and translational stroke investigators, and other experts who conduct clinical trials focused on stroke treatment, prevention, and recovery. This NIH-funded, 25-node network also promotes the development of junior investigators in stroke-related research.

Impact Through Partnerships

Diverse, multidisciplinary, and global partnerships amplify the impact of our research mission.



Inter-institutional Collaboration

In a unique partnership that leverages the strengths of all parties, the University of Michigan Center for Integrative Research in Critical Care (MCIRCC) partners with the U.S. Department of Defense (DoD) and The Massey Foundation to fund new research that impacts the way severe traumatic brain injury (TBI) is diagnosed and treated. TBI is the fourth leading cause of death in the U.S. with 52,000 deaths per year.

The partners work together to host The Massey Foundation TBI Grand Challenge, which invites researchers to engage and partner in groundbreaking research in severe TBI and to submit project proposals for funding. Funding is awarded to teams developing diagnostic, device, therapeutic or health information technology solutions that address the initial “golden hour” and critical 24 to 48 hours of care following a severe TBI. The 12-month projects are reviewed by researchers, physicians, and scientists from U-M and neurotrauma leadership from the DoD.

The Massey Foundation funding comes from a generous gift from the Joyce and Don Massey Family, in honor of Joyce, who sustained a life-altering TBI from an automobile crash. The DoD offers expertise and resources to support this project, and has a particular interest in the topic, as service members and their families represent the largest US population suffering from TBI. This initiative will deliver practical approaches to improving care of TBI victims in the field and beyond.

International Partnerships

PEKING UNIVERSITY HEALTH & SCIENCE CENTER

The recent addition of an Emergency Critical Care Center (EC3) at Michigan Medicine provides a unique collaboration opportunity with the well-established Resuscitation Unit and Intensive Care Unit at Peking University. U-M and Peking University researchers are working together to develop a clinical research platform that will enable multicenter interventional clinical trials in ED settings.



Local Partnerships

HEALTHY FLINT RESEARCH COORDINATING CENTER (HFRCC)

Energized to help Flint recover from its water crisis, researchers from across the state and country now collaborate via the HFRCC, led by U-M Emergency Medicine's Rebecca Cunningham M.D. The HFRCC serves as a coordinating center for all research programs focused on the economic, environmental, behavioral, and physical health of Flint residents. As a key element, the HFRCC includes community leaders to ensure that community participation and benefit are central considerations for all programs.



GHANA EMERGENCY MEDICINE COLLABORATIVE

The Ghana Emergency Medicine Collaborative, funded by the NIH's Fogarty International Center MEPI program, is actively developing an innovative, interdisciplinary, sustainable medical training program to improve the management of injury

and acute medical conditions in Ghana, while keeping skilled health care providers in the region. This onsite training program has significantly increased Ghana's emergency medicine capacity and treatment quality using a team-based approach, led by U-M Emergency Medicine's Rockefeller Oteng M.D.

Impact Through Education and Leadership

Residency



ARUN GANTI, MD

I chose the University of Michigan for my residency training because of the location, diverse patient population, and world class faculty. Ann Arbor is a wonderful city for young professionals and families alike with lots of options for

dining, entertainment, and outdoor activities. To me, Ann Arbor has all the benefits of a big city without many of the stressors. Living here has significantly improved my wellness as a resident. The three site model of our residency provides a breath of patient population and practice environment unlike any other program I interviewed at. The faculty are a pleasure to work with and constantly push us to think critically and evidence-based medicine is at the core of our department. As I move on from my training of four years, three sites, two colors and one goal I am ready for anything!!

1996

FOUR-YEAR RESIDENCY PROGRAM STARTED

64 10 3

SLOTS SUBSPECIALTY TRACKS HOSPITALS

253 100% 100%

GRADUATES PLACEMENT BOARD PASS RATE

Medical School



MATTHEW CHAPMAN

**University of Michigan
Medical School
M.D. Candidate Class of 2018**

As a student, it is a daunting task to decide where to pursue a medical education prior to matriculation. In hindsight, I

don't think I would be happier anywhere other than the University of Michigan. While training at such a large and prestigious institution has prepared me adequately for life as a physician, it has been working alongside Michigan-trained residents and faculty which truly distinguish Michigan. From interested faculty teaching bed-side ultrasound techniques, to the residents who willingly collaborated with me on research, the culture at Michigan has provided me with the opportunities to succeed moving forward. Furthermore, the guidance and interest in me as a learner from many EM faculty and residents has fostered my own interest in Emergency Medicine. The faculty and residents here at Michigan are the ones that honestly make the difference. The Michigan Difference. Go Blue!

180+

MEDICAL STUDENT ROTATORS



IN HOSPITAL AND OUTDOOR SETTINGS



Achieving excellence starts with a solid educational foundation, and that's exactly what you will find at Michigan. **Our vision is to be the premier training program for the development of future leaders in the field of Emergency Medicine.**

The Emergency Department training programs offer a wide range of experiences and follow a multi-disciplinary approach to teaching.

The mentors are leaders in their areas of specialty, with an enthusiasm to share their knowledge.

Fellowship



ERIN DUNBAR, MD

Looking back over the last two years of my Pediatric Emergency fellowship, I can confidently say that I would choose this program again. I'm proud that we can offer our patients world-class care, including amazing support staff and state-of-the-art facilities. Our close relationship with the Adult Emergency Services allows us to learn from our adult colleagues in many ways. For example, we come

together to review the newest advances in difficult airway management, in point of care ultrasound, and in research and medical education. As Pediatric Emergency Medicine (PEM) fellows we have the unique opportunity to care for both underserved and medically complex patient populations; preparing us for any environment after graduation. Most of all, the people we work with make this fellowship great. This is a supportive environment to thrive in our chosen areas of research and to develop a niche for ourselves in the world of PEM.

Pediatric Clinical Ultrasound Critical Care

2016 in Review

We celebrate our impact – from the bedside to building bridges across the world. **We thank our patients, our clinical and research teams, our partners, and our donors** for working together to provide solutions to the growing need and complexity of emergency medical care.



Prashant Mahajan, MD, MPH, MBA

Prashant Mahajan, MD, named Vice-Chair of Emergency Medicine and Division Chief of Pediatric Emergency Medicine

Dr. Neumar is extremely pleased to announce that Prashant Mahajan, MD, MPH, MBA, joined the U of M Department of Emergency Medicine as Vice-Chair of Emergency Medicine and Division Chief of Pediatric Emergency Medicine on September 1, 2016. Dr. Mahajan came from Wayne State University and the Children's Hospital of Michigan where he served as Professor of Emergency Medicine and Pediatrics, and Division Chief of Emergency Medicine in the Carman & Ann Adams Department of Pediatrics. He was also Medical Director for the Children's Research Center of Michigan and Director for the Center for Quality and Innovation at the Children's Hospital of Michigan. Nationally, Dr. Mahajan chairs the Executive Committee overseeing the Emergency Medicine Section of the American Academy of Pediatrics.

Dr. Mahajan received his MD at the University of Bombay, India, and completed his EM residency and fellowship at Children's Hospital of Michigan. He received his MPH from the University of Michigan and his MBA from the University of Massachusetts. Dr. Mahajan is a founding member of the Pediatric Emergency Care Applied Research Network (PECARN) and has an impressive track record of research publications, federal research funding, and mentorship of junior investigators. His current NIH R01 grant focuses on the innovative use of RNA biosignatures in the management of febrile infants. In addition to his research experience, Dr. Mahajan's administrative experience and expertise in clinical operations will be a tremendous asset to our Department and the University of Michigan Health System.

We are excited to have such a talented and respected leader join our team and contribute to our mission of creating the future of emergency care.

New Faculty, Fellows and Residents



New Faculty



Sharmistha Dev, MD



Cindy H. Hsu, MD, PhD



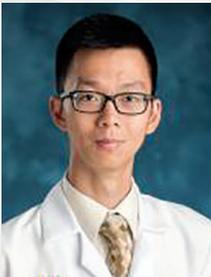
Allen Majkrzak, MD



Frederick Korley, MD, PhD



Brendan Byrne, MD



Ivan N. Co, MD



Carrie Harvey, MD



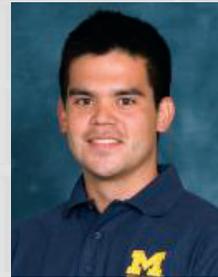
Kara Baker, MD



Joseph Betcher, MD

Chief Residents

2016-2017 (FY17)



Thomas Cunningham, MD



Graham Smith, MD



Sarah Tehranisa, MD

Chief Residents

2015-2016 (FY16)



Kara Baker, MD



Joseph Betcher, MD

New Faculty, Fellows and Residents

Chief Residents

2017-2018 (FY18)



Nate Haas, MD



Mary Haas, MD



Will Peterson, MD



Arun Ganti, MD

New Fellows

PEM FELLOWS



Taichi Itoh, MD



Wendi Wendt, MD

CRITICAL CARE FELLOWS



Russ Day, MD



Peter England, MD

EDUCATION FELLOW



Brendan Munzer, MD

RESEARCH FELLOW



Jeff Vlasic, MD

ULTRASOUND FELLOWS



Michael Cover, MD



Patrick Minges, MD



Medical Education Awards

Michael Boyd, MD

ACEP, Quality Improvement and Patient Safety Resident Quality Award.

Sage Whitmore, MD

Golden Apple Award from Residency for outstanding contributions as a clinical teacher.

Robert Shaffer, MD

Golden Apple Award from Residency for outstanding contributions as a clinical teacher.

Allison Cator, MD, PhD

Faculty FaceTime Award from PEM Fellowship for most engaged in the fellowship education program through conferences, clinical teaching and supporting fellow education.

Michelle Macy, MD

Golden Apple Award for PEM Fellowship for recognition of teaching excellence.

Andrew Hashikawa, MD

Excellence in Mentorship award from PEM Fellowship given to faculty who provided exceptional personal and professional mentorship.

Margaret Wolff, MD

Fellow Development Award from PEM Fellowship given to faculty demonstrating commitment to developing fellow independence practice through their teaching and actions.

Awards and Accomplishments

Jeffrey Desmond, MD, was named Chief Clinical Officer Michigan Medicine University Hospital/ Cardiovascular Center.

Sally Santen, MD, PhD, was awarded the Society for Academic Emergency Medicine Hal Jayne Excellence in Education Award, which recognizes "an SAEM member who has made outstanding contributions to emergency medicine through the teaching of others and the improvement of pedagogy."

Prashant Mahajan, MD, MPH, MBA, was selected to represent EM and PEM for Diagnostic Accuracy at the National Quality Forum.

Bradley Uren, MD, Assistant Professor of emergency medicine, was appointed by Gov. Rick Snyder to the Michigan Pharmacy and Therapeutics Committee.

Nicole S Sroufe, MD, MPH, was awarded the 2015 Certificate of Merit Citation: Recognition of Excellence for Education Exhibit: Suspected Acute Appendicitis in Children: MRI Appearances, Alternative Diagnoses, and Lessons Learned, 101st Scientific Assembly & Annual Meeting; Radiological Society of North America.

Emergency Care Innovation of the Year Award was awarded an Honorable Mention to Michigan Medicine's Emergency Critical Care Unit.

2014-2017 Lantern Award for Children's Emergency Services from the Emergency Nurses Association. Recognition award given nationally to emergency departments that exemplify exceptional practice and innovative performance.

2015 Hope Award Nomination, University of Michigan Health System to EM Children's Emergency Service for Recognition of exceptional patient and family centered care.

EM Children's Emergency Service: **Spring 2016 - Unsung Hero Certificate** for Reducing Harm from Alcohol Consumption from Ann Arbor Campus/Community Coalition.

Michigan Medicine earned **Magnet recognition**, the highest honor in nursing from the American Nurses Credentialing Center.

Laura Hopson, MD, Joseph House, MD, and Margaret Wolff, MD, were recipients of the Council of Residency Directors Academy Award for Scholarship in Education in Emergency Medicine.

Robert Neumar, MD, PhD, was inducted into the National Academy of Medicine and elected Co-Chair of the International Liaison Committee on Resuscitation (ILCOR).

TOP NEWS STORIES OF 2016

Ghana Emergency Medicine Collaborative: Shaping Emergency Care Delivery and Training

https://medicine.umich.edu/sites/default/files/content/downloads/Alliance2016-1_0.pdf (page10)

Survival Flight Nurse Thrives Taking One Step at a Time

<https://umhsheadlines.org/2016/12/survival-flight-nurse-thrives/>

Head Injuries Climb After Michigan Repeals Helmet Law

<http://www.reuters.com/article/us-health-motorcycles-helmets-idUSKBN13Q5NS>

Stopped Hearts Need More Research to Start: Review Shows Lack Of Cardiac Arrest Studies

https://www.eurekalert.org/pub_releases/2016-10/uomh-shn102716.php

U-M Becomes One of Four Training Sites for NIH Career Development Program in Emergency Care Research

<http://www.medicineatmichigan.org/web-exclusives/2016/october/u-m-selected-nih-career-program>

NEJM - Flipping the Script - A Patient-centered Approach to Fixing Acute Care

<http://www.nejm.org/doi/full/10.1056/NEJMp1601899>

To Improve Response During Outbreaks, Tap the Hive Mind

<http://labblog.uofmhealth.org/industry-dx/to-improve-response-during-outbreaks-tap-hive-mind>

History of Violence

<http://research.umich.edu/news-issues/michigan-research/history-violence>

ACEP Emergency Medicine Residents Use CPR To Revive Runner at Detroit Half Marathon

<http://www.acepnow.com/article/emergency-medicine-residents-use-cpr-revive-runner-detroit-halfmarathon/>

Locating Sepsis Michigan Redefines Sepsis Care and Survival

<http://medicineatmichigan.org/sites/default/files/archives/sepsis.pdf>

Detroit News- Teaching CPR Will Save More Lives Than You Think

<http://www.detroitnews.com/story/opinion/2016/03/27/cpr-schools-teaching/82327264/>

JAMA- New Emergency Department Study Examines Return Visits and Patient Care

<http://jamanetwork.com/journals/jama/fullarticle/2491638>

Community, Multiuniversity Partnership To Address Flint Health Challenges

<https://record.umich.edu/articles/community-multiuniversity-partnership-address-flint-health-challenges>

US NEWS- Saving Lives After Tragedy

<https://www.usnews.com/opinion/blogs/policy-dose/articles/2015-12-14/what-san-bernardino-paris-and-boston-teach-us-about-crisis-response>

Taking the Fight Against Risky Opioid Use to the Emergency Room

<http://labblog.uofmhealth.org/industry-dx/taking-fight-against-risky-opioid-use-to-er>

MCIRCC Welcomes Researchers from the University of Oslo

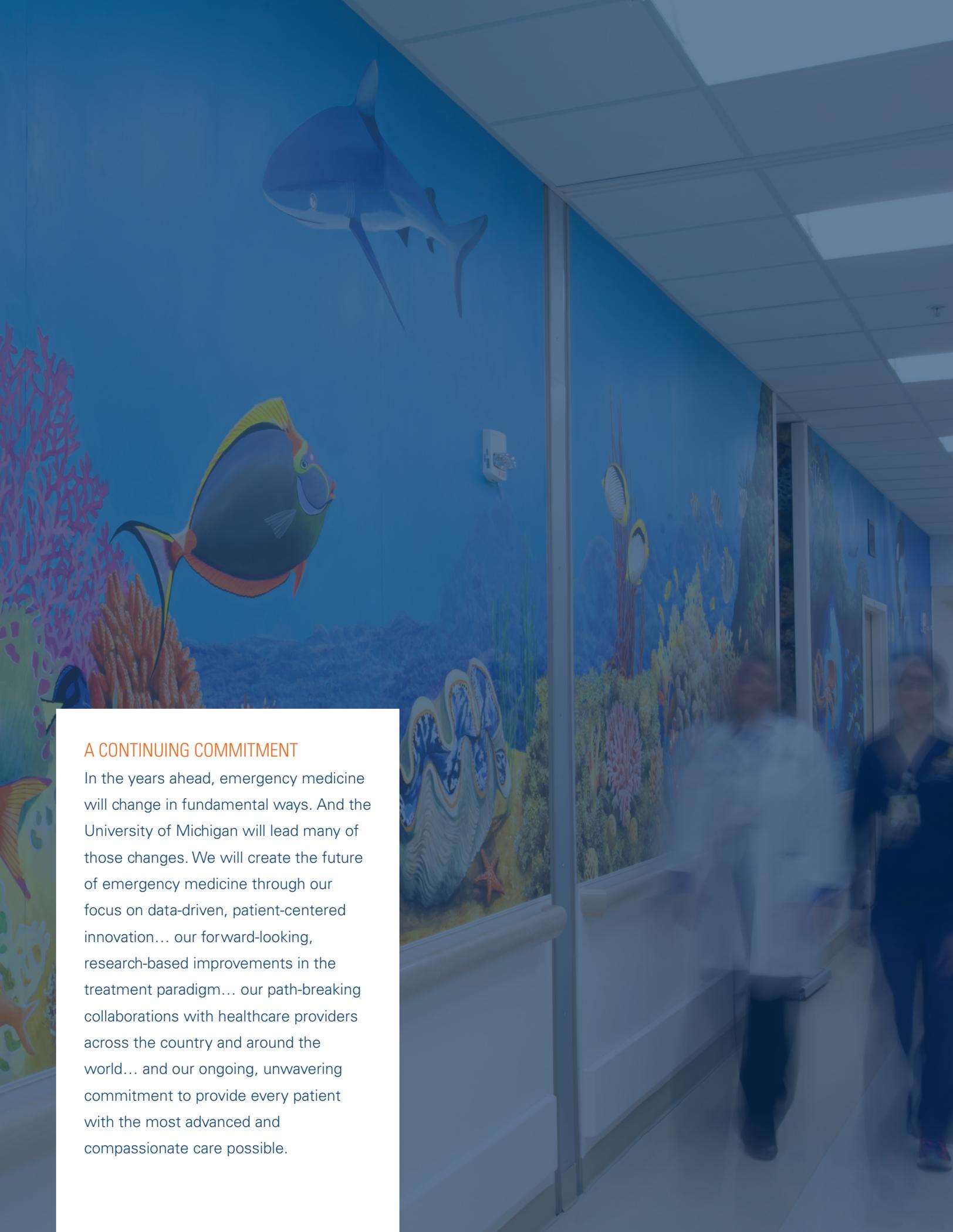
<http://mcircc.umich.edu/latest-news/2016/9/28/mcircc-welcomes-researchers-from-the-university-of-oslo>

University of Michigan and U.S. Department of Defense Partner for Traumatic Brain Injury Research

<http://www.uofmhealth.org/news/archive/201601/university-michigan-and-us-department-defense-partner>

What Are Gut Bacteria Doing in Critically Ill Lungs? New Discovery Could Change ICU Care

<https://www.sciencedaily.com/releases/2016/07/160718111943.htm>



A CONTINUING COMMITMENT

In the years ahead, emergency medicine will change in fundamental ways. And the University of Michigan will lead many of those changes. We will create the future of emergency medicine through our focus on data-driven, patient-centered innovation... our forward-looking, research-based improvements in the treatment paradigm... our path-breaking collaborations with healthcare providers across the country and around the world... and our ongoing, unwavering commitment to provide every patient with the most advanced and compassionate care possible.



medicine.umich.edu/dept/emergency-medicine



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