

47,000+

OUTPATIENT
VISITS

Discoveries

IN NEUROBIOLOGY

895

FACULTY MEMBERS

Focus

ON OUTCOMES

97

RESIDENTS
& FELLOWS

\$36M+

FY15 RESEARCH
FUNDING



Psychiatry

2015

YEAR IN REVIEW

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Dear Colleagues and Friends:

NYU Langone's Departments of Psychiatry and Child and Adolescent Psychiatry share a heritage of innovation and excellence that dates to the beginnings of modern psychiatric medicine. After more than a century at the forefront of the field, we are deeply committed to state-of-the-art care at every stage of life, outstanding educational programs, and trailblazing research to create the next generation of diagnostics and therapeutics.

Our investigators are shedding new light on disorders of mood, sleep, attention, and cognition, weaving together basic and clinical science. We are global leaders in the study of trauma, from the effects of child abuse on the developing brain to the effects of combat on adult neurobiology. At the Steven and Alexandra Cohen Veterans Center, we are identifying biomarkers crucial to improving the diagnosis and treatment of PTSD and traumatic brain injuries.

This year, we have intensified our focus on addiction psychiatry, recruiting additional accomplished faculty members who specialize in this destructive disease. Our researchers are making important discoveries about the neurobiology and epidemiology of addiction, developing novel therapies, and devising more effective strategies for harm reduction.

We are setting new standards in tracking patient outcomes and managing complex cases, creating scalable solutions to some of the most challenging problems in clinical psychiatry. Our faculty members recently implemented the first clinical pathway for children with autism and/or intellectual disability in a general inpatient psychiatric unit. We are pioneers in telepsychiatry, bringing care to underserved communities remotely via digital technology. In 2015, our consultation-liaison psychiatry team played a pivotal role in the most advanced facial transplant to date, coordinating with over 100 staff from a wide range of disciplines to help ensure success. In these and other areas, we are providing innovative models for practitioners across the country and beyond.

At NYU Langone, our collaborative Departments of Psychiatry and Child and Adolescent Psychiatry pursue a dual mission: to continually improve the care that we provide our own patients, and to find better ways of caring for patients everywhere. We believe that this year we have made significant progress toward the goal we share with our distinguished colleagues around the world: ensuring that people of all ages and backgrounds have access to excellent, evidence-based, compassionate mental healthcare.



A handwritten signature in black ink that reads "Charles R. Marmor".

CHARLES R. MARMOR, MD

Lucius N. Littauer Professor of Psychiatry
Chair, Department of Psychiatry
Director, Cohen Veterans Center



A handwritten signature in black ink that reads "Glenn N. Saxe".

GLENN N. SAXE, MD

Arnold Simon Professor of Child and Adolescent Psychiatry
Chair, Department of Child and Adolescent Psychiatry
Director, the Child Study Center

Psychiatry and Child and Adolescent Psychiatry

PATIENT VOLUME

47,000+

OUTPATIENT VISITS
ANNUALLY

4,500+

CONSULTATION-LIAISON
CONSULTS

644

INPATIENT DISCHARGES

FACULTY, RESIDENTS, AND FELLOWS

895

FACULTY MEMBERS*

*includes voluntary faculty

97

RESIDENTS & FELLOWS

EDUCATION

Top 10

IN THE COUNTRY ON DOXIMITY'S RESIDENCY RANKINGS

#4

for research contributions from
psychiatry residency graduates
(last 10 years)

#9

for reputation for quality of clinical
training in psychiatry residency

RESEARCH AND FUNDING

400+

SCIENTIFIC PUBLICATIONS

\$20.8M

IN FY15 NIH GRANTS

\$36.2M

IN FY15 TOTAL
RESEARCH FUNDING

#15

IN THE NATION

among psychiatry programs for
NIH funding

*SOURCE, BLUE RIDGE INSTITUTE FOR
MEDICAL RESEARCH (FY 14)

ACCOLADES

Birthplace

OF AMERICAN PSYCHIATRY

NYU School of Medicine is home to two of the largest and most respected departments of psychiatry and child and adolescent psychiatry in the country, and is widely considered to be the "birthplace of American psychiatry."

PUBLIC PROGRAMS

3,100+

COMMUNITY MEMBERS EDUCATED

through Child Study Center workshops
and webinars

NYU Langone Medical Center



#1

overall patient safety
& quality for
three years in a row

AND

ambulatory care quality
& accountability

among leading academic medical centers
across the nation that were included in the
University HealthSystem Consortium 2015
Quality and Accountability Study

Top 15

in *U.S. News & World Report*



#12

**BEST HOSPITALS
HONOR ROLL**



#14

**BEST MEDICAL
SCHOOLS FOR
RESEARCH**

and nationally ranked in 12 specialties,
including top 10 rankings in
Orthopedics (#5), Geriatrics (#6),
Neurology & Neurosurgery (#9),
Rheumatology (#9),
and Rehabilitation (#10)

NYU Langone
MEDICAL CENTER

**Tisch
Hospital**
The University Hospital
of NYU

GROWTH, COLLABORATION, AND INNOVATION

Over the past year, the Department of Psychiatry has added new addiction specialists to its team, strengthening NYU Langone Medical Center's leadership in the field.

GROUNDBREAKING EXPERT IN TREATMENT DISPARITIES AND HARM REDUCTION

Crystal Fuller Lewis, PhD, associate professor of psychiatry, also heads the new Division of Social Solutions and Services Research at the Nathan Kline Institute for Psychiatric Research of the New York State Office of Mental Health. Before arriving at NYU Langone, Dr. Lewis spent 15 years in the Department of Epidemiology, Mailman School of Public Health, at Columbia University. She has sustained a successful NIH-funded research program focused on the epidemiology of substance abuse and the social and medical-related co-occurring conditions experienced by addicts. Her research includes cross-sectional and prospective studies of various forms of stigma and discrimination affecting this population, as well as its susceptibility to incarceration, unstable housing, mental illness, and chronic and infectious diseases (such as HIV and HCV).

PIONEERING RESEARCHER IN NOVEL ADDICTION TREATMENTS

Michael P. Bogenschutz, MD, professor of psychiatry, comes to NYU Langone from the University of New Mexico Health Sciences Center, where he was professor of psychiatry and psychology, vice chair and division director for Addiction Psychiatry, and vice chair for research in the Department of Psychiatry. For 10 years, he served as principal investigator of the Southwest Node of the National Institute on Drug Abuse Clinical Trials Network (NIDA CTN). Dr. Bogenschutz's research interests fall into three broad areas: integration of addiction treatment into general medical settings, treatment of addiction and co-occurring mental disorders, and development of novel pharmacologic and combined pharmacologic/behavioral treatments.

Medical Center News

GROUNDBREAKING FACE TRANSPLANT EXEMPLIFIES EXPERTISE AND MULTIDISCIPLINARY COLLABORATION AT NYU LANGONE

In August 2015 surgeons at NYU Langone Medical Center performed the most complex face transplant to date. The patient, former firefighter Patrick Hardison, had lost all of the skin around his entire face, scalp, and neck, including his eyelids, ears, lips, and nose, while trapped in a burning building. Led by Eduardo Rodriguez, MD, DDS, the Helen L. Kimmel Professor of Reconstructive Plastic Surgery and chair of the Hansjörg Wyss Department of Plastic Surgery, the successful 26-hour operation—the first to include transplantation of eyelids capable of blinking as well as functional ears, among other milestones—involved more than 100 physicians, nurses, and technical and support staff. More than a dozen departments contributed to the planning and execution of the procedure, or to postoperative care.

The Department of Psychiatry played a central role, beginning with patient evaluation and pre-surgical counseling and continuing through discharge. "All the issues that we have to consider with a conventional transplant are that much more complex with a face transplant, because the organ is central to core aspects of identity and one's sense of self," explains Sally Habib, MD, clinical assistant professor of psychiatry and interim director of Psychiatry's Consultation-Liaison Service. "Our team helped determine the patient's appropriateness as a transplant candidate, and worked with him in the months before the procedure, evaluating for the emergence of psychiatric problems that might warrant intervention with medication. In the postoperative recovery period, we monitored carefully for emergence of delirium, mood, or anxiety spectrum symptoms, as well as the possibility of adverse effects from pain medications or immunosuppressants. Additionally, we provided emotional support throughout Patrick's journey. This case put us at the forefront of medical science, and exemplifies the role that our Consultation-Liaison Psychiatry team plays for all patients at NYU Langone."

Awards & Recognition

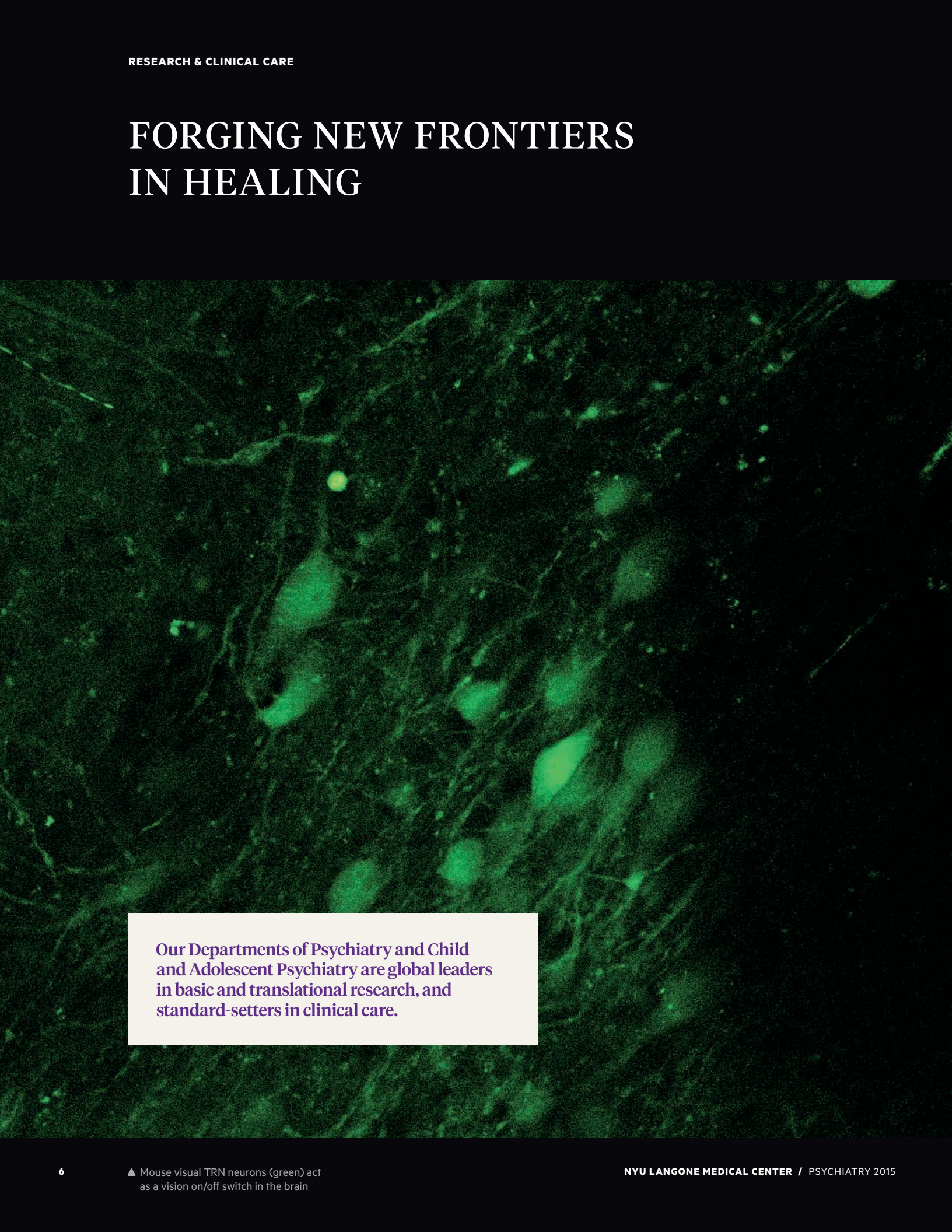
- **Carol Bernstein, MD**, associate professor of psychiatry and neurology, vice chair for education and director of residency and fellowship training in psychiatry, received the Alexandra Symonds Award from the APA. The award honors a woman psychiatrist who has made significant contributions to promoting women's health and the advancement of women. A past president of the APA, Dr. Bernstein continues to serve on the executive committee of the board of directors of the Accreditation Council for Graduate Medical Education and the Board of Regents of the American College of Psychiatrists. She has written numerous articles and chapters on psychiatric education, and has presented at more than 70 conferences and meetings.
- The Brain and Behavior Research Foundation's Ruane Prize was awarded to **Francisco Xavier Castellanos, MD**, the Brooke and Daniel Neidich Professor of Child and Adolescent Psychiatry, professor of radiology and neuroscience, and director of the Center for Neurodevelopmental Disorders at NYU Langone's Child Study Center. The prize is given annually to an outstanding scientist researching the causes, pathophysiology, treatment, or prevention of severe child mental illness. For the past 25 years, Dr. Castellanos has focused on understanding the neurobiology of ADHD by applying neuroimaging-based approaches and by collaborating on molecular genetic studies. One of the first researchers to focus on dysfunctional brain circuitry in developmental orders, he has studied brain development in healthy and hyperactive children, and is particularly interested in the use of large populations to develop norms for future clinical studies.
- **Michael Halassa, MD, PhD**, assistant professor of psychiatry and neuroscience and physiology, and director of the Residency Research Track in Psychiatry, whose research focuses on the neurobiology of attention, received a number of major honors in 2015, including the \$2.7M NIMH Director's Innovator Award from the National Institute of Mental Health; the Freedman Prize for Exceptional Basic Brain and Behavior Research; a Sloan Foundation Research Fellowship; a Klingenstein-Simons Fellowship Award in the Neurosciences; and the Feldstein Medical Foundation Award. In addition, he was elected to the Allen Institute for Brain Science's Next Generation Leaders council, a group of distinguished young researchers who provide feedback to leadership at the institute.
- **Kimberly Eaton Hoagwood, PhD**, vice chair for research and the Cathy and Stephen Graham Professor, Department of Child and Adolescent Psychiatry, received the Carl A. Taube Award from the Mental Health Section of the American Public Health Association (APHA). The award, for scholars who have made distinguished contributions to mental health services research, is the highest honor in the field.
- **Regina Sullivan, PhD**, professor of child and adolescent psychiatry, received a MERIT award from the National Institute of Human Development. MERIT stands for Method to Extend Research in Time. These awards are given to researchers who have demonstrated superior competence and productivity, and are intended to provide long-term, stable support to foster creativity. Dr. Sullivan investigates the neurobiology of infant attachment to the caregiver to determine mechanisms for the enduring mental health effects of abuse and trauma in early life. She has served as a consultant and adviser to the National Institute of Health, and as president of the International Society for Developmental Psychobiology. She lectures frequently around the United States and abroad, and sits on the boards of scientific journals including *Developmental Cognitive Neuroscience*, *International Journal for Developmental Psychobiology*, and *Frontiers in Behavioral Neuroscience*.

CHOIS: Innovation in Outcome Tracking

Child and Adolescent Psychiatry has incubated several innovative programs in the past year that are scalable at the national or international level. One groundbreaking example is the Child Health Outcomes Information System (CHOIS), designed to help clinicians keep better track of patients' progress and share that information with

families and other caregivers. The first system of its kind for psychiatric outpatients, CHOIS is a web-based platform that gathers multiple data points over time, displays them graphically, and aggregates results. The model is currently being adapted elsewhere, from other areas of the United States to Denmark.

FORGING NEW FRONTIERS IN HEALING



Our Departments of Psychiatry and Child and Adolescent Psychiatry are global leaders in basic and translational research, and standard-setters in clinical care.

Autism: Establishing a Clinical Pathway

The number of children with autism is increasing exponentially, and when such patients are hospitalized—especially those with low intellect or verbal skills—their difficulty processing sensory stimulation and language can lead to disruptive or even violent decompensation. In July 2015, NYU Langone’s Department of Child and Adolescent Psychiatry began implementing the first clinical pathway for managing these children within a general inpatient psychiatric unit, with the aim of improving patient outcomes at hospitals across the country.

An estimated 10,000 children and adolescents affected by severe forms of autism spectrum disorder and/or intellectual disability (ASD/ID) are psychiatrically hospitalized each year for dangerous, aggressive, or self-injurious behavior. Meanwhile, inpatient services nationally are contracting. These trends have been felt sharply at Bellevue Hospital Center, part of NYC Health and Hospitals, which operates the only dedicated child comprehensive psychiatric emergency program (C-CPEP) in New York State. By 2013, children with ASD/ID represented 24 percent of admissions to the hospital’s psychiatric inpatient units. Such children often respond poorly to traditional, verbally mediated inpatient care. Staff injuries were rising, patients required excessive medication, and hospital stays were costly and prolonged.

Experts from NYU Langone’s Child Study Center joined with NYU Langone Child and Adolescent Psychiatry faculty based at Bellevue to devise a systemic solution. Assembled by Sarah Kuriakose, PhD, clinical assistant professor of child and adolescent psychiatry and director of the Autism Spectrum Disorder Clinical and Research Program at the Child Study Center, the team was supported by an Innovations grant from the Department of Child and Adolescent Psychiatry (which provides seed money to foster innovative ideas in patient care that are nationally scalable). Leaders also included Beryl Filton, PhD, clinical assistant professor of child and adolescent psychiatry, and Mollie Marr, then program coordinator of the Bellevue Innovation Lab. The group consulted with Matthew Siegel, MD, director of the Developmental Disorders Program at Spring Harbor Hospital in Westbrook, Maine, and the nation’s leading expert on inpatient care of ASD/ID patients in specialized units.

The result, after more than a year of development, was a plan to improve management of ASD/ID patients from intake at Bellevue’s C-CPEP through discharge from inpatient units. The care pathway implementation tool kit includes training modules, a manual, and physical materials for personnel across all disciplines. At admission, caregivers of ASD/ID patients fill out a questionnaire detailing the child’s behavioral triggers. “We ask, what sorts of stimuli upset him or calm him down?” explains Dr. Kuriakose. “How does he communicate? What are early signs of agitation? What kinds of activities and rewards does he respond to best?”

This “tip sheet” goes into each patient’s binder—a notebook with Velcro strips to which visual representations of daily tasks can be attached. Because research has shown that physical exercise reduces challenging behavior, staff are instructed to schedule a “motor break” every two hours. They also carry a “coping card” with techniques for recognizing and defusing meltdowns. At discharge, caregivers receive copies of these materials as well as a verbal debriefing, in order to prevent incidents that could lead to readmission.

Data on the program’s first year is still being collected, but anecdotal evidence suggests that the new procedures are making a difference. “The pathway has increased our ability to effectively communicate with these young people, and to reduce the agitation and confusion associated with hospitalization,” says Jennifer Havens, MD, associate professor of child and adolescent psychiatry and psychiatry, vice chair for public psychiatry in the Department of Child and Adolescent Psychiatry, and director and chief of service of Child and Adolescent Psychiatry at Bellevue Hospital Center. “This is a tool with enormous promise.”

“The pathway has increased our ability to effectively communicate with these young people, and to reduce the agitation and confusion associated with hospitalization. This is a tool with enormous promise.”

—JENNIFER HAVENS, MD

Associate Professor of Child and Adolescent Psychiatry
Vice Chair for Public Psychiatry

Addiction: Exploring the Causes, Finding Solutions

NYU Langone researchers are attacking addiction from many different angles—tracing the roots of the problem in neural circuitry and societal dynamics, investigating novel treatment modalities, and devising new public health models to reduce disparities in care. This year, several new recruits have broadened the Department of Psychiatry's scope in research, clinical care, and education.

REBOOTING THE ADDICTED BRAIN

From the 1950s through the early 1970s, at least 30 clinical trials were conducted on the use of hallucinogens (mainly LSD) to treat addiction, primarily to alcohol. Although results in controlled trials were consistently positive, such research ended soon after passage of the Controlled Substances Act, which placed such compounds in the Schedule I class. Over the past decade, however, there has been a revival of interest in treatment with psychedelic drugs. Michael P. Bogenschutz, MD, professor of psychiatry, who joined the faculty in June 2015, is a pioneer in this burgeoning field.

Dr. Bogenschutz published a proof-of-concept study in the March 2015 issue of the journal *Psychopharmacology* on the use of psilocybin—the active ingredient in hallucinogenic mushrooms—to treat alcohol dependence. The compound was chosen because it is shorter-acting than LSD (6 hours versus 10), making it easier to use in an outpatient setting. Ten volunteers participated in the open-label trial. After four weeks of Motivation Enhancement Therapy, each subject received a single dose of psilocybin, with a follow-up session for debriefing. Abstinence from alcohol increased significantly after administration of the drug, and was largely maintained at 36 weeks. “There was a strong correlation between the intensity of the experience and how much subjects improved,” Dr. Bogenschutz notes. There were no significant adverse effects.

That study led to a randomized, double-blind trial, now under way, which will ultimately involve 180 subjects. “Administered under clinical conditions, psilocybin may trigger a kind of neurological reboot, leading to beneficial long-term changes in brain chemistry and connectivity,” Dr. Bogenschutz suggests. “So far, the results look promising. But time will tell.”

A NEW FRONTIER IN HARM REDUCTION

Crystal Fuller Lewis, PhD, research associate professor of psychiatry, focuses on the epidemiology of addiction, with an emphasis on the co-occurring medical and psychiatric conditions experienced by persons who are heavily drug-involved and in harsh social conditions. Her focus is largely on harm reduction—that is, on finding ways to keep these communities as healthy as possible when they're unable or unwilling to end their drug addiction. One solution, her National Institute on Drug Abuse-funded research suggests, is to leverage an underutilized resource: pharmacists.

Dr. Lewis, who joined NYU Langone in 2015, has conducted a series of studies growing out of New York State's Expanded Syringe Access Program, which allows syringes to be sold without a prescription to substance users to reduce HIV and HCV transmission. “The idea was to see if we could have a broader impact on people's lives than just selling syringes,” she says.

In a randomized, controlled trial involving 88 New York City pharmacies, Dr. Lewis showed that pharmacists referring syringe customers to medical and social services led to increased use of those services as well as of sterilized syringes. Pharmacists also became more supportive of the syringe access program. And in a more recent study, customers who were offered pharmacy-based chronic disease screening services along with HIV testing services subsequently sought out both clean needles and HIV screening more often than customers in control groups. “For some patients, there's a sense of shame or blame around HIV,” Dr. Lewis explains. “Packaging it with other non-stigmatized services reduced this stigma and greater uptake HIV testing resulted.”

\$4M

NIDA GRANT FOR ADDICTION RESEARCH

John Rotrosen, MD
Principal Investigator
for Greater New York Node of the National
Drug Abuse Treatment Clinical Trials Network

(left to right)
Michael Bogenschutz, MD;
Helena Hansen, MD, PhD;
and Crystal Fuller Lewis, PhD



NIDA CLINICAL TRIALS NETWORK RENEWED FOR GRANT-YEARS 16–20

John Rotrosen, MD, professor of psychiatry, is principal investigator of the Greater New York Node of the National Drug Abuse Treatment Clinical Trials Network (CTN). Often coordinating national as well as New York–area studies, he has contributed to U.S. addiction research for more than three decades. The CTN has conducted over 50 trials involving approximately 20,000 volunteers. “Our protocols range from pharmacotherapies to behavioral therapies to web-based interventions,” says Dr. Rotrosen. “There’s a growing need to shift focus from traditional addiction specialty settings to mainstream healthcare settings, such as primary care programs and emergency departments, as only about 5 percent of people with substance abuse problems are seen in specialty settings. The CTN of the future will emphasize outreach in a range of settings and broad use of the electronic health record and technology—eHealth and mHealth—to expand and improve treatment.”

Established by the National Institute on Drug Abuse (NIDA) in 1999, the CTN is a network of 13 regional centers—or Nodes—that bring together researchers, treatment providers, and participating patients to develop, validate, refine, and deliver new options for treating addiction. Dr. Rotrosen has headed the New York Node from the beginning (most recently in a partnership with Edward Nunes, MD, of Columbia University). The Node has been supported by nearly \$40 million in NIDA grants. Funding for the present year, beginning in September 2015, will exceed \$4 million.

EXPANDING ADDICTION PSYCHIATRY INPATIENT CARE

NYU Langone’s Tisch Hospital has undergone a significant expansion in clinical staff and resources dedicated to addiction—an initiative led by David Ginsberg, MD, clinical associate professor of psychiatry, vice chair for Clinical Affairs, and chief of Psychiatry Service. Key recruits to NYU Langone in this area began with the appointment of Stephen Ross, MD, associate professor of psychiatry and child and adolescent psychiatry, as director of Addiction Psychiatry, and, this past year, with Vickie Kalira, MD, clinical assistant professor of psychiatry and an addictions psychiatrist, joining the Consultation-Liaison (CL) Psychiatry Service. Most recently, Jennifer Hanner, MD, has been recruited to direct NYU Langone’s CL Psychiatry team. Dr. Hanner, clinical assistant professor of psychiatry, is board certified in both consultation-liaison and addiction psychiatry.

These new arrivals strengthen the hospital’s ability to address the needs of the growing number of patients who struggle with substance-abuse issues as well as complex medical and psychiatric problems. The specialists also helped design and implement an innovative alcohol-withdrawal screening protocol for incoming patients. “Alcoholism affects 15 to 20 percent of our patient population,” Dr. Ross explains. “Because delirium tremens can be fatal, it’s imperative to determine who is at risk and take measures to prevent complications.” Each new admission is now evaluated for amount and frequency of alcohol use; in cases where withdrawal is a danger, it is managed with appropriate medical and psychiatric interventions.

In addition to his clinical responsibilities, Dr. Ross contributes to NYU Langone's addiction research efforts, conducting or supervising a wide range of studies. His own projects include an investigation of naloxone kits to prevent opioid overdose fatalities and a NIDA-funded clinical trial comparing buprenorphine to naltrexone for opioid addiction.

PROBING THE SOCIAL FORCES THAT AFFECT ADDICTION

For the past two decades, in an effort to address disparities in health, U.S. physicians have received training in cultural competency—the ability to identify cross-cultural expressions of illness and health, and to take those factors into account when making diagnoses or prescribing treatment. Helena Hansen, MD, PhD, assistant professor of psychiatry and anthropology (FAS), who joined NYU Langone's faculty in 2012, is a national leader in the development of a new standard: structural competency, which calls on physicians to intervene in the social conditions that produce illness itself. For Dr. Hansen, such awareness is crucial in remedying health inequalities, and in effectively treating addiction and its co-occurring conditions, which impact different population groups in very different ways.

“Our understanding of how social forces impact health is tremendously underdeveloped,” Dr. Hansen observes, “particularly in translating that information into clinical intervention.” Her NIDA-funded research includes studies of how pharmaceutical marketing targeted by race and income affects addiction treatment (for instance, buprenorphine patients are disproportionately white and privately insured, while methadone patients are more likely to be non-white and on public insurance). She has also investigated the healthcare impact of policies such as welfare reform, which was followed by a large increase in the number of social security supplemental income applicants on the basis of psychiatric diagnosis. This shift may be increasing the rate of diagnosis of psychotic disorders among low-income and ethnic minority patients because such diagnoses help patients to qualify for social security benefits.

Structural competency, Dr. Hansen explains, would spur physicians to ask unaccustomed questions about the social and institutional conditions in which patients live—about their access to stable housing, social services, and healthy foods for example. It would also encourage clinical practitioners to get out of their offices and engage with their patients' world; to collaborate with community organizations, non-health sectors such as schools, housing, and law enforcement, and ultimately policy makers, in

order to intervene on the social determinants of health. To that end, Dr. Hansen established a public psychiatry elective that sends NYU Langone residents to Brownsville, Brooklyn, a low-income area with high rates of violence and of trauma related mental health disorders. There, residents work with community development and homelessness prevention organizations to launch mental health prevention and crisis interventions. “Doctors often feel frustrated by structural barriers to care,” she explains. “Structural competency can help them understand why certain patients don't get better, and how to solve the problem.”

A ROLE FOR GENE THERAPY IN TREATING ADDICTION?

In developing medications for psychiatric disorders, researchers target receptors within particular neural circuits. But because those receptors are also found elsewhere in the brain, it's difficult to maximize efficacy while avoiding unwanted side effects. To find better treatments for addiction, research assistant professor of psychiatry and neuroscience and physiology Lucas Sjulson, MD, PhD, is taking a novel approach: reverse pharmacogenetics.

This technique, so far employed only in laboratory studies, uses genetic engineering to create viral vectors carrying designer receptors exclusively activated by designer drugs, or DREADDs. When injected into a neural circuit, these vectors express DREADDs, which can modulate activity in the circuit with unparalleled specificity. In a recent study using mice bred for alcohol dependence, Dr. Sjulson's team introduced such receptors into the nucleus accumbens—a brain region known to play a central role in addiction. The mice were then given a pharmacologically inactive metabolite of clozapine that activated the DREADDs, which significantly reduced alcohol consumption.

Dr. Sjulson is currently investigating conditioned place preference, a model of addiction in which a mouse given an intoxicant returns habitually to the place where the substance was administered. His research suggests that the phenomenon involves strengthening of specific connections between the hippocampus and the nucleus accumbens. “This experiment provides evidence of one of the main mechanisms of place preference,” he explains. “Someday, we might be able to use a similar technique (to DREADDs) to help addicts avoid relapse when they walk past the spot where they used to buy illegal drugs or the bar where they used to drink.”

Children’s Mental Health: Improving Outcomes Measurement

More than 7 percent of children and adolescents in the United States receive treatment for mental disorders each year, yet their progress is seldom measured objectively. NYU Langone’s Department of Child and Adolescent Psychiatry has created the first high-quality, scalable outcome-tracking platform for such patients, opening new possibilities for assessing the efficacy of care.

Outcomes in psychiatry hinge largely on qualitative judgments: is the patient happier? Are his relationships less conflict-ridden? Even in more quantifiable areas, however—such as how many tantrums a child has daily, how much school he has missed due to anxiety, or whether his parents have mastered skills to help him overcome a behavior disorder—the field’s record-keeping remains rudimentary. “It’s pencil and paper, mostly,” observes Timothy L. Verduin, PhD, clinical assistant professor of child and adolescent psychiatry and clinical director of ADHD and Behavior Disorder Services at the Child Study Center. “Excel spreadsheets at best.”

In February 2015, the Child Study Center launched an initiative meant to help clinicians keep better track of outcomes and share that information with families and other caregivers. The Child Health Outcomes Information System (CHOIS) is a web-based platform that uses proprietary software to gather multiple data points on a single patient over time, display them graphically, and aggregate results for groups of patients. “The objective is for the clinician to make decisions on treatment based on trends in the patient’s data, and for the department to see how patients are responding to different types of intervention,” Dr. Verduin explains. “We can make assessments across the board at baseline, and at 3, 6, 9, and 12 months.”



▲ Timothy L. Verduin, PhD

CHOIS requires clinicians to fill out a 26-point questionnaire on each patient every 90 days, covering issues such as mood, anxiety, attention, and social interactions; patients’ parents are asked to fill out shorter questionnaires on iPads in the waiting room during appointments. (If they fail to do so, they later receive a prompt via e-mail.) So far, more than 2,000 patients have been logged into the system, and the results are already helping our clinicians to deliver more precisely targeted care.

Supported by a departmental “Innovations” grant (which provides seed money to foster innovative ideas in patient care that are scalable for national outreach and training), Molly Finnerty, MD, research associate professor of child and adolescent psychiatry, is designing a version of CHOIS that is integrated with Medicaid data. This project will allow clinicians to view outcomes and intervention data side by side, informing treatment decisions even further. Developers are also investigating ways to incorporate machine learning into CHOIS, with the aim of enabling outcomes to be predicted from patterns of patient data.

The goal is to disseminate the system as widely as possible. Several other institutions are now in the process of adopting CHOIS, including the New York State Office of Mental Health and a therapeutic school system in Denmark. “The model is designed to be customizable and scalable,” says Dr. Verduin. “We want to get it out into the field.”

26-point questionnaire

EVERY 90 DAYS

2,000+

PATIENT ASSESSMENTS TO DATE

Attention Disorders: Bringing Patients into Focus

Problems with attention are common to many debilitating neuropsychiatric conditions. NYU Langone Medical Center is at the forefront of research into the causes and treatment of such impairments in ADHD as well as other disorders.

IMPROVING TREATMENTS FOR ADULT ADHD

When clinicians evaluate an adult patient for attention deficit hyperactivity disorder (ADHD), they often begin with a screening tool devised in part by Lenard Adler, MD, professor of psychiatry and child and adolescent psychiatry and director of the Adult ADHD Program at NYU Langone Medical Center. A decade ago, when Dr. Adler helped develop the Adult ADHD Self-Report Scale (ASRS) for the World Health Organization, many clinicians still thought of ADHD as almost exclusively affecting young people. Awareness has grown since then, driven largely by parents who recognize their own symptoms after their children are diagnosed. Yet research in adult ADHD still lags behind that for the childhood form.

Dr. Adler has long led efforts to right that situation. According to the most recent National Comorbidity Study, of which he was a co-author, 4.4 percent of U.S. adults have ADHD (about half the rate of children), but only about one in 10 adults with ADHD is treated. One reason is that doctors often mistake adult ADHD for stress or age-related cognitive decline. Another is that few ADHD medications have been developed specifically for adults. “ADHD can present differently in adults than children,” Dr. Adler explains. “Physical restlessness may be less obvious and is more often felt rather than manifested.”

Dr. Adler is currently conducting studies on several novel medications for adult ADHD—including Vayarin, a medical food containing phospholipids and essential fatty acids; vortioxetine, a serotonin modulator; and dasotraline, a dopamine and norepinephrine reuptake inhibitor—in addition to modified versions of existing stimulants. He is also investigating whether certain medications may be more effective for adults with particular subsets of associated symptoms, such as sluggish cognitive tempo or problems with emotional control. And he’s researching new diagnostic tools, including an eye-tracking protocol designed to detect executive function deficits.

“NYU Langone’s goal is to be on the cutting edge of research and clinical services for both adults and children,” Dr. Adler says. “We want to improve the identification of patients with ADHD, find better medications, and get those medications into the right people.”

UNDERSTANDING THE BRAIN’S SWITCHBOARD

Attentional impairments are typical of several conditions besides ADHD. In autism, for example, patients may have difficulty filtering out sensory stimuli; in schizophrenia, they may be overwhelmed by inner voices. The thalamus is believed to play a central role in the regulation of attention, directing the flow of sensory input and internally generated data to the cerebral cortex. Researchers led by Michael Halassa, MD, PhD, assistant professor of psychiatry and neuroscience and physiology, recently provided the first detailed pictures of how the process works.

Dr. Halassa’s investigation centers on understanding how the brain allocates attention intentionally and appropriately based on behavioral context. Context-dependent attention requires interactions between executive regions of the brain (like the prefrontal cortex) and sensory regions that filter incoming sensory inputs. In earlier studies, Dr. Halassa focused on understanding the process of sensory filtering. In doing so, he studied the thalamic reticular nucleus (TRN), a sheath of neurons on the surface of the thalamus that seem to act as the brain’s “switchboard”—blocking some sensory inputs while letting others through. In a study published last year in the journal *Cell*, his team used electrode arrays to record the activity of individual TRN neurons in laboratory mice. They found that TRN cells function in subnetworks whose activity depends on whether an animal is asleep or awake.

During sleep, TRN neurons connected to sensory thalamic stations were highly active; the researchers hypothesized that the cells were blocking out sensory information to allow the mouse to sleep soundly. Meanwhile, neurons connected to an area that processes information from the limbic regions (involved with memory and emotion) fired less frequently than during waking periods. These TRN cells, the team hypothesized, allowed more internal information to reach the cortex during sleep. The researchers then employed optogenetics to alter these variables, using laser light to switch neurons on and off. When they triggered sleep-like activity in the sensory TRN cells of waking mice, it took the animals longer to find a cache of food. In a more recent study published in *Elife*, on which Dr. Halassa is a corresponding author, they found that turning this circuit on for a prolonged period of time actually puts the mouse to sleep.



In a third study, published this past September in *Nature*, Dr. Halassa and his colleagues showed how the TRN enables the brain to multitask. First, they trained mice to switch between responding to a flash of visual light or a sound by giving them a milk reward upon correct response. During this task, the firing of visual TRN cells slowed when the animal was supposed to detect the visual stimulus. In contrast, when the animal was supposed to respond to the sound and ignore the light, their visual TRN neurons became active—indicating that the cells were inhibiting signals to the cortex. These patterns were dependent on intact input from the prefrontal cortex, the brain’s executive circuit, showing that the switchboard function of the TRN can be under higher cognitive control.

“In at least a subset of ADHD and autism, impaired TRN function may be a primary deficit,” Dr. Halassa suggests. “If we can learn how sensory filtering goes awry, we can target it for disease correction.”

“In at least a subset of ADHD and autism, impaired thalamic reticular nucleus (TRN) function may be a primary deficit. If we can learn how sensory filtering goes awry, we can target it for disease correction.”

—MICHAEL HALASSA, MD, PhD

Assistant Professor of Psychiatry and Neuroscience,
and Physiology

Child and Adolescent Psychiatry: Finding Better Approaches to Treating Trauma

In addition to providing state-of-the-art care for our patients, NYU Langone Medical Center's Department of Child and Adolescent Psychiatry is dedicated to developing improved treatments and disseminating them widely. Our work in the area of childhood trauma exemplifies that commitment.

TRACING THE NEUROBIOLOGICAL EFFECTS OF CHILD ABUSE

Regina Sullivan, PhD, professor of child and adolescent psychiatry, is a prominent expert on the neurobiology of infant attachment to the caregiver. Her research is providing new insights into the enduring mental health impact of abuse and trauma in early life.

Over the past two decades, Dr. Sullivan has authored more than 100 journal articles, book chapters, and other publications on how the infant brain functions differently from that of the adult, as well as the critical role of the caregiver in modifying how the young brain responds to trauma. In June 2015, she received a prestigious MERIT award from the Eunice Kennedy National Institute of Child Health and Human Development. Intended to provide long-term support to investigators who have demonstrated superior competence and outstanding productivity, the award will fund her groundbreaking work for the next 10 years.

"I'm interested in how the caregiver changes the brain," Dr. Sullivan says. Abuse in childhood has long been associated with a range of psychopathologies, including depression, anxiety, substance dependence, and difficulty forming stable relationships. Human and animal studies suggest that the emergence of these behaviors is due to compromised brain development, particularly in the limbic system, stress axis, and cerebellum. The mechanism behind these changes remains unclear, however. Dr. Sullivan's research focuses on the neurobiological processes by which parental behavior—both normal and abusive—affects brain structure, connectivity, and neurochemistry. "This influence persists well beyond childhood," she explains. "The caregiver helps determine which synapses are strengthened or eliminated, and how neural circuitry is organized over time."

Under normal circumstances, Dr. Sullivan and her colleagues have demonstrated in laboratory studies, the mere presence of the mother can lower an infant's stress hormones and regulate heart rate and respiration. When the mother is abusive, this regulatory function is compromised. Yet an infant will bond with such a caregiver nonetheless, pursuing contact and seeking out sensory stimuli associated with her. As adolescents, animals raised under abusive conditions show depressive-

Regina Sullivan, PhD



like behavior; as adults, they exhibit overly aggressive threat responses and poor maternal protection of pups. Paradoxically, though, they continue to show preference for trauma cues. In a study published in *PNAS* in January 2015, Dr. Sullivan's team reported that an odor associated with abuse during infancy exerted an antidepressant effect on adult animals, normalizing serotonin and lowering corticosterone levels.

Central to such maladaptive responses and the long-term neurological changes they reflect is the amygdala—an almond-shaped brain region implicated in fear, aggression, learning, and social interaction. In conjunction with behavioral studies, Dr. Sullivan probes the effect of abuse on this structure's gene expression, electrophysiology, and anatomy. In the next phase of her research, she will continue to trace its communications with other regions as well. "We know that in humans who've been abused in early childhood, the functional connectivity between the amygdala and the many other brain areas is changed," she notes. "We aim to understand how this broad malfunctioning of the brain happens."

Answering such questions, she hopes, will lead to improved treatments for the psychiatric conditions associated with child abuse. It may also shed light on the phenomenon known as trauma bonding, in which a survivor of abuse is drawn to abusive individuals as an adult. "Although it's difficult to make a direct translation from animal to human behavior," Dr. Sullivan says, "this research does suggest that such situations may not result simply from poor judgment or weak character."

SETTING A NEW STANDARD OF CARE FOR TRAUMATIZED FOSTER CHILDREN

Glenn Saxe, MD, the Arnold Simon Professor of Child and Adolescent Psychiatry and chair of the Department of Child and Adolescent Psychiatry, is a leader in efforts to improve treatments for children with traumatic stress—particularly those in the U.S. child-welfare system. Dr. Saxe has developed several interventions and clinical tools to influence practice in frontline clinical settings. Perhaps the most important of these is Trauma Systems Therapy (TST), a clinical and organizational model for the treatment of traumatized children that is now used by more than 40 agencies in 14 states. Dr. Saxe's second book describing the TST model—entitled *Trauma Systems Therapy for Children and Teens*—was just released by Guilford Press. In September 2014, Dr. Saxe began the implementation phase of a two-year grant from the Annie E. Casey Foundation aimed at helping to make TST the national model of intervention for foster children suffering from traumatic stress.

Of the approximately 400,000 children in foster care in the United States, 30 percent have PTSD, according to a study by the Casey Family Programs and Harvard Medical School—nearly double the rate found in U.S. combat veterans. Foster children are also at elevated risk of other trauma-related emotional and behavioral problems, including depression, panic disorder, and generalized anxiety disorder. Although almost half of foster children need mental health intervention, according to the National Institutes of Mental Health, only one-quarter receive it. In many cases, moreover, that care is ineffective or even harmful. A 2009 Rutgers University study found that 12 percent of foster children were prescribed atypical antipsychotics, compared to 2.6 percent of non-foster care children. "These kids are often assessed improperly, and medication is given to control them without understanding the context of their behavior," says Dr. Saxe.

TST is a comprehensive, multidisciplinary, effective clinical approach that takes into account a child's support system and social environment. "A traumatized child loses control of emotion and behavior in certain moments because brain and body are processing the environment in a deeply threatening way," Dr. Saxe explains. "But the other important factor is that those around the child are unable to help him regulate himself in those moments, or may even make things worse." In TST, the therapist works actively with the family, school, community, and social service agencies to increase the likelihood of a successful outcome. The method is designed for easy adoption and scale-up by clinicians in any setting.

The Annie E. Casey Foundation approached Dr. Saxe in 2013, asking him to design a program for the needs of foster children nationwide. During the first year of the grant, he and his colleagues at NYU Langone's Child Study Center devised a curriculum for parents and a decision-making protocol for triggering intervention through TST. Training is currently under way at two county foster-care agencies, one in Ohio and the other in Maryland. If follow-up studies show the model to be successful, it will be disseminated across the country.

"The mission statement of the Department of Child and Adolescent Psychiatry is 'spreading effective care, everywhere,'" Dr. Saxe says. "That's what TST is all about."

400,000

CHILDREN IN U.S. IN FOSTER CARE

30%

HAVE PTSD

Veterans' Mental Health: Healing the Invisible Wounds of War

Post-traumatic stress disorder (PTSD) and traumatic brain injury (TBI) are the most common combat-related neuropsychiatric conditions, affecting hundreds of thousands of veterans. NYU Langone's Department of Psychiatry is leading the search for better ways of diagnosing and treating these conditions, while offering state-of-the-art care.

MEASURING THE SCOPE OF THE PROBLEM

Although the conflicts in Iraq and Afghanistan dominate today's headlines, many veterans still struggle with mental health problems stemming from earlier wars. A landmark study to measure those effects over four decades is the National Vietnam Veterans Longitudinal Study, led by Charles R. Marmar, MD, the Lucius N. Littauer Professor of Psychiatry and chair of Psychiatry at NYU Langone Medical Center, and colleagues at Abt Associates. Published in *JAMA Psychiatry* in July 2015, the study recently surveyed 1,450 veterans who originally participated in the National Vietnam Readjustment Study from 1984 through 1988. More than four decades after the war, Dr. Marmar and his colleagues found, up to 11 percent of male subjects and 9 percent of female subjects showed symptoms of PTSD, suggesting that over 270,000 Vietnam veterans may have the disorder. Among study subjects with PTSD, 36.7 percent also suffered from major depression.

Researchers led by Maria M. Steenkamp, PhD, research assistant professor of psychiatry, further illuminated the scope of the problem in a narrative review published the following month in *JAMA*. Examining randomized clinical trials of psychotherapies for military-related PTSD over a 35-year period, the team found that about two-thirds of veterans receiving cognitive processing therapy or prolonged exposure therapy—the two most commonly used, evidence-based treatment models—retained their PTSD diagnosis, even if their symptoms improved.

"These studies demonstrate that there are veterans of all wars who are struggling," says Dr. Marmar. "There's an urgent need for innovations in treatment to help those men and women and to protect future generations."

FINDING BIOMARKERS FOR BRAIN TRAUMA

A crucial step toward finding more effective treatments for combat-related neuropsychiatric disorders is to develop improved diagnostic tools. NYU Langone researchers are searching for biomarkers of mild TBI, which is undetectable using conventional medical tests or imaging techniques, but whose symptoms (including cognitive, emotional, and memory problems) can be devastating. According to the Congressional Research Service, about 270,000 Iraq and Afghanistan veterans have suffered this type of injury.

In 2015, Mony J. de Leon, EdD, director of the Center for Brain Health, professor of psychiatry, and an investigator with NYU Langone's Steven and Alexandra Cohen Veterans Center, launched a study aimed at developing a simple test for TBI. Using new technology 1,000 times more sensitive than conventional immunoassays—the Quanterix single molecule array, or Simoa—Dr. de Leon is searching for traces of tau or other abnormal proteins in the blood of TBI patients. "We know that tau proteins in the cerebrospinal fluid (CSF) are a marker for TBI," says Dr. de Leon, whose work is supported by a new \$3 million grant from Cohen Veterans Bioscience. "But analyzing CSF requires an invasive procedure. A blood or saliva test would allow us to detect a brain injury on the battlefield, without waiting for symptoms to appear. Our preliminary tests with plasma are very encouraging for the detection of tau."



▲ Mony J. de Leon, EdD

Meanwhile, two pioneering NYU Langone radiologists are lending their expertise to the Cohen Veterans Center’s biomarker project, providing new insights into both TBI and PTSD. Fernando Boada, PhD, professor of radiology, neurosurgery, and psychiatry and co-director of NYU Langone’s Center for Biomedical Imaging, and Yvonne W. Lui, MD, associate professor of radiology and section chief of neuroradiology, use a variety of novel technologies—including diffusion-weighted imaging and spectrum-weighted imaging, and resting state fMRI—to detect subtle changes in brain structure, connectivity, and metabolism. Among their findings: Iron is processed poorly in the brains of TBI patients, and connectivity is compromised in the precuneus, a region implicated in episodic memory, executive function, and sense of self. Similar, though less severe, changes are seen in the precuneus of PTSD patients. “We still have a lot of work to do,” says Dr. Lui, “but we’re beginning to understand the pathophysiology of these conditions.”



▲ Fernando Boada, PhD



▲ Yvonne W. Lui, MD

TRANSLATING CUTTING-EDGE RESEARCH INTO EVIDENCE-BASED CARE

In July 2015, the Home Depot Foundation donated \$1.5 million to help NYU Langone Medical Center launch the first mental health consortium in New York City dedicated to improving the diagnosis and treatment of PTSD and TBI. With this funding, in collaboration with NY-Presbyterian Hospital, NYU Langone is spearheading the establishment of the Greater New York City Military Family Clinic Consortium Coordinating Center, whose mission is to create a network of academic medical centers providing mental health services to veterans and their families. The consortium will oversee the integration of treatment services, care standardization, and staff training sponsored by member institutions.

At the Steven and Alexandra Cohen Military Family Clinic, veterans and family members receive comprehensive care for mental health conditions free of charge. This past August, the New York City Council awarded a \$150,000 grant to the clinic to improve assessment and treatment for TBI. The funds will enable the hiring of a neuropsychologist who specializes in cognitive remediation therapy, which has been shown to be effective in helping TBI patients compensate for deficits. “We serve veterans regardless of their discharge status or deployment history,” explains Amanda Spray, PhD, clinical assistant professor of psychiatry and assistant director of the Military Family Clinic. “As a complementary clinic to the VA NY Harbor Healthcare System, we provide essential adjunctive care for veterans as well as their loved ones.”

Key Funding in Support of Veterans Mental Health Research and Services

\$21M

Steven and Alexandra Cohen Veterans Center for the Study of Post-Traumatic Stress and Traumatic Brain Injury to find biomarkers for PTS and TBI

\$6.8M

Steven and Alexandra Cohen Military Family Clinic to offer free and confidential mental healthcare for veterans and their families

\$1M

Welcome Back Veterans, an initiative of Major League Baseball and the McCormick Foundation to establish a dual diagnosis program

\$1.5M

Home Depot Foundation gift to establish the Greater New York City Military Family Clinic Consortium Coordinating Center

Sleep Disorders: Untangling the Links Between Sleep and Alzheimer's

Ricardo Osorio, MD, research assistant professor of psychiatry at NYU Langone's Center for Brain Health, is a leader in the quest to understand the complex relationship between sleep and Alzheimer's disease. His research offers hope that treating sleep disorders may help delay onset and slow progression of this devastating illness.

Alzheimer's is the most common type of dementia, affecting an estimated 4.5 million Americans—a number expected to rise rapidly as the population ages. Since the disease was first identified in the early 1900s, abnormal sleep patterns have been included among its primary symptoms. Over the past decade, however, evidence has emerged that sleep disruption may actually trigger Alzheimer's. In laboratory experiments, mice genetically engineered to develop amyloid plaques (brain lesions that are a hallmark of Alzheimer's) did so much more quickly when sleep-deprived. And in clinical trials, Dr. Osorio's team found elevated biomarkers for Alzheimer's in the cerebrospinal fluid of elderly subjects diagnosed with obstructive sleep apnea—a disorder in which sagging tissue periodically blocks the airway until the patient rouses enough for throat muscles to tighten and breathing to resume.

Those findings led to a groundbreaking study, published this past April in the journal *Neurology*. Dr. Osorio and his colleagues reviewed the medical history of 2,470 people aged 55 to 90; participants were classified as either free of cognitive problems, having early-stage mild cognitive impairment (MCI), or having Alzheimer's disease. The researchers also divided subjects according to whether they had sleep apnea or not—and if so, whether it was treated. The results were striking: Patients with untreated apnea were diagnosed with MCI an average of 11 years earlier than those with no apnea (at 72 versus 83), and diagnosed with full-blown Alzheimer's five years earlier (at 83 versus 88). Even more remarkably, apnea patients treated with a continuous positive airway pressure (CPAP) machine were diagnosed with MCI about 10 years later than those who went untreated.

"This is the first evidence that treating sleep abnormalities could be a good strategy for preventing Alzheimer's," says Dr. Osorio. "The next challenge is to find the mechanisms involved." There are many pathways by which sleep apnea could cause neurological damage. Possibilities include hypoxia, changes in cerebral blood flow, overproduction of toxic metabolites (such as amyloid beta-42 and abnormal tau peptides), or disruption of the

recently discovered process through which glial cells clear such toxins from the brain during sleep. To help determine the roles these factors play, Dr. Osorio is creating a cohort of 200 healthy elderly people who will be followed for at least two years. The subjects will wear monitors at home each night to record their sleep-wake cycles, sleep quality, and breathing patterns. They'll also undergo spinal taps to test for suspect molecules and PET scans to detect plaques. The team will analyze causal relationships among these variables and any changes in cognition.

"Given that so many older adults have sleep problems, the implications of this research are far-reaching," Dr. Osorio notes. An estimated 22 million Americans suffer from obstructive sleep apnea, according to the American Sleep Apnea Association; though the disorder can often be controlled with CPAP or other measures, only 20 percent of patients are diagnosed and treated. For Alzheimer's, by contrast, few medications are available to delay onset or control symptoms, and their efficacy is limited. If treatments for apnea and other sleep disorders can also be effective against Alzheimer's, the potential savings in healthcare costs and human suffering could be substantial. Dr. Osorio suggests that other neuropsychiatric ailments associated with sleep disruption—such as schizophrenia, depression, and bipolar disorder—might benefit as well.

Dr. Osorio is currently recruiting healthy young people for a clinical trial in which subjects will sleep inside an MRI machine to measure the brain's metabolite-clearance cycle—the first such study in humans. "We still don't have a complete understanding of why we need to sleep," he says. "But we're getting one step closer."

"This is the first evidence that treating sleep abnormalities could be a good strategy for preventing Alzheimer's. The next challenge is to find the mechanisms involved."

—RICARDO OSORIO, MD

Research Assistant Professor of Psychiatry

Telepsychiatry: Bringing Care to Underserved Patients

In many communities across America, children with mental health needs have little access to psychiatric care. To help close the gap, NYU Langone Medical Center is pioneering the use of telepsychiatry—connecting clinicians to distant patients via fiber-optic cable and video screens.

For several years, NYU Langone’s Child Study Center has provided telepsychiatry services to St. Lawrence Psychiatric Center, a state facility in Ogdensburg, New York. Recognizing our expertise, administrators at the Rockland Children’s Psychiatric Center (RCPC) recently asked NYU Langone to provide such services for their school-based programs. The initiative will begin at two Rockland County schools in February 2016 and at several others in the following months.

Owned and operated by the state Office of Mental Health, RCPC is located in Orangeburg, 25 miles north of New York City. The institution has long been a training site for NYU Langone’s first-year fellows in child and adolescent psychiatry, who rotate to its inpatient facility.

The telepsychiatry program will enable second-year fellows to gain a very different kind of clinical experience. “Our fellows are among the best-trained in the country, because of the golden opportunities they have at Bellevue Hospital Center, RCPC, and NYU Langone’s own clinical and research facilities,” says Glenn Hirsch, MD, assistant professor of child and adolescent psychiatry and medical director of the Child Study Center. “The telepsychiatry rotation will add to their capabilities in a way that’s hard to get anywhere else.”

The program will also provide a model for bringing care to underserved populations nationwide. An estimated 13 percent of children in the United States experience a psychiatric disorder each year, according to the Centers for Disease Control, while there are only 7,400 practicing child psychiatrists. “By allowing clinicians to operate effectively from any location, telepsychiatry can address a growing need in many parts of the country,” says Dr. Hirsch. “In the future, this is going to be an increasingly important form of practice.”



▲ Glenn Hirsch, MD, medical director of the Child Study Center, and Zoe Blacksins, MD, child and adolescent psychiatry fellow

Inpatient Care: Focusing on Medically Complex Patients

Over the past year, NYU Langone Medical Center's Inpatient Psychiatry unit has focused on strengthening its ability to serve patients with complex medical conditions who also require psychiatric care.

In a project led by David L. Ginsberg, MD, clinical associate professor of psychiatry, vice chair for Clinical Affairs, and chief of Psychiatry Service, the Psychiatry team joined with the Department of Medicine to develop protocols for identifying and treating patients whose mental health needs would be more appropriately served on the Psychiatry unit than on a medical floor. An attending hospitalist now rotates through the 22-bed unit daily. The unit's medical resources have also been enhanced, so that patients can receive interventions including IV fluids, tube feeding, and dialysis in-house during their stay.

This initiative has helped increase the number of patients treated on the Psychiatry unit from 563 in 2014 to more than 640 in 2015. Their medical conditions included sarcoidosis, pyelonephritis, refeeding syndrome, hydrocephalus, and liver failure. One patient, a 50-year-old woman with schizophrenia, was admitted through the emergency department with diabetic ketoacidosis; in the Psychiatry unit, her glycemic issues as well as her psychosis were brought under control. Such patients would once have had to wait several days before being transferred to Psychiatry, compromising treatment for their mental disorders.

640+

Inpatient Discharges

22-bed unit

A strong partnership with nursing leadership was crucial in developing the competencies required to assure the highest level of safety and quality of care on the Psychiatry unit. Also central to the new system is the Consultation-Liaison Psychiatry Service, whose members care for patients with mental health issues throughout Tisch Hospital. "Without their efforts, our initiative would fail," says Michael F. Walton, MD, assistant professor of psychiatry and the Inpatient Psychiatry unit's chief.

The Inpatient Psychiatry unit offers a unique care model in which every patient encounter is team-based, involving a multidisciplinary panel of specialists. "Our goal is to ensure that the unit can provide state-of-the-art care to any patient with acute mental health needs, no matter the state of their physical health," says Dr. Ginsberg. "In collaboration with NYU Langone's expert medical staff, the Department of Psychiatry's dedicated clinicians are making that vision a reality."

Affiliation with Lutheran Medical Center

In November 2014, the boards of NYU Langone Medical Center and Lutheran Medical Center approved an affiliation agreement that brings the two organizations together to create a clinically integrated healthcare provider network for the New York metropolitan area. Based in Brooklyn, NYU Lutheran (as it is now known) operates a 450-bed teaching hospital as well as a network of ambulatory practices in all four boroughs of the city.

The merger, which culminates in January 2016, "greatly increases our capacity to serve patients with mental and behavioral health problems," says

David L. Ginsberg, MD, clinical associate professor of psychiatry, vice chair for Clinical Affairs, and chief of Psychiatry Service at NYU Langone. "NYU Lutheran's ambulatory psychiatric services provides 115,000 visits per year, compared with 15,000 at Tisch Hospital and 64,500 at Bellevue Hospital Center. We'll be able to bring our expertise in mood and anxiety disorders, PTSD, ADHD, psychosis, addiction, and other complex illnesses to many more people who need it. And our clinical research programs will benefit by the addition of a diverse new patient population."

CULTIVATING EXCEPTIONAL RESEARCHERS AND CLINICIANS



Our centers and programs provide a diverse instructional environment for the next generation of mental health leaders.

Resiliency Training for Residents

According to the American Foundation for Suicide Prevention, the rate of suicide among physicians is nearly double that of non-physicians. Between 300 and 400 doctors end their own lives each year. Studies have shown that trainees—who may be under professional and financial pressure, chronically sleep-deprived, and isolated from friends and family given the demands of their work—are especially vulnerable to depression and suicidal thinking.

That danger was driven home in August 2014, when two medical interns at New York City hospitals died by suicide in separate incidents. Dismayed by the tragedies, Carol A. Bernstein, MD, associate professor of psychiatry and neurology and director of the Department of Psychiatry's Residency Training Program, together with NYU School of Medicine's Internal Medicine Residency Program leadership, saw an urgent need to provide a curriculum for postgraduate year 1 residents at NYU Langone Medical Center to enable them to better cope with stress and avoid burnout.

The result was a collaboration with faculty at Massachusetts General Hospital to implement a Stress Management and Resiliency Training (SMART) curriculum, one of the first courses of its kind in the United States. Developed by the Benson-Henry Institute for Mind Body Medicine and Massachusetts General Hospital in Boston, the curriculum is offered to all interns in the

Departments of Psychiatry and Internal Medicine. It consists of three two-hour sessions, in which participants learn the importance of stress management, along with breathing exercises, guided imagery techniques, and other mindfulness-related practices. Residents also receive a wearable health tracker that monitors heart rate, sleep quality, and physical activity. Because interns might hesitate to discuss emotional challenges directly with their own program directors, Dr. Bernstein facilitates the oversight of SMART training for medical interns, while Patrick M. Cocks, MD, the Abraham Sunshine Assistant Professor of Clinical Medicine and director of the Internal Medicine Residency Training Program, does so for psychiatry interns.

"The culture of medicine remains somewhat 'stoic,'" says Dr. Bernstein. "There is significant stigma associated with acknowledging depression, or feelings of stress and anxiety." A dozen years after the American Medical Association published guidelines calling for "transforming professional attitudes and changing institutional policies to encourage physicians to seek help," few medical centers have taken concrete measures to realize those goals. Because residents are busy trying to gain mastery over their work, they may be particularly reluctant to use existing counseling services, whether from fears of seeming "weak" or simply a lack of free time. The SMART curriculum is designed to offer young physicians tools they can use throughout their careers to nurture well-being and to eliminate stigma around seeking help.

Preliminary studies of mindfulness training programs suggest that they can lower stress, improve coping ability and mood, increase physician empathy, and decrease burnout; doctors who practice mindfully have also been shown to find more meaning in their work. In addition to her role in establishing the SMART program at NYU Langone, Dr. Bernstein is working to promote awareness of these issues through the Accreditation Council for Graduate Medical Education (ACGME), on whose board of directors she sits. "It is crucial for physicians to learn what stresses us out and what makes us feel better," Dr. Bernstein notes. "If we are healthier and better adjusted, we will be better able to provide safe, high-quality care to our patients."

Bringing a New Generation into the Field

Child and adolescent psychiatry is among the most underrepresented medical specialties, leading to a widespread shortage of practitioners in the United States. To increase the numbers, it's crucial to attract young people to the field—and New York University's undergraduate minor in Child and Adolescent Mental Health Studies (CAMS) is doing just that. Established by NYU Langone's Department of Child and Adolescent Psychiatry in fall of 2006, the groundbreaking program began with one course of 24 students. Today, it encompasses 42 courses with an annual enrollment of over 4,000. Over 15 percent of NYU undergraduate college students take at least one course in CAMS, which is now one of the most popular disciplines at NYU. The program's success has led to the emergence of similar initiatives at colleges across the country.

"CAMS has dramatically increased the interest in child and adolescent psychiatry and psychology among undergraduates," says Jess P. Shatkin, MD, MPH, associate professor of child and adolescent psychiatry and pediatrics and vice chair for education, who designed the program and oversees its development. Besides drawing potential recruits to the profession, CAMS aims to increase undergraduates' awareness and understanding of mental health, and remove

the stigma often associated with those who receive psychiatric services. The need for such a shift in consciousness has never been greater. A 2010 survey of first-year U.S. college students by the Higher Education Research Institute reported their emotional health at the lowest point in a quarter-century. In the 2012 National College Health Assessment survey, 31 percent of undergraduates reported symptoms of depression; 51 percent reported anxiety. Yet studies show that only a minority of students with a mental disorder seek treatment.

The CAMS curriculum covers topics including anxiety disorders, eating disorders, disruptive behavior, trauma, sleep, attachment, child development, divorce, children's literature, love, and positive psychology. In a recent survey, 84 percent of students reported that participation in the program had a beneficial impact on their life; 60 percent said it had influenced their career choice. To date, 700 students at NYU have completed a minor in CAMS. "It's become a national model," says Dr. Shatkin, who consults on the program with other academic institutions. "Half a dozen universities have now launched similar programs or are in the process of doing so, further multiplying our impact on the field."



"Our Child and Adolescent Mental Health Studies undergraduate program has become a national model. Half a dozen universities have now launched similar programs or are in the process of doing so."

—JESS P. SHATKIN, MD, MPH

Associate Professor of Child and Adolescent Psychiatry
Vice Chair for Education

Uniting Psychiatry and Neurology

NYU School of Medicine is one of just a handful of institutions in the United States that offers a combined residency in psychiatry and neurology. “The double-board program fits our emphasis on translational medicine,” says Charles Marmar, MD, the Lucius N. Littauer Professor of Psychiatry and chair of the Department of Psychiatry at NYU Langone Medical Center. “Finding answers to the profound questions of mental disorders will depend on advancing the understanding of mind, brain, and behavior on a neurobiological level.”

Co-chaired by Dr. Marmar and Steven L. Galetta, MD, the Philip K. Moskowitz, MD, Professor of Neurology and chair of the Department of Neurology, and directed by Siddhartha S. Nadkarni, MD, assistant professor of neurology, the program enrolls one or two residents each year. It includes six years of coordinated training in psychiatry and neurology at NYU Langone’s Tisch Hospital and Hospital for Joint Diseases, Bellevue Hospital Center, and the VA NY Harbor Healthcare System. At the conclusion of the residency, trainees are experienced in the prevention, detection, and treatment of acute and chronic psychiatric and neurological illnesses as they present in inpatient and ambulatory settings, as well as in the socioeconomics of illness, the ethical care of patients, and the team approach to providing patient care. The program meets the special requirements for board certification as designated by the American Board of Psychiatry and Neurology.

Building Physician-Scientists

The Department of Psychiatry’s Residency Research Program is dedicated to training physician-scientists who are investigators whose focus is original research, but whose work is deeply grounded in the realities of patient care. “Our knowledge of what’s happening on the molecular, cellular, and circuit level of the brain is experiencing exponential growth,” says the program’s director, Michael M. Halassa, MD, PhD, assistant professor of psychiatry and neuroscience and physiology. “There’s a critical need for physician-scientists who can bridge the gap between basic science and the clinical world.”

The rigorous four-year program recruits two to three MD/PhD residents annually. Participants gain clinical and laboratory experience at facilities operated by NYU Langone Medical Center and its affiliates, while receiving intensive training in technical and administrative skills relevant to their field of inquiry. Departmental funds are available for approved research projects, and schedules are tailored to facilitate transition to independence by the end of the residency or shortly thereafter.

“Physician-scientist training is an extremely high priority for the department,” says Donald Goff, MD, the Marvin Stern Professor of Psychiatry and vice chair for Research for the Department of Psychiatry. “For those who take on this challenge, we go to great lengths to protect time, provide mentorship, and allocate the necessary resources.”

Fellowships

PSYCHIATRY FELLOWSHIPS

NYU Langone’s psychiatry fellowships offer highly focused postdoctoral training in key subspecialties:

- Addiction Psychiatry
- Forensic Psychiatry
- Geriatric Psychiatry
- Psychosomatic Medicine
- Reproductive Psychiatry/
Women’s Mental Health
- Public Psychiatry
- Child and Adolescent Psychiatry

CHILD AND ADOLESCENT PSYCHIATRY FELLOWSHIP

NYU Langone’s Child and Adolescent Psychiatry Fellowship program is one of the nation’s oldest, accepting 10 candidates per year.

PSYCHOLOGY POSTDOCTORAL FELLOWSHIPS IN CHILD AND ADOLESCENT PSYCHIATRY

- Autism Spectrum Disorder
- Pediatric Neuropsychology
- Anxiety and Mood Disorders
- Empirically Derived Assessment and Treatment

17

postdoctoral fellows in Psychiatry and Child and Adolescent Psychiatry

Join us for our upcoming Continuing Medical Education (CME) courses:

- Managing Psychiatric Emergencies in Children and Adolescents
March 2016
- NYU Langone/Bellevue Psychopharmacology Annual Review
March 2016

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Select Publications

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NYU LANGONE MEDICAL CENTER

*Numbers represent FY15 (Sept 2014–Aug 2015)

1,069
Total Number of Beds

77
Operating Rooms

38,554
Patient Discharges

1,216,428
Hospital-Based Outpatient Visits

5,766
Births

2,900,000
Faculty Group Practice
Office Visits

1,469
Full-Time Faculty

1,392
Part-Time Faculty

2,627
Voluntary Faculty

128
Endowed Professorships

2,740
Physicians

3,465
Registered and Advanced
Practice Nurses

730
Allied Health Professionals

611
MD Candidates

79
MD/PhD Candidates

272
PhD Candidates

400
Postdoctoral Fellows

1,063
Residents and Fellows

3,800
Publications

550,000
Square Feet of Research Space

\$178,000,000
NIH Funding

\$295,000,000
Total Grant Funding

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