DIVISION OF PULMONARY, CRITICAL CARE AND SLEEP MEDICINE
The Division of Pulmonary, Critical Care and Sleep Medicine at University Hospitals Case Medical Center, led by Division Chief, Rodney J. Folz, MD, PhD, Hubbell Professor of Medicine, Case Western Reserve University School of Medicine, is setting the standard for care in the diagnosis and treatment of acute and chronic lung diseases, critical care and sleep disorders.

Our renowned experts address the complete span of common and rare respiratory diseases including asthma, chronic obstructive pulmonary disease (COPD), interstitial fibrosis and pneumonia, sleep apnea, pulmonary vascular disease, cystic fibrosis (CF), lung cancer, sepsis, acute respiratory distress syndrome (ARDS) and acute lung injury (ALI). With access to advanced technologies, we utilize novel treatments, specializing in modalities such as interventional bronchoscopy and lung transplantation, as well as pioneer new therapies through clinical trials.

In collaboration with colleagues from multiple disciplines, our team determines the best therapeutic solutions for each patient while maintaining recognition as thought leaders in their specific fields. It is our commitment to deliver the most advanced, highest-quality patient care experience.

U.S. News & World Report has consistently ranked the division among the top 50 programs in pulmonary medicine for the past six years – significant against a backdrop of more than 2,000 pulmonary programs in the United States. Dedicated to transforming patient care at an integrated and individualized level, the division receives high marks for shorter lengths of stay and nationally low mortality rates.

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Heart failure patients often have heart arrhythmias, which are strongly linked to sleep-disordered breathing. In addition, these patients frequently have obstructive sleep apnea, as well as central sleep apnea, or Cheyne-Stokes respiration. Continuous positive airway pressure (CPAP) and bi-level positive airway pressure (BiPAP) are generally effective treatments for obstructive sleep apnea, but not Cheyne-Stokes respiration. If these patients’ nighttime breathing problems are not addressed, then it becomes difficult to improve their ejection fraction. Dr. Colleen Lance hopes these patients may benefit from a newer modality of noninvasive ventilation. This machine-based program regulates patients’ patterns of breathing. If their sleep-disordered breathing is treated with noninvasive ventilation, then the work load of the heart may be relieved and heart function improved, potentially reducing lengths of stay and readmission rates for heart failure patients.

Common medications given around the time of surgery can cause a markedly increased chance of perioperative complications in patients with sleep apnea or sleep-disordered breathing. Dr. Lance is evaluating data gathered from a program begun two years ago by anesthesiologists at UH Case Medical Center in which every patient who underwent an outpatient procedure was screened for sleep-disordered breathing. The Stop Bang questionnaire, a validated screening tool measuring factors that impact sleep, such as snoring, daytime tiredness and body mass, is used. If patients screen positive in the preoperative clinic, they are placed on home sleep testing units immediately. If the unit indicates obstructive sleep apnea, they are placed in a sleep lab for treatment or on an auto titrating unit at home prior to surgery. Dr. Lance’s evaluation will assess the effect on postoperative complication rates and readmission rates.

There is a strong genetic component to many sleep disorders, including sleep apnea, restless leg syndrome, periodic limb movement and insomnia. It is not uncommon to find multiple family members who share disorders. Dr. Lance and her counterpart in pediatrics, Carol Rosen, MD, Department of Pediatric Pulmonology, UH Rainbow Babies & Children’s Hospital; and Professor of Pediatrics and General Medical Sciences, Case Western Reserve University School of Medicine, are managing twice-monthly clinics specifically focused on families. Families participate in an interview and meet with pediatric and adult sleep specialists and psychologists to determine if cognitive behavioral therapy or further study in the sleep lab is recommended to address the common disorders within the family.

UH Case Medical Center was one of the clinical sites for the Stimulation Therapy for Apnea Reduction (the STAR trial) study and the findings were published in the New England Journal of Medicine (Jan. 9, 2014). Kingman Strohl, MD, pulmonologist, UH Case Medical Center; Professor of Medicine, Physiology & Biophysics, and General Medical Sciences at Case Western Reserve University School of Medicine; and Director of the Sleep Disorders Program at the Louis Stokes Cleveland VA Medical Center, was the site principal investigator for the study and co-author of the NEJM article. The STAR trial results showed that Inspire therapy reduced apnea events by 68 percent and significantly improved key quality of life measures. Inspire therapy is offered in collaboration with specially trained surgeon, Diana Ponsky, MD, of University Hospitals Ear, Nose & Throat Institute; and Assistant Professor of Otolaryngology, Case Western Reserve University School of Medicine.

Colleen Lance, MD, Clinical Director of the Sleep Program at UH Case Medical Center; and Assistant Professor of Medicine, Case Western Reserve University School of Medicine, has led a number of initiatives at UH Case Medical Center to establish more efficient and effective practices in the treatment of sleep disorders.
The Amyotrophic Lateral Sclerosis (ALS) Program joins specialists from UH Neurological Institute’s Neuromuscular Center, rehabilitative services (such as physical therapy, occupational therapy and speech therapy), surgery and pulmonary medicine to optimize patient care and comfort. Developed at Case Western Reserve University School of Medicine, diaphragmatic muscle pacing is now an option in managing respiratory failure in ALS patients. The NeuRx Diaphragm Pacing System® was pioneered at UH Case Medical Center under the direction of Raymond Onders, MD, Director of Adult Minimally Invasive Surgery, UH Case Medical Center; and Professor of Surgery, Case Western Reserve University School of Medicine, and Dr. Robert Schilz. The device, which has been approved by the FDA, helps patients to breathe and speak better and to stave off respiratory complications during the progression of ALS. It may also be used for patients with spinal cord injuries. The device was successfully used to treat the late actor Christopher Reeve in March 2003.

Robert Schilz, DO, PhD, Program Director, Lung Transplantation and Pulmonary Hypertension, UH Case Medical Center; Co-Director, Dyspnea Center, UH Harrington Heart & Vascular Institute; and Associate Professor of Medicine, Case Western Reserve University School of Medicine, leads the section of complex lung disease along with Mariana Petrozzi, MD, Director of the Medical Intensive Care Unit (MICU), UH Case Medical Center; and Assistant Professor of Medicine, Case Western Reserve University School of Medicine. Dr. Petrozzi and the division’s preceding MICU Director developed a step-down unit facilitated by nurse practitioners to care for the chronically critically ill. The MICU has actively participated in clinical trials since 1994. One, the NIH ARDS Clinical Network, was established to hasten the development of effective therapy for ARDS. The MICU has participated in two published studies and in one ongoing study of sepsis. The National Heart, Lung and Blood Institute (NHLBI) initiated a clinical network, including UH Case Medical Center, to carry out multicenter clinical trials of ARDS.

Elliott Dasenbrook, MD. Connie and Jim Brown Chair in Pulmonary Survivorship, UH Case Medical Center; and Assistant Professor of Medicine and Pediatrics, Case Western Reserve University School of Medicine, and Steven Strausbaugh, MD, Director, Combined Medicine/Pediatrics Residency Program, Adult Primary Ciliary Dyskinesia Program, and Pulmonary, Critical Care and Sleep Medicine Fellowship Program, UH Case Medical Center; and Assistant Professor of Medicine and Pediatrics, Case Western Reserve University School of Medicine, are co-directors of the Cystic Fibrosis Center, a collaboration of the Division of Pulmonary, Critical Care and Sleep Medicine at UH Case Medical Center, UH Rainbow Babies & Children’s Hospital and Case Western Reserve University School of Medicine. The team’s continued legacy of innovation and research has helped to more than triple the national average life expectancy of CF patients – increasing from 11 years in 1970 to more than 38 years today.

Jordan Kazakov, MD, interventional pulmonologist, UH Case Medical Center; and Assistant Professor of Medicine, Case Western Reserve University School of Medicine, brings with him state-of-the-art approaches to the diagnosis and treatment of malignant and nonmalignant lung disease including endobronchial and endoscopic ultrasound, rigid bronchoscopy and stent placement. His clinical interests include lung cancer, lung problems in immunocompromised patients, complex central airway disease, pleural disease and critical care. Dr. Kazakov leads research involving Y-stent insertion using a flexible bronchoscopic Seldinger technique in distal tracheal and carinal obstruction, and EBUS guided biopsies of peripheral lung masses.
RESPIRATORY RHYTHMOGENESIS – A GENOMIC APPROACH: Led by Dr. Kingman Strohl and funded by the VA Research Service, this study will use recombinant inbred mice strains to increase the genomic understanding of unstable breathing, and uncover genomic mechanisms and pathways underlying ventilatory responses to hypoxia and hypercapnia, in wakefulness and the different stages of sleep.

ERADICATION OF PERSISTENT MRSA AND PERSISTENT MRSA ERADICATION PROTOCOL: Funded by NIH to Case Western Reserve University School of Medicine, and led by Dr. Elliott Dasenbrook, these research studies consider whether CF patients and CF animal models with methicillin-resistant staphylococcus aureus (MRSA) in the respiratory tract have lower survival rates than those without the drug-resistant bacteria. Their initial findings, published in the Journal of the American Medical Association, suggested the need for more aggressive treatment of CF patients who are persistently MRSA positive and stressed the importance of following current infection control guidelines to minimize transmission of MRSA.

PRECLINICAL MODEL SYSTEMS OF NEURAL CONTROL OF BREATHING: Funded by the VA Research Service, this study focuses on the development of a cohesive set of computational approaches to quantify biologically determined ventilatory pattern variability with an emphasis on using ventilatory pattern analysis as a novel tool for investigating mechanisms responsible for breathing behaviors and providing predictive insight into prognosis and reversible pathophysiology leading to recovery, survival and rehabilitation. This work has future significance in management of acute respiratory distress syndrome, cystic fibrosis, respiratory failure and ventilatory support management.

ICU OF THE FUTURE: Ongoing collaboration with the Department of Electrical Engineering and Computer Science at Case Western Reserve University supported by the Ohio Board of Regents and, more recently, a Draper Laboratory University R&D Project to establish an Engineering Laboratory to build the ICU of the Future. This project is part of a national Integrated Medical Environment for Decision Support (IMEDS) consortium intended to optimize the collection, integration, processing and visualization of ICU bedside data to transform patient data into actionable information, improve patient outcomes and reduce health care costs.

EXPRESSION SIGNATURES OF TB-SPECIFIC MEMORY RESPONSES WITHIN THE HUMAN LUNG: A grant was recently awarded by the National Heart, Lung and Blood Institute of the NIH to Case Western Reserve University School of Medicine to examine how immunity to Mycobacterium tuberculosis, the cause of TB, is manifested within the human lung. This research is led by Richard F. Silver, MD, Associate Professor of Medicine, Case Western Reserve University School of Medicine, in collaboration with investigators at Saint Louis University and the Dana Farber Cancer Institute of Harvard University.

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