

30 JUNE 2023 | @UAZ_PACCS | 520-626-8309

DIVISION OF PULMONARY, ALLERGY, CRITICAL CARE AND SLEEP MEDICINE

First and foremost...

The Division of Pulmonary, Allergy, Critical Care, and Sleep Medicine (PACCS) has had a busy second quarter in 2023. This newsletter is aimed at highlighting the activities and accomplishments of the members of our division who serve the tripartite mission of our academic institution. The clinical services in the intensive care units, inpatient consultation services, and various pillars of the PACCS ambulatory clinics and procedural programs continue to serve our communities within Arizona. The educational and training mission continues with full vigor within our four fellowship programs -- Pulmonary-Critical Care, Critical Care, Allergy-Immunology, and Sleep Medicine -- and trains the future pipeline of clinicians, educators, and physician-scientists. Medical students, residents, and fellows from other intra- and extra-mural programs also receive training during their elective rotations within the busy PACCS clinical services and research labs. The PACCS research engine continues to power innovations that span the spectrum of research from knowledge generation to clinical translation.

Clinical Mission

PACCS continues to lead the Tucson market in the Interventional Pulmonary area with the arrival of the robotic bronchoscope at Banner University Medical Center - Tucson. Procedures have commenced in May 2023 with many patients benefiting from the less invasive procedure that enables clinicians to better examine the airways of the lungs; better diagnose lung cancer and other lung diseases; and enables better collection of tissue samples from the hard-to-reach periphery of the lung. The interventional pulmonologists are featured in the Tucson Lifestyle - Best Doctor issue.

Best Doctors in Tucson



Tucson Lifestyle 2023 Connolly Top Doctors featured PACCS faculty who also serve within the UArizona Cancer Center's lung cancer team. Drs. Madhav Chopra (back row, left), James Knepler (back row, middle), and Billie Bixby (front, right) were featured. Others from PACCS included Drs. Tara Carr, Puneet Shroff, and Sairam Parthasarathy (all three providers are not in picture).

Changing the standards

After three years of work, an official American Thoracic Society (ATS) Research Statement on Causes, Consequences, and Treatments of Sleep and Circadian Disruption in the ICU was released on April 1, 2023. The Division Chief (Sairam Parthasarathy, MD) was a member of this project that was led by Melissa Knauert, MD of Yale University. The report was published in the *American Journal of Respiratory and Critical Care Medicine*. This project was in response to the rising concern that sleep and circadian disruption (SCD) is common and severe in the ICU. On the basis of rigorous evidence in non-ICU populations and emerging evidence in ICU populations, SCD is likely to have a profound negative impact on patient outcomes. The report identified the following research priorities: establish an ICU SCD definition, further develop rigorous and feasible ICU SCD measures, test associations between ICU SCD domains and outcomes, promote the inclusion of mechanistic and patient-centered outcomes within large clinical studies, leverage implementation science strategies to maximize intervention fidelity and sustainability, and collaborate among investigators to harmonize methods and promote multisite investigation. The group concluded that ICU SCD is a complex and compelling potential target for improving ICU outcomes.

ICU Sleep and Circadian Disruption is a complex and compelling potential target for improving ICU outcomes.

New Grants and Contracts Awarded to the members of PACCS (April - June 2023)

Siren CORE-EM Hub Alliance Grant
Dr. Jarrod Mosier
Virginia Commonwealth University
\$140,060.00

A Phase 4, Prospective, Multicenter, Single-Arm Study of a Mean Pulmonary Artery Pressure-Targeted Approach with Early and Rapid Treprostinil Therapy to Reverse Right Ventricular Remodeling in Patient
Dr. Franz Rischard
United Therapeutics Corporation
\$509,073.52

Validation of a Genetic-based Biomarker Panel for Stratification of Mortality Risk in ARDS Patients
Grant
Dr. Christian Bime
National Heart, Lung, and Blood Institute
\$115,125.00

A Multicenter, Adaptive, Randomized, Controlled Trial Platform To Evaluate Safety and Efficacy of Strategies and Treatments for Hospitalized Patients with Respiratory Infections / Appendix E-1: Shio
Dr. Jarrod Mosier
Vanderbilt University Medical Center
\$1,527,500.00

<https://healthsciences.arizona.edu/connect/>

VISIT OUR WEBSITE
[HTTPS://DEPTMEDICINE.ARIZONA.EDU/DIVISIONS/PULMONARY-ALLERGY-CRITICAL-CARE-AND-SLEEP-MEDICINE](https://deptmedicine.arizona.edu/divisions/pulmonary-allergy-critical-care-and-sleep-medicine)

Lung Transplant



Brittany Anundson, PA



Christopher Prescott, PA



Hossai Shah, PA

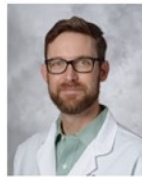
Medical ICU



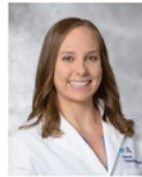
Bill Doctorman, PA



Amber Merrill, NP



Alex Rogers, NP



Amanda Zeagler, NP

Pulmonary Hypertension



Lillian Hansen, NP

Sleep Medicine



Joan MacHamer, NP

Sleep Medicine/ILD



Mary Beth Jamison, NP

Meet our APPs

The Division of PACCS is home to 10 amazing Advanced Practitioners who provide outstanding patient-care and help improve quality of care for our patients and hospitals. Our APPs work in lung transplant, intensive care unit and outpatient clinics.

Ms. Brittany Anundson, Mr. Christopher Prescott, and Ms. Hossai Shah have been providing high quality care to patients with advanced lung diseases and lung transplant in both the outpatient and inpatient settings. Their attention to high quality patient-centered care has been instrumental in the lung transplant program successes. The lung transplant program has been a center of excellence with many payors including Optum, Aetna, and Medicare. Mr. Bill Doctorman, Ms. Amber Merrill, Mr. Alex Rogers, and Ms. Amanda Zeagler work in the medical intensive care unit (MICU) where they have been providing outstanding care for critically ill patients. They have been instrumental in achieving high-quality healthcare metrics in the very busy MICU service whose census remains high despite the emergence from the COVID pandemic.

Ms. Lillian Hansen has been a stalwart provider for the pulmonary hypertension program and has been responsible for high-quality care in both the outpatient and inpatient consultation service settings. She has been an important member in many pulmonary hypertension research studies. Ms. Joan MacHamer and Ms. Mary Beth Jamison have been providing stellar care in the sleep clinics and have been assisting other programs such as the home ventilation program (Ms. MacHamer) and interstitial lung disease program (Ms. Jamison). The division of PACCS is grateful to all of our APPs for their dedication to their patients and programs.

JAMA Publication on Long-COVID

Initial findings from a study of nearly 9,674 Americans, many of whom had COVID-19, have uncovered new details about long COVID, the post-infection set of conditions that can affect nearly every tissue and organ in the body. In this analysis of data from the RECOVER adult cohort, a prospective longitudinal cohort study, 37 symptoms across multiple pathophysiological domains were identified as present more often in SARS-CoV-2-infected participants at 6 months or more after infection compared with uninfected participants. A preliminary rule for identifying PASC was derived based on a composite symptom score.

The study, published in JAMA, was accompanied by an editorial, and was coordinated through the NIH's [Researching COVID to Enhance Recovery \(RECOVER\) initiative](#), a nationwide effort dedicated to understanding why some people develop long-term symptoms following COVID-19, and most importantly, how to detect, treat, and prevent long COVID. PACCS investigators include Drs. Kenneth Knox, Jarrod Mosier, Franz Rischard, and Sairam Parthasarathy. Other investigators from the University of Arizona Health Sciences include Drs. Janko Nikolich, Karen Lutrick, Kacey Ernst, Kristen Pogreba-Brown, Eric Reiman and Joyce Lee-Iannotti.

Funded by NIH agreement OT2HL161847

Update on new Associate Program Directors

The Pulmonary Critical Care fellowship is led by outstanding educators -- James Knepler, MD (Program Director [PD]), Jarrod Mosier, MD (Associate PD) and Bhupinder Natt, MD (Associate PD). Dr. Knepler is the Associate Chief of the Division of PACCS and Director of Interventional Pulmonology. After many years of service Dr. Natt is stepping down as an Associate Program Director for the Pulmonary Critical Care fellowship program. Drs. Michael Insel and David Miller will be stepping up as the new Associate Program Directors and will assist both Drs. Knepler and Mosier in their current roles.

New Associate Program Directors for the ACGME-accredited Pulmonary Critical Care Fellowship Program - Drs. Michael Insel and David Miller.

The four fellowship programs celebrated the successful graduation of their fellows. The Division of PACCS is home to Pulmonary-Critical Care, Critical Care only, Allergy-Immunology, and Sleep Medicine fellowship programs. See pictures later in this edition of the newsletter.

Applications are being received for the next cycle of fellows and we are going to head into selection committee meetings and interviews for top candidates from across the country who are vying to join the PACCS family.

New Appointments



Associate Vice Chair of Education in the Department of Medicine

Laura Meinke, MD
Associate Professor of Medicine



Vice Chair of Diversity and Inclusion in the Department of Medicine

Christian Bime, MD, MSc
Associate Professor of Medicine



Promotion & Tenure Committee Department of Medicine

Franz Rischard, DO
Professor of Medicine



Vice Chair of AAAAI Sports, Exercise & Fitness Committee

Puneet Shroff, MD
Associate Professor of Medicine

Updates from Pulmonary Hypertension program

The UArizona Pulmonary Hypertension Program within the Division of PACCS in Tucson continues to serve as a regional referral center with increasing number of patient referrals. Continued excellence in invasive cardiopulmonary exercise testing, CPET, pulmonary, and cardiac imaging with patient-centered care are the hallmarks of this program. Currently there are 8 active clinical Trials (Rischard PI) including one using implantable CARDIOMEMS in PAH (first subject enrolled in June 2023). The pulmonary hypertension program has a large active cohort study called the "LATN PAHT". University of Arizona serves as the core site (Rischard PI) for the LATN PAHT study. This is a consortium of Pulmonary Hypertension programs that will enroll a cohort of participants that is enriched for Hispanic participants. The study aims to enroll patients with pulmonary hypertension and follow them longitudinally while examining Hispanic specific traits, effect of resources, and acculturation on therapeutic response.

The program is well known for Dr. Rischard's mentorship of medicine residents who are interested in pursuing a career in Pulmonary and Critical Care. Two of Dr. Rischard's mentees made a splash with their research presentations at the American Thoracic Society International Conference held in Washington D.C. at the American Thoracic Society International Conference held in May 2023. Dr. Swathi Jothi presented a poster discussion on her research entitled, "Post-acute Sequelae of SARS Co-V2 and Chronic Fatigue/Myalgic Encephalitis Share Similar Pathophysiologic Mechanisms of Exercise Limitation." Dr. Rachel Tan presented original research entitled, "Right ventricular volume inter-reader variability increases with ventricular dilation: Results from the PVDOMICS study." Moreover, Dr. Neelima Navaluri (Assistant Prof. Duke University, Pulmonary), a Az-PRIDE Summer Scholar who was mentored by Dr. Rischard presented her research entitled, "Clinical Phenotypes of Chronic Lung Disease and Associated Clinical Implications in Kenya" at the NIH PRIDE annual conference in Bethesda, MD (April 2023). The PRIDE Training program is funded by NIH-NHLBI (R25HL126140) and more information is available [here](#).



Picture from graduation celebration for the Allergy-Immunology fellowship program.

Congratulations to our graduates!

Allergy-Immunology: Dr. Jelena Eremija has accepted a position at Banner University Medical Center in Pediatric Allergy and Immunology! (Pic in left row; bottom)

Pulmonary-Critical Care: Drs. John Rathbun, Allison Wright, Ashley Scott, Jyothi Lenka, and Nicholas Klimberg are headed to great positions in private practices and to academic institutions across the U.S. Critical Care: Drs. Terrence Potter and Paul Crawford head to successful practices in critical care after their rigorous training at UArizona. (2 pics below)

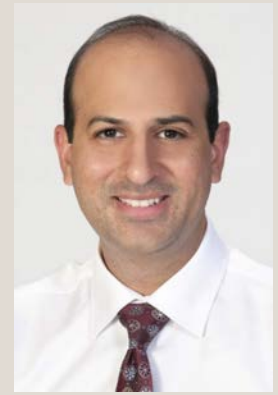
Sleep Medicine: Dr. Michael William heads home to Dallas, TX to start his new position as a sleep physician in a busy practice with friends and family around him. Family and friends celebrated the event together. (bottom pic in this column)



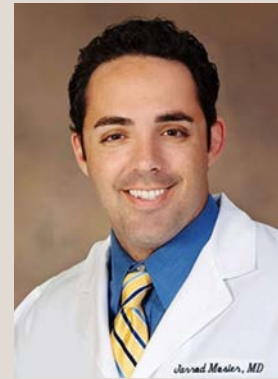
Dr. Michael Insel was chosen as the keynote speaker for the internal medicine residency graduation ceremony. He is seen giving his touching keynote address to a room full of attendees at the UAHS HSIB building.



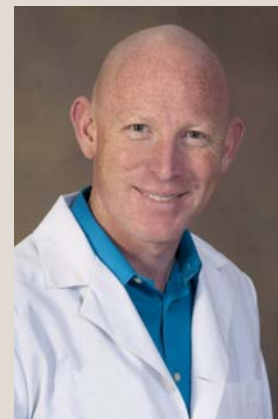
Promotions! Promotions!!



*Sachin Chaudhary, MD
Associate Professor of Medicine,
(Clinical Scholar)
Director, Interstitial Lung
Disease Program*



*Jarrod Mosier, MD
Professor of Emergency
Medicine (Tenured)
Medical Director, ECMO
Associate Program Director,
Critical Care Fellowship*



*Franz Rischard, DO
Professor of Medicine
(Clinical Scholar)
Medical Director, Pulmonary
Hypertension Program*

NIH Funded UAHS Center for Sleep, Circadian and Neuroscience Research opens

The UAHS Center for Sleep, Circadian and Neuroscience Research hosted the open house and ribbon cutting on May 15, 2023. The new facility is located in the basement of the Arizona Health Sciences Center building at 1501 N. Campbell Avenue. A video of the grand opening event can be found [here](#).



Previously, University of Arizona researchers conducted sleep studies in a leased facility located above a Tucson bar and grill. The new facility, built using a \$5 million construction grant from the National Institutes of Health Office of the Director (NIH-OD-C06OD028307), will give investigators access to state-of-the-art technology to conduct innovative sleep and circadian rhythm research.



The new facility offers a highly controlled environment aimed at enhancing human research involving sleep and circadian rhythms to improve understanding of disease processes involving multiple biological systems. "The University of Arizona Health Sciences has studied sleep for more than four decades, during which time our researchers have made pioneering advances in understanding the connections between sleep and cardiovascular disease, neurocognition and behavioral interventions," said Michael D. Dake, MD, senior vice president for the University of Arizona Health Sciences. "The Center for Sleep, Circadian and Neuroscience Research's new location and facilities will allow us to find new solutions to critical sleep issues, improving health and human potential for all." The new state-of-the-art facility will allow for continuous monitoring of the environment of each room using sensors for light, noise, inhaled gases, and room, core body and skin temperatures that will be collected and recorded in a time synchronous manner with the sleep and circadian rhythms in computerized software. The facility enables enables sophisticated short- and long-term experimentation that could simulate conditions in the International Space Station or future space missions.

PACCS at ATS and SLEEP 2023 Annual Meetings

The fellows, APPs, and faculty of the division of PACCS made a strong scientific, educational, and social presence at the American Thoracic Society International Conference in Washington, D.C. as well as the SLEEP 2023 meeting in Indianapolis, Indiana.

Presentations of original research at oral presentations, poster discussion as well as poster board sessions by our members were well received. Moreover, a scientific symposium at SLEEP2023 on "PASC and Sleep" as well as multiple events at ATS2023 pertaining to the new CDC-ATS-vaccine initiative award to University of Arizona - Banner University Medical Center were well attended.

A social and educational gathering of the Division of past and current trainees as well as faculty was well attended in D.C.



COVID Grand Rounds

The NIH-CEAL (OT2HL158287) and CDC funded COVID Grand rounds featured two speakers in the second quarter. The COVID Grand rounds is a virtual educational session that is held monthly. An innovative format -- huddle format -- aims to educate healthcare providers and researchers in Arizona about the latest developments in the area of the COVID pandemic and post-acute sequelae of SARS-CoV-2 infection (PASC). Emphasis is placed on the epidemiology, etiopathogenesis, public health implications, immunobiology, prevention (including vaccination), and treatment approaches for COVID and post-acute sequelae of SARS-CoV-2 virus infections (PASC). In April 2023, Dr. Joyce Lee-Iannotti, MD (Associate Professor, Division of Pulmonary, Critical Care and Sleep Medicine in COM-Phoenix) spoke about "Post-acute Sequelae of SARS-CoV-2: Neurological symptoms". In June 2023, Dr. Reena Mehra from the Cleveland Clinic gave a talk on, "Sleep disturbance, COVID-19, and PASC: More than just bedfellows".

The PACCS COVID grand rounds is attended by clinicians and researchers from 26 states and 7 countries. More information and material are available on the Arizona CEAL website at <https://ceal.arizona.edu/previous-events>.

Funded by CDC and NIH-NHLBI CEAL grants (OT2HL158287).

Upcoming events for 2023 Q3

July 2023

July 12 (Wednesday) Department of Medicine Faculty Meeting (UAHS 8403 @ 1730 hrs).

July 18 (Tuesday): COVID Grand Rounds (Zoom) 0800-0900 Hrs. - Dr. Sarah Jolley from University of Colorado

July 18 (Tuesday) PACCS Monthly Meeting (1500 hrs; AHSC Rm 6416).

August 2023

Aug 14 - 18 (Monday - Friday) Summer PRIDE training meeting for the 10th cohort of trainees. R25-PRIDE Training grant awardees (NIH-NHLBI) Tucson, AZ (R25-HL126140)..

August 15 (Tuesday): COVID Grand Rounds (Zoom) 0800-0900 Hrs. Dr. Kristen Pogreba-Brown

August 15 (Tuesday) PACCS Monthly Meeting (1500 hrs; AHSC Rm 6416).

August 23 (Wednesday) Critical Care Pulmonary Clinical Consensus Group (CCG) meeting. 4:45 pm - 6:15 pm

August 30 - 31 (Wednesday - Thursday): NIH Workshop; Pulmonary vascular disease and sleep health, Washington DC.

September 2023

September 19 (Tuesday): COVID Grand Rounds (Zoom) 0800-0900 Hrs.

September 19 (Tuesday): PACCS Monthly Meeting (1500 hrs; AHSC Rm 6416).



Please send your events and accomplishments to Sai Parthasarathy (sparthal@arizona.edu) Editor

41 Publications from the Division of PACCS in second quarter of 2023. A total of 96 in 2023 so far.

1. Mohandas S, Jagannathan P, Henrich TJ, et al. Immune mechanisms underlying COVID-19 pathology and post-acute sequelae of SARS-CoV-2 infection (PASC). *Elife*. 2023;12.
2. Bhakta NR, Bime C, Kaminsky DA, et al. Race and Ethnicity in Pulmonary Function Test Interpretation: An Official American Thoracic Society Statement. *Am J Respir Crit Care Med*. 2023;207(8):978-995.
3. Zein JG, Bazeley P, Meyers D, et al. A Between-Sex Comparison of the Genomic Architecture of Asthma. *Am J Respir Cell Mol Biol*. 2023;68(4):456-458.
4. Arjomandi M, Zeng S, Chen J, et al. Changes in Lung Volumes with Spirometric Disease Progression in COPD. *Chronic Obstr Pulm Dis*. 2023.
5. Li X, Li H, Christenson SA, et al. Genetic analyses of chr11p15.5 region identify MUC5AC-MUC5B associated with asthma-related phenotypes. *J Asthma*. 2023;1-12.
6. Angelini ED, Yang J, Balte PP, et al. Pulmonary emphysema subtypes defined by unsupervised machine learning on CT scans. *Thorax*. 2023.
7. Hill AC, Guo C, Litkowski EM, et al. Large scale proteomic studies create novel privacy considerations. *Sci Rep*. 2023;13(1):9254.
8. DiLillo KM, Norman KC, Freeman CM, et al. A blood and bronchoalveolar lavage protein signature of rapid FEV1 decline in smoking-associated COPD. *Sci Rep*. 2023;13(1):8228.
9. Ginebaugh SP, Hagner M, Ray A, et al. Bronchial epithelial cell transcriptional responses to inhaled corticosteroids dictate severe asthmatic outcomes. *J Allergy Clin Immunol*. 2023;151(6):1513-1524.
10. Bleecker ER, Meyers DA, Billheimer D, et al. Clinical Implications of Longitudinal Blood Eosinophil Counts in Patients With Severe Asthma. *J Allergy Clin Immunol Pract*. 2023;11(6):1805-1813.
11. Li H, Castro M, Denlinger LC, et al. Investigations of a combination of atopic status and age of asthma onset identify asthma subphenotypes. *J Asthma*. 2023;1-10.
12. Izquierdo M, Marion CR, Genese F, et al. Impact of Bronchiectasis on COPD Severity and Alpha-1 Antitrypsin Deficiency as a Risk Factor in Individuals with a Heavy Smoking History. *Chronic Obstr Pulm Dis*. 2023.
13. Carr TF, Fajt ML, Kraft M, et al. Treating asthma in the time of COVID. *J Allergy Clin Immunol*. 2023;151(4):809-817.
14. Carr T, Thompson AL, Benjamin-Neelon SE, Wasser HM, Ward DS. Confirmatory factor analysis of the infant feeding styles questionnaire in infant and toddler child care teachers. *Appetite*. 2023;183:106449.
15. Chaudhary S, Weigt SS, Ribeiro Neto ML, et al. Interstitial lung disease progression after genomic usual interstitial pneumonia testing. *Eur Respir J*. 2023;61(4).
16. Nenna R, Zhai J, Spangenberg A, et al. Cytomegalovirus serology in young to mid-adult life and decline of lung function. *Clin Respir J*. 2023;17(5):468-472.
17. Anesi GL, Andrews A, Bai HJ, et al. Perceived Hospital Stress, Severe Acute Respiratory Syndrome Coronavirus 2 Activity, and Care Process Temporal Variance During the COVID-19 Pandemic. *Crit Care Med*. 2023;51(4):445-459.
18. Vanderpool RR, Insel M, Kubba S, Rischard FP. The Acute Effects of Prostacyclin on Right Ventricular Contractility and Pulmonary Artery Coupling. *Am J Respir Crit Care Med*. 2023;207(8):1100-1102.
19. Pederson WP, Ellerman LM, Jin Y, Gu H, Ledford JG. Metabolomic Profiling in Mouse Model of Menopause-Associated Asthma. *Metabolites*. 2023;13(4).
20. Mashaqi S, Rangan P, Saleh AA, et al. Biomarkers of gut barrier dysfunction in obstructive sleep apnea: A systematic review and meta-analysis. *Sleep Med Rev*. 2023;69:101774.
21. Mosier JM. Individualized Treatment Effects: Machine Learning Can Revolutionize Observations, but Let's Understand What We Are Observing. *Am J Respir Crit Care Med*. 2023;207(12):1550-1551.
22. Thaweethai T, Jolley SE, Karlson EW, et al. Development of a Definition of Postacute Sequelae of SARS-CoV-2 Infection. *JAMA*. 2023.
23. Essay PT, Mosier JM, Nayebi A, Fisher JM, Subbian V. Predicting Failure of Noninvasive Respiratory Support Using Deep Recurrent Learning. *Respir Care*. 2023;68(4):488-496.
24. Mosier JM, Sammani S, Kempf C, Unger E, Garcia JGN. The impact of intravenous dodecafluoropentane on a murine model of acute lung injury. *Intensive Care Med Exp*. 2023;11(1):33.
25. Brown SM, Barkauskas CE, Grund B, et al. Intravenous aviptadil and remdesivir for treatment of COVID-19-associated hypoxaemic respiratory failure in the USA (TESICO): a randomised, placebo-controlled trial. *Lancet Respir Med*. 2023.
26. Perumal R, Shunmugam L, Naidoo K, et al. Long COVID: a review and proposed visualization of the complexity of long COVID. *Front Immunol*. 2023;14:1117464.
27. Patel SI, Zareba W, Wendel C, et al. A QTc risk score in patients with obstructive sleep apnea. *Sleep Med*. 2023;103:159-164.
28. Ignacio M, Oesterle S, Mercado M, et al. Narratives from African American/Black, American Indian/Alaska Native, and Hispanic/Latinx community members in Arizona to enhance COVID-19 vaccine and vaccination uptake. *J Behav Med*. 2023;46(1-2):140-152.
29. Knauert MP, Ayas NT, Bosma KJ, et al. Causes, Consequences, and Treatments of Sleep and Circadian Disruption in the ICU: An Official American Thoracic Society Research Statement. *Am J Respir Crit Care Med*. 2023;207(7):e49-e68.
30. Horwitz LI, Thaweethai T, Brosnahan SB, et al. Researching COVID to Enhance Recovery (RECOVER) adult study protocol: Rationale, objectives, and design. *PLoS One*. 2023;18(6):e0286297.
31. Zitting KM, Lockyer BJ, Azarbarzin A, et al. Association of cortical arousals with sleep-disordered breathing events. *J Clin Sleep Med*. 2023;19(5):899-912.
32. Sharma S, Stansbury R, Badami V, Rojas E, Quan SF. Inpatient CPAP adherence may predict post-discharge adherence in hospitalized patients screened high risk for OSA. *Sleep Breath*. 2023;27(2):591-597.
33. Robbins R, Epstein LJ, Pavlova M, et al. Quantifying the impact of the Philips recall on patients with sleep apnea and clinicians. *J Clin Sleep Med*. 2023.
34. Huo J, Quan SF, Roveda J, Li A. BASH-GN: a new machine learning-derived questionnaire for screening obstructive sleep apnea. *Sleep Breath*. 2023;27(2):449-457.
35. Batoool-Anwar S, Robbins R, Ali SH, et al. Examining Changes in Sleep Duration Associated with the Onset of the COVID-19 Pandemic: Who is Sleeping and Who is Not? *Behav Med*. 2023;49(2):162-171.
36. Quan SF, Landrigan CP, Barger LK, et al. Impact of sleep deficiency on surgical performance: a prospective assessment. *J Clin Sleep Med*. 2023;19(4):673-683.
37. Huo J, Quan SF, Roveda J, Li A. Coupling analysis of heart rate variability and cortical arousal using a deep learning algorithm. *PLoS One*. 2023;18(4):e0284167.
38. Quan SF, Weaver MD, Czeisler M, et al. Insomnia, Poor Sleep Quality, and Sleep Duration and Risk for COVID-19 Infection and Hospitalization. *Am J Med*. 2023.
39. Robbins R, Epstein LJ, Iyer JM, et al. Examining understandability, information quality, and presence of misinformation in popular YouTube videos on sleep compared to expert-led videos. *J Clin Sleep Med*. 2023;19(5):991-994.
40. Martens P, Yu S, Larive B, et al. Iron deficiency in pulmonary vascular disease: pathophysiological and clinical implications. *Eur Heart J*. 2023;44(22):1979-1991.
41. Hansen L, Brewer J. Mental Health and PH: APRNs and RNs Having a Positive Effect. *Advances in Pulmonary Hypertension*. 22(2): doi:<https://doi.org/10.21693/1933-088X-22.2.1> (pending publication in 2023).