

Frank J. Jacono, III, M.D.

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Education

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| August 1990 – May 1994 | Bachelor of Science , Major: Physics, Summa cum laude Case Western Reserve University, Cleveland, Ohio |
| August 1994 – May 1998 | Doctor of Medicine Washington University School of Medicine, St. Louis, Missouri |

Medical Training

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| July 1998 – June 1999 | Internship, Department of Medicine University Hospitals of Cleveland, CWRU, Cleveland, Ohio |
| July 1999 – June 2001 | Residency, Department of Medicine University Hospitals of Cleveland, CWRU, Cleveland, Ohio |
| July 2001 – June 2004 | Fellowship, Pulmonary and Critical Care Medicine University Hospitals of Cleveland, CWRU, Cleveland, Ohio |

Academic Appointments

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| July 2004 – June 2005 | Clinical Instructor, Department of Medicine Division of Pulmonary & CC Medicine, CWRU SOM, Cleveland, Ohio |
| July 2005 – June 2006 | Instructor, Department of Medicine Division of Pulmonary & CC Medicine, CWRU SOM, Cleveland, Ohio |
| July 2006 – June 2014 | Assistant Professor, Department of Medicine Div. of Pulmonary, CC & Sleep Medicine, CWRU SOM, Cleveland, Ohio |
| July 2014 – <i>current</i> | Associate Professor, Department of Medicine, with tenure Div. of Pulmonary, CC & Sleep Medicine, CWRU SOM, Cleveland, Ohio |

Hospital and Administrative Appointments

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|-----------------------|--|
| 2004 – <i>current</i> | Staff Physician Louis Stokes Cleveland Dept. of Veterans Affairs Medical Center |
| 2005 – <i>current</i> | Full Time Medical Staff Appointment Dept. of Medicine, UHCMC, Pulmonary, Critical Care & Sleep Medicine |
| 2005 – 2010 | Medical Director, Pulmonary Fellows' Outpatient Clinic Louis Stokes Cleveland Dept. of Veterans Affairs Medical Center |
| 2005 – 2010 | Director, Perioperative Medicine and Pain, Advanced Core Case School of Medicine Curriculum |
| 2005 – <i>current</i> | Medical Director, Respiratory Therapy Department Louis Stokes Cleveland Dept. of Veterans Affairs Medical Center |
| 2007 – <i>current</i> | Medical Chairperson, Resuscitation Committee Louis Stokes Cleveland Dept. of Veterans Affairs Medical Center |
| 2010 – <i>current</i> | Section Chief, Pulmonary & Critical Care Medicine Louis Stokes Cleveland Dept. of Veterans Affairs Medical Center |
| 2011 – <i>current</i> | Chairperson, Critical Care Council Louis Stokes Cleveland Dept. of Veterans Affairs Medical Center |

Honors and Awards

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| 1990-1994 | Presidential Scholarship; Outstanding Sophomore of the Year Award; Chandrasekhar Prize for Physics; Summa Cum Laude; NCAC All-Conference Athlete, Track & Field |
| 1993 | Phi Beta Kappa |
| 1994-1998 | Distinguished Alumni Scholarship - Full-tuition, merit-based, competitively awarded |
| 2001 | The Normal Gordon Award for Humanism in Medicine |
| 2002 | NIH Research Trainee Award |
| 2003 | Chief Fellow, Pulmonary and Critical Care Medicine, UHC |
| 2004 | American Heart Association Post-doctoral Fellowship Award |
| 2006 | VA Advance Research Career Development Award |
| 2009 | Finalist (1 of 8) for the 2009 John S. Diekhoff Graduate Student Mentoring Award |
| 2010 | Finalist (1 of 4) for Teacher of the Year as voted on by medical residents |
| 2011 | ATS SRN Assembly Travel Award to Matt Knoch (research mentee) |
| 2013 | ATS SRN Assembly Abstract Scholarship to Yee-Hsee Hsieh (research mentee) |
| 2013 | Department of Medicine Inpatient Clinical Teacher of the Year Award |
| 2015 | Award of Tenure in the School of Medicine of Case Western Reserve University |
| 2016 | Detecting Delirium in the Critically Ill Adult: VA I-CARE Project Awardee |
| 2016 | Pulmonary & Critical Care Medicine, Attending of the Year Award, Inaugural Awardee |
| 2018 | Wings of Excellence Award, Cleveland Federal Executive Board |

Certification and Licensure

Diplomate, American Board of Internal Medicine, Internal Medicine, 2001
Diplomate, American Board of Internal Medicine, Pulmonary Medicine, 2003, 2013
Diplomate, American Board of Internal Medicine, Critical Care Medicine, 2004, 2014
State Medical Board of Ohio, License Number 35.085060
DEA Number, Available on request
Advanced Cardiac Life Support Provider, Renewed June 2018
Basic Life Support Provider, Renewed June 2018

Professional Service

Professional Societies

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|-----------------------|--|
| 2001 – <i>current</i> | American Thoracic Society, Member Program Committee, 2010 – 2013; 2015 – 2017 Assembly on Sleep and Respiratory Neurobiology |
| 2010 – <i>current</i> | Society for Complex Acute Illness (scai-med.org), member <i>Elected</i> to the Board, 2012 - <i>current</i> |
| 2011 – 2014 | Society for Simulation in Healthcare, Member |

National/International Contributions

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| 2008 | Facilitator, thematic poster session: Control of Breathing and Ventilation American Thoracic Society 2008 International Conference, San Francisco, USA |
| 2011 | Facilitator, thematic poster session: Control of Breathing and Respiratory Muscles American Thoracic Society 2011 International Conference, Denver, CO, USA |
| 2012 | Co-chair, Featured Topic Session: <i>Respiratory Pattern Variability: Insights into Respiratory Control Mechanisms in Health and Disease</i> Experimental Biology 2012 Meeting, San Diego, CA, USA |

Professional Service (continued)

National/International Contributions (continued)

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| 2012 | Facilitator, Session: <i>Sleep Disordered Breathing: Pathophysiology</i> American Thoracic Society 2012 International Conf., San Francisco, CA, USA |
| 2012 | Facilitator, Scientific Poster Sessions International Conference on Complexity and Acute Illness 2012, Ottawa, Ontario, Canada. |
| 2013 | Abstract Review Committee International Conference on Complex Acute Illness (ICCAI), Budapest, Hungary |
| 2014 | Lead Facilitator, Session: <i>Upper Airway and Respiratory Control During Sleep</i> American Thoracic Society 2014 International Conference, San Diego, CA, USA |
| 2014 – 2015 | Scientist Reviewer, Department of Defense, U.S. Army Medical Research and Materiel Command, Congressionally Directed Medical Research Programs (CDMRP), FY 2014 Peer Reviewed Medical Research Program (PRMRP) |
| 2015 – 2016 | Scientist Reviewer, Department of Defense, U.S. Army Medical Research and Materiel Command, Congressionally Directed Medical Research Programs (CDMRP), FY 2015 Gulf War Illness Research Program (GWIRP) |
| 2016 – <i>current</i> | Scientist Reviewer, National Institutes of Health (NIH), Stimulating Peripheral Activity to Relieve Conditions (SPARC) Program, OT2 Study Section |
| 2016 | Co-chair, ATS SRN Mini-symposia: <i>From Genes to Motor Neurons: Advances in Control of Breathing</i> American Thoracic Society 2016 International Conf., San Francisco, CA, USA |
| 2016 – <i>current</i> | Program Consultant, National Institutes of Health (NIH), Stimulating Peripheral Activity to Relieve Conditions (SPARC) Program |
| 2017 | Co-chair, Poster Discussion Session: <i>Updates in Control of Breathing</i> American Thoracic Society 2017 International Conf., Washington DC, USA |
| 2018 | Scientist Reviewer, National Institutes of Health (NIH), Respiratory Integrative Biology and Translational Research (RIBT) Study Section |
| <i>Ad hoc</i> reviewer | Journal of Applied Physiology, Experimental Physiology, Sleep and Breathing, Comparative Biochemistry & Physiology, Brain Research Bulletin, Anesthesia & Analgesia, Respiratory Physiology & Neurobiology, Journal of Critical Care |

Regional Contributions

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| 2004 – 2014 | Cleveland Association of Phi Beta Kappa, Board of Trustees |
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Local Case Western Reserve University Campus Contributions

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|-----------------------|---|
| 2003 | Internal Review of Psychiatry Program: Graduate Medical Education Committee |
| 2004 – 2005 | Anti-IgE Therapy in Asthma: Recommendations for Use Committee |
| 2004 – <i>current</i> | Division of Pulmonary/CCM Fellowship Selection Committee |
| 2004 – 2009 | DOM Yearly Resident Board Review Course; Moderator: Pulmonary Section |
| 2005 – 2006 | Case SOM Year 2 Curriculum – Homeostasis II: Lecturer & Small Group Leader |
| 2005 – 2015 | UHCMC MICU Quality Assurance and Education Improvement Committee |
| 2005 – 2007 | UHCMC MICU Evidenced-Based Medicine Algorithm Implementation Team |
| 2005 – 2013 | Division of Pulmonary/CCM Research Conference: Co-Director |
| 2005 & 2010 | Case SOM Year 1 Curriculum: Pulmonary Physical Examination: Preceptor |

Professional Service (continued)

Local Case Western Reserve University Campus Contributions (continued)

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|-----------------------------|---|
| 2005 – 2015 | Department of Medicine Intern Selection Committee |
| 2005 – <i>current</i> | Louis Stokes Cleveland DVAMC CPR Committee |
| 2005 – 2010 | Case SOM, Curriculum Director, Perioperative Medicine & Pain Advanced Core |
| March 2006 | PHYS 500 Translational Cell Physiology: Pathophysiology of breathing disorders |
| August 2006 | Dept. of Medicine Resident Procedure Training: Design Team and Instructor |
| 2006 – <i>current</i> | Case SOM Year 3 Block I: Asthma, COPD, PFTs (8 lectures, ~50 students/year) |
| 2007 – <i>current</i> | Case School of Medicine (SOM) Year 1 Clinical Immersion Group Leader – Asthma, COPD & ARDS – 12 hours/year |
| 2008 – <i>current</i> | Case Critical Care Bioinformatics Working Group |
| 2009 – <i>current</i> | Cleveland VA MICU Quality Improvement (QI) Subcommittee |
| 2009 – 2012 | Cleveland VA Home Ventilator Oversight Committee |
| 2010; 2015 – <i>current</i> | Department of Medicine Yearly Research Day – Judge for Trainee Posters |
| 2010 – 2011 | Cleveland VAMC Chief of Medicine Search Committee |
| 2011 – 2015 | CTSC Grant Review Committee |
| 2012 – 2013 | Cleveland VAMC Chief of Surgery Search Committee |
| 2013 – 2017 | Research ShowCase Judge |
| 2013 – <i>current</i> | Cleveland VA MICU Peer Review Committee |
| 2013 – <i>current</i> | Cleveland VA MICU Comprehensive Cancer Committee |
| 2015 – <i>current</i> | Department of Medicine Leadership Council |
| 2015 – <i>current</i> | Louis Stokes Cleveland DVAMC Simulation Steering Committee |
| 2016 – <i>current</i> | DOM Cross-Disciplinary Mentoring Program for Junior Faculty; Coach/Mentor |
| 2016 – <i>current</i> | DOM Career Development Intern Coaching Program; Coach/Mentor |
| 2016 – <i>current</i> | Department of Medicine Chief of Rheumatology Search Committee |
| 2017 | To Tenure & Beyond: Building an International Career; Invited Panelist |
| 2017 – <i>current</i> | Medical Monitoring Committee, Advanced Platform Technology (APT) Center |

Grant Support & Funded Research

Active/Awarded:

- 4/1/18 – 3/31/22 VA Research Service: BLR&D Merit Review Award (I01BX004197) (Jacono)
Early Diagnosis and Novel Treatment of Sepsis
Direct: \$641,000 **PI: F. Jacono** (35% effort)
- 9/23/17 – 5/31/21 NIH U01EB021960-01A1 (Dick)
Modeling Brainstem Inflammation's Role in Systemic Dysfunction during Sepsis
Direct: \$1,808,712 PI: T. Dick. **Co-I: F. Jacono** (10% effort)
- 10/1/18 – 9/30/20 DoD CDMRP Lung Cancer Research Program (LCRP) LC170290 (Madabhushi)
Novel CT-Derived Radiomic Biomarkers for Lung Nodule Characterization in the
Screening Population
Direct: \$608,000 PI: A. Madabhushi. **Co-PI: F. Jacono** (10% effort)
- 7/1/17 – 6/30/19 CF Foundation (Darrah)
Application of GWAS results for therapeutic benefit in CF lung disease
Direct: \$124,459 PI: R. Darrah. **Co-I: F. Jacono** (10% effort)
- 8/01/15 – 8/19/18 DoD CDMRP DoD CDMRP Spinal Cord Injury Research Program (SCIRP)
SC140243 (Alilain)
Improving Survival and Promoting Respiratory Motor Function after Cervical
Spinal Cord Injury
Direct: \$557,788 PI: W. Alilain. **Co-PI: F. Jacono** (10% effort)
- 5/1/16 – current A Phase 1/2 Study to Assess the Safety and Efficacy of MultiStem® Therapy in
Subjects with Acute Respiratory Distress Syndrome (NCT02611609)
Multi-Center Trial, Sponsor: Athersys B04-01
UHCMC Site PI: F. Jacono
- 9/30/1999 – 6/30/21 NHLBI Training Grant (5 T32 HL007913-10) (Strohl)
Sleep Medicine Neurobiology and Epidemiology
PI: K.P. Strohl. **Program Faculty Trainer: F. Jacono** (2005-current)

Pending:

- 1/1/19 – 12/31/22 VA Research Service: BLR&D Merit Review Award (I01BX004121-01A2)
(Madabhushi)
Lung imaging based Risk Score (LunIRIS): Decision support tool screening CT
Direct: \$1,050,908 PI: A. Madabhushi. **Co-I: F. Jacono** (25% effort)
Impact Score: 183 Percentile: 12.9

Past/Completed:

- 4/1/15 – 3/31/18 NIH R R21OD018297 (Alilain)
Restoring Respiratory Motor Function with Cell Therapy after Cervical
Spinal Cord Injury
Direct: \$275,000 PI: W. Alilain. **Co-I: F. Jacono** (5% effort)
- 4/1/17 – 3/31/18 KBR Wyle Science, Technology & Engineering (U.S. Air Force) (Decker)
Hyperoxia: An Unrecognized Mechanism for Inducing “Hypoxia-Like” Symptoms
Direct: \$248,083 PI: M. Decker. **Co-I: F. Jacono** (5% effort)

Grant Support & Funded Research (continued)

Past/Completed (continued):

- 3/01/14 – 2/28/18 HUD HHTS-12 (Dearborn)
Residential Air Quality and Chronic Obstructive Pulmonary Disease (COPD)
Direct: \$749,952 PI: D. Dearborn. **Co-I: F. Jacono** (5% effort)
- 11/1/15 – 10/31/17 CF Foundation DARRAH15XX0 (Darrah)
Determining the timing and amount of CFTR repair for pulmonary improvement
Direct: \$250,000 PI: R. Darrah. **Co-I: F. Jacono** (5% effort)
- 10/01/14 – 9/30/17 DoD CDMRP Lung Cancer Research Program (LCRP) LC130463 (Madabhushi)
Computer-Extracted CT Features for Distinguishing Suspicious Lung Lesions
with No, Minimal, and Significant Invasion
Direct: \$534,000 PI: A. Madabhushi. **Co-I: F. Jacono** (5% effort)
- 2/1/17 – 9/30/17 VA Innovators Network Accelerator Program (Jacono)
Measuring blood pressure in the home environment
Direct: \$10,000 **PI: F. Jacono** (5% effort)
- 2/1/17 – 9/30/17 VA Innovators Network Accelerator Program (Jacono)
Fall Sensor
Direct: \$10,000 **PI: F. Jacono** (5% effort)
- 7/1/15 – 6/30/17 CF Foundation (Project within DRUMM15R0 (Drumm))
Research Development Program: Functional Consequences of Type-2
Angiotensin II Receptor Signaling on CF Lung Disease
Direct: \$160,000 **Sub-award PI: F. Jacono** (10% effort)
- 10/1/11 – 9/30/16 VA Research Service: BLR&D Merit Review Award (I01BX000873) (Jacono)
Prognostic & Therapeutic Implications of Breathing Patterns in ALI
Direct: \$650,000 **PI: F. Jacono** (40% effort)
- 2014 – 2016 Extend Steroid (use in severe) Community Acquired Pneumonia(e) (ESCAPE)
Department of Veterans Affairs CSP #574 (NCT01283009)
Cleveland VAMC Site Investigator: F. Jacono
- 6/1/15 – 5/31/16 CTSC Annual Pilot Grant (Jacono)
Developing Predictive Biomarkers by Modeling Inflammation-induced
Changes in Cardiorespiratory Variability Dynamics
Direct: \$46,213 **PI: F. Jacono** (5% effort)
- 9/01/11 – 8/31/14 NINDS 2-R01-NS-057398-05 (Katz)
Respiratory Circuit Dysfunction in Rett Syndrome
Direct: \$740,000 PI: D.M. Katz. **Co-PI: F. Jacono** (10% effort)
- 7/1/12 – 6/30/14 Draper Laboratory University R&D Project (Jacono & Loparo)
ICU Engineering Research Laboratory
Direct: \$96,000 **Co-PI: F. Jacono** (5% effort)
- 2011 – 2013 Weaning and Variability Evaluation (WAVE) (NCT01237886)
Multi-Center Trial, Coordinating Center: Ottawa Hospital Research Institute
Study PI: A.J. Seely **UHCMC Site PI: F. Jacono**

Grant Support & Funded Research (continued)

Past/Completed (continued):

- 4/1/10 – 3/31/13 NIH Feasibility II Pilot Project (Project within NIH P30 DK27651 (Konstan))
Respiratory Phenotyping of a Mouse Model of Cystic Fibrosis
Direct: \$130,000 **Pilot Project PI: F. Jacono**
- 2013 Statins for Acutely Injured Lungs From Sepsis (SAILS) (NCT00979121)
National Heart, Lung, and Blood Institute (NHLBI) ARDS Network
UHCMC Site Sub-Investigator: F. Jacono
- 9/15/08 – 5/31/11 NHLBI Exploratory Program in Systems Biology (R33 HL087377) (Dick)
Breathing Pattern Dysregulation in Cardiopulmonary Disease
Direct: \$611,854 PI: T.E. Dick. **Co-PI: F. Jacono** (10% effort)
- 9/15/08 – 5/31/11 NHLBI Exploratory Program in Systems Biology (R33 HL087340) (Strohl)
Breathing Stability: Linear and Non-Linear Features
Direct: \$593,194 PI: K.P. Strohl. **Co-PI: F. Jacono** (10% effort)
- 7/1/08 – 6/30/11 2008 Presidential Research Initiative (PRI) (Jacono)
Complex Systems Analysis of Breathing Patterns in Lung Injury:
Applications to Predict Outcomes and Limit Severity
Direct: \$75,000 **PI: F. Jacono**
- 7/1/08 – 6/30/11 2008 Presidential Research Initiative (PRI) (Jacono)
Complex Systems Analysis of Breathing Patterns in Lung Injury:
Applications to Predict Outcomes and Limit Severity
Direct: \$75,000 **PI: F. Jacono**
- 7/9/06 – 7/8/09 DVA Advance Research Career Development Award (Jacono)
Impact of Lung Injury on Control of Breathing: Role of the Carotid Body
Direct: \$537,600 **PI: F. Jacono**
- 7/1/04 – 6/30/06 American Heart Association 0425347B (Jacono)
Carotid Body Oxygen Sensing in an Experimental Model of Lung Injury
Direct: \$84,000 **PI: F. Jacono**
- 7/02 – 6/04 NHLBI Training Grant (T32 HL07887) (Prabhakar)
PI: N. Prabhakar; Role: Research Trainee (**F. Jacono**)

Peer-Reviewed Publications

1. Read, TE, **Jacono, FJ**, Prakash, C. Coloenteric fistula from chicken bone perforation of the sigmoid colon. *Surgery* 1999; 125(3): 354-6.
2. Prabhakar, NR, Peng, Y, **Jacono, FJ**, Kumar, GK, Dick, TE. Cardiovascular alterations by chronic intermittent hypoxia: Importance of carotid body chemoreflexes. *Clinical and Experimental Pharmacology and Physiology* 2005; May 32(5-6): 447-9.
3. Prabhakar, NR and **Jacono, FJ**. Cellular and Molecular Mechanisms Associated with Carotid Body Adaptations to Chronic Hypoxia. *High Altitude Medicine and Biology* 2005; Summer; 6(2):112-20.
4. **Jacono, FJ**, Peng, Y, Kumar, GK, Prabhakar, NR. Modulation of the hypoxic sensory response of the carotid body by 5-hydroxytryptamine: Role of the 5-HT₂ receptor. *Respiratory Physiology & Neurobiology* 2005; Feb 15;145(2-3):135-42.
5. Peng, Y, Yuan, G, **Jacono, FJ**, Kumar, GK, Prabhakar, NR. 5-HT evokes sensory long-term facilitation of rodent carotid body via activation of NADPH oxidase. *J Physiol.* 2006; Oct 1; 576(Pt 1):289-95.
6. **Jacono, FJ**, Peng, Y, Nethery, D, Faress, JA, Lee, Z, Kern, JA, Prabhakar, NR. Acute lung injury augments hypoxic ventilatory response in the absence of systemic hypoxemia. *J Appl Physiol.* 2006; Dec 101(6):1795-802.
7. Faress, JA, Nethery, D, Kern, E, Eisenberg, R, **Jacono, FJ**, Allen, C, Kern, JA. Inhibition of human epidermal growth factor receptor 2 (HER2) signaling decreases bleomycin-induced pulmonary fibrosis and improves survival in mice. *J Appl Physiol.* 2007; Dec 103(6):2077-83.
8. Pawar, A, Peng, Y, **Jacono, FJ**, Prabhakar, NR. Comparative analysis of neonatal and adult rat carotid body responses to chronic intermittent hypoxia. *J Appl Physiol.* 2008 May;104(5):1287-94.
9. Yamauchi, M, Hasan, O, Dostal, J, **Jacono, FJ**, Loparo, KA, Strohl, KP. Pharmacologic and Genetic Modification of Post-sigh Breathing Behavior and Spontaneous Pauses in the C57BL/6J (B6) Mouse. *Respir Physiol Neurobiol.* 2008 Jul 31;162(2):117-25.
10. Thaiyananthan, NN, **Jacono, FJ**, Patel, SR, Kern, JA, Stoller, JK. Right-to-Left Anatomic Shunt Associated with a Persistent Left Superior Vena Cava: The Importance of Injection Site in Demonstrating the Shunt. *Chest* 2009 Aug;136(2):617-20.
11. Ibrahim, LH, **Jacono, FJ**, Patel, SR, Thomas, RJ, Larkin, EK, Mietus, JE, Peng, C, Goldberger, AL, Redline, S. Heritability of Abnormalities in Cardiopulmonary Coupling in Sleep Apnea: Use of an Electrocardiogram-based Technique. *SLEEP* 2010; 33(5):643-646.
12. Koo, B, Strohl, KP, Gillombardo, CB, **Jacono, FJ**. Ventilatory Patterning in a Mouse Model of Stroke. *Respir Physiol Neurobiol.* 2010 Jul 31;172(3):129-35.
13. **Jacono, FJ**, De Georgia, MA, Wilson, CG, Dick, TE, Loparo, KA. Data Acquisition and Complex Systems Analysis in Critical Care: Developing the Intensive Care Unit of the Future. *Journal of Healthcare Engineering* 2010; September; 1(3): 337-356. doi: 10.1260/2040-2295.1.3.337.
14. Yamauchi, M, Tamaki, S, Yoshikawa, M, Ohnishi, Y, Nakano, H, **Jacono, FJ**, Strohl, KP, Loparo, KA, Kimura, H. Differences in Breathing Patterning during Wakefulness in Patients with Mixed-Apnea Dominant vs. Obstructive-Dominant Sleep Apnea. *Chest* 2011; Jul;140(1):54-61. Epub 2011 Mar 10.
15. Dhingra, RR, **Jacono, FJ**, Fishman, M, Loparo, KA, Rybak, IA, Dick TE. Vagal-Dependent Respiratory Variability in the Anesthetized Spontaneously Breathing Rat. *J Appl Physiol* 2011; Jul;111(1):272-84. Epub 2011 Apr 28.

Peer-Reviewed Publications (continued)

16. **Jacono, FJ**, Mayer, CA, Hsieh, Y, Wilson, CG, Dick, TE. Lung and brainstem cytokine levels are associated with breathing pattern changes in early acute lung injury. *Respir Physiol Neurobiol* 2011 Sept 30; 178(3):429-438. Invited contribution to Special Issue on “Inflammation and Cardiorespiratory Control.” Epub 2011 May 13, doi:10.1016/j.resp.2011.04.022.
17. Friedman, L, Dick, TE, **Jacono, FJ**, Loparo, KA, Yeganeh, A, Fishman, M, Wilson, CG, Strohl, KP. Cardio-ventilatory coupling in young healthy resting subjects. *J Appl Physiol*. 2012 Apr;112(8):1248-57. Epub 2012 Jan 19.
18. Fishman, M, **Jacono, FJ**, Park, S, Jamasebi, R, Thungtong, A, Loparo, KA, Dick, TE. A method for analyzing temporal patterns of variability of a time series from Poincaré plots. *J Appl Physiol*. 2012 Jul; 113(2): 297-306. Epub 2012 May 3, doi:10.1152/jappphysiol.01377.2010.
19. Dick TE, Molkov YI, Nieman G Hsieh Y-H, **Jacono FJ**, Doyle J, Scheff JD, Calvano SE, Androulakis IP, An G and Vodovotz Y. Linking inflammation, cardiorespiratory variability, and neural control in acute inflammation via computational modeling. *Front. Physio*. 2012; 3:222. doi: 10.3389/fphys.2012.00222.
20. Bou Serhal, CE, **Jacono, FJ**, van Lunteren, E, Strohl, KP. Constant Daily Hypoxia Leads to Different Degrees of Pulmonary Hypertension in Two Different Rat Strains. *Open Journal of Molecular and Integrative Physiology* 2012; 2: 87-92. doi:10.4236/ojmip.2012.23012 Published Online 8/2012.
21. Yamauchi, M, **Jacono, FJ**, Fujita, Y, Yoshikawa, M, Ohnishi, Y, Nakano, H, Campanaro, CK, Loparo, KA, Strohl, KP, Kimura, H. Breathing Irregularity During Wakefulness Associates with CPAP Acceptance Sleep Apnea. *Sleep and Breathing* 2012 Oct 19. [Epub ahead of print].
22. Loria, CJ, Stevens, AM, Crummy, E, Casadesus, G, **Jacono, FJ**, Dick, TE, Siegel, RE. Respiratory and behavioral dysfunction following loss of the GABAA receptor $\alpha 4$ subunit. *Brain and Behavior*. 2013 Mar; 3(2):104-13.
23. Zhu, Y, Hsieh, Y-H, Dhingra, RR, Dick, TE, **Jacono, FJ**, Galán, RF. Quantifying interactions between real oscillators with information theory and phase models: Application to cardiorespiratory coupling. *Phys Rev E Stat Nonlin Soft Matter Phys*. 2013 Feb; 87(2):022709.
24. Darrah, B, Bederman, I, Mitchell, A, Hodges, C, Campanaro, C, Drumm, M, **Jacono, FJ**. Ventilatory Pattern and Energy Expenditure are Altered in Cystic Fibrosis Mice. *Journal of Cystic Fibrosis* 2013 Jan 3. <http://dx.doi.org/10.1016/j.jcf.2012.11.008> [Epub ahead of print].
25. Dhingra, RR, Zhu, Y, **Jacono, FJ**, Katz, DM, Galan, RF, Dick, TE. Decreased Hering-Breuer input-output entrainment in a mouse model of Rett syndrome. *Frontiers in Neural Circuits* 2013 2013; 7:42. doi: 10.3389/fncir.2013.00042.
26. Chung, A, Fishman, M, Dasenbrook, EC, Loparo, KA, Dick, TE, **Jacono, FJ**. Isoflurane and Ketamine Anesthesia have Different Effects on Breathing Pattern Variability in Rats. *Respiratory Physiology & Neurobiology* 2013 Feb 1;185(3):659-64. doi:10.1016/j.resp.2012.12.001.
27. Park, S, Kaffashi, F, Loparo, KA, **Jacono, FJ**. The Use of Heart Rate Variability for the Early Detection of Treatable Complications After Subarachnoid Hemorrhage. *J Clin Monit Comput*. 2013 Aug;27(4):385-93. doi: 10.1007/s10877-013-9467-0. Epub 2013 Apr 25.
28. Yamauchi, M, **Jacono, FJ**, Fujita, Y, Kumamoto, M, Yoshikawa, M, Campanaro, CK, Loparo, KA, Strohl, KP, Kimura, H. Effects of environmental light during sleep on autonomic functions of heart rate and breathing. *Sleep Breath*. 2014 Feb 13.

Peer-Reviewed Publications (continued)

29. Seely, AJE, Bravi, A, Herry, C, Green, G, Longtin, A, Ramsay, T, Fergusson, D, McIntyre, L, Kubelik, D, Fazekas, A, Maziak, DE, Fergusson, N, Brown, S, Mehta, S, Martin, C, Rubenfeld, G, **Jacono, FJ**, Clifford, G, Marshall, J, and the WAVE Investigators for the Canadian Critical Care Trials Group. Do Heart and Respiratory Rate Variability Improve Prediction of Extubation Outcomes in a General ICU Population? *Crit Care*. 2014 Apr 8;18(2):R65.
30. Hsieh, YH, **Jacono, FJ**, Siegel, RE, Dick, TE. Respiratory modulation of sympathetic activity is attenuated in adult rats conditioned with chronic hypobaric hypoxia. *Respir Physiol Neurobiol*. 2015 Jan 15;206:53-60.
31. Godard S, Herry C, Westergaard P, Scales N, Brown S, Burns K, Mehta S, **Jacono, FJ**, Kubelik D, Maziak DE, Marshall J, Martin C, Seely A. Practice Variation in spontaneous breathing trial performance and documentation. *Can Respir J*. 2015 Nov 17. pii: 17147.
32. Attaway AH, **Jacono, FJ**, Gilkeson R, Faress JA. Subacute Invasive Pulmonary Aspergillosis Associated with Ankylosing Spondylitis. *Am J Respir Crit Care Med*. 2016 Mar 1;193(5):572-3.
33. Darrah RJ, Mitchell AL, Campanaro CK, Barbato ES, Litman P, Sattar A, Hodges CA, Drumm ML, **Jacono, FJ**. Early pulmonary disease manifestations in cystic fibrosis mice. *J Cyst Fibros*. 2016 May 23. pii: S1569-1993(16)30051-0. doi: 10.1016/j.jcf.2016.05.002.
34. Attaway AH, **Jacono, FJ**, Faress JA. Reply: Pulmonary Aspergillosis in Ankylosing Spondylitis. *Am J Respir Crit Care Med*. 2016 Nov 15;194(10):1304.
35. Godard S, Herry C, Westergaard P, Scales N, Brown S, Burns K, Mehta S, **Jacono, FJ**, Kubelik D, Maziak DE, Marshall J, Martin C, Seely A. Practice Variation in spontaneous breathing trial performance and reporting. *Can Respir J*. 2016; 2016:9848942. doi: 10.1155/2016/9848942.
36. Alilou, M, Beig, N, Orooji, M, Rajiah, P, Velcheti, V, Rakshit, S, Reddy, N, Yang, M, **Jacono, FJ**, Gilkeson, R, Linden, P, Madabhushi, A. An integrated segmentation and shape based classification scheme for distinguishing adenocarcinomas from granulomas on lung CT. *Medical Physics* 2017 Jul;44(7):3556-3569. doi: 10.1002/mp.12208. Epub 2017 May 23.
37. Ruso, M, Rajiah, P, Gilkeson, R, Yang, M, Donatelli, C, Thawani, R, **Jacono, FJ**, Linden, P, Madabhushi, A. Co-registration of pre-operative CT with ex vivo surgically excised ground glass nodules to define spatial extent of invasive adenocarcinoma on in vivo imaging: proof-of-concept study. *European Radiology* 2017 Oct;27(10):4209-4217. doi: 10.1007/s00330-017-4813-0. Epub 2017 Apr 6.
38. Vandendriessche, B, Abas, M, Dick, TE, Loparo, KA, **Jacono, FJ**. A Framework for Patient State Tracking by Classifying Multiscalar Physiologic Waveform Features. *IEEE Transactions on Biomedical Engineering* 2017 Dec;64(12):2890-2900. doi: 10.1109/TBME.2017.2684244. Epub 2017 Mar 17.
39. Litvin DG, Dick TE, Smith CB, **Jacono, FJ**. Lung-injury depresses glutamatergic synaptic transmission in the nucleus tractus solitarii via discrete age-dependent mechanisms in neonatal rats. *Brain Behav Immun*. 2018 May;70:398-422. doi: 10.1016/j.bbi.2018.03.031. Epub 2018 Mar 28.
40. Warren PM, Campanaro C, **Jacono FJ**, Alilain WJ. Mid-cervical spinal cord contusion causes robust deficits in respiratory parameters and pattern variability. *Experimental Neurology*. 2018 Aug;306:122-131. doi: 10.1016/j.expneurol.2018.04.005. Epub 2018 Apr 10.
41. Orooji M, Alilou M, Rakshit S, Beig N, Khorrami MH, Rajiah P, Thawani R, Ginsberg J, Donatelli C, Yang M, **Jacono, FJ**, Gilkeson R, Velcheti V, Linden P, Madabhushi A. Combination of computer extracted shape and texture features enables discrimination of granulomas from adenocarcinoma on chest computed tomography. *Journal Medical Imaging (Bellingham)*. 2018 Apr;5(2):024501.

42. Darrah RJ*, **Jacono FJ***, Joshi N, Mitchell AL, Sattar A, Campanaro CK, Litman P, Frey J, Nethery DE, Barbato ES, Hodges CA, Corvol H, Cutting GR, Knowles MR, Strug LJ, Drumm ML. AGTR2 absence or antagonism prevents cystic fibrosis pulmonary manifestations. *Journal Cystic Fibrosis* 2018 Jun 21. pii: S1569-1993(18)30618-0. doi: 10.1016/j.jcf.2018.05.013.
43. Thungtung, A, Knoch, MF, **Jacono FJ**, Dick, TE, Loparo, KA. Periodicity: A Characteristic of Heart Rate Variability Modified by the Type of Mechanical Ventilation after Acute Lung Injury. *Frontiers in Physiology* (accepted, in press).

Invited Works

1. **Jacono, FJ** and Dick, TE. Variability, Measuring the Spice of Life. *J Appl Physiol* 2011; Aug; 111(2):351-352. Epub 2011 Jun 30. doi: 10.1152/jappphysiol.00786.2011. [Invited Editorial]
2. **Jacono, FJ**, De Georgia, MA, Wilson, CG, Dick, TE, Loparo, KA. Data Acquisition and Complex Systems Analysis in Critical Care: Developing the Intensive Care Unit of the Future. In: Chyu, M (ed). *Advances in Critical Care Engineering*. Multi-Science Publishing Co., Brentwood, 2011, pp 205-224 (ISBN 978-1-907132-28-5). [Book Chapter]
3. Namas, R, Zamora, R, Namas, R, Ghuma, A, An, G, Doyle, J, Dick, TE, **Jacono, FJ**, Androulakis, IP, Chang, S, Billiar, TR, Angus, DC, Vodovotz, Y. Sepsis: Something Old, Something New, and a Systems View. *J Crit Care*. 2012 Jun;27(3):314.e1-314.e11. [Invited Review]
4. Dick, TE, Dhingra, RR, Hesih, Y-H, Fishman, M, Kaffashi, F, Loparo, KA, Wilson, CG, **Jacono, FJ**. Analysis of Ventilatory Pattern Variability. In: An, G and Vodovotz, Y (eds.). *Complex Systems and Computational Biology Approaches to Acute Inflammation*. Springer Science, Inc., New York, 2013. [Invited Book Chapter]
5. **Jacono, FJ**, Soler, X, Malhotra, A. Control of Ventilation. In: Grippi M, Elias J, Fishman J, et al. *Fishman's Pulmonary Diseases and Disorders, 5th ed*. New York: McGraw-Hill, in press.
6. **Jacono, FJ**. Control of Ventilation in COPD and Lung Injury. *Respir Physiol Neurobiol* Special Issue on "Inflammation and Cardiorespiratory Control." *Respir Physiol Neurobiol*. 2013 Jul 12. doi:pii: S1569-9048(13)00244-9. 10.1016/j.resp.2013.07.010. [Invited Review].
7. Dick TE, Molkov YI, Nieman G Hsieh Y-H, **Jacono FJ**, Doyle J, Scheff JD, Calvano SE, Androulakis IP, An G and Vodovotz Y. Linking inflammation, cardiorespiratory variability, and neural control in acute inflammation via computational modeling. In: Winslow, RJ, Larkin, J Qasba, P (eds.). *Systems Biology Approaches to Understanding the Cause and Treatment of Heart, Lung, Blood, and Sleep Disorders*. Frontiers E-books, Nov 21, 2014. [Book Chapter]
8. De Georgia, MA, Kaffashi, F, **Jacono FJ**, Loparo, KA. Information Technology in Critical Care: Review of Monitoring and Data Acquisition Systems for Patient Care and Research. *ScientificWorldJournal*. 2015; 2015:727694. [Review].

Submitted for Peer Review

1. Litvin DG, Denstaedt SJ, Smith CB, Dick TE, **Jacono, FJ**. Cyclooxygenases mediate immune-to-brain communication at the area postrema glial-barrier following sterile lung injury in adult rats. (Submitted, *Brain, Behavior and Immunity*).
2. Young BP, Fishman M, Loparo KA, Dick TE, **Jacono FJ**. Ventilatory Pattern Variability as a Biomarker for Severity of Acute Lung Injury in Rats. (Submitted, *Respir Physiol Neurobiol*).
3. Beig N, Khorrami MH, Alilou M, Prasanna P, Braman N, Orooji M, Rakshit S, Bera K, Rajiah P, Ginsberg J, Donatelli C, Thawani R, Yang M, **Jacono, FJ**, Tiwari P, Velcheti V, Gilkeson R, Linden P, Madabhushi A. A Combination of Intranodular and perinodular radiomic features on non-contrast lung CT distinguishes NSCLC adenocarcinoma from granulomas. (Submitted, *Radiology*).

Selected Abstracts (2003-2015)

1. Peng, Y, **Jacono, FJ**, Overholt, JL, Prabhakar, NR. Repetitive application of 5-HT induces LTF of carotid body sensory activity via PKC-dependant mechanisms. Abstract #3099. Experimental Biology Annual Meeting 2003, San Diego, California, USA.
2. **Jacono, FJ**, Peng, Y, Prabhakar, NR. Short term potentiation of carotid body sensory activity by 5-HT. Abstract #352088. ATS Annual Conference 2003, Seattle, Washington, USA.
3. **Jacono, FJ**, Nethery, D, Kern, JA, Prabhakar, NR. Enhanced hypoxic ventilatory response in a rat model of bleomycin-induced lung injury. Abstract #4445. American Thoracic Society Annual Conference 2004, Orlando, Florida, USA.
4. Peng, Y, Yuan, G, **Jacono, FJ**, Kumar, GK, Prabhakar, NR. Role of 5-HT in chronic intermittent hypoxia induced sensory long-term facilitation of the carotid body. Abstract #904.10. Experimental Biology Annual Meeting 2005, San Diego, California, USA.
5. **Jacono, FJ**, Peng, Y, Nethery, D, Kern, JA, Prabhakar, NR. Selective augmentation of the hypoxic ventilatory response in the early phase of lung injury. Abstract #904.7. Experimental Biology Annual Meeting 2005, San Diego, California, USA.
6. Minowada, G, **Jacono, FJ**. Loss of *spry2* protects against hyperoxia. Abstract #3718. American Thoracic Society Annual Conference 2005, San Diego, California, USA.
7. **Jacono, FJ**, Peng, Y, Prabhakar, NR. Early lung injury enhances hypoxic ventilatory response in the absence of arterial hypoxemia. Abstract #4517. American Thoracic Society Annual Conference 2005, San Diego, California, USA.
8. **Jacono, FJ**, Peng, Y, Nethery, D, Faress, J, Kern, JA, Prabhakar, NR. Hypoxic ventilatory response in early lung injury is augmented by oxygen-independent sensitization of the carotid body. Abstract #64. Central Society for Clinical Research Annual Meeting 2006, Chicago, Illinois, USA.
9. Faress, JA, Nethery, D, Kern, E, Eisenberg, R, **Jacono, FJ**, Kern, JA. HER2 blockade attenuates bleomycin induced lung injury. Abstract. ATS Annual Conference 2006, San Diego, California, USA.
10. **Jacono, FJ**, Nethery, D, Kern, JA, Prabhakar, NR. Cytokine Receptor Expression in the Rat Carotid Body. Abstract #3378. ATS Annual Conference 2006, San Diego, California, USA.
11. Kaffashi, F, Miller, C, Dick, TE, Strohl, KP, **Jacono, FJ**, Loparo, KA. A Novel Technique to Quantify Coupling between Time Series Data with Applications to the Detection of Coupling between Heart Rate and the Onsets of Inspiration and Expiration in Healthy Subjects. Abstract #13A. Biomedical Graduate Student Symposium 2007 Annual Meeting, Cleveland, OH, USA.
12. Palacios, MY, **Jacono, FJ**, Ceco, E, Fishman, M, Dick, TE. Nonlinear analysis of breathing patterns in development of acute and chronic lung injury. Case SOM Heart, Lung and Blood Summer Research Symposium 2007, Cleveland, OH, USA.
13. Ibrahim, L, Larkin, E, **Jacono, FJ**, Patel, S, Thomas, R, Mietusand, J, Goldberger, A, Redline, S. Heritability of novel measures of cardiopulmonary coupling as a measure of ventilatory patterns in sleep. Mini Symposium Presentation, ATS 2007 International Conference, San Francisco, CA, USA.
14. Bou Serhal, CE, van Lunteren, E, **Jacono, FJ**, Strohl, KP. Pulmonary hypertension in two strains of rats following daily hypoxia. Abstract #950701, American Thoracic Society 2007 International Conference, San Francisco, CA, USA.
15. Fishman, MB, **Jacono, FJ**, Loparo, KA, Dick, TE. Novel analysis applied to Poincaré plots to quantify pattern complexity and regularity. Abstract #918.27, Experimental Biology 2007 International Conference, Washington, D.C., USA.

Selected Abstracts (2003-2015) (continued)

16. **Jacono, FJ**, Fishman, M, Ceco, E, Loparo, KA, Dick, TE. Poincare plots applied to analysis of breathing pattern after lung injury. Abstract #918.28, Experimental Biology 2007 International Conference, Washington, D.C., USA. *FASEB J.* 2007 21:918.28.
17. **Jacono, FJ**, Fishman, M, Ceco, E, Loparo, KA, Dick, TE. Poincare plots applied to analysis of breathing pattern after lung injury. Abstract #918.28, Experimental Biology 2007 International Conference, Washington, D.C., USA. *FASEB J.* 2007 21:918.28.
18. **Jacono, FJ**, Kaffashi, F, Fishman, MB, Loparo, KA, Dick, TE. Breathing pattern complexity and regularity in lung injury. Abstract #955416, American Thoracic Society 2007 International Conference, San Francisco, CA, USA.
19. Fishman, M, Dutschmann, M, **Jacono, FJ**, Komendantov, AO, Loparo, KA, Rybak, IA, Wilson, CG, Dick, TE. Using a model of respiratory rhythm generation to suggest sources of breathing variability. Society for Neuroscience 2007 International Conference, San Diego, CA, USA.
20. Fishman, MB, Dhingra, RR, **Jacono, FJ**, Komendantov, AO, Loparo, KA, Dutschmann, M, Rybak, IA, Wilson, CG, Dick, TE. Analysis of Respiratory Pattern Variability in Animal Models of Diseases and using the Model of Respiratory Rhythm Generation for Suggesting the Possible Sources of Breathing Variability. Experimental Biology 2008 International Conference, San Diego, CA, USA.
21. Palacios, MY, **Jacono, FJ**, Ceco, E, Fishman, M, Loparo, KA, Dick, TE. Nonlinear analysis of breathing patterns in development of acute and chronic lung injury. Experimental Biology 2008 International Conference, San Diego, CA, USA. *FASEB J.* 2008 22:756.13.
22. Bou Serhal, CE, Strohl, KP, **Jacono, FJ**, van Lunteren, E. Gene Expression Profiling of Right Ventricles in Hypoxia Exposed Sprague Dawley and Brown Norway Strains of Rats. American Thoracic Society 2008 International Conference, Toronto, Canada, *Am. J. Resp. Crit. Care Med.*, Apr 2008; 177.
23. Miller, CM, James, AS, Cruz-Sanchez, N, Kaffashi, F, Loparo, KA, Dick, TE, **Jacono, FJ**, Strohl, KP. Cardioventilatory Coupling in Healthy Subjects as Disclosed by Entropy Analysis is Increased by Mild Exercise and Unaffected by Vigilance Task. American Thoracic Society 2008 International Conference, Toronto, Canada, *Am. J. Respir. Crit. Care Med.*, Apr 2008; 177.
24. **Jacono, FJ**, Dhingra, RR, Fishman, M, Loparo, KA, Dick, TE. Impact of Vagotomy on Breathing Pattern in Early Lung Injury. Abstract #5274, American Thoracic Society 2008 International Conference, Toronto, Canada, *Am. J. Respir. Crit. Care Med.*, Apr 2008; 177.
25. Koo, BB, **Jacono, FJ**, Gillombardo, CB, Strohl, KP. Nonlinear Complexity of Breathing in a Mouse Model of Stroke and Cheyne-Stokes Respiration. Associated Professional Sleep Societies 2009 Annual Conference, Seattle, Washington, USA.
26. Bou Serhal, CE, **Jacono, FJ**, Strohl, KP, van Lunteren, E. Gene Expression Profiling of Right Ventricles in Hypoxia Exposed Sprague Dawley and Brown Norway Strains of Rats. Associated Professional Sleep Societies 2009 Annual Conference, Seattle, Washington, USA.
27. Young, BP, Balaji, R, Fishman, M, Dick, TE, **Jacono, FJ**. Impact of Early Lung Injury on a Global Index of Non-linear Breathing Pattern Variability. American Thoracic Society Annual Conference 2009, San Diego, California, USA, *Am. J. Respir. Crit. Care Med.*, Apr 2009; 179: A6333.
28. Gharibeh, T, **Jacono, FJ**, Hejal, R. A Case of Typical Endobronchial Carcinoid Tumor Treated with Flexible Bronchoscopic Therapy. American Thoracic Society Annual Conference 2010, New Orleans, Louisiana, USA, *Am. J. Respir. Crit. Care Med.*, May 2010; 181: A1581.

Selected Abstracts (2003-2015) (continued)

29. Young, BP, Campanaro, C, Balaji, R, Fishman, M, Dick, TE, **Jacono, FJ**. The Effect of Hypercarbia on Nonlinear Breathing Pattern Variability in Early Lung Injury. ATS Annual Conference 2010, New Orleans, Louisiana, USA, *Am. J. Respir. Crit. Care Med.*, May 2010; 181: A3714.
30. Chung, A, Young, BP, Fishman, M, Balaji, R, Loparo, KA, Dick, TE, **Jacono, FJ**. Impact of Sedation on Breathing Pattern Variability in Rats. American Thoracic Society Annual Conference 2010, New Orleans, Louisiana, USA, *Am. J. Respir. Crit. Care Med.*, May 2010; 181: A3712.
31. Dhingra, RR, Baekey, DM, Hsieh, Y, **Jacono, FJ**, Dick, TE. Blockade of dorsolateral pontine 5HT1A receptors destabilizes the respiratory rhythm in wild-type mice. Program No. 298.15. Society for Neuroscience 2010 International Conference, San Diego, CA, USA.
32. Knoch, MF, Balaji, R, Nethery, DE, Campanaro, C, Baekey, DM, Dick, TE, **Jacono, FJ**. Biologically Variable Ventilation Limits Acute Lung Injury Following Acid Aspiration in Rats. Abstract #15697, American Thoracic Society 2011 International Conference, Denver, CO, USA, *Am. J. Respir. Crit. Care Med.*, May 2011; 183(1): A5281.
33. Hsieh, Y, **Jacono, FJ**, Dick, TE. Cardio-respiratory Coupling is Negligible in a Rodent Septic-Model. Experimental Biology 2012 International Conference, San Diego, California, USA.
34. Xu, K, **Jacono, FJ**, Dick, TE. Ventilatory pattern variability is associated with long-term recovery following cardiac arrest and resuscitation in rats. Experimental Biology 2012, San Diego, CA, USA.
35. Campanaro, CK, Darrach, RJ, Dick, TE, Drumm, ML, **Jacono, FJ**. Cystic fibrosis mice display different breathing patterns than non-CF mice. Experimental Biology 2012 International Conference, San Diego, California, USA.
36. Zaylor, AR, Dick, TE, Hsieh, Y, **Jacono, FJ**. Changes in central respiratory patterns and activity following acute lung injury. Experimental Biology 2012 International Conference, San Diego, California, USA.
37. Knoch, MF, Thungtung, A, Loparo, KA, Dick, TE, **Jacono, FJ**. Comparison of the effect of Biologically Variable Ventilation (BVV) and Continuous Mechanical Ventilation (CMV) after lung injury on heart rate variability (HRV) in rats. American Thoracic Society 2012 International Conference, San Francisco, CA, USA.
38. The Use of Heart Rate Variability for the Early Detection of Treatable Complications After Subarachnoid Hemorrhage. Park, S, Kaffashi, F, Loparo, KA, **Jacono, FJ**. Neurocritical Care Society 2012 Annual Meeting, Denver, CO, USA.
39. Robilotto, T, **Jacono, FJ**. Interdisciplinary collaboration enhances learner experience during acute care simulation team training. International Mtg. on Simulation in Healthcare 2013, Orlando, FL, USA.
40. Xu, K, Kuang, Y, **Jacono, FJ**, Dick, TE, LaManna, JC. Acute Ventilatory Pattern Variability Predicts Long-term Survival following Cardiac Arrest and Resuscitation in Rats. Experimental Biology 2013 International Conference, Boston, MA, USA.
41. Hsieh, Y, Nethery, D, **Jacono, FJ**, Dick, TE. Central Expression of IL-1beta and Cardioventilatory Uncoupling in a Rodent Septic Model. Experimental Biology 2013 International Conference, Boston, MA, USA (Selected for oral presentation).
42. Getsy, P, Hsieh, Y, Litvin, D, Nethery, D, Wilson, CG, **Jacono, FJ**. Acute Lung Injury Alters Synaptic Drive to Nucleus Tractus Solitarius Neurons. Experimental Biology 2013, Boston, MA, USA.

Selected Abstracts (2003-2015) (continued)

43. Kayanja, H, Curry, A, Hejal, R, **Jacono, FJ**, Silver, RS, Dasenbrook, EC. COPD Outcomes Among Cleveland Veteran Administration Patients: A 13-Year Cohort Study. American Thoracic Society 2013 International Conference, Philadelphia, PA, USA.
44. Hsieh, Y, Zaylor, AR, Nethery, D, Dick, TE, **Jacono, FJ**. Acute Lung Injury Alters Central Respiratory Pattern and Activity Independent of Pulmonary Feedback. American Thoracic Society 2013 International Conference, Philadelphia, PA, USA (Selected for oral presentation).
45. Dick, TE, Hsieh, Y, Litvin, D, Nethery, D, Zhu, Y, Galan, RF, Getsy, P, Wilson, CG, Loparo, KA, **Jacono, FJ**. Development of brainstem inflammation correlates with uncoupling of the cardiorespiratory system in an endotoxemic rodent model. International Conference for Complex Acute Illness 2013, Budapest, Hungary (selected for oral presentation).
46. Litvin, D, Getsy, P, Hsieh, Y, Nethery, D, Wilson, CG, **Jacono, FJ**. Pro-inflammatory cytokine expression and acute neuronal injury in the nTS following bleomycin-induced lung-injury. Society for Neuroscience 2013 International Conference, San Diego, CA, USA.
46. Manochakian, R, Smith, J, Watts, B, Mervar, S, Whittlesey, **Jacono, FJ**, Jesberger, B, Ludin, A, Fox, D, Curry, S, Eiseman, M, Arfons, L. Improving Veteran Access to Lung Cancer Care (IVALuCancerCare) at the Louis Stokes Veteran Affairs Medical Center (LSVAMC). Association of VA Hematology/Oncology 2013 Annual Meeting, Atlanta, GA, USA.
47. Denstaedt, SJ, Litvin, D, Hsieh, Y, Nethery, D, Dick, TE, Wilson, CG, **Jacono, FJ**. Increased Brainstem Expression of IL-1 β Persists Seven Days after Lung Injury in Rats. American College of Chest Physicians 2013 International Conference, Chicago, IL, USA.
48. Hsieh, Y, Nethery, D, **Jacono, FJ**, Dick, TE. IL-1beta Microinjections into the nucleus Tractus Solitarius (nTS) in Rodents Alter Cardiorespiratory Patterning Consistent with Endotoxemia. Experimental Biology 2014 International Conference, San Diego, CA, USA.
49. Hsieh, Y, Nethery, D, Dick, TE, **Jacono, FJ**. IL-1beta microinjection into the nucleus Tractus Solitarius (nTS) alters ventilatory pattern variability (VPV) similar to Acute Lung Injury. American Thoracic Society 2014 International Conference, San Diego, CA, USA.
49. Orooji, M, Rusu, M, Rajiah, P, Yang, M, **Jacono, FJ**, Gilkeson, R, Linden, P, Madabhushi, A. Computer Extracted Texture Features on CT Predict Level of Invasion in Ground Glass Non-Small Cell Lung Nodules. Radiological Society of North America 2014 International Conf., Chicago, IL, USA.
50. Rusu, M, Yang, M, Rajiah, P, **Jacono, FJ**, Gilkeson, R, Linden, P, Madabhushi, A. Histology-CT Fusion Facilitates the Characterization of Suspicious Lung Lesions with No, Minimal, and Significant Invasion on CT. United States & Canadian Academy of Pathology (USCAP) 2015 Annual Meeting, Boston, MA, USA.
51. Litvin, DG, Nethery, DE, Campanaro, CK, Dick, TE, **Jacono, FJ**. Central cyclooxygenase inhibition during the course of lung injury attenuates breathing frequency. Experimental Biology 2015 International Conference, Boston, MA, USA.
52. Fabien, A, Nethery, D, Denstaedt, S, **Jacono, FJ**. Inflammation and ventilatory pattern changes persist 14 days after bleomycin-mediated lung injury in rats. American Thoracic Society 2015 International Conference, Denver, CO, USA.
46. Manochakian, R, Smith, J, Mervar, S, Fox, D, Woods, K, Driscoll, M, Whittlesey, Ludin, A, **Jacono, FJ**, Jesberger, B, Alvarado, N, Robke, J, Berman, S, Dimick, J, Curry, S, Barnum, M, Vallette, M, Howard, A, Bokar, JA, Arfons, LM. Improving veteran access to lung cancer care (IVaLuCancerCare): A quality improvement project at the Louis Stokes Cleveland VA Medical Center (LSVAMC). American Society of Clinical Oncology 2015 Annual Meeting, Chicago, IL, USA.

Formally Supervised Trainees

- 2007 Mariana Palacios (Amherst College Undergraduate Student)
Role: Research Mentor as part of Case SOM Heart, Lung and Blood Summer Research Program; Project: Nonlinear analysis of breathing patterns in development of acute and chronic lung injury
Current Position: Anesthesiology Resident, University of Alabama at Birmingham
- 2007-2008 Lamia Ibrahim, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Advisor; Project: Heritability of Abnormalities in Cardiopulmonary Coupling in Sleep Apnea: Use of an Electrocardiogram-based Technique
Current Position: Staff Physician, Critical Care Medicine, Cleveland Clinic
- 2007-2008 Chadi Bou Serhal, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Advisor; Project: Constant Daily Hypoxia Leads to Different Degrees of Pulmonary Hypertension in Two Different Rat Strains
Current Position: Private Practice, Aultman Hospital, Canton, OH
- 2008-2009 Anita Pawar (Ph.D. Student, Physiology and biophysics)
Role: Research Advisor; Project: Comparative analysis of neonatal and adult rat carotid body responses to chronic intermittent hypoxia
Current Position: Industry Scientist, India
- 2008-2010 Augustine Chung, MD (Case School of Medicine Student - 4th year research project)
Role: Research Mentor for MD thesis; Project: Effect of Anesthesia on Breathing Pattern Variability in Rats
Current Position: Pulmonary & Critical Care Medicine Fellow, UCLA
- 2008-2010 Ben Young, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Breathing Pattern Variability as a Biomarker for Severity of Acute Lung Injury in Rats
Current Position: Staff Physician, Pulmonary Medicine, Cleveland Clinic
- 2008-2011 Ravishankar Balagi, BTech (Masters Student, Electrical Engineering & Computer Sci.)
Role: Research Mentor; Project: Development and Optimization of Computer-controlled Biologically Variable Ventilation
Current Position: Industry Engineer, Intel Corporation, California, USA
- 2010-2012 Matt Knoch, MD (Pulmonary, Critical Care & Sleep Medicine Fellow)
Role: Research Mentor; Project: Impact of Biologically Variable Ventilation on Acute Lung Injury in Rats
Current Position: Private Practice, Aultman Hospital, Canton, OH
- 2011-2014 Yee-Hsee Hsieh, PhD (Pulmonary, Critical Care & Sleep Medicine Fellow)
Role: Research Mentor; Project: Central Neural Control of Breathing Following Acute Lung Injury in Rats
Current Position: Post-doctoral Research Associate, CWRU
- 2012-2015 Scott Denstaedt, MD (Internal Medicine Resident)
Role: Research Mentor; Project: Central Neural Inflammation Following ALI
Current Position: Pulmonary & Critical Care Medicine Fellow, University of Michigan

Formally Supervised Trainees (continued)

- 2013-2015 Andre' Fabien, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Breathing Pattern Variability as a Biomarker for Severity of Chronic Lung Injury in Rats
Current Position: Attending Physician, Pulmonary& CCM, UHCMC/UHMP
- 2014-2016 Erica Roesch, MD (Pediatric Pulmonary Fellow)
Role: Scholarship Oversight Committee Member; Project: Effects of CFTR function on the inflammatory response and to determine if that response can be altered by treatment with CFTR potentiators such as Ivacaftor.
Current Position: Faculty/Attending, CWRU/RB&C
- 2014-2016 Mustafa Abas, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Developing ICU-based predictive biomarkers for onset of sepsis and respiratory failure
Current Position: Attending Physician, Pulmonary& CCM, UHCMC/UHMP
- 2014-2016 Steve Shein, MD (Assistant Professor of Pediatrics)
Role: Research Advisor; Project: A potential marker of steroid-responsive bronchiolitis
Current Position: Assistant Professor of Pediatrics, CWRU/RB&C
- 2014-2016 Benjamin Vandendriessche (Post-doctoral Fellow)
Role: Research Mentor; Project: Developing predictive biomarkers by modeling inflammation-induced changes in cardiorespiratory variability dynamics
Current Position: Chief Medical Officer at Byteflies & Adj Prof at CWRU
- 2014-2018 David Litvin, PhD (PhD Candidate, Physiology and Biophysics, CWRU)
Role: Research Mentor, PhD Advisor; Project: Central Neural Inflammation Following Peripheral Injury
Current Position: Post-Doctoral Researcher, John Wesseling Laboratory, Instituto de Neurociencias, Alicante, Spain
- 2015-2017 Mona Al-Otaibi, MD (Internal Medicine Resident)
Role: Research Mentor; Project: Impact of AGTR2 deficiency in bleomycin-induced ALI
Current Position: Pulmonary & Critical Care Medicine Fellow, UCSD
- 2015-2017 Amy Attaway, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Clinical indications for oxygen therapy using high flow nasal cannula device
Current Position: Staff Physician, Pulmonary Medicine, Cleveland Clinic
- 2016-2018 Vidhi Shah, MD (Neonatology Fellow)
Role: Scholarship Oversight Committee Member; Project: Correlating intermittent hypoxemia events and oxidative stress markers in preterm infants
Current Position: Assistant Professor, Neonatology Fellow, CWRU/RB&C
- 2016-2018 Chris Donatelli, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Outcomes among patients with self-reported occupational exposures in the National Lung Screening Trial
Current Position: Pulmonary/MIUC Attending, Mercy Medical Center, Des Moines, IA

- 2017-current Neha Solanki, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Characterize mechanisms that contribute to changes in ventilator pattern variability during and following sepsis
Current Position: Pulmonary & Critical Care Medicine Fellow, CWRU/UHCMC/VA
- 2017-current Mike Yeager, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Variability and Inflammation for Sepsis Trajectory Analysis – MICU-based observational clinical trial
Current Position: Pulmonary & Critical Care Medicine Fellow, CWRU/UHCMC/VA
- 2018-current Shiloh Tackett, MD (Pulmonary & Critical Care Medicine Fellow)
Role: Research Mentor; Project: Characterize mechanisms that contribute to changes in heart rate variability and cardio-pulmonary coupling during and following sepsis
Current Position: Pulmonary & Critical Care Medicine Fellow, CWRU/UHCMC/VA

Scientific & Educational Presentations

National/International Contributions

- 2008 Facilitator, Session: *Control of Breathing and Ventilation*
 American Thoracic Society 2008 International Conference, San Francisco, CA, USA
- 2008 Invited lecture: *Critical Care Bioinformatics: Conceptual Goals*
 Critical Care Bioinformatics Workshop, Neurocritical Care & Stroke Conference, Cleveland, OH, USA, 9/08
- 2009 Invited lecture: *Variability Analysis in the ICU: From Bench to Bedside*
 Critical Care Bioinformatics Workshop, Neurocritical Care & Stroke Conference, Cleveland, OH, USA, 9/09
- 2010 Invited lecture: *Variability Analysis in Preclinical Models of Human Disease*
 Critical Care Bioinformatics Workshop, Neurocritical Care 2010 Conference, Cleveland, OH, USA, 10/10
- 2011 Invited lecture: *Lung and Brainstem Cytokine Levels in Early Acute Lung Injury*
 Respiratory Physiology Symposium, Joint meeting: Department of Neonatology (CWRU) and University of Wisconsin, 2/11
- 2011 Invited lecture: *Respiratory Phenotyping a Mouse Model of Cystic Fibrosis*
 Cystic Fibrosis Advanced Center Grant (NIH P30 DK27651) External Advisory Board Meeting, 3/11
- 2011 Facilitator, Session: *Control of Breathing and Respiratory Muscles*
 American Thoracic Society 2011 International Conference, Denver, CO, USA
- 2011 Invited lecture: *The Long Run: Forecasting Physiology in the ICU*
 Critical Care Bioinformatics Workshop, Neurocritical Care 2011 Conference, Cleveland, OH, USA, 10/11
- 2011 Facilitator, Session: *Data Acquisition and Analysis in Critical Care*
 Neurocritical Care 2011 Conference, Cleveland, OH, USA
- 2011 Visiting Professor: *Ventilatory Pattern Variability in Health and Disease*
 Johns Hopkins Sleep Disorders Center, Baltimore, MD, USA, 11/11

Scientific & Educational Presentations (continued)

National/International Contributions (continued)

- 2012 Co-chair, Featured Topic Session: *Respiratory Pattern Variability: Insights into Respiratory Control Mechanisms in Health and Disease*, Experimental Biology 2012 International Conference, San Diego, CA, USA, 4/12
- 2012 Invited lecture: *Is respiratory variability diagnostic?*
Featured Topic: *Respiratory Pattern Variability: Insights into Respiratory Control Mechanisms in Health and Disease*, Experimental Biology 2012 International Conference, San Diego, CA, USA, 4/12
- 2012 Facilitator, Session: *Sleep Disordered Breathing: Pathophysiology*
ATS 2012 International Conference, San Francisco, CA, USA, 5/12
- 2012 Visiting Professor: *Clinical Implications of Ventilatory Pattern Variability*
Harvard Medical School, Boston, MA, USA, 6/12
- 2012 Visiting Professor: *Approaches for Quantifying Physiologic Variability*
University of Pittsburgh Medical Center, Pittsburgh, PA, USA, 6/12
- 2012 Invited Participant: *Model-based approaches for improved diagnostic and therapeutic strategies for sleep-related breathing disorders: Current and Future Directions*
Focused Study Group sponsored by the USC Biomedical Simulations Resource
Boston, MA, USA (Moderator: Michael Khoo), 6/12
- 2012 Facilitator, Scientific Poster Session
International Conference on Complex Acute Illness 2012, Ottawa, Ontario, Canada, 9/12
- 2012 Invited lecture: *Insights into central mechanisms responsible for breathing pattern changes following acute lung injury*
Scientific Session: *Mechanistic models in vivo and in silico*
International Conference on Complex Acute Illness 2012, Ottawa, Ontario, Canada, 9/12
- 2013 Invited lecture: *Interdisciplinary Mock Codes and the Value of Debriefing*
Cardiopulmonary Resuscitation Community of Practice Educational Series
National LIVE Meeting Presentation, >120 participants, Contact Time: 1 hour, 1/13
- 2013 Oral Presentation: *Central Expression of IL-1 β and Cardio-Ventilatory Uncoupling in a Rodent Septic Model*
Session: *Inflammation and Cardiorespiratory Control*
Experimental Biology 2013 International Conference, Boston, MA, USA, 4/13
- 2013 Oral Presentation: *Acute Lung Injury Alters Central Respiratory Pattern and Activity Independent of Pulmonary Feedback*
Mini-Symposium: *Ventilatory Control: From Bench to Bedside*
American Thoracic Society 2013 International Conference, Philadelphia, PA, USA, 5/13
- 2013 Visiting Professor: *Ventilatory Pattern Variability Following Acute Lung Injury: Insights into Central Mechanisms and Clinical Implications*
Mayo Clinic, Dept. of Physiology & Biomedical Eng., Rochester, MN, USA, 10/13
- 2014 Visiting Professor: *Variability in Critical Illness: Applications in the ICU of the Future*
Pulmonary Grand Rounds
University of Wisconsin, Madison, WI, USA, 12/14

Scientific & Educational Presentations (continued)

National/International Contributions (continued)

- 2014 Visiting Professor: *Ventilatory Pattern Variability Following Acute Lung Injury: Insights into Central Mechanisms*
Integrative Respiratory Physiology and Pathophysiology Seminar
University of Wisconsin, Madison, WI, USA, 12/14
- 2016 Invited lecture: *Bioelectronic Opportunities to Impact Pulmonary Function: ARDS*
Bioelectronics Approaches to Personalized Medicine CWRU Annual Conference
Case Western Reserve University, Cleveland, OH, USA, 9/06
- 2017 Oral Presentation: *Ventilatory Pattern Variability Following Acute Lung Injury: Insights into Central Mechanisms (and Clinical Implications)*
Session: Mechanisms Preserving Breathing Stability
Experimental Biology 2017 International Conference, Chicago, IL, USA, 4/26

Regional Contributions

- 2004 *Out-of-Hospital Emergencies and Ohio's Good Samaritan Law*
Cleveland City Wide Chest Conference, Contact time: 0.4 hours, 9/04
- 2004 *Medical Innovation: A Long and Winding Road*
Encore Campus Class – Cuyahoga Community College, Contact time: 1 hour, 11/04
- 2008 *Perioperative Pulmonary Care*
Annual Cleveland Citywide Resident Perioperative Medical Consultation Conference
~100 residents, Contact time: 0.5 hours, 5/08
- 2009 *Perioperative Pulmonary Care*
Annual Cleveland Citywide Resident Perioperative Medical Consultation Conference
~100 residents, Contact time: 0.5 hours, 5/09
- 2010 *Perioperative Pulmonary Care*
Annual Cleveland Citywide Resident Perioperative Medical Consultation Conference
~100 residents, Contact time: 0.5 hours, 5/10
- 2011 *Perioperative Pulmonary Care*
Annual Cleveland Citywide Resident Perioperative Medical Consultation Conference
~125 residents, Contact time: 0.5 hours, 5/11
- 2011 *Perioperative Pulmonary Care*
Annual Cleveland Citywide Resident Perioperative Medical Consultation Conference
~125 residents, Contact time: 0.5 hours, 5/11
- 2013 *Surviving Sepsis Campaign: International Guidelines for the Management of Severe Sepsis and Septic Shock*
Northeast Ohio Infectious Disease Roundtable, Hilton Garden Inn, Cleveland, OH, 5/13
- 2013 *Ventilatory Pattern Variability Following Acute Lung Injury: Insights into Central Mechanisms and Clinical Implications*
Department of Physiology and Biophysics Seminar Series, CWRU, 9/13

Scientific & Educational Presentations (continued)

Regional Contributions (continued)

- 2013 - 2014 National Educational Series: *Managing Chronic Obstructive Pulmonary Disease*
VA Specialty Care Access Network (SCAN)-ECHO Initiative National Teleconference,
10 participants, Contact Time: 3.0 hours/month
Role: Director; Providing interactive, remote education and consultation support
- Introduction to COPD, 3/13
 - Essentials of PFT Interpretation, 3/13
 - Dyspnea, 4/13
 - Asthma, 4/13
 - Weight Loss in COPD, 5/13
 - Chronic Cough, 5/13
 - End-stage COPD management, 6/13
 - Lung Imaging, 7/13
 - Pharmacologic Options in COPD, 7/13
 - Interstitial Lung Diseases, 8/13
 - PFT practice session, 9/13
 - Lung Mass, 10/13
 - Pulmonary Hypertension, 11/13
 - Sleep Disorders in the Primary Care Setting, 11/13
 - Home Oxygen, 12/13
 - Smoking Cessation, 1/14
 - Acute Exacerbations of Chronic Bronchitis, 2/14
 - Latent Tuberculosis Infection, 2/14
 - Treatment of Pulmonary hypertension, 3/14
 - Evaluation of Dyspnea, 3/14
 - Behavioral Medicine and Pulmonary Disease, 4/14
 - Managing Severe COPD, 5/14
 - Sarcoidosis, 5/14
 - Asbestos Related Lung Disease, 6/14
 - Lung Volume Reduction Surgery, 8/14
 - Role of Steroids in COPD, 9/14
 - Two Cases of Refractory COPD, 9/14
 - Alternative Therapies for COPD, 10/14
 - Asthma vs. COPD, 10/14
 - A Difficult Case of Obstructive Lung Disease, 11/14
- 2014 *Ventilatory Pattern Variability Following Acute Lung Injury: Insights into
Central Mechanisms and Clinical Implications*
Rammelkamp Research Conference
MetroHealth Medical Center, Cleveland, OH, 10/14
- 2015 *Ventilatory Pattern Changes Following Lung Injury: Brainstem Inflammation and the Early
Diagnosis of ARDS*
APT Center Investigators Meeting, CWRU, 4/27
- 2015 *Perioperative Pulmonary Care*
Annual Cleveland Citywide Resident Perioperative Medical Consultation Conference
~125 residents, Contact time: 0.5 hours, 5/15

Scientific & Educational Presentations (continued)

Regional Contributions (continued)

- 2015 *Pulmonary Care*
15th Annual Louis Stokes Cleveland VA Primary Care CBOC Conference
~75 primary care providers, Contact time: 0.5 hours, 9/11
- 2015 *Respiratory Evaluation in SCI: Ventilator and Respiratory Care*
Annual Louis Stokes Cleveland VA Spinal Cord Injury (SCI) Conference
~100 spinal cord injury providers, Contact time: 0.5 hours, 11/2
- 2016 *Diagnosis and Management of Chronic Obstructive Pulmonary Disease*
16th Annual Louis Stokes Cleveland VA Primary Care CBOC Conference
~75 primary care providers, Contact time: 1.0 hours, 9/9
- 2016 *Respiratory Evaluation in SCI: PFTs, ABGs, etc.*
Annual Louis Stokes Cleveland VA Spinal Cord Injury (SCI) Conference
~100 spinal cord injury providers, Contact time: 0.5 hours, 10/19
- 2017 *Perioperative Pulmonary Care*
Annual Cleveland Citywide Resident Perioperative Medical Consultation Conference
~125 residents, Contact time: 0.5 hours, 5/5

Local Contributions

Continuing Medical Education Courses:

- 2004 *Control of Breathing in Lung Injury: Carotid Body as a Sensor of Inflammation*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 12/04
- 2005 *Impact of Lung Injury on Control of Breathing: Carotid Body and Inflammation*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 6/05
- 2005 *Diagnosis and Treatment of Severe Sepsis*
DOM Morbidity & Mortality Conference, UHCMC, Contact time: 1 hour, 10/05
- 2006 *Oxygen Sensing*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 3/06
- 2006 *Pulmonary Involvement in Wegner's Granulomatosis*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 7/06
- 2006 *Thoracentesis and Pneumothorax*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 8/06
- 2007 *Vena Caval Filters: When, Why, and for How Long?*
Department of Medicine Grand Rounds, UHCMC, Contact time: 1 hour, 1/07
- 2007 *Seeing the Forest and the Trees: Nonlinear Analysis of Breathing Pattern in Lung Injury*
Sleep Research Grand Rounds, UHCMC, Contact time: 1 hour, 3/07
- 2007 *Vena Caval Filters: A Primer for Pulmonologists*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 4/07

Scientific & Educational Presentations (continued)

Continuing Medical Education Courses (continued):

- 2007 *Endobronchial Sarcoidosis and XDR-TB*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 12/07
- 2008 *Workup of hypoxia: Shunt physiology*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 3/08
- 2008 *Alpha-1 Antitrypsin Deficiency*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 9/08
- 2009 *Advances in Mechanical Ventilation: From Bench to Bedside*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 2/09
- 2009 *Discussant of Unknown Case: Pleural Effusion from M. Tuberculosis Infection*
Dept. of Medicine: Clinicopathologic Conference, VAMC, Contact time: 1 hour, 8/09
- 2010 *Role of Rapid Response Teams in Preventing Cardiac Arrest*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 2/10
- 2010 *Building the ICU of the Future*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 3/10
- 2010 *Pre-Operative Evaluation of Pulmonary Risk Factors*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 5/10
- 2011 *Chronic Thromboembolic Pulmonary Hypertension*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 1/11
- 2011 *Information and Liberation in the Intensive Care Unit*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 24/11
- 2011 *Approach to DNR in the Intensive Care Unit*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 4/11
- 2011 *Discussant of Unknown Case: A Curious Case of Cough*
Dept. of Medicine: Clinicopathologic Conference, UHCMC, Contact time: 1 hour, 5/11
- 2011 *Neutropenic Enterocolitis in the ICU*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 8/11
- 2011 *Care of Complicated Patients and Interactions with their Social Support Systems*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 10/11
- 2011 *Tele-ICU and Beyond: Building the Intensive Care Unit of the Future?*
Department of Medicine Grand Rounds, UHCMC, Contact time: 1 hour, 11/11
- 2012 *Lung Cancer Screening with Low Dose Computed Tomography*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 1/12
- 2012 *Approach to the Poisoned Patient*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 6/12
- 2012 *Variability in Acute Illness: From Mechanisms to Application*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 9/12

Scientific & Educational Presentations (continued)

Continuing Medical Education Courses (continued):

- 2012 *Identifying the cause of unknown hypoxemia: Shunt physiology*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 12/12
- 2013 *Ventilatory Pattern Changes Following Lung Injury: Brainstem Inflammation and Early Diagnosis of ARDS*
Department of Medicine 2013 Research Day, UHCMC, 5/13
- 2013 *Management of Thrombocytopenia in the Intensive Care Unit*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 8/13
- 2013 *Lung Cancer Recurrence Following Cyberknife Therapy*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 10/13
- 2013 *ANCA-Associated Vasculitis and Alveolar Hemorrhage*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 11/13
- 2014 *Management of Alveolar Hemorrhage Syndrome*
DOM Morbidity & Mortality Conference, UHCMC, Contact time: 1 hour, 2/14
- 2014 *Difficult Airway Management*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 5/14
- 2014 *Ventilatory Pattern Variability in Acute Lung Injury: Mechanistic Insights*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 10/14
- 2014 *Management of Chronically Critically Ill Patient*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 11/14
- 2015 *Distributive Shock due to Cytokine Storm*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 2/15
- 2015 *Variability in Critical Illness: Applications in the ICU of the Future*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 9/18
- 2015 *Discussion on Physician Decision Making: Panel Discussant*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 10/28
- 2015 *Variability in Critical Illness: Applications in the ICU of the Future*
Department of Medicine Grand Rounds, UHCMC, Contact time: 1 hour, 9/18
- 2016 *Sepsis due to Multidrug-Resistant Organisms*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 2/3
- 2016 *Thrombolytic therapy in cardiac arrest due to massive PE*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 4/27
- 2016 *Etiology, clinical presentation, and diagnosis of chylothorax*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 8/24
- 2017 *Ventilatory Pattern Variability Following Acute Lung Injury: Insights into Central Mechanisms and Implications for Critically Ill Patients*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 3/24

Scientific & Educational Presentations (continued)

Continuing Medical Education Courses (continued):

- 2018 *Hypercapnic Respiratory failure from Myxedema Crisis*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 1/24
- 2018 *Ventilatory Pattern Variability Following Acute Lung Injury*
Pulmonary Grand Rounds, UHCMC, Contact time: 1 hour, 3/23
- 2018 *Adjunctive Steroids in Sepsis Shock: A Medical Management (Pro-Con) Debate*
DOM Morbidity & Mortality Conference, VAMC, Contact time: 1 hour, 5/16

Medical Students:

- 2005-2006 *Case School of Medicine Year 2 Core Curriculum – Homeostasis II*
Lecturer & Small Group Case Conference Leader
12 contact hours/yr – 15-18 students
- 2005 & 2010 *Case School of Medicine Year I Medical Student Lecture Series*
Pulmonary Physical Exam & Pulmonary Section Review
2 contact hours, ~100 medical students
- 2005-2010 *Director, Perioperative Medicine and Pain Advanced Core at the UH/VA site*
Responsible for administrative oversight of the educational activities of third and fourth year medical students (~4 each month)
- 2006 *Pathology & Pathophysiology of Bacterial Pneumonia*
Homeostasis II Medical Student Lecture Series
1 contact hour, ~100 medical students
- 2006-current *Case School of Medicine Year 3 - Basic Core Block I*
Topic: Asthma, COPD & PFTs
6-10 separate 1-hour lectures/year – 10-15 medical students/lecture
- 2007-current *Case School of Medicine (SOM) Year 1 Clinical Immersion*
Group Leader – Asthma, COPD & ARDS
12 contact hours/year – 15-18 students

Graduate Students:

- 2006 *PHYS 500 Translational Cell Physiology: Pathophysiology of Breathing Disorders*
Lecture series to systems physiology graduate students
3 contact hours, 6 students
- 2012 *PHOL 481 Pulmonary Pathophysiology: Clinical Correlations*
Graduate Medical Physiology class
2 contact hours, 85 students, 11/12
- 2014 *PHOL 481 Respiratory Translational Physiology*
Clinical Correlations: Respiratory Failure
Graduate Medical Physiology class
2 contact hours, 85 students, 1/14

Scientific & Educational Presentations (continued)

Graduate Students (continued):

- 2015 *PHOL 481 Respiratory Translational Physiology*
Clinical Correlations: Respiratory Failure
Graduate Medical Physiology class
2 contact hours, 85 students, 1/15
- 2016 *PHOL 481 Respiratory Translational Physiology*
Clinical Correlations: Respiratory Failure
Graduate Medical Physiology class
2 contact hours, 85 students, 1/22
- 2017 *PHOL 481 Respiratory Translational Physiology*
Clinical Correlations: Respiratory Failure
Graduate Medical Physiology class
2 contact hours, 85 students, 1/27
- 2018 *PHOL 481 Respiratory Translational Physiology*
Clinical Correlations: Respiratory Failure
Graduate Medical Physiology class
2 contact hours, 85 students, 1/26

Residents and Fellows:

- 2004-current *Clinic Preceptor, Division of Pulmonary, CC, & Sleep Medicine Fellows*
120 hours/yr, 8-10 pulmonary fellows/year
- 2004-current *Medical Intensive Care Unit and Pulmonary Consult Service*
100 hours/yr, 4 medicine residents and 2 pulmonary fellows/block
- 2004-2009 *Department of Medicine Resident Board Review Course*
Moderator of Pulmonary Section
5 contact hours/year, 8-12 medicine residents
- 2005-2014 *Co-Director, Division of Pulmonary/CCM Research Conference*
Responsible for administrative oversight and educational content of research conference
- 2008-current *Mock Code Program, VAMC in partnership with Nursing Education*
~12 mock codes/year with targeted education of BLS and ACLS, 0.5 contact hours/event
- 2005 *Paralysis and Sedation*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/05
- 2005 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/05
- 2005 *Introduction to PFTs*
DOM Resident Noon Conference Series, UHCMC & VAMC, Contact time: 2 hours, 8/05
- 2005 *Community Acquired Pneumonia*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/05
- 2005 *Hitchhiker's Guide to the IACUC*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 11/05

Scientific & Educational Presentations (continued)

Residents and Fellows (continued):

- 2006 *Ventilator Associated Pneumonia*
Pulmonary Fellow Seminar Series, UHCMC, Contact time: 1 hour, 3/06
- 2006 *Preparing your ATS presentation: A Primer for Fellows*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 4/06
- 2006 *Paralysis and Sedation*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/06
- 2006 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/06
- 2006 *Community Acquired Pneumonia*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/06
- 2006 *Introduction to PFTs*
DOM Resident Noon Conferences, UHCMC & VAMC, Contact time: 2 hours, 12/06
- 2006 *Hitchhiker's Guide to the IACUC*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 12/06
- 2007 *Presenting your research at ATS*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 5/07
- 2007 *Paralysis and Sedation*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/07
- 2007 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/07
- 2007 *Pulmonary Function Testing*
DOM Resident Noon Conference Series, UHCMC, Contact time: 1 hour, 8/07
- 2007 *New ATS/IDSA Guidelines for managing CAP*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/07
- 2007 *Hitchhiker's Guide to the IACUC*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 8/07
- 2008 *Hydrocortisone Therapy for Patients in Septic Shock*
DOM Resident Journal Club Series, UHCMC, Contact time: 1 hour, 1/08
- 2008 *Ventilator Associated Pneumonia*
Pulmonary Fellow Seminar Series, UHCMC, Contact time: 1 hour, 3/08
- 2008 *Preparing your ATS presentation: A Primer for Fellows*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 5/08
- 2008 *Paralysis and Sedation*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/08
- 2008 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/08

Scientific & Educational Presentations (continued)

Residents and Fellows (continued):

- 2008 *Pulmonary Function Testing*
DOM Resident Noon Conference Series, UHCMC, Contact time: 1 hour, 7/08
- 2008 *New ATS/IDSA Guidelines for managing CAP*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/08
- 2008 *Introduction to the IRB and IACUC*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 09/08
- 2009 *Vena Caval Filters: When, Why, and for How Long?*
DOM Resident Noon Conference Series, UHCMC, Contact time: 1 hour, 1/09
- 2009 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/09
- 2009 *ATS/IDSA Guidelines for managing CAP*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/09
- 2009 *Introduction to the IRB and IACUC*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 09/09
- 2009 *Pulmonary Function Testing*
DOM Resident Noon Conference Series, UHCMC, Contact time: 1 hour, 11/09
- 2010 *Home Oxygen Therapy*
Combined Pulmonary/Sleep Fellows Conference, UHCMC, Contact time: 1 hour, 2/010
- 2010 *The Human Lung - Did Evolution Get it Wrong*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 2/10
- 2010 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/10
- 2010 *Managing CAP*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/10
- 2010 *Introduction to the IRB and IACUC*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 09/10
- 2010 *Pulmonary Function Testing*
DOM Resident Noon Conference Series, UHCMC, Contact time: 1 hour, 11/10
- 2011 *Ventilation and Lung Volumes: Part I*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 2/11
- 2011 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/11
- 2011 *Managing CAP*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/11
- 2011 *Ventilation and Lung Volumes: Part II*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 8/11

Scientific & Educational Presentations (continued)

Residents and Fellows (continued):

- 2011 *Diffusion*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 10/11
- 2012 *Pulmonary Blood Flow*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 1/12
- 2012 *Ventilatory Pattern Variability in Lung Disease*
Pediatric CF Seminar, Case School of Medicine, Contact time: 1 hour, 2/12
- 2012 *Introduction to Mechanical Ventilation*
DOM Resident Noon Conference Series, VAMC, Contact time: 1 hour, 3/12
- 2012 *Ventilation-Perfusion Relationships*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 5/12
- 2012 *Community Acquired Pneumonia*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/12
- 2012 *Shock States and Vasopressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/12
- 2012 *Nuts and Bolts of Case Presentations for Fellows*
Pulmonary Research Conference, UHCMC, Contact time: 0.5 hour, 09/12
- 2012 *Ventilation and Lung Volumes*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 9/12
- 2012 *Pulmonary Function Testing*
Sleep Medicine Didactic Series, UHCMC & MHMC, Contact time: 1 hour, 10/12
- 2012 *Opportunities, Procedures & Overview of writing a grant*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 11/12
- 2012 *Introduction to the IRB and IACUC*
Pulmonary Research Conference, UHCMC, Contact time: 1 hour, 11/12
- 2013 *High Frequency Oscillatory Ventilation in ARDS*
DOM Resident Journal Club Series, UHCMC, Contact time: 1 hour, 3/13
- 2013 *Chest Wall and Airway Mechanics*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 3/13
- 2013 *Control of Ventilation*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 4/13
- 2013 *Mechanics of Breathing*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 5/13
- 2013 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/13
- 2013 *Community Acquired Pneumonia*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/13

Scientific & Educational Presentations (continued)

Residents and Fellows (continued):

- 2013 *Thoracic Oncology*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/13
- 2013 *Pulmonary Function Testing*
DOM Resident Morning Conference Series, VAMC, Contact time: 1 hour, 9/13
- 2013 *Physician-Scientist Career Path*
Peter Agre Society Annual Lecture Series, DOM HCMC, Contact time: 1 hour, 11/13
- 2014 *Blood Flow*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 1/14
- 2014 *Ventilation-Perfusion Relationships in the Lung*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 4/14
- 2014 *Community Acquired Pneumonia*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/14
- 2014 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/14
- 2014 *Thoracic Oncology: Part I*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/14
- 2014 *Thoracic Oncology: Part II*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 8/14
- 2014 *Pulmonary Function Testing*
Medicine Interns Didactic Series, VAMC, Contact time: 1 hour, 9/14
- 2015 *Ventilation and Lung Volumes: Part I*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 1/15
- 2015 *Ventilation and Lung Volumes: Part II*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 2/15
- 2015 *Shock States and Pressors*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/15
- 2015 *Community Acquired Pneumonia*
Pulmonary Fellow Summer Lecture Series, UHCMC, Contact time: 1 hour, 7/15
- 2015 *Introduction to Mechanical Ventilation*
DOM Resident Noon Conference Series, VAMC, Contact time: 1 hour, 11/6
- 2016 *Mechanics of Breathing*
Pulmonary Fellow Physiology Lecture Series, UHCMC, Contact time: 1 hour, 4/13
- 2016 *Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)*
DOM Resident Journal Club Series, UHCMC, Contact time: 1 hour, 4/15

Scientific & Educational Presentations (continued)

Residents and Fellows (continued):

- 2016 *Basics of Pulmonary Function Testing*
Medicine Interns Didactic Series, VAMC, Contact time: 2 hours, 5/27 and 6/3
- 2016 *Chest Wall and Airway Mechanics*
Pulmonary Fellow Physiology Lecture Series, UHCCMC, Contact time: 1 hour, 6/15
- 2016 *Evaluation and Testing of Pulmonary Function*
Pulmonary Fellow Summer Lecture Series, UHCCMC, Contact time: 1 hour, 7/12
- 2016 *Community Acquired Pneumonia*
Pulmonary Fellow Summer Lecture Series, UHCCMC, Contact time: 1 hour, 8/15
- 2017 *Ventilation and Lung Volumes: Part I*
Pulmonary Fellow Physiology Lecture Series, UHCCMC, Contact time: 1 hour, 3/22
- 2017 *Ventilation and Lung Volumes: Part II*
Pulmonary Fellow Physiology Lecture Series, UHCCMC, Contact time: 1 hour, 3/29
- 2017 *Physician-Scientist Career Path*
Peter Agre Society Annual Lecture Series, DOM HCMC, Contact time: 1 hour, 4/5
- 2017 *Navigating the American Thoracic Society Meeting: A Primer for Fellows*
Pulmonary Fellow Friday Lecture Series, UHCCMC, Contact time: 1 hour, 5/12
- 2017 *Basics of Pulmonary Function Testing*
Medicine Interns Didactic Series, VAMC, Contact time: 2 hours, 5/26 and 6/16
- 2017 *Early, Goal-Directed Therapy for Septic Shock*
DOM Resident Journal Club Series, UHCCMC, Contact time: 1 hour, 6/23
- 2017 *Evaluation and Testing of Pulmonary Function*
Pulmonary Fellow Summer Lecture Series, UHCCMC, Contact time: 1 hour, 7/25
- 2017 *Early, Goal-Directed Therapy for Septic Shock — A Patient-Level Meta-Analysis*
Senior Resident Journal Club Series, Cleveland VAMC, Contact time: 1 hour, 8/4
- 2017 *Introduction to Mechanical Ventilation*
DOM Resident Noon Conference Series, VAMC, Contact time: 1 hour, 12/8
- 2018 *Introduction to the IRB and IACUC*
Pulmonary Fellow Friday Lecture Series, UHCCMC, Contact time: 1 hour, 2/9
- 2018 *Mechanics of Breathing*
Pulmonary Fellow Physiology Lecture Series, UHCCMC, Contact time: 1 hour, 2/21
- 2018 *Chest Wall and Airway Mechanics*
Pulmonary Fellow Physiology Lecture Series, UHCCMC, Contact time: 1 hour, 2/28
- 2018 *Adjunctive Glucocorticoid Therapy in Patients with Septic Shock*
Senior Resident Journal Club Series, Cleveland VAMC, Contact time: 1 hour, 4/13
- 2018 *Navigating the American Thoracic Society Meeting: A Primer for Fellows*
Pulmonary Fellow Friday Lecture Series, UHCCMC, Contact time: 1 hour, 4/13

Scientific & Educational Presentations (continued)

Residents and Fellows (continued):

- 2018 *Mechanical Ventilation: Hands-on Simulation Session*
Pulmonary Fellow Physiology Series, Cleveland VAMC, Contact time: 1 hour, 4/25
- 2018 *Basics of Pulmonary Function Testing*
Medicine Interns Didactic Series, VAMC, Contact time: 2 hours, 6/1 and 6/8