

CURRICULUM VITAE

NAME: Paula G. Carvalho

EDUCATION: 1980 B.A. Zoology
University of Washington
Seattle, Washington

1984 M.D.
University of Washington School of
Medicine, Seattle, Washington

PROFESSIONAL EXPERIENCE:

2000-present Associate Professor of Medicine
Division of Pulmonary and Critical Care Medicine
University of Washington, Seattle, WA
Medical Director, Intensive Care and Step-Down Units
Medical Director, Polysomnography Laboratory

1995-present Assistant Professor of Medicine
Division of Pulmonary and Critical Care Medicine
University of Washington, Seattle, WA
Medical Director, Intensive Care and Step-Down Units
VA Medical Center

1990 - 1995 Staff Physician
Medical Director, Intensive Care Unit
Medical Director, Polysomnography Laboratory
VA Medical Center
Boise, Idaho
Acting Instructor in Medicine
University of Washington, Seattle, WA

1987 - 1990 Fellow, Division of Respiratory Diseases, University of Washington and
Veterans Administration Medical Center, Boise, Idaho

(Professional Experience, Continued)

- 1984 - 1987 Internal Medicine Residency Program, University of Washington
Affiliated Hospitals, Seattle, Washington
- 1980 - 1984 Student, University of Washington School of Medicine, Seattle,
Washington

OFFICES HELD, HONORS AND AWARDS:

1. University of Washington Award for Excellence in Biological Research, 1980.
2. Alpha Omega Alpha Medical Honor Society, University of Washington School of
Medicine, Seattle, Washington, 1983.
3. Medical Thesis Honors, 1984.
4. American Heart Association of Idaho Research Grant Award, 1994, 1995, 1996.
5. Governor, American College of Chest Physicians, Idaho Chapter, 1995-1998.
6. Secretary, DaVinci Society for the Study of Airway Circulation, 1998-1999.
7. Treasurer, DaVinci Society for the Study of Airway Circulation, 1999-present.

BOARD CERTIFICATION:

1. American Board of Internal Medicine (September, 1988)
2. American Board of Internal Medicine, Pulmonary Diseases (November, 1990)
3. American Board of Internal Medicine, Critical Care Subspecialty
(November, 1991)
4. American Board of Internal Medicine, Pulmonary Diseases Recertification
(November, 2000)
5. American Board of Internal Medicine, Critical Care Subspecialty Recertification
(November, 2000)
6. American Board of Sleep Disorders,
Sleep Boards, Part I (October, 2002)
Sleep Boards, Part II (April, 2003)

LICENSE _____

Washington: _____

Idaho: _____

PROFESSIONAL ORGANIZATIONS:

1. Fellow, American College of Chest Physicians
2. American Thoracic Society
3. DaVinci Society for the Study of Airway Circulation
4. John Butler Lung Foundation
5. Northwest Society, Respiratory Diseases

TEACHING RESPONSIBILITIES/ frequency of lectures:

1. ICU Resident lectures: 5/week while on service (4 months/year)
2. Chest X-ray conference: 2 per month
3. Critical Care conference: 2 per month
4. Sleep Medicine lectures: 1 per month
5. Pulmonary fellow teaching sessions: 1 per week
Fellows in the last 5 years:

6. Course Director, Introduction to Critical Care Medicine
(UW3/UW4 Medical Students): 8-week session
8. ACLS, 6 courses/year.

HOSPITAL COMMITTEES:

1. Blood Product Use Committee
2. Code Management Review Committee
3. Chair, Research Animal Subjects Committee
4. Chair, Critical Care Committee

SPECIAL NATIONAL RESPONSIBILITIES:

1. American Board of Internal Medicine panel:
Question writing, Critical Care Recent Advances Module Questions, 2003-present
2. American Board of Internal Medicine panel:
Question evaluation, Critical Care Self-Evaluation Process 2004-present

PUBLICATIONS:

Original Manuscripts:

1. **Carvalho P**: Prolactin and growth hormone response to hypothalamic injection of the endogenous opiate peptide, Beta-endorphin. Medical Thesis, University of Washington Press, 1983.
2. Hori M, Knight LL, **Carvalho P**, Stevens DL: Aspergillar myocarditis and acute coronary artery occlusion in an immunocompromised patient. *West J Med* 155:525-527, 1991.
3. **Carvalho P**, Kirk W, Butler J, Charan NB: The effects of tube thoracostomy on pleural fluid characteristics in sheep. *J Appl Physiol* 74:2782-2787, 1993.
4. Charan NB, Marks M, **Carvalho P**: The use of plasma in arterial blood gas determination. *Chest* 105:954-955, 1994.
5. Charan NB, **Carvalho P**, Agostoni P: On the purported discovery of the bronchial circulation: A rebuttal. *J Appl Physiol* 76:1836-1837, 1994.
6. Charan NB, Mudumbi R, Hawk P, Vestal RE, **Carvalho P**: Streptococcus pneumoniae-induced pulmonary hypertension and shock in anesthetized sheep. *J Appl Physiol* 77:2071-2078, 1994.
7. Charan NB, Carvalho C, Crowley JJ, Hawk P, **Carvalho P**: Management of bronchopleural fistula using a variable resistance valve. *Chest* 107:256-260, 1995.
8. **Carvalho P**, Knight LL, Olson RD, Crowley JJ, Hawk P, Charan NB: The effects of erythromycin on the rabbit pleura: Its potential role as a pleural sclerosant. *Am J Respir Crit Care Med* 151:1228-1232, 1995.
9. Thompson WH, Nielson CP, **Carvalho P**, Charan NB, Crowley JJ: Controlled trial of oral prednisone in outpatients with acute exacerbation of chronic obstructive pulmonary disease. *Am J Respir Crit Care Med* 154:407-412, 1996.
10. **Carvalho P**, Hildebrandt J, Charan NB: Effects of progressive tension pneumothorax on pulmonary and bronchial arterial blood flow. *J Appl Physiol* 81:1664-1669, 1996.

11. Charan NB, **Carvalho P**: Angiogenesis in the bronchial circulatory system in unilateral pulmonary artery obstruction. *J Appl Physiol* 82:284-291, 1997.
12. **Carvalho P**, Thompson WH, Riggs R, Carvalho C, Charan NB: Management of bronchopleural fistula with a variable-resistance valve and a single ventilator. *Chest* 111:1452-1454, 1997.
13. Charan NB, Johnson SR, Lakshminarayan S, Thompson W, **Carvalho P**: Nitric oxide and *B*-adrenergic agonist-induced bronchial arterial vasodilation. *J Appl Physiol* 82:686-692, 1997.
14. Charan NB, Ripley R, **Carvalho P**: Effect of increased coronary venous pressure on left ventricular function in sheep. *Respir Physiol* 112:227-235, 1998.
15. **Carvalho P**, Johnson SR, Charan NB: Non-cyclic AMP-mediated bronchial arterial vasodilation in response to inhaled *B*-agonists. *J Appl Physiol* 84:215-221, 1998.
16. Charan NB, **Carvalho P**, Johnson SR, Thompson WH, Lakshminarayan S: Effect of aerosolized acetylcholine on bronchial blood flow. *J Appl Physiol* 85:432-436, 1998.
17. **Carvalho P**, Thompson WH, Charan NB: Comparative effects of alpha-receptor stimulation and nitric oxide synthase inhibition on bronchovascular tone. *J Appl Physiol* 88:1685-1689, 2000.
18. Thompson WH, **Carvalho P**, Souza JP, Charan NB: The effect of expiratory resistive loading on the noninvasive tension-time index in COPD. *J Appl Physiol* 89:2007-2014, 2000.
19. Thompson WH, **Carvalho P**, Charan NB: Controlled trial of inhaled fluticasone propionate in moderate to severe COPD. *Lung* 180:191-201, 2002.
20. **Carvalho P**, Thompson WH, Whale M, Charan NB: Bronchovascular responses to intravenous contrast media for helical CT pulmonary angiography. *Arch Physiol Biochem* 111:323-325, 2005.
21. **Carvalho P**, Anderson DL, Charan NB: Bronchial arterial imaging with helical CT pulmonary angiography. *Arch Physiol Biochem*, in press, 2006.

Chapters and Reviews:

1. **Carvalho P**, Gale CC, Abson P, Miyauchi D. Neuroendocrine and Thermoregulatory Response to Beta-Endorphin and Bombesin in Primates. In "Neurosecretion: Molecules, Cells, and Systems". Editors: Donald S. Farne and Karl Lederis. Plenum Publishing Co., New York, pp. 443-444, 1982.
2. Charan NB, **Carvalho P**. Manifestations of respiratory disorders. *In*: "Foundations of Respiratory Care". Editors: David J. Pierson, Charles B. Spearman, Robert M. Kacmarek. Churchill Livingstone Inc., New York, pp. 663-678, 1992.
3. Charan NB, **Carvalho P**. The anatomy of the normal bronchial circulatory system in man and animals. *In*: "The Bronchial Circulation". Section Editor: John Butler. Lung Biology in Health and Disease series. Executive Editor: Claude Lenfant. Marcel Dekker, Inc., New York, pp. 45-77, 1992.

4. Charan NB, **Carvalho P**. The bronchial circulation in chronic lung infections. *In: "The Bronchial Circulation"*. Section Editor: John Butler. Lung Biology in Health and Disease series. *Executive Editor: Claude Lenfant*. Marcel Dekker, Inc., New York, pp. 535-549, 1992.
5. Charan NB, **Carvalho P**. Regulation of lung water: The role of bronchial circulation. *In: "Principles of Medical Biology"*. Editor: Edward E. Bittar. Springer Verlag Inc., 2003.
6. **Carvalho P**. Transudative pleural effusions. *In: "Pleural Diseases"*. Section Editor: D. Bouros. Lung Biology in Health and Disease series. *Executive Editor: Claude Lenfant*. Marcel Dekker, Inc., New York, 2004.

Selected Abstracts, 1996-2005:

1. **Carvalho P**, Johnson SR, Charan NB: Role of nitric oxide in B-agonist-induced bronchial arterial vasodilatation. *Am J Respir Crit Care Med* 153:A814, 1996.
2. Thompson WH, **Carvalho P**, Charan NB: Effect of simulated pursed-lip breathing on respiratory muscle tension-time index and FRC in COPD patients. *Am J Respir Crit Care Med* 155:A920, 1997.
3. **Carvalho P**, Johnson SR, Thompson WH, Charan NB: Inhibition of nitric oxide synthase blocks reperfusion-induced increases in bronchial blood flow. *Am J Respir Crit Care Med* 155:A116, 1997.
4. **Carvalho P**, Johnson SR, Charan NB: Influence of endogenous nitric oxide on reperfusion-induced increases in bronchial blood flow. *Clin and Exp Pharm and Physiol* 24:A5, 1997.
5. **Carvalho P**, Johnson SR, Charan NB: Role of endogenous nitric oxide in hypercarbia-induced bronchial arterial vasodilation. *Clin and Exp Pharm and Physiol* 24:A6, 1997.
6. Charan NB, Johnson SR, Lakshminarayan S, Thompson W, **Carvalho P**: Nitric oxide and beta-adrenergic receptor agonist-induced bronchial arterial vasodilation. *Clin and Exp Pharm and Physiol* 24:A7, 1997.
7. **Carvalho P**, Johnson SR, Charan NB: Effects of α -receptor stimulation and nitric oxide synthase inhibition on bronchovascular tone. *Am J Resp Crit Care Med*, 1998.
8. **Carvalho P**, Lakshminarayan S, Charan NB: Effects of adenosine on bronchovascular tone. *Am J Resp Crit Care Med*, 1999.
9. **Carvalho P**, George M, Thompson WH, Charan NB: Mechanisms of CO₂-induced bronchial arterial vasodilation. *Am J Resp Crit Care Med*, 2001.
10. Agostoni PG, Bussotti M, **Carvalho P**, Guazzi M, Charan NB: DLCO and exercise capacity in chronic heart failure. *Am J Resp Crit Care Med*, 2001.
11. Charan NB, Seath D, **Carvalho P**, Thompson WH, Lakshminarayan S: Effects of intravenous versus endotracheal administration of epinephrine on the bronchial circulation. *Am J Resp Crit Care Med*, 2001.
12. **Carvalho P**, Thompson WH, Charan NB: Mechanisms of hypercarbia-induced bronchial arterial vasodilation. Submitted for the American Thoracic Society

meeting, Atlanta, GA, 2002.

13. **Carvalho P**, Thompson WH, Anderson DA, Charan NB: Imaging of bronchial arteries with helical chest CT. Am J Resp Crit Care Med, 2004.
14. **Carvalho P**, Stevens DL, Charan NB: Differential hemodynamic responses in gram-positive and gram-negative shock in a sheep model. Accepted for presentation, ATS 2005.

Invited Speaker at International Symposia:

Septic shock in humans.

University of Oporto School of Medicine

July, 1993

Guimaraes, Portugal

Beta receptors in the bronchial circulation.

Third International Conference in Airway Circulation. September, 1995.

Bordeaux, France

The contribution of nitric oxide in bronchial arterial reperfusion.

Fourth International Conference in Airway Circulation.

November, 1996

University of Newcastle, New South Wales, Australia

Alpha-agonist versus nitrergic control of the bronchial circulation

August, 1997

Gstaad, Switzerland

Adenosine receptors in the bronchial circulation.

September, 1999

Lake Tahoe, California

Mechanisms of hypercarbia-induced bronchial arterial vasodilation.

June, 2001

Stockholm, Sweden

Hemodynamic and bronchovascular effects of non-ionic contrast in CT pulmonary angiography.

September, 2003

Nimes, France

Bronchial arterial imaging with helical CT pulmonary angiography.

September, 2005

Camogli, Italy

CME Lectures, 2004-2005

Annual Idaho Sleep Society Meeting: Circadian Sleep Disorders. Boise, ID, January 2004.

Annual General Internal Medicine Review Conference: Airway Management.
Sun Valley, ID, January 2004.

Grand Rounds: The Physiology of Alcohol and Gas Exchange.
Boise, ID, February 2004.

Lung Day, UW Division of Pulmonary and Critical Care Medicine: How Circadian Rhythms
Affect Your Patients. Seattle, WA, June 2004.

Annual General Internal Medicine Review Conference: Antithrombotic Therapy in Venous
Thromboembolic Disease: Current Recommendations. McCall, Idaho, January 2005.

Grand Rounds: Human Circadian Physiology and Chronotherapy.
Boise VA Medical Center, February 2005.

Washington Society of Respiratory Therapy: Sleep Disorders and Shift Work.
Seattle, WA, May 2005

Idaho Endoscopy Society: Conscious Sedation and Sleep Apnea: A Bad Combination
Boise, ID, June 2005.

Idaho Respiratory Therapy Society: The Abnormal Airway and Conscious Sedation
Boise, ID, September 2005.

John Butler Lung Conference: Evidence-Based Medicine
Boise, ID, October 2005

NW Sleep Society: Literature 2005: The Year in Review.
Boise, ID, November 2005.

Scheduled: Grand Rounds, University of _____