

## CURRICULUM VITAE

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### Education

1977-1979 A.S., College of Mount St. Joseph, Cincinnati OH  
1977-1979 R.R.T., Christ Hospital School of Respiratory Therapy, Cincinnati OH  
1994-1996 B.A., College of Mount St. Joseph, Cincinnati OH  
2001-2004 M.Sc., The George Washington University, Washington, DC

### Positions Held

1/12- 1/14 UC Health Research Executive Committee  
10/10 – present Professor of Surgery, Director of Clinical Research, University of Cincinnati College of Medicine, Cincinnati, OH  
2/10 – present Medical Director, Post Approval Monitoring Program, Office of Research Compliance University of Cincinnati  
3/05-1/11 Adjunct Faculty, College of Pharmacy, University of Cincinnati  
5/05 – present Adjunct Faculty, USAF School of Aerospace Medicine  
7/02-12/03 Graduate Teaching Assistant, Adjunct Faculty, College of Health Sciences, George Washington University, Washington D. C.  
8/99- 10/10 Associate Professor of Surgery, Director of Clinical Research, University of Cincinnati College of Medicine, Cincinnati OH  
9/93-8/99 Assistant Professor of Clinical Surgery, Department of Surgery, University of Cincinnati College of Medicine, Cincinnati OH  
12/84-8/93 Clinical Instructor, Division of Trauma and Critical Care, Department of Surgery, University of Cincinnati College of Medicine, Cincinnati OH  
1982-1984 Clinical Instructor and Advisory Board Member, Cincinnati Technical College, Cincinnati OH  
1982-1984 Clinical Instructor and Advisory Board Member, College of Mount St. Joseph, Cincinnati OH

- 1980-1984 Supervisor, Department of Respiratory Therapy, University of Cincinnati Medical Center, Cincinnati OH
- 1978-1980 Staff Therapist and Clinical Coordinator - Newborn ICU, Children's Hospital Medical Center, Cincinnati OH

**Licensure**

- 1979 Registered Respiratory Therapist No. 10886, National Board of Respiratory Care

**Certificates**

- 1984-present Instructor, Advanced Cardiac Life Support, American Heart Association
- 1984 Advanced Cardiopulmonary Dynamics, Bird Institute of Biomedical Technology
- 1979-present Basic Cardiac Life Support, American Heart Association

**Honors**

- 2011 Jimmy Young Medal, American Association for Respiratory Care
- 2010 Top Reviewer, CHEST, American College of Chest Physicians
- 2005 Life Membership, American Association for Respiratory Care
- 2005 Forrest M Bird Lifetime Scientific Achievement Award, American Association for Respiratory Care
- 2004 National Alpha Eta Honor Society, George Washington University
- 2002 Fellow, American College of Critical Care Medicine
- 2000 Fellow, American Association for Respiratory Care
- 1996 The Allen DeVilbiss Technology Paper Award, American Respiratory Care Foundation
- 1995 Best Original Paper, American Respiratory Care Foundation
- 1995 Lifecare Fellowship in Mechanical Ventilation, American Respiratory Care Foundation
- 1993 Golden Tree of Life Award, New York Society of Respiratory Care
- 1989 Armour Literary Award, American Association of Respiratory Care
- 1987 Armour Literary Award, American Association of Respiratory Care
- 1985 Armour Literary Award, American Association of Respiratory Care

**Memberships**

- 2001 Association of Clinical Research Professionals
- 1998 American Thoracic Society
- 1996 American College of Chest Physicians
- 1994 American Society for Testing Materials
- 1994 International Standards Organization
- 1993 National Institutes of Health, SBIR Grant Review SSS 8
- 1987 American Society of Parenteral and Enteral Nutrition
- 1984 Society of Critical Care Medicine
- 1983 Ohio Society of Critical Care Medicine
- 1979 Critical Care Section, American Association for Respiratory Care
- 1977 American Association for Respiratory Care
- 1977 Ohio Society of Respiratory Care

## Committee Appointments

### American Association for Respiratory Care:

2018- present Editor-in-Chief, *Respiratory Care*  
2008- 2018 Deputy Editor, *Respiratory Care*  
1998-2000 Chair, Fellows Committee  
1997-2007 Associate Editor, *Respiratory Care*  
1993-1997 Member, Respiratory Care Research Council  
1989-present Member, Committee on Guidelines - Mechanical Ventilation  
1988-present Editorial Board, *Respiratory Care*  
1986-1988 Member, Research Committee  
1988-1990 Chairman, Adult Acute Care Section  
1988 Member, Ad-Hoc Committee on Ventilator Dependent Units  
1986-1988 Chair-Elect, Adult Acute Care Section  
1986-1988 Consulting Editor, *Respiratory Care*  
1998-1999 Chairman, American College of Respiratory Care Selection Cmte

### American Society for Testing Materials (ASTM):

1994-present Member, Committee F29 on Anesthesia and Respiratory Equipment

### International Standards Organization (ISO):

1994-present Member, Technical Committee ISO/TC 121 - Anaesthetic and respiratory equipment

### American Heart Association

2008- 2012 Emergency Cardiovascular Care Basic Life Support (BLS) Subcommittee  
2006 – 2012 ACLS subcommittee on devices

### American Thoracic Society

2001 Member, Committee on Guidelines for Inhaled Nitric Oxide Therapy

### Society of Critical Care Medicine:

1988-2001 Member, Committee on Standards for Critical Care Units  
1998-2003 Member, Membership Committee  
1998-2001 Member, Critical Care in the Community Hospital Guidelines  
1998-2001 Member, Program Committee  
1998-2000 Member, Models of Critical Care Practice Committee  
2003-2006 Member, Safety Committee  
2003-2005 Chair, Respiratory Care Section  
2006- 2010 Fundamentals of Disaster Committee  
2006 – 2010 Compensation Committee  
2009-2011 Strategic Education Committee  
2013-2014 Program Committee  
2015 Co-chair Program Committee

### American College of Critical Care Medicine

2001 Fellow  
2005-2012 Board of Regents  
2006-2010 Co-chair Committee of Guidelines  
2006 -present Member, Emerging Paradigms in Critical Care Conference  
2009 -2010 Secretary Treasurer, ACCM Board of Regents  
2009-2010 Credentials Committee, ACCM  
2010-2011 Vice-Chancellor, ACCM Board of Regents  
2011-2012 Chancellor, ACCM Board of Regents

Emergency Care Research Institute  
2008 – present Editorial Board, Health Devices  
2000 – present Clinical Reviewer

Food & Drug Administration  
2004-present Panel Member Anesthesia and Respiratory Devices

### **Reviewer**

Annals of Intensive Care Medicine  
American Journal of Respiratory and Critical Care Medicine  
Chest  
Critical Care Medicine  
Critical Care  
Intensive Care Medicine – Editorial Board Member  
JAMA  
Journal of Critical Care  
Journal of Trauma  
Lung  
Medical Engineering & Physics  
Military Medicine  
Nutrition  
Patient Education and Counseling  
Pediatric Research  
Respiratory Care – Deputy Editor  
Respirology  
Transactions on Biomedical Engineering

### **Publications**

1. Branson RD, Hurst JM, DeHaven CB. Synchronous independent lung ventilation in the treatment of unilateral pulmonary contusion: A report of two cases. *Respir Care* 1984; 29:361-367.
2. Branson RD. Dyspnea and crepitation in an infant. *Respir Care* 1984; 29:763-764.
3. Branson RD, Hurst JM, DeHaven CB. Use of high frequency jet ventilation during mechanical hyperventilation for control of elevated intracranial pressure. *Respir Care* 1984; 29:1221-1225.

4. Hurst JM, Saul T, DeHaven CB, Branson RD. Use of high frequency jet ventilation during mechanical hyperventilation to reduce intracranial pressure in patients with multiple organ-system injury. *Neurosurg* 1984; 15:530-534.
5. Hurst JM, DeHaven CB, Branson RD. Comparison of conventional mechanical ventilation and Synchronous Independent Lung Ventilation (SILV) in the treatment of unilateral lung injury. *J Trauma* 1985; 25:766-770.
6. Branson RD, Hurst JM, DeHaven CB. Mask CPAP: State of the art. *Respir Care* 1985; 30:846-857.
7. Hurst JM, DeHaven CB, Branson RD. Use of CPAP mask as the sole mode of ventilatory support in trauma patients with mild to moderate respiratory insufficiency. *J Trauma* 1985; 25:1065-1068.
8. DeHaven CB, Hurst JM, and Branson RD. Postextubation hypoxemia treated with a continuous positive airway pressure mask. *Crit Care Med* 1985; 13:46-48.
9. Hurst JM, DeHaven CB, Branson RD, Solomkin J. Combined use of high-frequency jet ventilation and induced hypothermia in the treatment of refractory respiratory failure. *Crit Care Med* 1985; 13:771-772.
10. Branson RD, Hurst JM. Book Review: Mechanical Ventilation. *Respir Care* 1985; 30:720-721.
11. Adams KS, Branson RD. Unusual finding in resolving pneumonia. *Respir Care* 1985; 30:160-162.
12. Hurst JM, Zumwalt R, Branson RD, DeHaven CB. Bronchopulmonary dysplasia in an adult: A case report. *Respir Care* 1985; 30:759-763.
13. Branson RD, Hurst JM, Adams KS, Kessinger CK. Ventilators for aeromedical transport: Description and performance evaluation. *Hosp Aviation* 1985; 4:13-19.
14. Branson RD, Hurst JM, Adams KS, Kessinger CK. Utilization of mechanical ventilators in hospital based air ambulance programs. *Hosp Aviation* 1986; 5:6-7.
15. DeHaven CB, Hurst JM, Branson RD. Evaluation of two different extubation criteria: Attributes contributing to success. *Crit Care Med* 1986; 14:92-94.
16. Branson RD, Hurst JM. Book Review: Comprehensive Management of Respiratory Emergencies. *Respir Care* 1986; 31:425.
17. Branson RD, Hurst JM. Book Review: Decision Making in Critical Care. *Respir Care* 1986; 31:425-426.

18. Branson RD. Response to "One-way valves in CPAP systems". *Respir Care* 1986; 31:540.
19. Kessinger CK, Branson RD, Hurst JM. Evaluation of blunt chest injury. *Respir Care* 1986; 31:725-726.
20. Branson RD. Home oxygen therapy with high humidity for tracheostomy patients. *RX Home Care* 1986; 8:49-52.
21. Adams KS, Branson RD. Respiratory distress following thymectomy. *Respir Care* 1986; 31:1225-1226.
22. Hurst JM, Branson RD. Current concepts of high-frequency ventilation. *Curr Surg* 1987; 44:7-12.
23. Hurst JM, Branson RD, DeHaven CB. The role of high-frequency ventilation in post-traumatic respiratory insufficiency. *J Trauma* 1987; 27:236-242.
24. Branson RD. Humidification, a dry subject, but... (editorial). *Respir Care* 1987; 32:731-732.
25. Branson RD, Hurst JM, Warner B, Bower R, Arita A. Measured vs predicted resting energy expenditure in mechanically ventilated patients with COPD. *Respir Care* 1987; 32:748-752.
26. Barrette RR, Hurst JM, Branson RD, Davis Jr K. A comparison of conventional mechanical hyperventilation with two forms of high-frequency ventilation for the control of intracranial pressure in closed-head injury. *Respir Care* 1987; 32:733-740.
27. Branson RD, Hurst JM. Laboratory evaluation of moisture output of seven airway heat and moisture exchangers. *Respir Care* 1987; 32:741-747.
28. Stormer TA, Branson PS, Branson RD. PFT Corner: Noisy breathing in a 16 month old. *Respir Care* 1987;32:806-807.
29. Adams KS, Branson RD, Hurst JM. Monitoring oxygenation with oximetry during transport. *Resp Management* 1987; 17:63-69.
30. Branson RD, Hurst JM. Nutrition and respiratory function: Food for thought (editorial). *Respir Care* 1988;33:89-92.
31. Branson RD. Ventilators and loss of electrical power. Response and responsibility (editorial). *Respir Care* 1988; 33:177-178.
32. Branson RD, Hurst JM, Davis Jr K, Pulsfort R. A laboratory evaluation of the Biergy VVR calorimeter. *Respir Care* 1988; 33:341-347.

33. Branson RD. PEEP without endotracheal intubation. *Respir Care* 1988; 33:598-610.
34. Branson RD. Contamination of multiple-use humidifiers in ambulances. *Ann Emerg Med* 1988; 17:761.
35. Branson RD. The responsibility of medical-product evaluators and inventors to avoid conflict of interest (editorial). *Respir Care* 1988; 33:769-770.
36. Ploysongsang Y, Branson RD, Rashkin MC, Hurst JM. Pressure flow characteristics of commonly used heat-moisture exchangers. *Amer Rev Respir Dis* 1988; 138:675-678.
37. Hurst JM, Branson RD, Davis Jr K. High frequency percussive ventilation in the management of elevated intracranial pressure. *J Trauma* 1988; 28:1363-1367.
38. O'Donahue WJ, Branson RD, Hoppough JM, Make BJ. Criteria for establishing units for chronic ventilator-dependent patients. *Respir Care* 1988; 33:1044-1045.
39. Task Force on Guidelines. Recommendations for services and personnel for delivery of care in a critical care setting. *Crit Care Med* 1988; 16:809-813.
40. Hurst JM, Branson RD, Davis Jr K, Barrette RR. Cardiopulmonary effects of pressure support ventilation. *Arch Surg* 1989; 124:1067-1070.
41. Branson RD, Hurst JM, Davis Jr K, Campbell RS. Measurement of maximal inspiratory pressure: A comparison of three methods. *Respir Care* 1989; 34:789-794.
42. Ploysongsang Y, Branson RD, Hurst JM, Rashkin M. Effect of flow rate and duration of use on the pressure drop across six artificial noses. *Respir Care* 1989; 34:902-907.
43. Branson RD. Artificial noses. The unanswered questions. *Respir Care* 1989; 34:969-971.
44. Hurst JM, Davis Jr K, Branson RD, Johannigman JA. Comparison of blood gases during transport using two methods of ventilatory support. *J Trauma* 1989; 29:1637-1640.
45. Hurst JM, Davis Jr K, Branson RD, Adams KS, Barrette RS. Comparison of conventional mechanical ventilation and high frequency ventilation: A prospective, randomized trial in patients with respiratory failure. *Ann Surg* 1990; 21:486-491.
46. Branson RD. The measurement of energy expenditure: Instrumentation, practical considerations, and clinical application. *Respir Care* 1990; 35:640-668.

47. Johannigman JA, Branson RD, Campbell RS, Hurst JM. Laboratory and clinical evaluation of the Max transport ventilator. *Respir Care* 1990; 35:952-959.
48. Campbell RS, Branson RD, Hurst JM. Non-ventilatory cause of hypercapnia during weaning. *Respir Care* 1990; 35:1001-1002.
49. Branson RD, Campbell RS, Davis Jr K, Johannigman JA, Hurst JM. Comparison of the effects of pressure support ventilation by two ventilators. *Respir Care* 1990; 35:1049-1055.
50. Branson RD, Campbell RS, Davis Jr K, Johannigman JA, Johnson DJ, Hurst JM. Altering flowrate during maximum pressure support ventilation: Effects on cardiorespiratory function. *Respir Care* 1990; 35:1056-1064.
51. Branson RD. Pioneers in respiratory care: Forrest M. Bird. *AARC Times* 1990; 14:51-57.
52. Branson RD. Humidification of inspired gases during mechanical ventilation. *RT* 1991; 3:54-66.
53. Johannigman JA, Branson RD, Davis Jr K, Hurst JM. Techniques of emergency ventilation: A model to evaluate tidal volume, airway pressure, and gastric insufflation. *J Trauma* 1991; 31:93-98.
54. Johannigman JA, Branson RD. Oxygen enrichment of expired gas for mouth-to-mask resuscitation. *Respir Care* 1991; 36:99-103.
55. Branson RD. Enhanced capabilities of current ICU ventilators: Do they really benefit patients? *Respir Care* 1991; 36:362-376.
56. Branson RD. Book Review: *Clinical Applications of Ventilatory Support*. *Respir Care* 1991; 36:439.
57. Branson RD. Book Review: *Resuscitation Handbook*. *Respir Care* 1991; 36:439-440.
58. Johnson DJ, Johannigman JA, Branson RD, Davis Jr K, Hurst JM. The effects of low dose dopamine on splanchnic blood flow during PEEP ventilation for acute lung injury. *J Surg Res* 1991; 50:344-349.
59. Branson RD, Campbell RS, Thompson D. Ventilator circuits: What you see may not be what you get. *Respir Care* 1991; 36:629-630.
60. Branson RD. The environment is our concern. *AARC Times* 1991; 15:96-97.
61. Branson RD. Ventilator circuit resistance: A clarification. *Respir Care* 1991; 36:874.



62. Task Force on Guidelines. Guidelines for standards of care for patients with acute respiratory failure on mechanical ventilatory support. *Crit Care Med* 1991; 19:275-278.
63. Purcell PN, Johannigman JA, Branson RD, Johnson DJ. PEEP ventilation for acute lung injury decreases hepatic oxygen supply and increases hepatic oxygen demand. *Current Surgery* 1991; 48:435-438.
64. Purcell PN, Johnson DJ, Branson RD, Davis Jr K. Systemic hemodynamics estimate changes in gut perfusion during lung injury managed with positive end-expiratory pressure (PEEP). *Surg Forum* 1991; 42:48-49.
65. Rouse MJ, Branson RD, Semonin-Holleran R. Mechanical ventilation during air medical transport: Techniques and devices. *J Air Med Transport* 1992; 11:5-8.
66. Branson RD, Campbell RS. Sighs: Wasted breath or breath of fresh air? *Respir Care* 1992; 37:462-468.
67. Branson RD, Campbell RS. Monitoring respiratory function in the ICU. *RT* 1992; 3:24-28.
68. Branson RD. Intrahospital transport of critically ill, mechanically ventilated patients. *Respir Care* 1992; 37:775-795.
69. Purcell PN, Branson RD, Hurst JM, Davis Jr K, Johnson DJ. Gut feeding and hepatic hemodynamics during PEEP ventilation for lung injury. *J Surg Res* 1992; 53:335-341.
70. Purcell PN, Branson RD, Schroeder TJ, Davis Jr K, Johnson DJ. Monoethylglycinexylidide (MEGX) production parallels changes in hepatic blood flow and oxygen delivery in lung injury managed with positive end-expiratory pressure. *J Trauma* 1992; 33:482-486.
71. Campbell RS, Branson RD. How ventilators provide temporary O<sub>2</sub> enrichment: What happens when you press the 100% suction button? *Respir Care* 1992; 37:933-937.
72. Branson RD, Campbell RS, Chatburn RL, Covington J. Clinical Practice Guidelines: Patient Ventilator System Check. *Respir Care* 1992; 37:882-886.
73. Branson RD, Campbell RS, Chatburn RL, Covington J. Clinical Practice Guidelines: Humidification During Mechanical Ventilation. *Respir Care* 1992; 37:887-890.
74. Branson RD, Campbell RS. Some history related to the sigh. Letter to the editor. *Respir Care* 1992;37:951-952.

75. Branson RD. 'Bye sigh. Letter to the editor. *Respir Care* 1992; 37:952.
76. Branson RD, Brougher P, Chatburn RL, East TD, Marini JJ, MacIntyre NR. Consensus statement on the essentials of mechanical ventilators. *Respir Care* 1992; 37:1000-1008.
77. Branson RD, Chatburn RL. Technical description and classification of modes of ventilator operation. *Respir Care* 1992; 37:1026-1044.
78. Purcell PN, Branson RD, Davis Jr K, Johnson DJ. Histamine-2 blocker infusion decreases portal venous blood flow and hepatic blood flow in anesthetized canines. *Surg Forum* 1992; 43:53-55.
79. Hurst JM, Davis K Jr, Johnson DJ, Branson RD, Campbell RS, Branson PS. Cost and complications during in-hospital transport of critically ill patients: a prospective cohort study. *J Trauma*. 1992 Oct;33(4):582-5.
80. Purcell PN, Davis Jr K, Branson RD, Johnson DJ. Continuous duodenal feeding restores gut blood flow and increases gut oxygen utilization during PEEP ventilation for lung injury. *Am J Surg* 1993; 165:188-194.
81. Branson RD, Chatburn RL. Humidification of inspired gases during mechanical ventilation. *Respir Care* 1993; 38:461-468.
82. Campbell RS, Branson RD. Ventilatory support for the 90's: Pressure support ventilation. *Respir Care* 1993; 38:526-537.
83. Branson RD, Campbell RS, Chatburn RL, Covington J. AARC Clinical Practice Guideline: Endotracheal suctioning of mechanically ventilated adults and children with artificial airways. *Respir Care* 1993; 38:500-504.
84. Branson RD. The nuts and bolts of increasing arterial oxygenation: Devices and techniques. *Resp Care* 1993; 38:672-686.
85. Davis Jr K, Branson RD, Campbell RS, Porembka D, Johnson DJ. The addition of sighs during pressure support ventilation. Is there a benefit? *Chest* 1993; 104:867-870.
86. Branson RD, Davis Jr K, Campbell RS, Johnson DJ, Porembka DT. Humidification in the intensive care unit: Prospective study of a new protocol utilizing heated humidification and a hygroscopic condenser humidifier. *Chest* 1993; 104:1800-1805.
87. Davis Jr. K, Johnson DJ, Branson RD, Campbell RS, Johannigman JA, Porembka D. Airway pressure release ventilation. *Arch Surg* 1993; 128:1348-1352.
88. Branson RD. Faulty ventilator and functionally crossed pipelines (letter). *Anaesthesia* 1993; 48:270.

89. Valente JF, Anderson GL, Branson RD, Johnson DJ, Davis Jr K, Porembka D. Disadvantages of prolonged propofol sedation in the critical care unit. *Crit Care Med* 1994; 22:710-712.
90. Branson RD. Decreasing the work of breathing: How much of a change is important? *Respir Care* 1994; 39:187-189.
91. Branson RD. Flow-triggering systems. *Respir Care* 1994; 39:138-144.
92. Davis Jr. K, Branson RD, Porembka D. A comparison of the imposed work of breathing with endotracheal and tracheostomy tubes in a lung model. *Respir Care* 1994; 39:611-616.
93. Branson RD, Campbell RS, Davis Jr K, Johnson DJ. Comparison of pressure and flow triggering systems during continuous positive airway pressure. *Chest* 1994; 106:540-544.
94. Branson RD, Fischer JE. Indirect calorimetry and its application in the critical care setting. *Pathways in Critical Care* 1994; 1:1-5.
95. Branson RD. Technical aspects of metabolic measurements (editorial). *Nutrition* 1995; 11:176.
96. Branson RD, Johannigman JA. Ventilatory support during cardiopulmonary resuscitation. *Respir Care* 1995; 40:479-497.
97. Haas CF, Branson RD, Folk LM, Campbell RS, Wise CR, Davis Jr K, Dechert RE, Weg JG: Patient-determined inspiratory flow during assisted mechanical ventilation. *Respir Care* 1995; 40:716-721.
98. Johannigman JA, Branson RD, Johnson DJ, Davis Jr K, Hurst JM. Out-of-hospital ventilation: Bag-valve device vs transport ventilator. *Acad Emerg Med* 1995; 2:719-724.
99. Branson RD. Broadening our outlook - Oxygen therapy in the People's Republic of China (editorial). *Respir Care* 1995; 40:810.
100. Davis Jr K, Johannigman JA, Johnson Jr. RC, Branson RD. Lung compliance following cardiac arrest. *Acad Emerg Med* 1995; 2:874-878.
101. Hess D, Branson RD. Case studies on mechanical ventilator innovations: Perspectives of two clinicians. *Respir Care* 1995; 40:957.
102. Branson RD, Davis Jr K. Work of breathing imposed by five ventilators used for long-term support: The effects of PEEP and simulated patient demand. *Respir Care* 1995; 40:1270-1278.

103. Branson RD, MacIntyre NR. Dual-control modes of mechanical ventilation. *Respir Care* 1996; 41:294-302.
104. Branson RD. Humidity and standards: More questions than answers (letter). *Respir Care* 1996; 41:344-345.
105. Hurst JM, Branson RD. Liquid breathing - partial liquid ventilation. *Respir Care* 1996; 41:416-423.
106. Branson RD, Davis Jr K. Evaluation of 21 passive humidifiers according to the ISO 9360 standard: moisture output, dead space, and flow resistance. *Respir Care* 1996; 41:736-743.
107. Branson RD, Davis Jr K, Brown R, Rashkin M. Comparison of three humidification techniques during mechanical ventilation: patient selection, cost, and infection considerations. *Respir Care* 1996; 41:809-816.
108. Branson RD. What is tracheal pressure-triggering and do we need it? NO! We don't need it! (Editorial) *Respir Care* 1996; 41:526-528.
109. Davis Jr K, Branson RD, Campbell RS, Porembka DT. Comparison of volume control and pressure control ventilation: Is flow waveform the difference? *J Trauma* 1996; 41:808-814.
110. Campbell RS, Branson RD, Burke W, Covington J, Graybeal J. Capnography/capnometry during mechanical ventilation. AARC Clinical Practice Guideline. *Respir Care* 1996; 40:1321-1324.
111. Johannigman JA, Branson RD. Ventilatory support in the field. *Respiratory Care Clinics of North America*. W.B. Saunders, Philadelphia, PA, 1996.
112. Branson RD, Meredith R. Role of the respiratory care practitioner in the emergency department. *Respir Care* 1997; 41:141-147.
113. Grolman W, Blom ED, Branson RD, Schouwenburg PF, Hamaker RC. An efficiency comparison of four heat and moisture exchangers used in the laryngectomized patient. *Laryngoscope* 1997; 107:814-820.
114. Branson RD, Campbell RS, Johannigman JA. Excessive work of breathing, active exhalation, and retardation of expiratory flow: What's the problem and where's the problem? *Respir Care* 1997; 42:791-795.
115. Branson RD, Campbell RS, Davis Jr K. Effect of expiratory flow on moisture output of passive humidifiers as measured by the ISO 9360 standard. *Respir Care* 1997; 42:960-964.

116. Campbell RS, Branson RD, Johannigman JA, Davis Jr K. Erratic ventilator triggering during neuromuscular blockade. *Respir Care* 1997; 42:1048-1056.
117. Branson RD. Is a nose just a nose? (editorial) *Chest* 1997; 112:581.
118. Johannigman JA, Davis Jr K, Campbell RS, Branson RD, Luchette FA, Hurst JM. Use of the rapid/shallow breathing index as an indicator of patient work of breathing during pressure support ventilation. *Surgery* 1997; 122:737-741.
119. Johannigman JA, Davis Jr K, Campbell RS, Luchette FA, Hurst JM, Branson RD. Inhaled nitric oxide in ARDS. *J Trauma* 1997; 43:904-909.
120. Branson RD. Airway pressures and volutrauma. (editorial) *Respir Care* 1997; 42:1167-1169.
121. Hess DR, Ritz R, Branson RD. Delivery systems for inhaled nitric oxide. *Respiratory Care Clinics of North America*. 1997;3:371-410.
122. Branson RD, Campbell RS. Triggering the ventilator. *Current Opinion in Critical Care* 1998; 4:48-58.
123. Branson RD, Campbell RS, Davis Jr K, Porembka DT. Anaesthesia Circuits, humidity output, and mucociliary structure and function. *Anaesthesia and Intensive Care* 1998; 26:178
124. Johannigman JA, Campbell RS, Branson RD, Hurst JM. Ventilatory support of the critically injured patient. *New Horizons* 1999;7:116-130.
125. Branson RD. The effects of inadequate humidity. *Respiratory Care Clinics of North America*. 1998;4:199-214.
126. Branson RD, Campbell RS. Humidification in the intensive care unit. *Respiratory Care Clinics of North America*. 1998;4:305-320.
127. Branson RD. Jack Emerson: The man behind the machines. Notes on his life and contributions to respiratory care. *Respiratory Care* 1998;43:567-571.
128. Davis Jr. K, Campbell RS, Johannigman JA, Valente JF, Branson RD. Changes in Respiratory Mechanics After Tracheostomy. *Arch Surg* 1999; 134:59-62.
129. Branson RD, Campbell RS. Pressure Support Ventilation, Patient-Ventilator Synchrony, and Ventilator Algorithms. *Respiratory Care* 1998; 43:1045-1047.
130. Branson RD. New modes of mechanical ventilation. *Current Opinion in Critical Care* 1999; 5:33-42.
131. Branson RD, Hess DR, Campbell RS, Johannigman JA. Inhaled Nitric Oxide:

- Delivery Systems and Monitoring. *Respiratory Care* 1999;44:281-307.
132. Davis K Jr, Evans SL, Johannigman JA, Campbell RS, Luchette FA, Porembka D, Branson RD. Extended use of heat and moisture exchangers does not effect efficacy or safety. *Critical Care Medicine* 2000;28:1412-1418.
  133. Branson RD. Humidification for patients with artificial airways. *Respiratory Care* 1999;44:630-641.
  134. Branson RD, Campbell RS, Johannigman JA, Ottaway M, Davis K Jr., Luchette FA, Frame SB. Comparison of Conventional Heated Humidification with A New Active Hygroscopic Heat and Moisture Exchanger In Mechanically Ventilated Patients. *Respiratory Care* 1999;44:912-917.
  135. Johannigman JA, Davis K Jr., Campbell RS, Luchette FA, Frame SB, Branson RD. The effects of PEEP on response to inhaled nitric oxide: Changing non-responders to responders. *Surgery* 2000;127:390-394.
  136. Branson RD, Campbell RS, Davis K Jr. New modes of mechanical ventilation. *International Anesthesiology Clinics* 1999;37:103-125.
  137. Luchette FA, Porembka D, Davis K Jr., Branson RD, James L, Hurst JM, Johannigman JA, Campbell RS. Effects of body temperature on accuracy of continuous cardiac output measurements. *Journal of Investigative Surgery* 2000;13:147-152.
  138. Davis K Jr., Johannigman JA, Campbell RS, Marraccini A, Luchette FA, Frame SB, Branson RD. The acute effects of body position strategies and respiratory therapy in paralyzed patients with acute lung injury. *Critical Care* 2001;5:81-87.
  139. Johannigman JA, Davis K Jr., Miller SL, Luchette FA, Frame SB, Branson RD. Prone Positioning for Acute Respiratory Distress Syndrome in the Surgical Intensive Care Unit: Who, When, and How Long? *Surgery* 2000;128:708-716.
  140. Hess DR, Branson RD. Ventilators and weaning modes. *Respiratory Care Clinics of North America* 2000;6:193-225.
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#### Abstracts

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#### **Guest Editor**

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## **Grant Funding**

### **Current**

FA8650-12-2-6B10 (Johannigman/Branson) 05/09/2012-05/08/2015 1.20 cal  
United States Air Force \$126,047

Closed Loop Control of Oxygen Delivery and Oxygen Generation

Aims of this project include creation of a control system interface to allow ventilator control of two different oxygen concentrators using continuous flow output of the concentrator and pulse dose delivery, measurement of the oxygen delivered by these techniques, and overall system efficacy determination based on oxygen delivered, power consumption, and complexity.

FA8650-12-2-6B11 (Johannigman/Branson) 05/08/2012-05/07/2015 1.20 cal  
United States Air Force \$236,248

Closed Loop Control of Mechanical Ventilation



The goals of this study are to identify the ventilator requirements of civilian trauma patients, examine the potential role of end-tidal carbon dioxide monitoring in trauma patients for control of ventilation, and to use the height and predicted body weight to guide ventilator settings through either a decision assist mechanism or full closed loop control.

FA8650-12-2-6B12 (Branson) 07/11/2012-12/10/2013 2.40 cal  
United States Air Force \$101,364

Performance of the Volumetric Diffusive Respirator at Altitude

The main objective of this study is to evaluate the VDR-4, a ventilator used by the USAF Acute Lung Team assess the function of this device upon and any and all associated changes in gas density at altitude during aeromedical evacuation of critically injured casualties.

N00014-10-1-0252 (Johannigman) 01/01/2010-3/31/2014 3.00 cal

Office of Naval Research \$243,971

Automatic Control of Inspired Oxygen and PEEP in Mechanically Ventilated Trauma Patients

Goals of this project include delivery of oxygen to patients to prevent hypoxemia, and apply PEEP to minimize compressed O<sub>2</sub> and stabilize lung volume, with PEEP and FIO<sub>2</sub> controllers working in an integrated fashion to patients in order to support the critically injured until critical care physician support is reached.

Role: Co-I

FA8650-13-2-6B15 (McMullan) 12/20/2012-03/19/2014 0.60 cal

United States Air Force \$15,339

Oxygen Flow Rate Requirements of Critically Injured Patients

The main objective of this study is to determine and optimize oxygen flow rates for critically injured trauma patients under parameters of altitude and various transport conditions for future device implementation and usage.

Role: Co-I

U01 HL077863 (sub# 0008027A) 01/01/2011-12/31/2014 1.80 cal

NIH prime (UTHSC) (Muskat) \$411,111

Prospective, Randomized Optimal Platelet and Plasma Ratios (PROPPR)

This is a multi-center clinical trial with goals of examining the platelet and plasma ratios that are optimal for massive transfusion into critically injured patients. Role: Co-I

FA8650-13-2-6B16 (Branson) 04/01/2013-09/30/2014 0.60 cal

United States Air Force \$117,193

Performance of Chemical Oxygen Generators and Concentrators for En Route Care at Altitude and Temperature Extremes

The main objective of this study is to evaluate the efficacy of several types of portable and/or chemical oxygen generators and for delivery of oxygen and maintenance of a desired oxygen concentration level to critically injured patients while traveling at altitude to emergency care facilities.

W81XWH-12-1-0598 (Kinsky) (subcontract) 09/30/2012-09/29/2015 0.60 cal

University of Texas Medical Branch at Galveston \$14,936

Smart Oxygen Monitors to Diagnose and Treat Cardiopulmonary Injuries

Specific functional evaluation of the CLO<sub>2</sub>-FiO<sub>2</sub> oxygen monitoring system will be performed and analyzed by the main clinical site. This system, among others, will be reviewed and assessed and the SOS algorithm to detect pulmonary injury will be refined.

Role: Site Principal Investigator

FA8650-13-2-6B19 (Branson) 06/03/2013-03/02/2014 0.60 cal

United States Air Force \$96,355

Performance of Portable Ventilators for En Route Care at Altitude and Temperature Extremes

The main objective of this study is to evaluate the efficacy of several types of portable and/or chemical oxygen generators and concentrators for delivery of oxygen and maintenance of a desired oxygen concentration level to critically injured patients while traveling at altitude to emergency care facilities.

1UM1HL08724 (sub from Beth Israel) 09/01/2013-06/30/2014 1.20 cal

NIH/NHLBI prime, UC PI: Johannigman \$36,428 plus per patient reimbursement

EPVent 2-A Phase II Trial Esophageal Pressure Guided Ventilation

The main goals of this project include evaluation of mechanical ventilation in SICU and MICU patients using either esophageal manometry or standard of care ventilation mechanisms.

Evaluation will be achieved by daily measurements along with changes in PEEP as per protocol specifications.

## Completed

1. Title: Automatic Control of Inspired Oxygen in Mechanically Ventilated Trauma Patients  
Office of Naval Research 5/1/2006-7/31/2009 85% Effort  
PI: Dr. Jay Johannigman Project Total \$: \$932,646  
Role: Co-investigator
2. Title: Evaluation of Oxygen Concentrators at Altitude  
National Space BioMedical Research Institute 4/1/2008-3/31/2009 15% Effort  
PI: Dr. Jay Johannigman Project Total \$: \$100,000  
Role: Co-Investigator
3. Title: Pre-clinical and Regulatory Affairs as a Precursor of Testing an Algorithm for Setting PEEP and FIO<sub>2</sub> via Closed Loop  
Office of Naval Research 3/15/2007-1/14/2008  
PI: Dr. Jay Johannigman Project Total \$: 80,000 20% Effort  
Role: Co-Investigator
4. Title: Determination of Oxygen Requirement in Hypoxic Environments  
National Space BioMedical Research Institute 8/1/2006-7/31/2007 36% Effort  
PI: Dr. Jay Johannigman Project Total \$: \$100,000  
Role: Co-Investigator

5. Title: Clinical Interventions to Increase Organ Procurement  
 University of Pittsburgh 9/1/2005-8/31/2006 15% Effort  
 PI: Dr. Steven Rudich Project Total \$: \$41,916  
 Role: Site coordinator
6. Title: Reducing Secondary Insults in TBI  
 Department of Defense 9/30/2009-9/29/2011 10% Effort  
 PI: Dr. Jay Johannigman Project Total \$: \$450,000  
 Role: Co-investigator
7. Title: Success of ventilation with varying airways using the SAVe resuscitator in a human simulator.  
  
 Department of Defense 9/30/2009-9/29/2011 20% Effort  
 PI: Richard Branson Project Total \$: \$52,000
8. Title: Prospective Observational Multicenter Massive Transfusion Study (PROMMT)  
 University of Texas Health Science Center 6/1/09-9/15/2010 20% Effort  
 PI: Dr. Peter Muskat Project Total \$: \$ 381,921  
 Role: Coordinator
9. Title: Do Trauma Patients Need Oxygen? Prevalence of Pre-hospital Hypoxemia in Trauma Patients  
 The Henry Jackson Foundation (USAF) 8/1/09-8/16/10 20% Effort  
 PI: Dr. Jason McMullan Project Total \$: \$224,007  
 Role: Co-investigator
10. Title: Determining the Oxygen Requirements Using an Oxygen Concentrator at Altitude  
  
 HPW 711<sup>th</sup> (USAF) 2/1/2011 – 1/30/2013 30% Effort  
 PI: Richard Branson Project Total: \$784,000  
 Role: PI
11. Title: Effect of Omega-3 Fatty Acid Supplementation on Infection Rate and Morbidity in Multisystem Trauma Patients  
  
 Department of Defense 9/30/2009-9/29/2011 10% Effort  
 PI: Dr. Athota Project Total \$: \$654,960  
 Role: Co-investigator

### **Pending**

711 HPW 14-013 (PI Branson) 12/01/2013-11/30/2014 1.20 cal  
 United States Air Force / DoD \$67,365  
 Correction of Altitude Induced Changes in Performance of the Volumetric Diffusive Respirator (VDR) Ventilator

Major goals of this study include determination of ability of CCATT members to correct altitude induced changes in VDR performance and restore lung protective ventilation, and to determine the best method for monitoring altitude induced changes and returning parameter settings to lung protective baseline settings.

711 HPW 14-011 (PI Blakeman) 12/01/2013-11/30/2014 0.60 cal

United States Air Force / DoD \$87,294

Automatic Tracheal Tube Cuff Management at Altitude

The major goal of this study will be achieved through evaluation of three automatic ETT cuff pressure adjustment devices with changes simulated altitude during ascent, at altitude, and descent in an altitude chamber. This study will evaluate 2 sizes of ETT with each device to determine if the use of any of these devices may be superior to the current ETT cuff management practice in the aeromedical evacuation environment.

Role: Co-I

711 HPW 14-016 (PI Branson) 12/01/2013-11/30/214 1.20 cal

United States Air Force / DoD \$100,703

Impact of Hypobarism During Simulated Transport on CCATT Performance

The major objectives of this study are to determine the physiologic response to hypobarism during training flights in CCATT Teams, and to determine the relationship between physiologic derangements during flight and student performance.

711 HPW 14-017 (PI Gomaa) 12/01/2013-11/30/2014 2.40 cal

United States Air Force / DoD \$94,932

Impact of Changes in Oxygenation on Non-Invasive Hemoglobin (SpHgb)

The goals of this project are to evaluate the impact of extremes of oxygenation, both hypoxemia and hyperoxia on the measured SpHgb, and to compare the SpHgb to the measured Hgb from a finger stick in normal volunteers at altitude with and without hypoxemia/hyperoxemia.

Role: Co-I

711 HPW 14-060 (PI Johannigman) 12/01/2013-11/30/2014 1.20 cal

United States Air Force / DoD \$156,820

Critical Care Air Transport Team Registry

The main objective of this project is to create searchable CCATT registry containing 5300 AF 3899 data.

USAMRAA (sub from U of MI) 01/01/2014-12/31/2015 0.60 cal

W81XWH-13-CCCJPC6-FSERC #13057137 (prime) \$182,787

UC PI: Johannigman

Noninvasive Bioinformatic Based Methods for Multi-Echelon Casualty Monitoring

The main goal of this project is to perform required testing of the BEAM device described in the full proposal submission, as well as compilation of the data that will be used to generate the algorithms required for further testing.

Ventec Group LLC 10/01/2013-09/30/2015 1.20 cal

NIH SBIR prime; UC PI Branson \$47,034

Portable Life-Support Ventilator with Integral Oxygen

During Phase I of this SBIR project, the product will be developed, tested, and evaluated. During Phase II, the main goals will be to evaluate oxygen delivery of the piece of equipment in a porcine model of respiratory failure. This phase of the study will be a cross-over trial with each animal servicing as their own control

\*Updated 1-JAN-2018