

KIRA BACAL, MD, PhD, MPH, FACEP

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CURRENT POSITIONS:

Assistant Professor, Section of Emergency Medicine, Department of Family Medicine, College of Osteopathic Medicine, Ohio University, Athens, OH, 45701

Director, Appalachian Rural Health Institute, Ohio University, Athens, OH 45701

Associate Director and Faculty Director, Voinovich Center for Leadership and Public Affairs, Ohio University, Athens OH, 45701

Consultant, Mauri Ora Associates, 222 Jervois Rd, Herne Bay, Auckland, New Zealand

EDUCATION AND TRAINING:

Aerospace Medicine Residency, NASA-Johnson Space Center/University of Texas Medical Branch, Texas

Masters of Public Health, 2001

Assistant Deputy Crew Surgeon, Shuttle mission STS-98, 2001

Distinguished Graduate, USAF Aeromedical Primary Course, 2000

USAF Aviation Mishap Investigation and Prevention Course, 2000

Johnson Space Center (JSC) Shuttle Crash Investigation Course, 2000

USAF Critical Care Air Transport Team Course, 1999

FAA Aviation Medical Examiner Course, 1999

FAA Global Survival Course, 1999

Emergency Medicine Residency, Albany Medical Center Hospital, Albany, New York

Trauma Protocol Committee, 1998

National Institutes of Health Medical Scientist Training Program, joint MD-PhD program, Baylor College of Medicine, Houston, Texas

Doctor of Medicine, 1996

Doctor of Philosophy in Molecular Physiology & Biophysics, 1993

Post-doctoral research in laboratory of Dr DL Kunze, 1996

Harvard Divinity School, Cambridge, Massachusetts

Master of Theological Studies program, 1993-4

Amherst College, Amherst, Massachusetts

Bachelor of Arts in mathematics and biology, 1988

CREDENTIALS:

Medical Boards:

Emergency Medicine, American Board of Emergency Medicine

Aerospace Medicine, American Board of Preventive Medicine

Medical Licenses:

Texas

New York

Ohio

RECENT EMPLOYMENT HISTORY:

Post-Doctoral Fellow in Health Care Communications, Mauri Ora Associates, Auckland, New Zealand (2006)

- Develop integrated curriculum to train physicians in cultural competence
- Develop decision support software and related biotechnology to improve health disparities

- Participate in research investigating patient experiences of health services and other topics related to cultural differences in health care

- Draft reports and papers for scientific or medical publications based upon research projects

- Strategic planning for long-term expansion

Assistant Professor, University of Texas Medical Branch, Galveston, Texas (2001-2006)

Robert Wood Johnson Foundation Health Policy Fellow, Office of Senator Orrin Hatch, Washington DC (2004-2005)

- Legislative portfolio includes: Project BioShield II, medical preparedness, bioterror/bioweapon deterrence, public health infrastructure, health informatics, emergency medical services, biomedical research, stem cells (embryonic, cord blood, adult), cloning and nuclear transfer techniques, medical malpractice, Ryan White CARE Act (HIV/AIDS), and traumatic brain injury/disability issues

- Other duties include: drafting recommendations on specific legislation, drafting questions for use during Congressional hearings, providing briefings to staff and Members, staffing health-related hearings and meetings with Senator Hatch, constituent visits, legislative correspondence, and participating in staff meetings (Republican, bipartisan, and bicameral)

Emergency Physician, Southeast Physicians Association, Inc., Houston, Texas (2000-2004)

- Duties include running Emergency Department at community hospital
- Supervise activities of nurses, respiratory therapists, practice assistants, other physicians

Clinical Lead, Clinical Systems Development Group, Wyle Laboratories and Life Sciences, Houston, Texas (2004)

- Supervised Clinical Team (physicians, nurses, scientists) of R&D section
- Led effort to identify, prioritize, and implement projects designed to improve the medical systems used in space.

- Coordinated efforts with NASA-Johnson Space Center civil servants and other contractors (Lockheed Martin, United Space Alliance, etc)

- Responsible for synthesizing efforts of multi-disciplinary groups, including Engineering, Information Technology, Operations, and Training

Chief Clinical Consultant to the Branch of Medical Informatics & Health Care Systems, NASA-Johnson Space Center, Wyle Laboratories and Life Sciences, Houston Texas (2001-2004)

- Developed concept of medical operations for extending on-orbit clinical care to safeguard astronaut health

- Developed database linking all potential on-orbit medical conditions with associated medical resources, diagnostic tools, and treatment protocols

Developed electronic interface for emergency triage and initial stabilization of on-orbit medical emergencies

Guided development of concepts for decision support tools designed for diagnostic and therapeutic care

Oversaw sharing and integration of medical resource information from both Russian and American space agencies

Organized several summits on various aspects of in-flight care, dealing with medical care in austere environments

Served as advisor to the Institute of Medicine Committee on Metabolic Monitoring, providing information on the use of noninvasive monitoring devices and predictive algorithms to anticipate and prevent performance-related medical issues

Wrote and delivered presentation to multiple audiences, including: NASA-JSC groups, including NASA flight surgeons and management, International Partner medical leads (Canada, Russia, Europe, Japan), Aerospace Medical Association, Advanced Technological Applications to Combat Casualty Care conference, Baylor College of Medicine, Houston, Texas, Curtin University, Perth, Australia, National Youth Leadership Forum, USAF Residents in Aerospace Medicine, Israeli Air Force Surgeon General

TEACHING EXPERIENCE:

Faculty, University of Phoenix Online campus, 2004-present

Adjunct Faculty, USAF School of Aerospace Medicine, 2001-present

Lecturer, University of Texas Medical Branch Aeromedicine Short Course, 2001-present

Adjunct Instructor, EMS Curriculum, College of the Mainland, Texas City TX, 2000-2004

Lecturer, National Youth Leadership Forum, 2002-present

Instructor, American Heart Association Advanced Cardiac Life Support and Pediatric Advanced Life Support, 2002-2005

Instructor, American Red Cross Community First Aid and CPR, 1990-present

Faculty Advisor, National Youth Leadership Forum Undergraduate Medical Mission to Australia, 2003

Self-Defense Instructor, 1994-present

Lecturer, Regional Emergency Medical Organization Continuing Education series, Albany, NY, 1998-9

Lecturer, Hudson Valley Community College EMS program, Troy, NY, 1998-9

Oral board examiner, Hudson Valley Community College EMS program, Troy, NY, 1998-9

Volunteer scientist, Science-By-Mail, 1992-6

Co-founder and chief instructor, science outreach program for inner city school children, 1989-94

Private tutor, 1982-96

COMMUNITY SERVICE:

Annual Medical Mission to Honduras, staff physician, 2000-present

City of Houston Smallpox Preparedness Team, 2003-present

Houston-Galveston Area Council Trauma Committee Member, 2003-present

American Red Cross volunteer, 1990-present

SELECTED SCIENTIFIC PUBLICATIONS/PRESENTATIONS:

- Member, Scientific Program Committee, International Academy of Astronautics (IAA)
16th Humans in Space Symposium, Beijing, May 2007
- Tokumar, Haruki, Bacal, Katagiri, Yamamoto, and Sakurai, "Incidence Of Cancer Among Female Flight Attendants: A Meta-Analysis", *Journal of Travel Medicine*, 13(3): 127-132, 2006.
- Participant/Contributor, *Medical And Health Policy Formulation For Human Exploration Of The Solar System: Part I: Ethical Considerations in Scarce Resource Allocation for Health and Medical Systems Development and Operation*, Office of International Medical Policy, School of Public Policy, George Mason University, March 30, 2006.
- Bacal and Lemery, "Aerospace Medicine" in *Wilderness Medicine, 5th Edition*, ed. Paul S. Auerbach, C.V. Mosby, in press.
- Bacal, Beck, and Barratt, "Hypoxia, Hypercapnia, and Atmospheric Control", in *Textbook of Aerospace Medicine*, ed. Barratt and Pool, Springer-Verlag, in press.
- Invited participant, NASA Headquarters/George Mason University School of Public Policy workshop series, "Medical and Health Policy Formulation for Human Exploration of the Solar System: Ethical Considerations: Scarce Resource Allocation for Health and Medical Systems", 2005
- Bacal, "Metabolic Monitoring at NASA: A Concept for the Military," in *Monitoring Metabolic Status: Predicting Decrements in Physiological and Cognitive Performance*, Food and Nutrition Board, Institute of Medicine, National Academies Press, 2004.
- Bacal, Beck, and McSwain, "A Concept of Operations for Medical Contingencies On the International Space Station", *Military Medicine*, 169 (8): 631-641, 2004.
- Author of Aerospace Medicine Course lessons, Federal Aviation Administration, Aeromedical Education Division, Civil Aeromedical Institute, 2004
- Bacal, Billica, and Bishop, "Neurovestibular Syndromes After Short Duration Space Flight," *Journal of Vestibular Research*, 13 (2-3):93-102, 2003.
- Bacal and Frey, "Selection of Medications for the International Space Station: The Space Medicine Patient Condition Database", *Journal of Pharmacy Practice*, 16:91-96, 2003.
- Seminar, "Aerospace Medicine for the New Millennium" at Civil Aviation Authority of New Zealand, Petone, New Zealand
- Seminar, "Building a Better Sickbay for Dr McCoy: Designing a New Medical System for the International Space Station" at Curtin University, Perth, Australia, 2003.
- Dulchavsky, Hamilton, Melton, Bacal, et al, "Hypothesis-Driven End-to-End Testing of Space Medical Contingencies", 2002 Core Technologies for Space Systems Conference, Colorado Springs, Colorado, November 19-21, 2002.
- Contributor to *Delmar's Medical Dictionary for Health-Related Professionals*, Delmar Publishers, Albany, NY, 1999.
- Bacal and Kunze, "Dual Effects of Angiotensin II on Calcium Currents in Neonatal Rat Nodose Neurons," *Journal of Neuroscience*, 14:7159-7167, 1994.
- Mendelowitz, Bacal, and Kunze, "Bradykinin-Activated Calcium Influx Pathway in Bovine Aortic Endothelial Cells," *American Journal of Physiology*,

262: H942- H948, 1992.

Bacal, Priddy, and Kunze, "Angiotensin II Reversibly Increases Calcium Currents in Cultured Rat Nodose Neurons," The Physiologist 34:242, 1991.
Bacal and Kunze, "Calcium and Potassium Currents in Neurons Isolated from the Nucleus Tractus Solitarius Decrease in Response to Somatostatin," FASEB Journal 5: A743, 1991

RECENT AWARDS:

Robert Wood Johnson Foundation Health Policy Fellowship, 2004
National Finalist, 2004-2005 White House Fellowship (withdrew upon award of RWJ)
AAAS Homeland Security Fellowship Finalist, 2004 (declined upon award of RWJ)
NASA Space and Life Sciences Directorate Special Professional Achievement Award, 2003
NASA Space and Life Sciences Directorate Special Professional Achievement Award, 2002

MILITARY SERVICE:

USAF Reserve, 1998-present (inactive/standby reserves)
Rank: Major
Instructor, USAF School of Aerospace Medicine, Critical Care Air Transport Course Graduate, Air Command & Staff College, 2005
Graduate, Squadron Officer School, 2003

FICTION PUBLICATIONS:

"First Impressions", Another Realm, 2003. (Runner up in 2003 Another Realm Editors Choice Award)
"The Treaty of Q", Remote Control 8, 1997.
"The Eye of Apollo", Remote Control 7, 1997.
"Confusion" and "Family Values", Eridani 27, 1996.
"Rogue Encounter" and "Terrorist Tactics", Eridani 26, 1996.
"Bonds" and "The Work of Courage", The Farthest Frontier 4, 1996.
"Emma" and "Past & Present", The Farthest Frontier 3, 1996
"Jinx", Remote Control 6, 1996.
"Intruder Alert", Eridani 25, 1995.
"The World Wizard", Eridani 24, 1995.
"The Cost of Friendship", Idylls 12, 1995.
"Shadows of Time", Involution 7, 1995.
"Necessity" and "Worst Enemy", Outpost 4, 1995.
"A Matter of Trust", Outpost 3, 1995.
"Double Masquerade", Remote Control 5, 1995.