

BIOGRAPHICAL SKETCH

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NAME: Koff, Matthew

eRA COMMONS USER NAME (credential, e.g., agency login): MATTHEW.D.KOFF

POSITION TITLE: Assistant Professor in Anesthesiology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Vermont, Burlington, VT	BS with Honors	1990	Animal Science
University of Vermont, Burlington, VT	MS	1994	Animal Science and Molecular Biology
University of Vermont College of Medicine, Burlington, VT	MD	2000	Medicine
University of Massachusetts Medical Center, Worcester MA	Resident	2003	Emergency Medicine Resident
Dartmouth-Hitchcock Medical Center, Lebanon, NH	Fellow	2005	Critical Care Medicine
Dartmouth-Hitchcock Medical Center, Lebanon, NH	Resident	2007	Anesthesiology Resident

A. Personal Statement

I am an Assistant Professor of Anesthesiology and Critical Care Medicine and the Director of General Surgery at Dartmouth-Hitchcock Medical Center. I have been practicing as an attending physician at this institution for the past 20 years. I started on faculty in 2003 as an Emergency Physician and in Anesthesiology on faculty in 2008. I also currently serve in the US Army Reserves as a LTC in the Medical Corps and am fully credentialed via Army Professional Management Command. I am the current Program Director in Critical Care Anesthesiology Fellowship Training program and have served in this role since 2011. I have directly mentored 58 Fellow trainees during my tenure. My research expertise is in the area of Intra-Operative and Critical Care infection control having worked with Dr. Randy Loftus since 2007. We have pioneered this important area of study and have identified the role of the Anesthesia workspace in the direct transmission of surgical site and patient infections in the intraoperative arena. We have also developed effective transmission strategies to reduce this risk and reduce morbidity and mortality. I have had both regional funding, industry funding and national funding for this important work. Dr. Loftus and I have co-authored 8 RCT's that validate these prevention strategies and that test these strategies in a bundled fashion to achieve best practice and a powerful reduction in surgical site infections. These strategies should be widely adopted. We have RO1 funding to evaluate dissemination practices (BASIC trial). The current study will test early identification of high-risk transmission organisms within the hospital setting. Specific targeting strategies will then be instituted to prevent transmission in real time during patient care. I currently serve as the site PI for the ongoing BASIC RCT, and will serve as the site PI in the AREA grant and recruit 20 surgeons to capture 560 case pairs in project years 3-4.

Ongoing and recently completed projects that I would like to highlight include:

2009	Anesthesia Patient Safety Foundation Research Grant Routine Intra-Operative Transmission of Pathogenic Bacterial Organisms	Co PI w/ Loftus	Hitchcock Foundation, Lebanon, NH	\$500,000
2013	Sage Intraoperative Hand Hygiene Grant	Co PI w/ Loftus	SAGE, Ill, USA	\$450,000
2022	The BASIC trial: Improving implementation of Evidence-based approaches and surveillance to prevent bacterial transmission and infection	Site-PI (MPIs Brown, Loftus)	NIH Subaward R01, Bethesda, MD	\$25,000

B. Positions, Scientific Appointments, and Honors

Positions and Employment

2003-2005	Instructor in Medicine, Geisel School of Medicine at Dartmouth
2008-Present	Hanover, NH
2008-Present	Assistant Professor in Anesthesiology, Geisel School of Medicine at Dartmouth, Hanover NH

Other Experience and Professional Memberships

1994-1995	American Cancer Society Board, American Cancer Society, Lebanon, NH
2008	Revised Perioperative Committee, Dartmouth-Hitchcock Medical Center
2008-Present	Anesthesiology Equipment Committee, Dartmouth-Hitchcock Medical Center
2009-Present	ICU Ultrasound Committee, Dartmouth-Hitchcock Medical Center
2010-Present	Anesthesiology Cost Containment Committee, Dartmouth-Hitchcock Medical Center
2010-2013	On-Doctoring, Dartmouth-Hitchcock Medical Center
2013-Present	Committee Anesthesia Research Evidence, Dartmouth-Hitchcock Medical Center
2013-Present	Hospitalist Chair Search Committee, Dartmouth-Hitchcock Medical Center
2013-Present	Trauma Candidate Search Committee, Dartmouth-Hitchcock Medical Center
2014	Pulmonary Critical Care Candidate Search Committee, Dartmouth-Hitchcock Medical Center
2015	Anesthesiology Executive Council, Dartmouth-Hitchcock Medical Center
2018-2021	Geisel School of Medicine at Geisel Medical School Interview Committee, Dartmouth-Hitchcock Medical Center

MEMBERSHIP, OFFICE & COMMITTEE ASSIGNMENTS IN PROFESSIONAL SOCIETIES:

<u>Date</u>	<u>Society</u>
1999	American Medical Informatics Association
2000	American College of Emergency Physicians
2000- Present	Alpha Omega Alpha Society
2003- Present	Society of Critical Care Medicine
2003- Present	CHEST
2005- Present	American Society of Anesthesiologists

HONORS

<u>Date</u>	<u>Award Name</u>
1996	Hitchcock Foundation Competitive Research Grant Principal Investigator,

Skin Cancer Research
Dartmouth–Hitchcock Medical Center, Lebanon, NH

- 1996 Microbiology Class Award
University of Vermont, Burlington, VT
- 2004 Quality Research Grant Program, “Surviving Sepsis,”
Dartmouth–Hitchcock Medical Center, Lebanon, NH
- 2007 Quality Research Grant Program, Infection Control in the Anesthesia Workspace
Dartmouth–Hitchcock Medical Center, Lebanon, NH
- 2008 Teaching Award Department of Internal Medicine
Dartmouth–Hitchcock Medical Center, Lebanon, NH, December 2008
- 2020 Army Commendation Medal with Combat
- 2018/2020 Army Achievement Medal (2)
- 2019 Army Reserve Component Achievement Medal
- 2020 National Defense Service Medal
- 2020 NATO Medal
- 2020 Global War on Terror Medal

C. Contributions to Science

My work has focused on intraoperative infection in the Anesthesia Workspace and to develop techniques and best practices for reduction and prevention strategy. I have also studied the utility of minimally invasive hemodynamic monitoring and resuscitation in the critically ill intraoperative patient and critically ill patient.

Articles supporting my contributions:

1. Characterizing the rate, magnitude and implications of bacterial transmission occurring outside of the sterile surgical field:
 - a. Loftus RW, **Koff MD**, Burchman CC, Schwartzman JD, Thorum V, Read ME, Wood TA, Beach ML. Transmission of pathogenic bacterial organisms in the anesthesia work area. *Anesthesiology* 2008; 109: 399-407. [10.1097/ALN.0b013e318182c855](https://doi.org/10.1097/ALN.0b013e318182c855)
 - b. Loftus RW, **Koff MD**, Birnbach DJ. The dynamics and implications of bacterial transmission events arising from the anesthesia work area. *Anesth Analg*. 2015 Apr;120(4):853-60. doi: 10.1213/ANE.0000000000000505.
 - c. Loftus RW, Brown JR, Patel HM, **Koff MD**, Jensen JT, Reddy S, Ruoff KL, Heard SO, Dodds TM, Beach ML, Yeager MP. Transmission dynamics of gram-negative bacterial pathogens in the anesthesia work area. *Anesth Analg*. 2015 Apr;120(4):819-26. doi: 10.1213/ANE.0000000000000626.
 - d. Loftus RW, **Koff MD**, Brown JR, Patel HM, Jensen JT, Reddy S, Ruoff KL, Heard SO, Yeager MP, Dodds TM. The epidemiology of *Staphylococcus aureus* transmission in the anesthesia work area. *Anesth Analg*. 2015 Apr;120(4):807-18. doi: 10.1213/ANE.0b013e3182a8c16a. PMID: 24937345.
2. Developing and validating and innovative surveillance system:
 - a. Loftus RW, Brown JR, **Koff MD**, Reddy S, Heard SO, Patel HM, Fernandez PG, Beach ML, Corwin HL, Jensen JT, Kispert D, Dodds TM, Ruoff KL, and Yeager MP. Multiple Reservoirs Contribute to Intraoperative Bacterial Transmission. *Anesth Analg* 2012; 114:1236-1248. [10.1213/ANE.0b013e31824970a2](https://doi.org/10.1213/ANE.0b013e31824970a2)
3. Reducing Healthcare-Associated Infections:
 - a. Improved disinfection of intravascular devices: Loftus RW, Brindeiro BS, Kispert DP, Patel HM, **Koff MD**, Jensen JT, Dodds TM, Yeager MP, Ruoff KL, Gallagher JD, Beach ML, Brown JR. Reduction

in intraoperative bacterial contamination of peripheral intravenous tubing through the use of a passive catheter care system. [Anesth Analg](#). 2012; 115: 1315-23.

[10.1213/ANE.0b013e31826d2aa4](#)

- b. *Improved hand hygiene in the operating room*: **Koff MD**, Loftus RW, Burchman CC, Schwartzman JD, Read ME, Henry ES, Beach ML. Reduction in intraoperative bacterial contamination of peripheral intravenous tubing through the use of a novel device. *Anesthesiology*. 2009 May; 110(5):978-85. [10.1097/ALN.0b013e3181a06ec3](#)
 - c. Sharma A, Fernandez PG, Rowlands JP, **Koff MD**, Loftus RW. Perioperative Infection Transmission: the Role of the Anesthesia Provider in Infection Control and Healthcare-Associated Infections. *Curr Anesthesiol Rep*. 2020;10(3):233-241. doi: 10.1007/s40140-020-00403-8.
 - d. **Koff MD**, Brown JR, Marshall EJ, O'Malley AJ, Jensen JT, Heard SO, Longtine K, O'Neill M, Longtine J, Houston D, Robison C, Moulton E, Patel HM, Loftus RW. Frequency of Hand Decontamination of Intraoperative Providers and Reduction of Postoperative Healthcare-Associated Infections: A Randomized Clinical Trial of a Novel Hand Hygiene System. *Infect Control Hosp Epidemiol*. 2016 Aug;37(8):888-895. doi: 10.1017/ice.2016.106.
4. Creating a paradigm shift in anesthesiology where anesthesiologists, historically resistant to believe that they contribute to postoperative infections, have embraced their role in infection control and are partnering with infectious disease to address the apparent issues, and capturing the attention of leaders within anesthesiology and infectious disease.
- a. Loftus, RW, and **Koff MD**. Infection Control Practices by the Anesthesiologist. *Anesthesiology*: May 2009 - Volume 110 - Issue 5 - pp 1191-1192.
 - b. **Koff MD**, Loftus RW, Herwaldt LA. Epidemiology and Prevention of Nosocomial Infections Associated with Diagnostic and Therapeutic Procedures Nosocomial Infections Associated with Anesthesia. In: C.Glen Mayhall, editor. Hospital Epidemiology and Infection Control, Fourth Edition.