

Personal Data:

Keely L. Buesing, MD, FACS

Associate Professor, Department of General Surgery
Director of Emergency General Surgery
Co-Director, Virtual OR Skills Lab Curriculum
Section of Trauma | Surgical Critical Care | Emergency General Surgery

University of Nebraska Medical Center
983280 Nebraska Medical Center
Omaha, Nebraska 68198-3280

Education:

Undergraduate

University of Nebraska-Lincoln
Lincoln, NE
Degree: BA
1/1996 – 5/2001

Medical School

University of Texas Health Science Center – San Antonio
San Antonio, TX
Degree: MD
7/1/2001 – 6/30/2005

Residency

University of Nebraska Medical Center
Department of General Surgery
Omaha, NE
7/1/2005 – 6/30/2012

Research Fellowship

Children's Hospital of Wisconsin
Department of Pediatric Surgery
Milwaukee, WI
7/1/2008 – 6/30/2010

Clinical Fellowship

Washington University/Barnes-Jewish Hospital
Department of Surgical Critical Care
St. Louis, MO
7/1/2012 – 6/30/2013

Board Certifications and Licensing

Board Certified, General Surgery	Certificate No. 59015	Exp. 12/31/2024
Board Certified, Surgical Critical Care	Certificate No. 3339	Exp. 12/31/2024
State of Nebraska	License No. 27342	Exp. 07/31/2020

Memberships:

American College of Surgeons. 2005-current.
Society of Critical Care Medicine. 2012-current.
Eastern Association for the Surgery of Trauma. 2013-current.
Association for Academic Surgery. 2014-current.
American Medical Association. 2005-current.
Shock Society. 2014-current.
Association of Women Surgeons. 2015-current.

Positions:

11/2013-current Reviewer for American Journal of Surgery.

12/2013-current Performance Improvement Committee, Emergency General Surgery. TNMC, Omaha, NE.

01/2014-12/2016 Shift Physician, Advisory Board of Experts, Omaha EMS. Omaha, NE.

10/2014 Promotion & Tenure Committee, Department of General Surgery
TNMC, Omaha, NE

01/2015-09/2017 Member, Surgical Services Operations Committee, UNMC
Committee was disbanded by institution.

03/2015 Department of Surgery, Summer Research Student Selection Committee. UNMC, Omaha, NE.

07/2015 Invited peer reviewer for Clinical Medicine Insights: Therapeutics

08/2015-current Member, Program Evaluation Committee, UNMC (General Surgery)

08/2015-current Appointment to Core Faculty, Department of General Surgery, UNMC.

08/2015-current Appointment to Graduate Faculty, University of Nebraska.

10/2015-current Grants & Fellowship Committee, Association of Women Surgeons.

10/2015 Appointment to Fellow, American College of Surgeons.

10/2015 Invited reviewer, Journal of Pregnancy & Child Health

12/2015-01/2016 Member, Academic Variable Compensation Plan Committee.

06/2016-current Co-Director of Virtual OR Skills Lab Curriculum. UNMC.

12/2016 Appointment, Director of Emergency General Surgery.

12/2016 Scientist Reviewer, Defense Health Program-Operational Systems Development (DHP-OSD) peer review panel of the FY16 Defense Health Agency, Research, Development, and Acquisition (DHA RDA) Directorate for the Department of Defense (DoD).

9/2018 Consultant and member of Scientific Advisory Board, Respirogen, Inc.

Bibliography:

K Buesing, D Perry, C Reyes, S Abdessalam. *Castleman disease: surgical cure in pediatric patients.* J Pediatr Surg, 2009; 44(1): e5-8.

K Buesing, J Densmore, S Kaul, K Pritchard Jr., J Jarzembowski, D Gourlay, K Oldham. *Endothelial microparticles induce inflammation in acute lung injury.* J Surg Res, 2011 Mar; 166(1): 32-39.

K Buesing, E Tracy, C Kiernan, A Pastor, L Cassidy, JP Scott, R Ware, A Davidoff, F Rescorla, JC Langer, H Rice, K Oldham. *Partial Splenectomy in Hereditary Spherocytosis: A Multi-Institutional Review.* J Pediatr Surg, 2011 Jan; 46(1): 178-83.

B Mullapudi, KA Flowers, KL Buesing. *Deep Venous Thrombosis and Venous Thromboembolism Prophylaxis.* Surg Clin North Am, 2015 Apr; 95(2):285-300.

Damme C, Luo J, Buesing KL. *Isolated Prehospital Hypotension Correlates with Injury Severity and Outcomes in Trauma Patients.* Trauma Surgery & Acute Care Open, 12 Aug 2016. DOI: 10.1136/tsaco-2016-000013.

Legband ND, Buesing K, Borden M, Terry B. *Treatment of Acute Respiratory Distress Syndrome in Rats with a Peritoneal Dosing System*. Journal of Medical Devices, 9(2), pp. 020929.1-020929.2. 2015. DOI: 10.1115/1.4030140.

Legband ND, Hatoum LH, Thomas AN, Kreikemeier-Bower C, Hostetler D, Buesing KL, Borden MA, Terry BS. *Peritoneal Membrane Oxygenation Therapy for Rats with Acute Respiratory Distress Syndrome*. Journal of Medical Devices, Transactions of the ASME, 10(2), art. No. 020908. 2016. DOI: 10.1115/1.4033201.

Hatoum, L., Legband, N., Thomas, A., Kreikemeier-Bower, C., Hostetler, D., Borden, M., Buesing, K., Terry, B. *Design and development of a rat peritoneal infusion device for oxygen microbubble bolus delivery*. Journal of Medical Devices, 10(2), pp. 020908.1-02.0908.3. 2016. DOI: 10.1115/1.4033203.

Visenio M, Buesing K, Moffatt K. *Solid Organ Laceration in an Adolescent Soccer Player: A Case Report*. Medicine & Science in Sports & Exercise. Med Sci Sports Exerc. 2017 May 9. DOI: 10.1249/MSS.0000000000001316.

Aghabaglou F, Buesing K, Legband ND, Slagle C, Xie W, Borden M, Kreikemeier-Bower C, Terry BS. *Preliminary Investigation of the Mechanics of a Novel Thoracic Cavity Extra Pulmonary Oxygenation Device*. Proceedings of the 2018 Design of Medical Devices Conference, DMD 2018-6908. 2018 Apr.

Tecos ME, Buesing KL. *Updates on Prophylaxis for Deep Venous Thrombosis and Venous Thromboembolism*. Medical Research Archives. May 2019; 7(5): 1-18.

Pending Publication:

Fiala A, Slagle C, Legband N, Aghabaglou F, Buesing K, Borden M, Terry B. *Treatment of a rat model of LPS-induced ARDS via peritoneal perfusion of oxygen microbubbles*. 2019. Accepted to Journal of Surgical Research, pending publication.

Oral Presentations:

Condon-Donagan research presentation, June, 2009; Milwaukee, WI
Endothelial Microparticles in Acute Lung Injury. K Buesing, S Kaul, L Cassidy, D Weihrauch, J Densmore, K Pritchard Jr., D Gourlay, K Oldham.

American College of Surgeons Surgical Forum, October, 2009; Chicago, IL
Endothelial microparticles attenuate stimulated nitric oxide production in pulmonary artery endothelial cells. K Buesing, S Kaul, D Jones, K Pritchard Jr., D Gourlay, J Densmore, K Oldham.

Academic Surgical Congress, February, 2010: San Antonio, TX
Endothelial Microparticles Induce Inflammation in Acute Lung Injury. K Buesing, J Densmore, S Kaul, K Pritchard Jr., J Jarzembowski, D Gourlay, K Oldham.

American Pediatric Surgical Association, May, 2010: Orlando, FL.
Partial Splenectomy in Hereditary Spherocytosis: A Multi-Institutional Review. K Buesing, E Tracy, C Kiernan, A Pastor, L Cassidy, JP Scott, R Ware, A Davidoff, F Rescorla, JC Langer, H Rice, K Oldham.

American College of Surgeons Scientific Papers Session, October, 2010; Washington, DC.
Novel Tripeptide Mitigates Pulmonary Sequestration of Endothelial Microparticles. K Buesing, J Rydlewicz, J Densmore, H Zhang, Y Shi, KA Pritchard Jr., D Gourlay, K Oldham.

General Surgery Grand Rounds, June 2012: UNMC, Omaha, NE
Endothelial Microparticles in Acute Lung Injury.

Makin' It Real: Medical Student Lecture Series. October, 2013. UNMC, Omaha, NE.
Bacteriology Case Studies.

Kansas City Committee of Trauma Resident Paper Competition. December, 2013. Kansas City, KS.
In an urban setting, does field hypotension matter if the patient arrives with a normal blood pressure?

General Surgery Grand Rounds, January 2014: UNMC, Omaha, NE
Updates in Management of Adult Respiratory Distress Syndrome.

NASA Aeronautics and Space Science, April 17, 2015. Lincoln, NE.
Surgical Options in Space: Development of a Closed-Loop Peritoneal Membrane Oxygenator for Acute Respiratory Distress Syndrome.

Rural Emergency Medicine Course, Omaha, NE. April 22, 2015.
Rural Trauma through the Eyes of a Trauma Surgeon.

Military Health System Research Symposium, Ft. Lauderdale, FL. August 19, 2015.
Development of a Novel Method of Peritoneal Oxygenation for Salvage During Acute Respiratory Failure.

Trauma Symposium, Nebraska Medicine, Omaha, NE. October 23, 2015.
Risks of Ignoring Hypotension.

ACS Committee on Trauma Meeting, San Diego, CA. April 10, 2016.
Peritoneal Membrane Oxygenation for Acute Respiratory Distress Syndrome.

Rural Emergency Medicine Course, Omaha, NE. April, 2016.
Developments in Rural Trauma Care.

General Surgery Department Grand Rounds, 12/13/2017. Omaha, NE
Alternative Oxygen Carriers for Treatment of Severe ARDS.

University of Nebraska Board of Regents, 8/3/2018. Brief overview of oxygen microbubble research for Board of Regents.

UNMC, 10/31/2018. Overview of oxygen microbubble research for Navy RDML Darin Via, Dpty Chief of Readiness, Bureau of Medicine & Surgery, and accompanying personnel.

UNMC, 11/28/2018. Surgery Research Forum. Alternative Oxygen Carriers for Treatment of Severe ARDS.

Eastern Association for the Surgery of Trauma (EAST) Annual Scientific Assembly, 01/17/2019, Austin, TX. Assembly Quick Shot Presentation. "Oxygen Microbubbles Correct Acute Hypoxia in Rat Model of Smoke Inhalation Injury".

Posters:

Shock Society, June, 2009; San Antonio, TX
Preferential Pulmonary Sequestration of Endothelial Microparticles. K Buesing, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Medical College of Wisconsin Research Day, September, 2009; Milwaukee, WI.
Preferential Pulmonary Sequestration of Endothelial Microparticles. K Buesing, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Finalist for Merit Award in postgraduate research.

Wisconsin Surgical Society, November, 2009; Kohler, WI
Endothelial Microparticles in Acute Lung Injury. K Buesing, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Society of Critical Care Medicine, January, 2015; Phoenix, AZ.
Prehospital Hypotension Correlates with Injury Severity and Outcomes. C Damme, J Luo, MR Goede, S Cemaj, JC Stothert, Jr., PJ Schenarts, K Buesing.

Finalist for Abstract Award.

NASA Human Research Program Investigators' Workshop. January 13-15, 2015. Galveston, TX.

Surgical Options in Space: Development of a Closed-Loop Peritoneal Membrane Oxygenator for Acute Respiratory Distress Syndrome. ND Legband, KL Buesing, MA Borden, BS Terry.

Design of Medical Devices Conference. April 13-16, 2015. University of Minnesota, Rochester, MN.

The Treatment of Acute Respiratory Distress Syndrome in Rats with a Peritoneal Dosing System. ND Legband, D Hostetler, KL Buesing, MA Borden, BS Terry.

38th Annual Conference on Shock. Shock Society. June 8, 2015. Denver, CO.

Alternative to ECMO: Development of a Novel Peritoneal Membrane Oxygen Delivery System. KL Buesing, ND Legband, DE Hostetler, MR Goede, MA Borden, BS Terry.

13th Annual AMA Research Symposium. AMA-MSS. November 13, 2015. Atlanta, GA.

Clinical Outcomes and Health Care Improvement Feasibility of an Enhanced Recovery Protocol in an Emergency General Surgery Setting. MR Visenio, J Luo, KL Buesing.

Legband, N.³, Hatoum, L.², Kreikemeier-Bower, C., Hostetler, D., Buesing, K., Borden, M., Terry, B., *Peritoneal Membrane Oxygenation Therapy for Rats with Acute Respiratory Distress Syndrome*, Design of Medical Devices 2016, Minneapolis, MN, April, 2016.

Hatoum, L.², Legband, N.³, Thomas, A., Kreikemeier-Bower, C., Hostetler, D., Borden, M., Buesing, K., Terry, B. *Design and Development of a Rat Peritoneal Infusion Device for Oxygen Microbubble Bolus Delivery*, Design of Medical Devices 2016, Minneapolis, MN, April, 2016.

Terry, B., Borden, M., Velds, H., Slagle, C., Krause, C., Legband, N., Bills, N., Morien, M., Buesing, K. *Development and validation of deployable peritoneal microbubble oxygenation for mitigation of acute respiratory distress syndrome*, AFMS Technology Demonstration Day, Washington DC, May 9, 2017.

Terry, B., Borden, M., Velds, H., Slagle, C., Krause, C., Legband, N., Bills, N., Morien, M., Buesing, K. *Development and validation of deployable peritoneal microbubble oxygenation for mitigation of acute respiratory distress syndrome*, COMEDS/NATO meeting, Washington DC, May 30, 2017.

Velds, H., Slagle, C., Borden, M., Aghabaglou, F., Buesing, K., Morien, M., Terry, B.

Oxygen microbubble treatment of acute hypoxia: development of animal injury models and scale-up of microbubble production, Military Health System Research Symposium (MHSRS), Kissimmee, FL, August 2017.

Krause C, Bills N, Weber H, Slagle C, Terry B, Borden M, Buesing K.

Oxygen microbubbles correct acute hypoxia in a rat model of smoke inhalation injury. Military Health System Research Symposium (MHSRS), Kissimmee, FL, August 2018.

Abstracts:

Shock Society 2009, San Antonio, TX

Preferential Pulmonary Sequestration of Endothelial Microparticles. K Buesing, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

American College of Surgeons Surgical Forum 2009, Chicago, IL

Endothelial Microparticles Attenuate Stimulated Nitric Oxide Production in Pulmonary Artery Endothelial Cells. K Buesing, S Kaul, D Jones, K Pritchard Jr., D Gourlay, J Densmore, K Oldham.

Wisconsin Surgical Society 2009, Kohler, WI

Endothelial Microparticles in Acute Lung Injury. K Buesing, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Academic Surgical Congress 2010, San Antonio, TX

Endothelial Microparticles Induce Inflammation in Acute Lung Injury. K Buesing, J Densmore, S Kaul, K Pritchard Jr., J Jarzembowski, D Gourlay, K Oldham.

American Pediatric Surgical Association 2010, Orlando, FL

Partial Splenectomy in Hereditary Spherocytosis: A Multi-Institutional Review. K Buesing, E Tracy, C Kiernan, A Pastor, L Cassidy, JP Scott, R Ware, A Davidoff, F Rescorla, JC Langer, H Rice, K Oldham.

Society of Critical Care Medicine. January, 2015.

Prehospital Hypotension Correlates with Injury Severity and Outcomes. C. Damme, J. Luo, K. Buesing.

Kansas City Region 7 COT.

The Influence of Poverty Level on Trauma Patients from Urban and Rural Environments using a Statewide Trauma Registry. JR Thompson, R Cooper, M Goede, L Schlitzkus, K Buesing, C Evans, J Stothert, PJ Schenarts.

Design of Medical Devices Conference.

The Treatment of Acute Respiratory Distress Syndrome in Rats with Peritoneal Membrane Oxygenation. N Legband, K Buesing, M Borden, B Terry.

NASA Human Research Program Investigators' Workshop.

Surgical Options in Space: Development of a Closed-Loop Peritoneal Membrane Oxygenator for Acute Respiratory Distress. ND Legband, KL Buesing, MA Borden, BS Terry.

Midwest Student Biomedical Research Forum. February 28, 2015. Omaha, NE.

Prehospital Hypotension Correlates with Injury Severity and Outcomes. C Damme, J Luo, K Buesing.

Shock Society. June, 2015. Denver, CO.

Alternative to ECMO: Development of a Novel Peritoneal Membrane Oxygen Delivery System. KL Buesing, ND Legband, MR Goede, MA Borden, BS Terry.

Military Health System Research Symposium. 2015.

Development of a Novel Method of Peritoneal Oxygenation for Salvage During Acute Respiratory Failure. KL Buesing, ND Legband, MA Borden, DE Hostetler, BS Terry.

Design of Medical Devices Conference, University of Minnesota, April 11-14, 2016.

Design and Development of a Rat Peritoneal Infusion Device for Oxygen Microbubble Bolus Delivery. L Hatoum, N Legband, A Thomas, C Kreikemeier-Bower, D Hostetler, M Borden, K Buesing, B Terry.

Design of Medical Devices Conference, University of Minnesota, April 11-14, 2016.

Peritoneal Membrane Oxygenation Therapy for Rats with Acute Respiratory Distress Syndrome. N Legband, L Hatoum, A Thomas, C Kreikemeier-Bower, D Hostetler, K Buesing, M Borden, B Terry.

Book Chapters:

6/2015 Omaha Fire Department Paramedic Treatment Protocol book.

8/2018 Acute Kidney Injury in the ICU. Cameron and Cameron: Current Surgical Therapy, 13th Ed.

Awards/Grants:

12/2013 Faculty Diversity Award.
Awarded \$50,000/year x 2 years. (0.1 FTE)

PI: Keely Buesing, MD

7/2014 Nomination to Physician Leadership Academy, TNMC.

11/2014 Biomedical Research Seed Grants. *Peritoneal Microbubble Oxygen Therapy for ARDS.*
Awarded \$50,000 x 1 year. (0% FTE – faculty salary not supported by project)

PI: Benjamin Terry, PhD

Co-I: Keely Buesing, MD; Matt Goede, MD

- 4/2015 Nebraska Research Initiative. *Novel Treatment for Acute Respiratory Distress Syndrome using Transperitoneal Oxygenated Microbubbles.*
 Awarded \$100,000 over FY 2015-2017 period. (0% FTE – faculty salary not supported by project)
PI: Keely Buesing, MD
 Co-I: Benjamin Terry, PhD; Matthew Goede, MD
- 07/2015 NIH R21. *Oxygen Microbubble Peritoneal Ventilation Treatment for Acute Respiratory Distress Syndrome.*
 Awarded (\$228,258 over 2 years), Grant #1R21HL129144-01 (0.05 FTE)
 PI: Benjamin Terry, PhD
Co-I: Keely Buesing, MD
- 10/2015 Awarded Madonna Chairman’s 2015 GOAL Award.
- 09/2016 NU/NSRI UARC Contract No. FA4600-12-D-9000, TOPR No. 0054. Supporting Agency: US AFSG through NU/NSRI.
 Title: En-Route Care Patient Viability Technology Development.
 Awarded \$999,899
PI: Keely Buesing, MD
 Collaborating PIs: Benjamin Terry, PhD; Mark Borden, PhD
- 02/2017 Nominated for Student Senate Mentor Award, UNMC
One of 15 nominations from students across all colleges on UNMC campus for “mentors in their life who served as role models, held high ethical standards, and took personal interest in the development and growth of the students they worked with.”
- 11/2017 NU/NSRI UARC Contract No. FA4600-18-U913 (TOPR 0057). Supporting Agency: US AFSG through NU/NSRI.
 Title: Maturation of En-Route Care Acute Respiratory Distress Syndrome (ARDS) Mitigation Strategy
 Awarded: \$3.7 M
PI: Keely Buesing, MD
 Collaborating PIs: Benjamin Terry, PhD; Mark Borden, PhD
- 2/2018 New Investigator Award, UNMC.
- 9/2018 NU/NSRI UARC Contract No. FA4600-18-F-U911 (TOPR 0013). Supporting Agency: Air Force Medical Support Agency (AFMSA) through NU/NSRI.
 Title: Fielding Proof of Concept: En Route Care Acute Respiratory Distress Syndrome (ARDS) Mitigation Using Oxygenated Microbubbles (OMB).
 Awarded: \$3.8M
PI: Keely Buesing, MD
 Co-PIs: Benjamin Terry, PhD; Mark Borden, PhD; Bob Scribner
- TBD NIH Application No. 1 R01 HL151151-01.
 Title: Peritoneal Oxygen Delivery For The Treatment Of Acute Respiratory Distress Syndrome.
 Proposed Budget: \$3,315,272
 PI: Mark Borden, PhD
Collaborating PIs: Keely Buesing, MD; Benjamin Terry, PhD

Teaching/Mentorships:

- 4/2014. Mechanical Ventilation eCurriculum lectures.
- 1/2014 to 8/2014. Department of Surgery Summer Student Research Program of Excellence, UNMC, Omaha, NE.
Research mentor for first-year medical student, Clayton Damme. Resulted in poster presentation at SCCM in Phoenix, AZ – poster was selected as finalist in abstract award competition.
- 2/19/14. Resident Seminar & Case Conference, UNMC.
 Neck & Thoracic Trauma.

- 5/2014 to current. Instructor, ATLS. Omaha, NE.
- 7/11/14-current Recurring lecturer at medical student Friday lecture series, UNMC.
Topic: Surgical Bleeding.
- 10/2014 Faculty speaker, General Surgery Review Course
American College of Surgeons, San Francisco, CA.
Lectures: Perioperative Care - Renal Function, Cardiac Critical Care.
- 3/18/2014 Resident Seminar & Case Conference, UNMC.
Chest Trauma.
- Summer, 2015. Department of Surgery Summer Student Research Program of Excellence, UNMC, Omaha, NE.
Research mentor for first-year medical student, Michael Visenio.
- June, 2015 Department of Surgery Intern Boot Camp
Teaching over two days included practical skills in central line placement, chest tube placement, thoracentesis, paracentesis, intubation, cricothyroidotomy, and tracheostomy.
- 10/2015 Faculty speaker, General Surgery Review Course. American College of Surgeons, Chicago, IL.
Lectures: Renal Function, Cardiac Critical Care.
- Spring, 2016 Masters Committee for Liana Hatoum, BS
Reviewed and assisted in the defense of Masters Candidate thesis on diffusion kinetics of oxygenated microbubbles across the peritoneum.
- Summer, 2016 PhD Committee for Nathan Legband, PhD Candidate, University of Nebraska-Lincoln.
- 10/2016 Faculty speaker, General Surgery Review Course. American College of Surgeons, Washington, DC.
Lectures: Cardiac Critical Care, Pain Management.
- 11/2016 Chest tube skills lab. Emergency Department Cadaver Lab. Omaha, NE. UNMC.
- 12/2016 PhD Committee for Fariba Aghabaglou, PhD Candidate, University of Nebraska-Lincoln.
- April, 2017 Chest Tube Skills Lab. Rural Emergency Medicine Course, UNMC, Omaha, NE.
- April, 2017 Patient Handoff Lecture, 4th Year Medical Student Surgical Bootcamp. Dept of General Surgery, UNMC, Omaha, NE.
- Summer, 2017 Department of Surgery Summer Student Research Program of Excellence, UNMC, Omaha, NE.
Research mentor for first-year medical student, Sarah Schmoker.
- 10/2017 Faculty speaker, General Surgery Review Course. American College of Surgeons.
Lectures: Cardiac Critical Care, Pain Management.
- 5/9/2018 Moderator for General Surgery Resident Lecture & Case Presentation – TEG, Coagulopathy

Community Service

- 2/27/2015 Hernia Repair for the Underserved. Bellevue, NE.
Volunteered day of umbilical and inguinal hernia repairs pro bono at Bellevue Medical Center.
- 11/2018 Grace 4 Haiti. Pierre de Payen, Haiti.
Week of various clinical and surgical duties for people of Haiti.

Continuing Education

Jan, 2015

ECMO Management Course, Society of Critical Care Medicine. Phoenix, AZ.