University of Nebraska Medical Center

2025 OFFICE OF MEDICAL EDUCATION

RESEARCH ANNUAL REPORT

Introduction

Medical students at the University of Nebraska Medical Center have a longstanding tradition of scholarly engagement, collaborating in research with College of Medicine faculty since the institution's founding. In 2022, this commitment to academic excellence was further strengthened with the formal establishment of the Student Research Division within the Office of Medical Education. Led by Dr. Geoff Talmon, Dr. Kari Nelson, and Mr. Tyler Shearer, the Division provides strategic oversight of flagship initiatives such as the Medical Student Summer Research Program (MSSRP), the Enhanced Medical Education Tracks (EMETs), and institutional funding to support student travel for research presentations at conferences. Beyond these structured programs, the Student Research Division is dedicated to fostering a culture of inquiry by educating students about scholarly activities and actively facilitating meaningful connections between motivated medical students and faculty mentors across the College of Medicine.

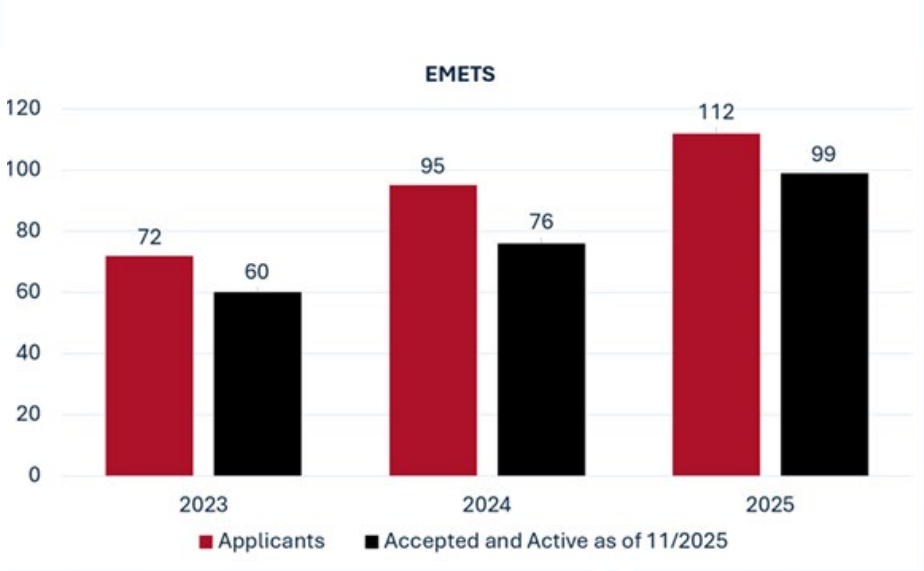
Medical Student Research Opportunities

Enhanced Medical Education Tracks (EMETs)

Longitudinal activities in which students work closely with faculty mentors, residents, and advanced students. The tracks are challenging for students and address specific topics in greater depth than is available through the required curriculum.

28 Unique Tracks

286 Total Students Participating



EMET Capstone Project

Fourth Year EMET students present a culmination of their work via a capstone project. This occurs annually on the day before Match Day in the Davis Global Center. An example of one capstone presentation can be seen below.

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REPRESENTATION AND OUTCOMES OF CATHETER ABLATION FOR TREATMENT OF ATRIAL FIBRILLATION AMONG PATIENTS WITH OBESITY: A SYSTEMATIC REVIEW OF RANDOMIZED CONTROL TRIALS

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Background

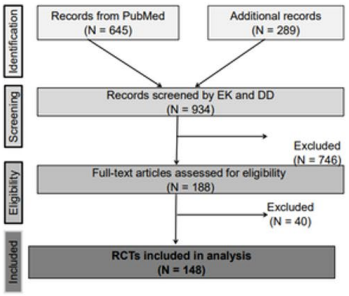
- The rapid rises in atrial fibrillation (AF) and obesity have been identified as global epidemics associated with increased morbidity and mortality.
- Observational studies report 18%-30% of concomitant obesity among AF patients.
- Obesity is a known risk factor of AF incidence, progression, and recurrence after ablation.

Objective:
1. Examine the proportion of patients with obesity represented in contemporary randomized controlled trials (RCT) of catheter ablation for the treatment of AF
2. Examine potential risks associated with underrepresentation of participants with obesity
3. Examine the impact of obesity on the main outcomes across RCTs

Methods

- We searched PubMed for RCTs examining management of AF using endocardial catheter ablation published between 01//01/2015 to 05/31/2022, Figure 1.
- Among the RCTs that did not provide the actual proportion of participants with obesity and when data regarding body mass index (BMI) were available, normal distribution was assumed and a z-score was used to estimate the proportion of participants with obesity.
- Obesity was defined as BMI>25 kg/m² in RCTs conducted in Asia and >30 kg/m² in RCTs conducted in other continents.

Figure 1. RCT selection and inclusion process



Results

Reporting data regarding obesity and BMI

- 148 RCTs were included that contained 30,174 participants
- 7 (4.73%) trials reported the proportion of participants with obesity
- 2 RCTs investigating cryoballoon ablation excluded BMI>35 kg/m²
- 94 (63.51%) trials reported BMI of study participants.

Estimated representation of participants with obesity

- Of the 7 trials that reported the proportion of obesity, it ranged from 19% to 51% (mean 37.04% ±9.52%)
- Using BMI info, the estimated proportion of participants with obesity varied greatly, ranging from 5.82% to 71.9% (mean 39.16% ±14.09%) across AF RCTs.
- There was no significant difference in the proportion of participants with obesity from 2015 to 2022 despite global increases in rates of obesity (P = 0.395)

Figure 2. Proportion of participants with obesity by year of publication (P=0.395)

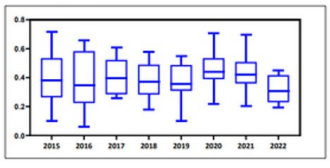
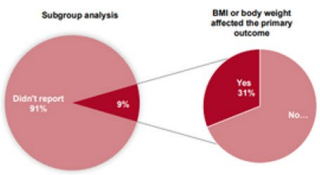


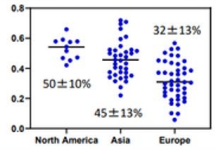
Figure 3. Subgroup analysis or analysis adjusted for BMI or body weight for the primary outcome



Representation of participants with obesity according to RCT characteristics

- There was no evidence of a difference in the proportion of participants with obesity between government-support trials vs. industrial-support trials or single-center vs. multi-center trials.
- Both study size and registration record failed to have an association with a greater proportion of participants with obesity.
- Representation of participants with obesity was higher in trials from North America (50%) and Asia (45%), as compared to Europe (32%), P<0.001, Figure 3.

Figure 4. Estimated proportion of participants with obesity by geographic regions of RCTs (P<0.001)



Subgroup analysis of participants with obesity or analysis adjusting for BMI

- Additional analysis regarding BMI or body weight was conducted in 11 (9.5%) RCTs, Figure 3.
- 4 (31%) of these suggested that BMI or body weight affected their main findings, Table 1

Author, year	Interventions	Primary Results	Obesity, %	Results of subgroup analysis for obesity
Verma, 2015	PVI vs. PVI+ Fractionated Electrograms vs. PVI +Linear ablation	No difference in freedom from AF recurrence	41.35%	Forest plot: In BMI≤29 kg/m², PVI alone was better than PVI + lines. In BMI>29 mg/m², no difference in freedom from AF recurrence.
Scherr, 2015	Posterior vs. Anterolateral mitral isthmus ablation	No difference in bi-directional MI conduction block	36.00%	Obesity (BMI>30 kg/m²) had higher failure of MI block (64% vs. 25%; P=0.03).
Prabhu, 2017	Adenosine 12 mg vs. 18 mg vs. 24 mg	Higher dose increased desirable effect (dormant conduction and atrioventricular block)	Estimated 37.07%	BW ≥90 kg had a significantly attenuated response. BW ≥110 kg had significant reduction in desirable effect (atrioventricular block).
Kirchhof, 2020	Early rhythm control vs. Usual care	Early rhythm control decreased CV mortality, stroke, HF/ACS hospitalization	Estimated 39.00%	Forest plot: BMI≥40 kg/m² favored early rhythm control. However, early rhythm control did not benefit in other BMI groups.

Conclusion

- Lack of reporting: It is estimated that 39% of AF patients in these clinical trials have obesity. However, more than 95% of RCTs failed to report the proportion of patients with obesity.
- Underrepresentation: despite increases in the incidence of obesity with time, the proportion of participants with obesity included in the trials did not significantly increase over time
- Impact of obesity on results: The BMI/body weight affected the main outcomes among 36% of the trials that contained a subgroup analysis. However, less than 10% of trials contained a subgroup analysis for BMI or body weight, making it difficult to generalize the results.
- This systematic review of AF RCTs confirmed that obesity is a common comorbidity among AF patients. However, the enrollment of participants with obesity and obesity's impact on the results in these RCTs are often not studied nor reported.

Relevance and Future Directions
- Limited information regarding BMI of study participants was available, making it difficult to draw conclusions about the impact of obesity on RCT results.
- There is a need for a standardized system that encourages adequate representation of obese participants and transparency in reporting such information in AF research to ensure the applicability of results to patients with obesity and to prevent weight bias.

Funding: The Jensen Family Research Funding, Division of Cardiovascular, UNMC
Disclosures: None

Current EMETracks and number of medical student participants

EMETrack	Total Students
Acute Care Surgery	22
Aging and Integrative Medicine	30
Auto-Immune Diseases	17
Behavioral Health Education, Research, and Policy	3
Biocontainment and Bio-preparedness	8
Cardiovascular Medicine	14
Climate Change and Health	7
Clinical Educator	14
Clinical Innovation & Entrepreneurship	7
Combined Medical and Surgical Integrated Track in Liver Transplantation	7
Community Outreach and Engagement	5
Comprehensive HIV Medicine	8
CUIDAR (Cultura, Idioma, Desarrollo, Atención y Respeto)	4
Dermatology	3

EMETrack	Total Students
Enhancing Care for Individuals with Intellectual and Developmental Disabilities	1
Engineering and Technology in Medicine	13
Health Care Ethics	7
LGBTQ+ Health Advocacy	6
Medical Humanities and Arts	20
New American Health Care	17
Pediatric Medicine	8
Physician Scientist	5
Precision Care in Oncology and Hematology	4
Prehospital Medicine	16
Preventive Medicine	15
Rare Disease and Precision Medicine	3
Underserved Health Care	14
Women's Health	6

5 New EMETS Added in 2025

Community Outreach and Engagement

Director: Emily Frankel, PhD

This track will equip students with the knowledge and skills to effectively engage and build partnerships with communities to improve health outcomes through clinical care, education and research. Through a focus on key principles and best practices, students will learn to co-design and implement research projects, clinical and outreach initiatives in partnership with community partners.

CUIDAR (Cultura, Idioma, Desarrollo, Atención y Respeto)

Director: Melanie Menning, MD

This EMET will support students in developing their Spanish skills so that they can provide culturally and linguistically competent care for Hispanic patients. This EMET is in partnership with the University of Anahuac Veracruz Campus Xalapa.

Dermatology

Director: Molly Oudenhoven, MD

The Dermatology EMET offers students a comprehensive, four-year exploration of Dermatology with a strong foundation in clinical knowledge, procedural skills, culturally competent care and scholarly growth.

Healthcare Ethics

Director: Jacob Dahlke, PhD

This track will be in conjunction with current IPE/ethics education and give students an opportunity to more deeply consider their role in identifying and resolving ethical dilemmas in modern health care settings.

Enhancing Care for Individuals with Intellectual and Developmental Disabilities

Directors: Mary Halbur, PhD & Jessica Gormley, PhD

This track prepares students to support individuals with intellectual and developmental disabilities in healthcare settings. Students will learn evidence-based strategies for pre-visit preparation, communication support, behavioral and sensory accommodations, and collaboration with caregivers.

The track emphasizes the use of visual support, AAC, graduated exposure, reinforcement, and family-centered care to promote comfort, participation, and successful healthcare experiences.

Total EMET Students by Class

Class of 2026 – 52
Class of 2027 – 59
Class of 2028 – 76
Class of 2029 – 97

Medical Student Summer Research Program (MSSRP)

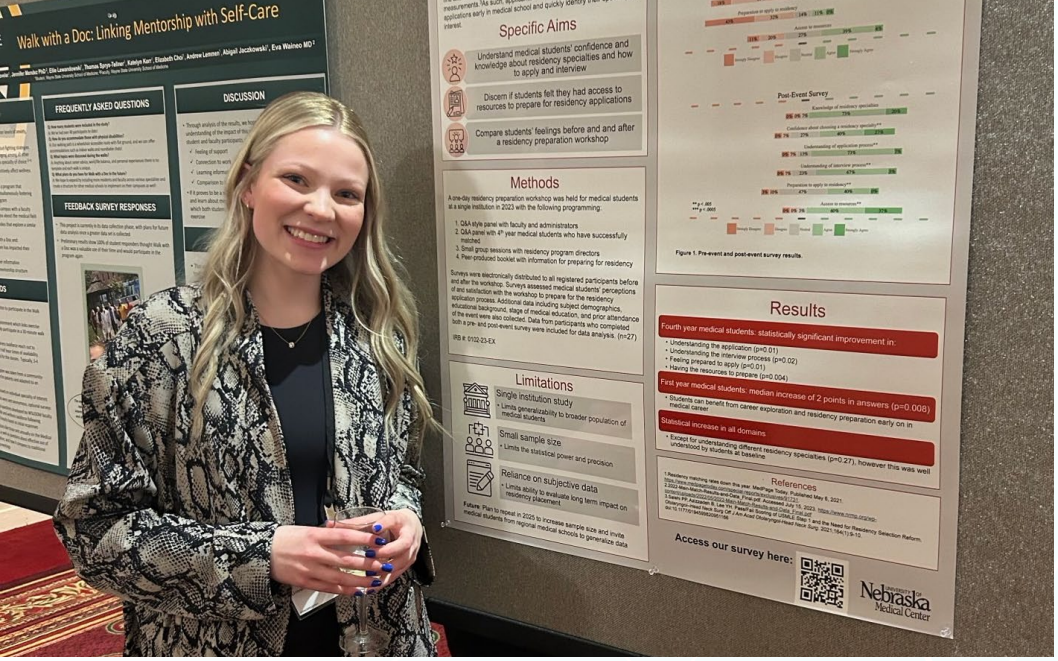
This paid program, designed for rising UNMC M2s, provides students within the College of Medicine with the opportunity to seek out information and apply it to the solution of a defined problem. Students accepted into the program spend eight weeks in their research endeavor and are expected to spend a significant number of hours (40/week) conducting research.

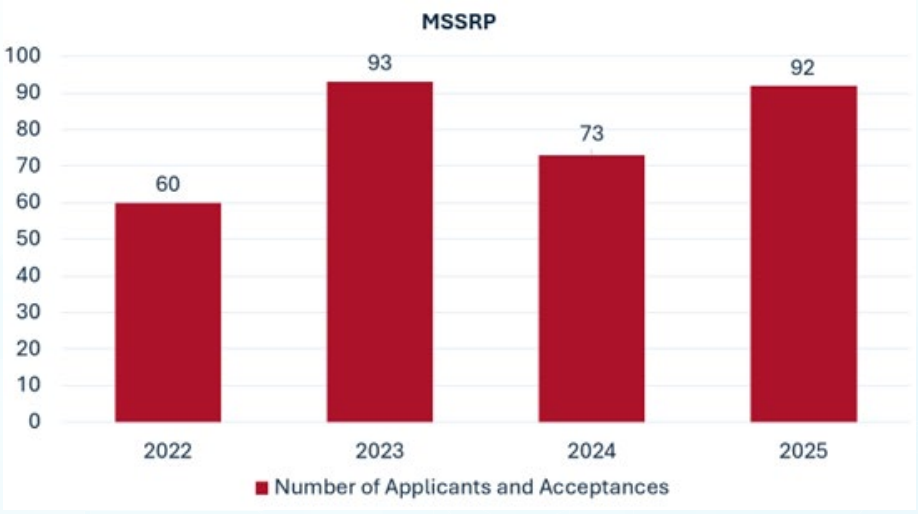
Number of MSSRP student projects per department in the summer of 2025

Department	MSSRP Projects
Internal Medicine	19
Surgery	12
Family Medicine	7
Orthopedic Surgery	6
Pediatrics	6
Dermatology	5
Cell Biology and Integrative Physiology	4
Ophthalmology	4
Infectious Disease	3
Neurosciences	3
Otolaryngology	3
Cardiovascular Medicine	3
Emergency Medicine	2
Hospital Medicine	2
Psychiatry	2

Department	MSSRP Projects
Epidemiology	1
Genetic Medicine	1
Neurology	1
Neurosurgery	1
OB-GYN	1
Pharmacology & Experimental Neuroscience	1
Physical Medicine and Rehabilitation	1
Plastic and Reconstructive Surgery	1
Respiratory Therapy	1
Anesthesiology	1
Urology	1
Genetics, Cell Biology, and Anatomy	1
Hematology and Oncology	1

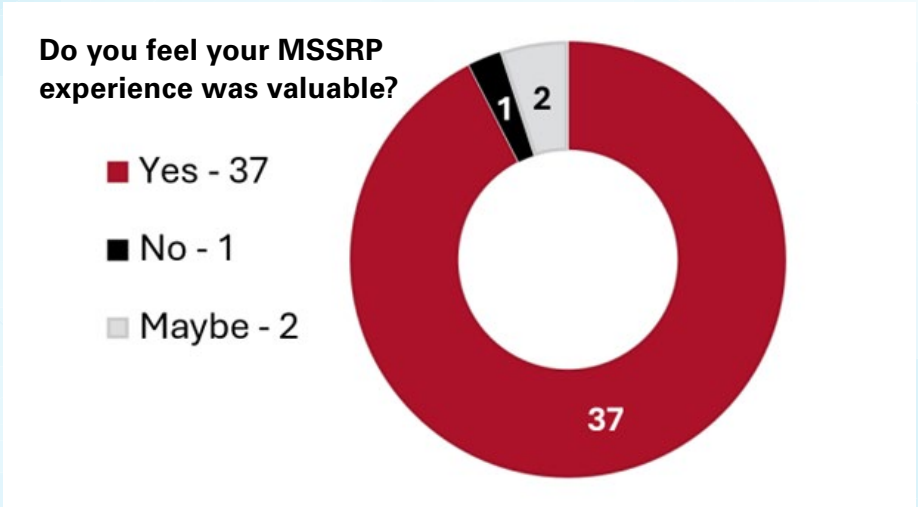
**Please note multiple departments can be involved in the same project*





**2024 was the first year applications were limited to rising M2 students.*

MSSRP 2025 Student Feedback Survey



Top 5 MSSRP Abstracts from 2025

Morgan Owens, mentor Sara Bares, MD: Adherence to STI Screening in Pregnancy and Missed Opportunities.

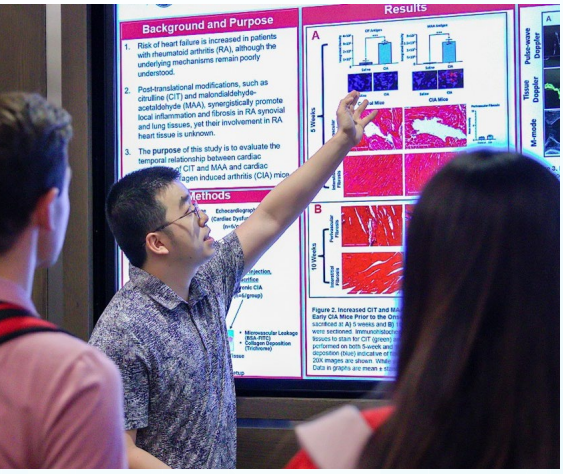
Sterling Cloet, mentor Claudia Berrondo, MD: National Trends in Post-Operative Length of Stay After Pediatric Robotic Pyeloplasty and Ureteral Reimplantation.

Drew Hedstrom, mentor Chris Cornett, MD: Post Operative Outcomes Comparing Drain vs. No Drain Placement Following Single and Multilevel Anterior Cervical Discectomy and Fusion Surgery.

Wyatt Mach, mentor Hesham Basma, PhD: Filamin C Mutations and Susceptibility to Chemotherapy-Induced Dilated Cardiomyopathy: Exploring the Role of Genetic Predisposition in Adriamycin Toxicity.

Karissa Nichols, mentor Kayley Anderson: Mapping Durable Medical Equipment Access for Tracheostomy and Ventilation in Nebraska.

The College of Medicine is committed to advancing medical student scholarship and proudly provides financial support for students whose research abstracts are accepted for presentation at regional, national, and international conferences requiring travel. These scholarly presentations highlight the rigor and dedication of our medical students while amplifying the impact of their work on a broader academic stage. Such achievements benefit not only the presenting students, but also their faculty mentors, the departments in which the research was conducted, and the College of Medicine as a whole, reinforcing the institution's reputation for excellence in research and education.



Other Research Opportunities

Senior Selective: Individualized Research Program (M-ID 763) - one month research elective during M4. Typically, about 10-15 students participate per year.

Student Research Symposium: Initiated in August 2023 and held annually in the Davis Global Center every Fall, this symposium features original research projects with approximately 40 medical student participants each year.

Research Portal: Launched in the Winter of 2025, the College of Medicine debuted a Research Posting Portal to facilitate the connection of medical students and faculty members with possible research opportunities.

Funding for Student Conference Presentation Travel:

August 2021 – July 2022
= $39,850

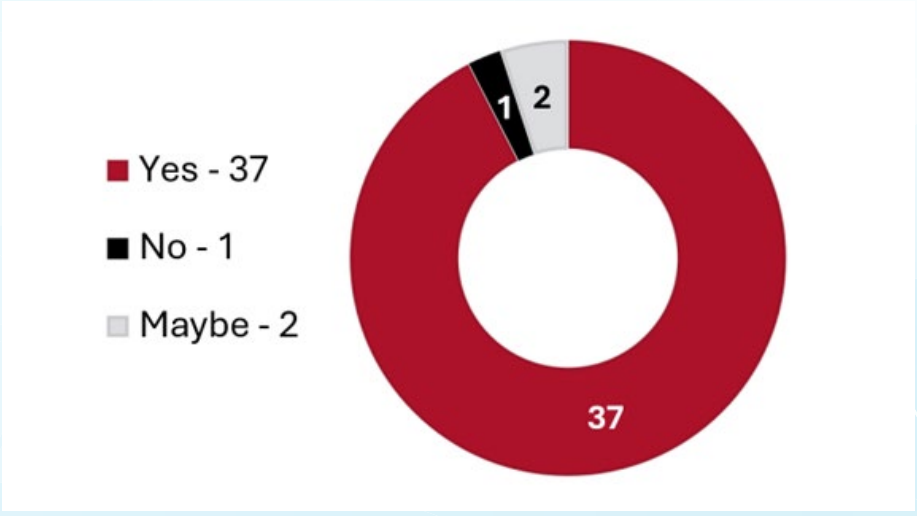
August 2022 – July 2023
= $57,151

August 2023 – June 2024
= $41,001

July 2024 – May 2025
= $44, 520

June 2025 – Nov 2025
= $16,533

After participating in the MSSRP, 93% of survey respondents said they plan to continue research after medical school.



Extracurricular Programs Oversight Committee (EPOC)

Launched in 2025, the EPOC oversees all aspects of medical student extracurricular programs such as the Enhanced Medical Education Tracks (EMETs) and Medical Student Summer Research Program.

Committee Members and Leadership

Leadership:
Chair: Harish Pulluru, MBBS
Vice-Chair: Keely Buesing, MD
Associate Dean: Geoffrey Talmon, MD
Director of UME Research: Kari Nelson, PhD

Members:
Arpan Acharya, PhD
Jenenne Geske, PhD
Shailender Singh, MD
Stephanie Hartman, MD
Liz Harlow, MD
Scott Lundgren, DO
Ivy Haskins, MD
Joe Runge, JD
Kari Neemann, MD
Kirstie Bash, PhD
Tyler Shearer, BS

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