

BIOGRAPHICAL SKETCH

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NAME: Deane E. Smith, M.D.

eRA COMMONS USER NAME (credential, e.g., agency login): SMI010

POSITION TITLE: Associate Professor of Cardiothoracic Surgery

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
Youngstown State University	B.S.	2001	Chemistry
Drexel University College of Medicine	M.D.	2005	Medicine
Allegheny General Hospital		2010	General surgery residency
New York University		2013	CT surgery training

A. Personal Statement

I am an adult cardiac surgeon with advanced training in heart transplantation and mechanical circulatory support (MCS). In addition to a busy clinical practice, I have spent the early part of my research career focused on acute mechanical circulatory support options for cardiogenic shock and acute respiratory failure. I have served as the surgical director for our extra-corporeal membrane oxygenation (ECMO) program since 2015. During that time we have built the infrastructure to provide the highest level of care to our patients, collect important data on these patients, and then ask clinically relevant questions and publish our findings in peer-reviewed journals. As an example of the clinical performance of our program, we were recently awarded the certification as a Center of Excellence for ECMO by the Extracorporeal Life Support Organization (ELSO). In addition, since 2018 I have served as the Associate Director for Heart Transplant and MCS. This was the first year of our transplant program and since its inception, we have performed more than thirty-five transplants each year with excellent results. In 2021, we performed 50 heart transplants for the first time. In addition, we are aggressive with dual-organ transplants performing more than 10 heart-kidney operations per year for the last three years. We have also been part of the resurgence in heart-lung transplants in New York; having performed twelve en-bloc heart-lung transplants since 2019. This speaks to the complexity of our transplant program, both in terms of surgical expertise and the medical acumen required to care for these patients. In addition to excellent transplant outcomes our group remains a robust durable MCS program as evidenced by the performance of NYU's first Total Artificial Heart (TAH) operation

More recently, I have been asked to serve as the Surgical Director of Mechanical Circulatory Support. In this role, I am not only responsible for the Acute MCS program, but also for the durable MCS devices as well. This complex background is particularly relevant to this proposed research protocol. Collectively, our group possesses the surgical expertise and the medical acumen to offer patients complex surgery for biventricular failure with a novel TAH device under the proposed research protocol.

Furthermore, this work has resulted in several peer-reviewed publications, examples of which are listed here:

1. Smith DE, Chen S, Fagnoli A, et al. Impact of early initiation of direct-acting antiviral therapy in thoracic organ transplantation from Hepatitis C virus positive donors. *Seminars in Thoracic & Cardiovascular Surgery* 2020. [PMID: 32621962]
2. Gidea CG, Navneet N, Reventovich A, et al. Increased early acute cellular rejection events in hepatitis C-positive heart transplantation. *Journal of Heart & Lung Transplantation*. 2020. [PMID: 32739334]
3. Smith DE, Kon ZN, Carillo JA, et al. Early experience with donation after circulatory death heart transplantation using normothermic regional perfusion in the United States. *Journal of Thoracic & Cardiovascular Surgery*. 2021. Sep 14. [PMID 34728084]

B. Positions, Scientific Appointments, and Honors

Positions and Employment

2021 – present	Associate Professor of CT Surgery	NYU Grossman School of Medicine
2014 – 2021	Assistant Professor of CT Surgery	NYU School of Medicine
2017 - present	Associate Program Director, Thoracic Surgery	NYU School of Medicine
2013-2014	Assistant in Clinical Surgery	Columbia University Medical Center
2014 – present	Attending Cardiothoracic Surgeon	NYU Langone Health
2014 – present	Attending Cardiothoracic Surgeon	Bellevue Hospital Center
2014 – present	Attending Cardiothoracic Surgeon	Manhattan Veterans Affairs Hospital

Other Experience

2022 – present	Surgical Director, Mechanical Circulatory Support	NYU Langone Health
2015 – present	Surgical Director, Adult ECMO Program	NYU Langone Health
2018 – present	Associate Director, Heart Transplant and MCS	NYU Langone Health
2018 – present	Co-Director, Thoracic Aortic Disease Program	NYU Langone Health

Professional Memberships

2005	American Medical Association
2014	American College of Surgeons
2014	The Society for Thoracic Surgery
2014	International Society for Heart & Lung Transplantation
2016	American Society of Artificial Internal Organs

Honors

2001	Phi Kappa Phi Honor Society
2013	Gold Humanism Honor Society
2015	Joint Council of Thoracic Surgical Education
2019	Education Mission Leadership Development Program
2020	Fellow, American College of Surgeons

C. Contributions to Science

My published work centers on clinical outcomes related to cardiothoracic surgery. The specific areas of focus have generally included heart transplantation and mechanical circulatory support including extra-corporeal membrane oxygenation (ECMO). Our efforts were primarily focused on improving the care provided to our sickest patients. During this time I served as principal investigator on two industry-funded trials coordinated through our CT surgery department, and as co-investigator in a multi-departmental industry-funded trial treating pulmonary embolisms. They include the following:

- a. A clinical study to evaluate ambulatory counterpulsation for the treatment of advanced heart failure: a feasibility study: Nu-PulseCV
- b. AtriClip Left Atrial Appendage Exclusion Concomitant to Structural Heart Procedures (ATLAS)
- c. A prospective, multicenter trial to evaluate the safety and efficacy of the Indigo Aspiration System in Acute Submassive Pulmonary Embolism: Penumbra

Over the last year, I have had the opportunity to participate in several other investigator-initiated clinical projects focused on increasing available organs for transplantation. This has resulted in several publications and presentations related to use of organs for donors who are positive for hepatitis C, and the resurgence of interest in the use of donor hearts after circulatory death (DCD). Our technique has involved the use of normothermic regional perfusion (NRP) to resuscitate a donor organ and then proceed with transplant. Our group was the first to use this strategy for DCD heart transplantation in the United States, and the results of this early experience were presented on the national stage at the American Association of Thoracic Surgeons (AATS) meeting in May 2021. The IRB-approved investigator initiated studies relevant to these projects include:

1. A single-center pilot study of the use of Hepatitis C positive donors for Hepatitis C negative transplant recipients with post-transplant treatment of Hepatitis C Viremia with Mavyret
2. Heart transplantation using Normothermic Regional Perfusion (NRP) Donation after Circulatory Death (DCD): A pilot study

In addition, to the efforts highlighted earlier, with respect to the COVID-19 pandemic, I led and participated in several investigator-initiated clinical projects including the following:

- a. ECMO and Lung Recovery in COVID-19
- b. COVID-19 intervention: influence of ECMO on cytokine storm with/without cytokine filtration

Our work related to the use of ECMO to support patients with acute respiratory failure from COVID-19 during the pandemic has led to multiple publications. Examples include:

1. Kon ZN, Smith DE, Chang SH, et al. Extracorporeal membrane oxygenation support in severe COVID-19. *Annals of Thoracic Surgery*. 2020 [PMID: 32687823]
2. Ibrahim H, Perl A, Smith DE, et al. Therapeutic blockade of inflammation in severe COVID-19 infection with intravenous n-acetylcysteine. *Clinical Immunology*. 2020. [PMID: 32707089]
3. Angel L, Kon ZN, Chang SH, et al. Novel percutaneous tracheostomy for critically ill patients with COVID-19. *Annals of Thoracic Surgery*. 2020; 110: 1006-1011. [PMID: 32339508]
4. Chang SH, Jiang J, Kon ZN, et al. Safety and efficacy of bronchoscopy in critically ill patients with COVID-19. *Chest*. 2021; 159:870-872. [PMID: 33039461]

Additional scientific investigation completed by our group has focused on the use of mechanical circulatory support to treat cardiogenic shock. In some instances this has focused on the role of pre-emptive use of temporary surgical support to prevent the development of cardiogenic shock in high risk cases. In other instances, we have reviewed the complications that occur in patients supported with these devices in the hopes to mitigate the risk to patients. Examples of these publications include:

1. Ranganath NK, Nafday HB, Zias E, et al. Concomitant temporary mechanical circulatory support in high-risk coronary artery bypass surgery. *Journal of Cardiac Surgery*. 2019; 34: 1569-1572. [PMID: 31654576]

2. Chen S, Paone D, Spellman L, et al. Comparison of device-specific adverse event profiles between Impella platforms. *Journal of Cardiac Surgery* 2020; 35: 3310-3316. [PMID 32939839]
3. Chanan EL, Bingham N, Smith DE, Nunnally ME. Early detection, prevention, and management of acute limb ischemia in adults supported with venoarterial extracorporeal membrane oxygenation. *Journal of Cardiothoracic & Vascular Anesthesia*. 2020; 34: 3125-3132. [PMID: 32217044]