

Symposium

Introduction

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Mechanical Circulatory Support: Individualizing the Complexity of Care

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A *ACN Advanced Critical Care* is designed to put forth the most up-to-date and evidence-based research and case examples to assist advanced practice nurses, bedside nurses trained in critical care, and academic and critical care educators working with the most vulnerable and critically ill patient populations. Durable mechanical circulatory support (dMCS) is recognized as an evolving therapy affecting many advanced practice clinicians. Thus, the idea of an MCS themed symposium was born, to include discussion mostly about durable MCS as well as one temporary MCS strategy that is evolving quickly.

Not all dMCS devices are the same, and therefore not all patients with dMCS devices can be treated with the same approach. The first topic of the series, by Petersen, is the evolution of MCS devices. It is important to know the history of dMCS, where the therapy started and where device evolution is headed. The once-unimaginable thought of implantable mechanical hearts began more than 50 years ago, where devices were initially created using everyday materials. Early generation devices in the 1990s were larger than a cantaloupe, bulky, and implanted to bridge an individual to transplantation. Patients receiving these early therapies risked infection, stroke, and bleeding, yet they had nothing left to try and were facing imminent death regardless. Fast forward to the twenty-first century with the emergence of smaller, kiwi-sized devices that added pulsatility to a previously known nonpulsatile situation, and with newer indications regardless of a patient's transplant eligibility. The history of MCS devices is important groundwork to lay before discussing other MCS topics.

Wojack and colleagues then present the topic of ambulatory extracorporeal membrane oxygenation (ECMO), which is used in some patients as a temporary MCS strategy. When the transplant allocation rules and regulations changed in October 2018, so did the strategies for bridging individuals to a long-term and more durable device.¹ Because of this allocation policy change, the use of ambulatory ECMO increased 5-fold, leading to a need for knowledge to care for these patients appropriately.¹ This article provides information on the evolution of ambulatory ECMO use as a leading therapy for critically ill cardiogenic shock patients. The COVID-19 pandemic in 2020 showed that ECMO consideration was needed more than ever for these extremely ill patients. This article highlights the evolution of ECMO use and, more importantly, discusses how care

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transitioned from a predominantly bedside therapy to an ambulatory approach in order to better serve patients.

Psychosocial issues are not new to those working in the MCS field. Many would say this is something encountered on a daily basis and requires thinking outside of the box to address. Meehan and colleagues take a unique perspective: application of case scenarios. The authors provide case studies, but they also provide the perspectives of patients receiving dMCS support as well as dMCS coordinators. Being able to add the human factor to a story assists in learning and remembering what to do if that particular scenario is encountered again. Oftentimes, dMCS coordinators will share stories among themselves in order to learn, share, improve care, or develop strategy for future research. Meehan et al help non-dMCS advanced practice providers or clinical expert bedside nurses understand what may happen behind the scenes many days to months after the dMCS device is placed.

Although many patients receiving dMCS support return to a tolerable quality of life following implantation, eventually every patient will get to the point of making decisions about end-of-life care. Literature is lacking on how to proceed with end-of-life care in patients receiving dMCS support. End-of-life decisions affect all providers treating such patients, and providers have their own perspectives regarding what should or should not be done with the pump

during an individual's final hours or days of life. Regardless of individual circumstances, each patient should have the opportunity for a dignified death. Johnson and colleagues focus on the importance of advanced care planning and ongoing post-dMCS end-of-life discussions. They also explore potential situations encountered and assessments needed throughout the dying process of a patient receiving dMCS support, as well as pump management and postmortem retrieval.

This symposium is a much needed series for advanced practice providers and critical care experts across the spectrum of health care. Although MCS-trained providers know a great deal about patient management, further knowledge and education is essential to caring for patients receiving dMCS support along the continuum of life with the pump and for determining how to proceed with the right referral at the right time for the right patient. The history of dMCS development provides important grounding to understand when ambulatory ECMO should be used, why patients undergo psychological distress after dMCS, and finally, how to bring the patient to their final hours or days on dMCS with dignity.

REFERENCE

1. Li JP, Kingsford P, Hashimi S, et al. One-year before and after UNOS status change effect on ECMO as a bridge to heart transplant. *J Heart Lung Transplant.* 2021;40(4)(suppl):S83-S84.