Clinical Practice Patterns in Temporary MCS for Shock in the CCCTN Registry

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Disclosures

• *I have no personal disclosures*
Background

• Temporary MCS devices can provide hemodynamic assistance for shock refractory to pharmacologic treatment

• Most registries have focused on single devices or specific etiologies of shock, limiting data regarding overall practice patterns with temporary MCS in CICUs
Objective

To investigate clinical practice patterns of temporary MCS use in contemporary CICUs
CCCTN Registry

- CCCTN is an investigator-initiated multicenter network of tertiary CICUs in N. America
- Between Sept 2017 – Sept 2018, each center (n=16) contributed a 2-month snapshot of consecutive CICU admissions (n=3049)

Temporary MCS
- IABP counterpulsation
- Impella LVAS (2.5, CP, 5.0)
- TandemHeart LVAS
- VA-ECMO
Indication for Temporary MCS

N=270

- Acute MI-related Cardiogenic Shock: 33%
- Cardiogenic Shock w/o Acute MI: 31%
- Mixed Shock: 11%
- Other/Uncertain Shock: 3%
- Indication Other than Shock: 22%

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MCS Selection by Shock Type

- **Acute MI-CS (n=143):** 62% with Temporary MCS
  - VA-ECMO: 6, Impella: 18, IABP: 76

- **CS w/o Acute MI (n=311):** 25% with Temporary MCS
  - VA-ECMO: 17, Impella: 16, IABP: 67

- **Mixed Shock (n=131):** 22% with Temporary MCS
  - VA-ECMO: 14, Impella: 14, IABP: 72
Wide Variation in Temporary MCS Use

Proportion of Cardiogenic and Mixed Shock Patients With Temporary MCS by Site

- IABP Only
- Advanced MCS (Impella, TandemHeart, VA-ECMO)

Sites

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Illness Severity by Site MCS Utilization

**CS and Mixed Shock Severity Distribution (IABP-SHOCK II Score) by Site Acute MCS Utilization**

- **Tertile 1**: Low MCS-Utilizing Sites
  - Score 0-2 (Low Risk)
  - Score 3-4 (Mod Risk)
  - Score 5-9 (High Risk)
  - Proportions: 70%, 30%

- **Tertile 2**: High MCS-Utilizing Sites
  - Score 0-2 (Low Risk)
  - Score 3-4 (Mod Risk)
  - Score 5-9 (High Risk)
  - Proportions: 50%, 20%

- **Tertile 3**: (More Advanced MCS Utilization)
  - Score 0-2 (Low Risk)
  - Score 3-4 (Mod Risk)
  - Score 5-9 (High Risk)
  - Proportions: 40%, 30%

**CS and Mixed Shock Severity Distribution (IABP-SHOCK II Score) by Site Advanced MCS vs. IABP Only Utilization**

- **Tertile 1**: More IABP Only
  - Score 0-2 (Low Risk)
  - Score 3-4 (Mod Risk)
  - Score 5-9 (High Risk)
  - Proportions: 80%, 20%

- **Tertile 2**: (More Advanced MCS Utilization)
  - Score 0-2 (Low Risk)
  - Score 3-4 (Mod Risk)
  - Score 5-9 (High Risk)
  - Proportions: 70%, 30%

- **Tertile 3**: More Advanced MCS
  - Score 0-2 (Low Risk)
  - Score 3-4 (Mod Risk)
  - Score 5-9 (High Risk)
  - Proportions: 60%, 40%

**Notes**

- **IABP-SHOCK II**
  - Tertile 1: 1 (1-3)
  - Tertile 2: 1 (1-3)
  - Tertile 3: 2 (1-3)

- **SOFA Score**
  - Tertile 1: 8 (5-11)
  - Tertile 2: 8 (5-10)
  - Tertile 3: 9 (5-13)

**Increasing Proportion of Acute MCS Utilization**

**Increasing Proportion of Advanced MCS Utilization**
Summary

• There is wide variation in proportion of pts with shock who are managed with temporary MCS in tertiary CICUs

• Hospital-level variation in temporary MCS utilization is not explained by differences in illness severity

• These data highlight a need for randomized comparisons of strategies involving temporary MCS to guide treatment of pts w/shock and illustrate opportunities for standardization of care
Clinical Practice Patterns in Temporary Mechanical Circulatory Support for Shock in the Critical Care Cardiology Trials Network (CCCTN) Registry

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Thank you!