#AHA23

MICU OVERFLOW PATIENTS IN THE CARDIAC INTENSIVE CARE UNIT: INSIGHTS FROM THE CRITICAL CARE CARDIOLOGY TRIALS NETWORK REGISTRY

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DISCLOSURES

NONE

BACKGROUND

- The cardiac intensive care unit (CICU) is designed to manage critically ill pts with acute cardiovascular conditions.

- Patients with non-cardiovascular critical illness are at times managed in the CICU due to the unavailability of MICU beds – "MICU overflow" patients.

- There is limited information on characteristics, resource utilization and outcomes of MICU overflow patients cared for in the CICU.

METHODS

- **CCCTN is a multicenter registry of CICUs in North America coordinated by the TIMI Study Group.**

- **Consecutive admissions to each CICU were captured during annual 2-month collection periods from 2018 to 2022.**

- **Pts with no acute or major cardiac issues who were designated as MICU overflow by the participating site were compared to those admitted with acute CV illness.**

- **A generalized mixed-effect regression model was used to adjust for age, sex, Sequential Organ Failure Assessment (SOFA) score and cardiac arrest while accounting for variability among centers.**

- **Patients with active COVID-19 disease were excluded from the analysis.**

RESULTS

- **MICU overflow patients comprised 4.3% [778/18006] of all CICU admissions.**

- **There was significant variation in the proportion of MICU overflow patients among the 41 participating sites, ranging from 0% to 26%.**
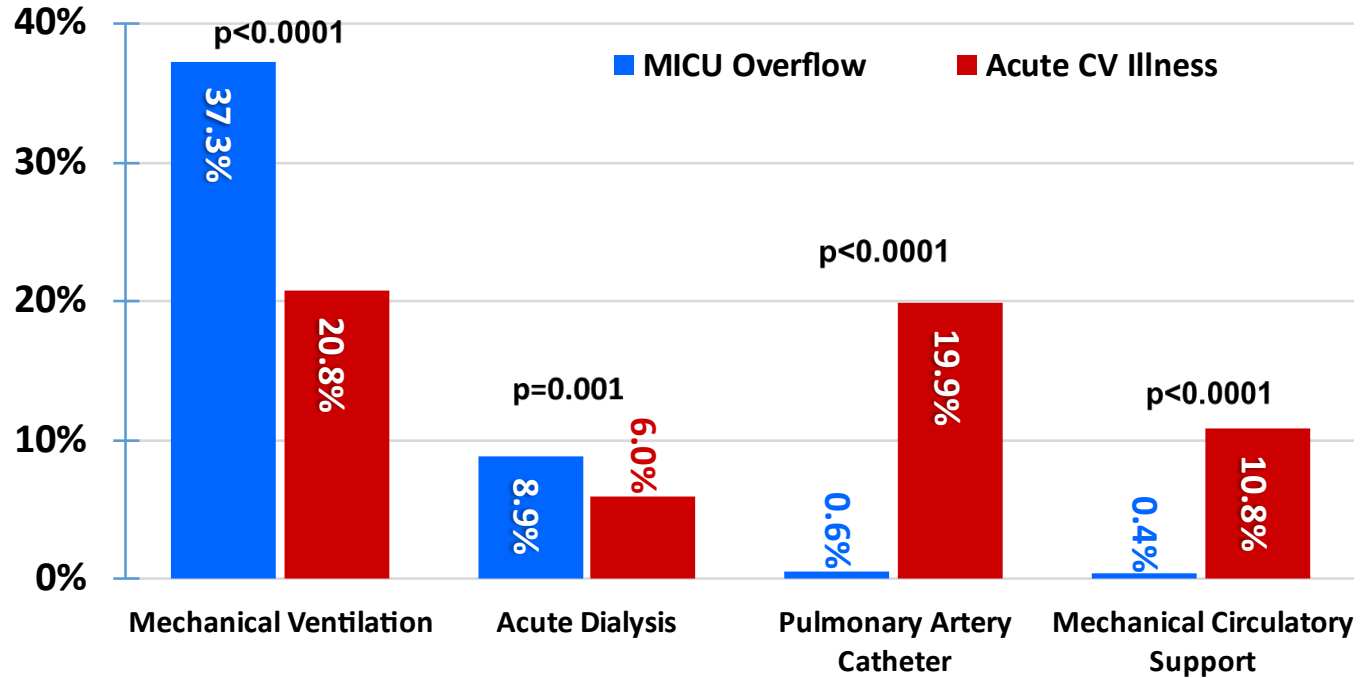
Percentage of MICU Overflow by Site

Median – 0.7(0%-5.7%)
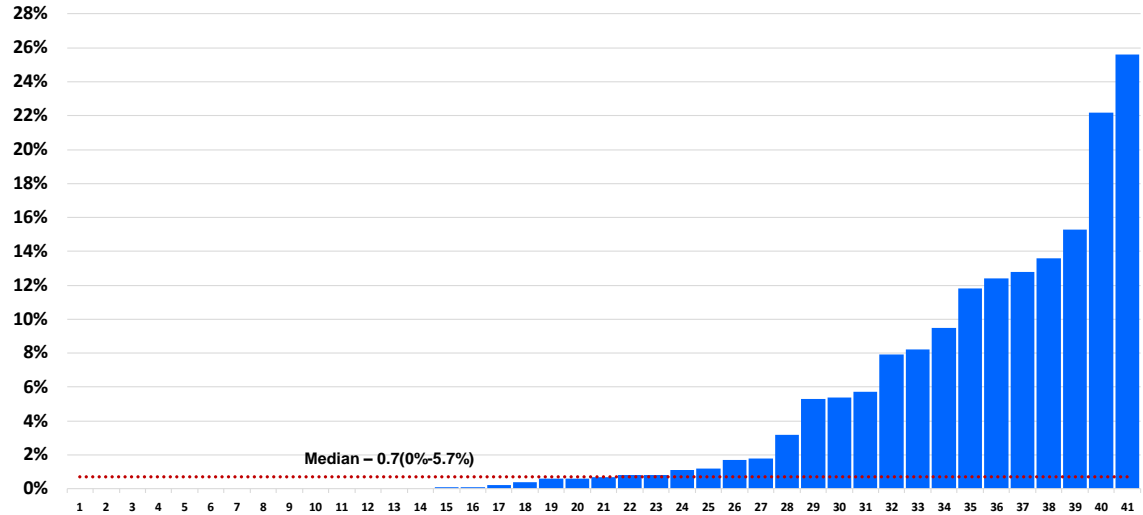
RESULTS

	MICU Overflow (n=778)	Acute CV Illness (n=17228)	p value
Demographics			
Age (yrs)	60 (47.0-71.0)	67.0 (56.0-76.0)	<0.0001
Female	45.6%	36.7%	<0.0001
BMI (kg/m^2)	26.8 (22.7-32.5)	27.7 (24.1-32.5)	0.0002
Caucasian	66.1%	69.2%	0.0913
Comorbidities			
Hypertension	49.9%	64.3%	<0.0001
Diabetes	28.9%	34.2%	0.0023
End stage renal disease	6.6%	5.3%	0.1131
Significant lung disease	24.2%	14.6%	<0.0001
Significant liver disease	10.7%	2.9%	<0.0001
Significant dementia	3.5%	1.9%	0.0018
Active cancer	23.3%	6.5%	<0.0001

RESULTS

	MICU Overflow (n=778)	Acute CV Illness (n=17228)	p value
Prior Cardiovascular history			
Coronary artery disease	15.2%	36.9%	<0.0001
Heart failure	12.3%	36.4%	<0.0001
LVEF $\geq$ 50 %	64.4%	27.0%	<0.0001
Atrial fibrillation	12.6%	25.9%	<0.0001
Ventricular arrhythmia	1.0%	6.3%	<0.0001
Severe valvular disease	3.1%	15.3%	<0.0001
Pulmonary hypertension	3.7%	5.6%	0.0223
Clinical characteristics			
Presenting cardiac arrest	4.5%	12.9%	<0.0001
SOFA score	5.0 (3.0-9.0)	3.0 (1.0-6.0)	<0.0001
Lactate (mmol/L)	1.9 (1.2-3.7)	1.8 (1.2-3.0)	0.0354
eGFR (mL/min/1.73m^2)	67.3 (34.6-105.6)	63.0 (38.7-85.5)	<0.0001

RESULTS

Utilization of ICU Resources

Legend: ■ MICU Overflow ■ Acute CV Illness

- Mechanical Ventilation: MICU Overflow 37.3% (p<0.0001), Acute CV Illness 20.8%
- Acute Dialysis: MICU Overflow 8.9% (p=0.001), Acute CV Illness 6.0%
- Pulmonary Artery Catheter: MICU Overflow 0.6%, Acute CV Illness 19.9% (p<0.0001)
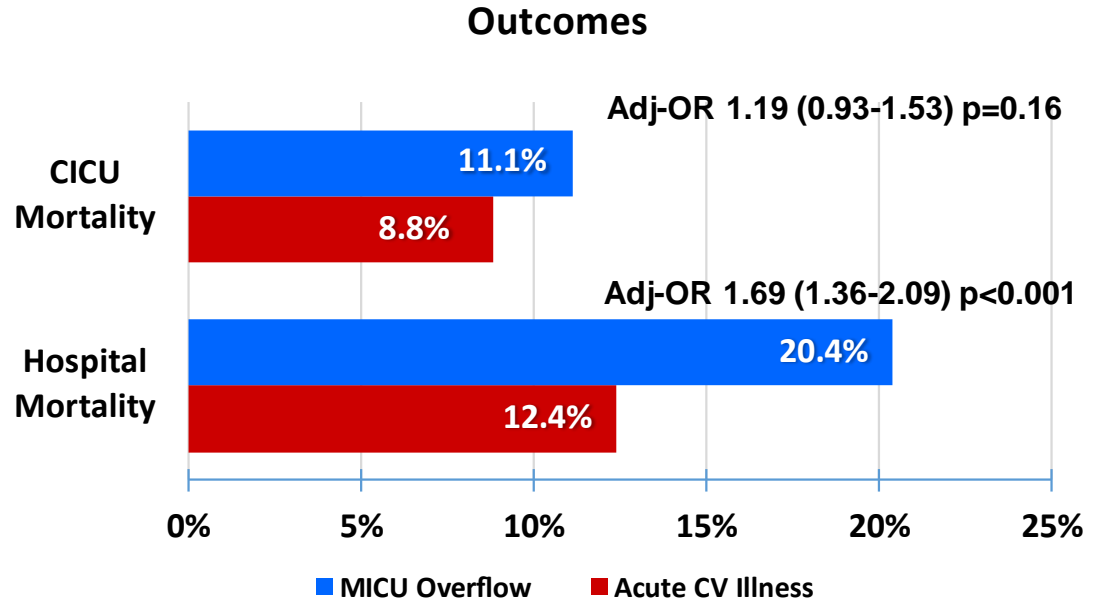- Mechanical Circulatory Support: MICU Overflow 0.4%, Acute CV Illness 10.8% (p<0.0001)

RESULTS

- **ICU length-of-stay was similar**
  - 2.0 vs 2.2 days, p=0.16

- **MICU overflow status was independently associated with:**
  - **Trend toward higher CICU mortality**
  - **Significantly higher hospital mortality**

Outcomes

Adj-OR 1.19 (0.93-1.53) p=0.16

CICU Mortality
- MICU Overflow: 11.1%
- Acute CV Illness: 8.8%

Adj-OR 1.69 (1.36-2.09) p<0.001

Hospital Mortality
- MICU Overflow: 20.4%
- Acute CV Illness: 12.4%

0% 5% 10% 15% 20% 25%

■ MICU Overflow   ■ Acute CV Illness

CONCLUSIONS

- The proportion of MICU overflow patients varied significantly across sites to as high as 1 in 4 CICU admissions.

- MICU overflow pts had more multi-system disease, greater baseline organ dysfunction, and higher hospital mortality compared to patients with acute cardiovascular illness.

- The presence of MICU overflow patients in the CICU reinforces the need for multidisciplinary CICU care teams led by clinicians who are expert in all facets of critical care.