Background

With the aging of the US population, more elderly adults are being admitted to cardiac intensive care units (CICUs).

However, their clinical presentation and outcomes have not been well described.

Given existing concern for particularly poor outcomes in elderly patients, we investigated the epidemiology of this important cohort.

Methods

The Critical Care Cardiology Trials Network (CCCTN) is a multicenter network of advanced CICUs in North America coordinated by the TIMI Study Group.

Consecutive medical admissions to CICUs (n=24) were captured in annual 2-month data collection periods (2017-2019).

Patients were categorized by age <65, 65-<75, 75-<85 & ≥85y.

Multivariable regression analysis including sex, SOFA score, platelet count, lactate, and eGFR was performed for in-hospital mortality and LOS in patients with and without cardiac arrest.

Results

This analysis included 8,230 admissions, of which 28% were for patients ≥75 yo (Figure 1).

Severity of the acute illness by SOFA was shifted slightly downward toward moderate scores with advancing age (Table 1).

Admission diagnoses of cardiogenic shock and cardiac arrest were fewer with older age and NSTEMI was more common.

Use of advanced ICU therapies was less with advanced age (Figure 2).

Table 1. Clinical and demographic characteristics by age group.

<table>
<thead>
<tr>
<th>Age group</th>
<th>n</th>
<th>%</th>
<th>Female</th>
<th>BMI &lt;18.5</th>
<th>History of diabetes</th>
<th>CAD</th>
<th>Admitting diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;65y</td>
<td>3823</td>
<td>61.1 (33.2-85.0)</td>
<td>60.4 (27.3-73.7)</td>
<td>45.6 (26.1-67.7)</td>
<td>45.3 (30.1-63.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-&lt;75y</td>
<td>2173</td>
<td>45.6 (26.1-73.7)</td>
<td>45.3 (26.1-67.7)</td>
<td>45.3 (30.1-63.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75-&lt;85y</td>
<td>1533</td>
<td>31.4 (20.1-63.5)</td>
<td>31.4 (20.1-63.5)</td>
<td>31.4 (20.1-63.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥85y</td>
<td>701</td>
<td>11.4 (6.7-20.5)</td>
<td>11.4 (6.7-20.5)</td>
<td>11.4 (6.7-20.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*All data presented as % unless otherwise stated. p<0.0001 **<0.05

Figure 1. Age group distribution among the CCCTN Cohort

Figure 2. Advanced ICU Therapies and Monitoring by Age Group

<table>
<thead>
<tr>
<th>Age group</th>
<th>n</th>
<th>%</th>
<th>Mechanical ventilation</th>
<th>Mechanical Circulatory Support</th>
<th>Invasive monitoring</th>
<th>Renal replacement</th>
</tr>
</thead>
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P<0.0001

Figure 3. Discharge disposition by age group

Figure 4. In-hospital Mortality by age group

Results (cont.)

- Adjusted LOS was shorter in the oldest patients without cardiac arrest: <65y 11.5 (10.9-12.2) vs. ≥85y 7.0 (5.7-8.2), p<0.0001.
- In patients who died transition to comfort measures was more common with advanced age: 63.5%, 70.6%, 68.8%, 74.7%, in those <65y, 65-<75y, 75-<85yo & ≥85y respectively, p<0.0001.
- Hospital mortality varied with age but with only a 3% absolute difference between the lowest and highest age groups (Figure 4).

Conclusions

- Nearly 1 in 10 patients admitted to CICUs are >85 years old.
- While this group differs in clinical features from younger patients, in-hospital survival was qualitatively similar to other age groups.
- Further research focusing on elderly CICU patients is warranted to guide treatment and decision-making for this important population.