INTRODUCTION

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OBJECTIVES

Objective
Assess the per capita rates of IMV in adults across a strategic sample of developed countries with variable ICU bed availability and explore the factors that are associated with differences in rates.

Hypothesis
Overall per capita rates of IMV among patients is similar among younger patients and diverges among the elderly.
METHOD

Population/Inclusion Criteria: Adults (Age ≥20), admitted to an acute care hospital in the US, Canada, England in 2018, and received invasive mechanical ventilation.

Outcomes:

1. The overall and age-standardized per capita rate of IMV for all patients (i.e. IMV per 100,000 people per year)
   Age-standardized to US 2010 Census Population

2. Crude rates of IMV using 10-year age bands in each country (20-29, 30-39,…70-79, 80+)
# RESULTS

Patients who received IMV in England were younger, and a lower percentage of patients receiving IMV were surgical.

More than four times the number of patients receiving IMV in the US had a diagnosis of dementia or dialysis-dependence prior to receiving IMV.

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>Canada</th>
<th>England*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total n</strong></td>
<td>1,614,768</td>
<td>70,250</td>
<td>59,873</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
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<tr>
<td>Median (IQR)</td>
<td>65 (54-74)</td>
<td>65 (54-74)</td>
<td>61.0 (47-72)</td>
</tr>
<tr>
<td><strong>Sex (male), n (%)</strong></td>
<td>92,347 (57)</td>
<td>45,175 (64)</td>
<td>35,578 (59)</td>
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<tr>
<td><strong>Surgical admission, n (%)</strong></td>
<td>778,282 (49)</td>
<td>35,834 (51)</td>
<td>18,003 (30)</td>
</tr>
<tr>
<td><strong>Primary reason for admission, n (%)</strong></td>
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<td></td>
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<tr>
<td>AMI</td>
<td>105,136 (6.5)</td>
<td>2,211 (3.1)</td>
<td>1621 (2.9)</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>8,012 (0.5)</td>
<td>256 (0.4)</td>
<td>238 (0.4)</td>
</tr>
<tr>
<td>GI bleed</td>
<td>14,491 (0.9)</td>
<td>558 (0.8)</td>
<td>885 (1.6)</td>
</tr>
<tr>
<td><strong>Comorbidities, n (%)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dementia</td>
<td>102,421 (6.3)</td>
<td>938 (1.3)</td>
<td>797 (1.4)</td>
</tr>
<tr>
<td>Dialysis-dependence</td>
<td>90,344 (5.6)</td>
<td>235 (0.3)</td>
<td>729 (1.3)</td>
</tr>
</tbody>
</table>

* To identify the primary reason for admission to hospital and comorbidities, we used Hospital Episode Statistics data that was previously linked to all ICU admissions in England for the year 2016.
CONCLUSION

1. Variation exists in patient characteristics among those who receive IMV across countries.

2. IMV rate per capita in the United States was four times higher than England and twice that of Canada.

3. Rates of IMV were more similar at younger ages and varied by almost 10-fold among older adults.
These findings highlight the variation in practice that may result from differences in resource availability, physician practice, and patient preferences.

While this study may demonstrate differences in practice internationally, it does not aim to delineate which practice pattern is “better”.
1. OECD. Health at a Glance 2021


CONTACT INFORMATION

Naheed Jivraj MBBS MSc FRCP C
Naheed.Jivraj@mail.utoronto.ca