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Provider Awareness of Blood Draws in the Cardiac Intensive Care Unit

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Table 1 shows respondent demographics. The project was initiated with removal of desflurane from the ORs. A benchmark was set for reduction in desflurane use by 50% in the year following project implementation. Desflurane use and purchasing data was re-evaluated after removal from the ORs with a goal of 100% elimination over time.

Results: Desflurane was used as the primary anesthetic for 71/12,239 cases at CHMC in 2019. Desflurane was not used for any cases from June 15, 2020 – November 2021. Desflurane purchasing was reduced by half in 2020 and to zero in 2021.

Conclusion: GHGs are measured in CO2 equivalents to standardize and compare global warming potential. Metric ton CO2 equivalents (MTCO2e) are used to compare quantities of anesthetic gas used to each other or to other activities. Desflurane MTCO2e at CHMC in 2019 accounted for the equivalent of 53,682 miles driven by an average passenger vehicle and accounted for 3.3% of CHMC’s anesthetic gas MTCO2e. In 2020, this was reduced by half and to zero in 2021. Desflurane was eliminated from the ORs at CHMC reducing the GHG emissions. ■

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Table 1. Volatile anesthetic MTCO2e for Children’s Hospital and Medical Center from 2019-2021. MTCO2e= Metric ton CO2 equivalent.

<table>
<thead>
<tr>
<th>Anesthetic</th>
<th>2019 MTCO2e</th>
<th>2020 MTCO2e</th>
<th>2021 MTCO2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevoflurane</td>
<td>68.86</td>
<td>67.23</td>
<td>63.43</td>
</tr>
<tr>
<td>Nitrous Oxide</td>
<td>545.02</td>
<td>787.02</td>
<td>415.25</td>
</tr>
<tr>
<td>Total</td>
<td>635.24</td>
<td>864.93</td>
<td>476.68</td>
</tr>
</tbody>
</table>

Provider Awareness of Blood Draws in the Cardiac Intensive Care Unit

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Mentor: Amanda Marshall

Program: Pediatric Cardiology

Type: Original Research

Background: Pediatric surgical intensive care patients have frequent phlebotomy which may account for substantial blood loss. Evidence suggests blood sample volume should not exceed 4% of total blood volume within a 24-hour period. Providers may be unable to determine if excessive blood is drawn.

Methods: A survey comprised of background questions and three vignettes (each included a lab schedule and asking providers to estimate blood volume drawn in 24 hours) was administered to intensive care providers here and elsewhere to assess awareness of blood draw volumes. Differences between actual and estimated volumes were assessed by t-test.

Results: Thirty-three providers responded. Table 1 shows respondent demographics. Respondents overestimated blood volume drawn on a 7-day-old following truncus arteriosus repair by 0.97 milliliters with a mean response of 4.27 milliliters. Providers underestimated blood volume drawn on a 6-week-old following D-TGA repair by 2.61 milliliters with a mean response of 12.29 milliliters and a 15-year-old trauma patient by 5.31 milliliters with a mean response of 25.49 milliliters. There was a significant difference between response and blood volume required for each vignette. Responses were no different between provider type, primary job, or years in practice. There was a difference in response for the trauma patient by location, with Nebraska providers being more accurate.

Conclusion: Providers are unaware of blood volume drawn for labs in surgical patients, leading to inaccurate estimates of iatrogenic blood loss. Providers need an easily accessible, accurate method, such as a blood draw tab in the medical record, to calculate this in any given 24-hour period. ■

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