The Clinical Utilization of Inhaled Pulmonary Vasodilators

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Inhaled Nitric Oxide (INO) and other pulmonary vasodilators, like Flolan, have demonstrated positive physiological responses in select patient populations; however, no clinical studies have proven any long term outcome benefits in mortality and morbidity. However, INO and Flolan are commonly used as rescue therapy in order to stabilize critically ill patients until a more definitive treatment can be implemented and future direction of care can be discussed with the family. Currently, Lehigh Valley Health Network utilizes both drugs and has a titration protocol for Flolan (fig 1) but not for INO (fig 2).

**OBJECTIVES OF STUDY:**
- Better assess the clinical outcomes of inhaled pulmonary vasodilators.
- Determine if INO and Flolan are being administered correctly and for the appropriate clinical indications.
- Streamline administration for their future utilization.

**Methods**
- A retrospective chart analysis of 158 patients (124 treated with Flolan and 34 patients treated with INO) was performed.
- The clinical indication, clinical response, and total drug administration time was recorded.
- For the patients treated with Flolan it was noted if the prescribed titration protocol was adhered to.
- A positive response was recorded if one or more of the following were observed during treatment: an overall increase of 2% in SpO2, a 20% increase in P/F ratio, an overall reduction of 10% in FiO2, a sustained increase in P/F ratio, an overall reduction of 10% in FiO2, a sustained increase in P/F ratio, or if hemodynamic support was reduced.
- A neutral response was recorded if none of the above changes were observed.
- An unknown response was recorded if the changes could not be determined secondary to treatment with either Flolan or INO.

**Results**

<table>
<thead>
<tr>
<th></th>
<th>Flolan</th>
<th>INO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time on drug</td>
<td>82.5 hours</td>
<td>Adjusted: 61.9 hours</td>
</tr>
<tr>
<td>Median time on drug</td>
<td>41.5 hours</td>
<td>Adjusted: 39.6 hours</td>
</tr>
<tr>
<td>Range of hours</td>
<td>0.75–663.2 hours</td>
<td>2.3–162.9 hours</td>
</tr>
</tbody>
</table>

**Clinical Indications for Flolan**

![Fig. 1: Clinical indication for Flolan administration](image1.png)

**Clinical Indications for INO**

![Fig. 2: Clinical indication for INO administration](image2.png)

**Clinical Responses for Flolan**

![Fig. 3: Clinical responses for Flolan administration](image3.png)

**Clinical Responses for INO**

![Fig. 4: Clinical responses for INO administration](image4.png)

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