HEATED HIGH FLOW (HHF)

Prior to HHF initiation:
Obtain respiratory score (RS), suction, repeat RS

Was RS moderate or severe?

Moderate

Attempt HFNC Initiation Pause (HIP)
- Optimize nasal suctioning
- Attempt feeds if safe for PO (vs. sucrose on pacifier)
- Encourage parent to hold patient, dim the lights
- Administer antipyretic for comfort if not already given
- Address hydration needs; consider bolus if clinically dehydrated
- Consider low flow nasal cannula

*Monitor for 15-30 minutes following completion of above intervention*
*Document with dot phrase: .HIPdocument*

Was HIP successful?

Yes

Manage off pathway

No

Initiate HHF at flow rate of 2L/kg/min (max 15L/min and ≥ 30% FiO₂)
- Call Provider for order
- Obtain RS, suction, repeat RS + VS per provider order
- Place PIV (consider NS bolus/IVF)
- Order NPO status

Provider disposition assessment at 1 hour

Clinically Improving

2 providers together at bedside (within 30 min) may be required should differing opinions on disposition occur

- VS per provider order, with suctioning PRN
- Place NG/OG if anticipated NPO duration > 1 day (recommend OG for ≤ 5kg patient)
- Wean flow rate as tolerated
- May orally feed when patient is clearly clinically improving

Clinically Improving

Weaning HHF

- On admission, provider may attempt pause or attempt a 1 hour holiday every 12 hours
- FiO₂ should be weaned by RN/RT to maintain saturations ≥ 90%
- Flow rate should be weaned quickly for improving patients, including at night

RT/RN to wean flow rate by at least 1L every 2 hours as long as patient is:
- Clinically improving (respiratory distress, respiratory rate, RS)
- Requiring less than 30% FiO₂
- Place LFNC if needed to keep saturations ≥ 88%
- Weaning by conducting a trial directly off HHF to room air (from any rate) is also possible as patient’s condition allows and notifying ordering provider
- When flow is stable at 2L for 2 hours, discontinue HHF

No Change OR Clinically Worsening

Severe

Manage off pathway

Notify PICU and arrange for potential transfer of patient

Inclusion Criteria:
- Age 40 weeks post-conceptual age to < 2 years
- Any of the following:
  - Respiratory distress
  - Hypoxemia (need for >1L if 30-90 days old, >1.5L 91 days to 6 months old, >2L for 6 months to 2 years old)
  - RS score ≥5

Exclusion Criteria (if using HHF, manage off pathway)
- Cardiac disease
- Anatomic airway defects
- Neuromuscular disease
- Immunodeficiency

Signs of clinical improvement:
- Lower respiratory rate (not inappropriately low for age)
- Lower heart rate
- Improving RS

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HEATED HIGH FLOW (HHF)

Criteria for transfer from ICU to floor
- Meets pathway criteria, stable on flow rate at 80% of floor maximum for ≥ 4 hours AND RS <8 prior to transfer

Criteria to transfer to the ICU:
- Clinical worsening on HHF trial
- Reoccurring apnea > 20 seconds requiring intervention
- Reoccurring desaturations with increased FIO₂ needs of >60% FIO₂
- Altered mental status (irritability, lethargy)
- Poor perfusion, cool extremities, capillary refill > 3 seconds

Respiratory Score
Children’s Hospital & Medical Center wishes to acknowledge the work of Dr. Russ Migita and Dr. Lynda Ken of Seattle Children’s Hospital in the development of this pathway/tool.

<table>
<thead>
<tr>
<th>Variable</th>
<th>0 points</th>
<th>1 point</th>
<th>2 points</th>
<th>3 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESPIRATORY RATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2 months</td>
<td>≤ 60</td>
<td>61 - 69</td>
<td>≥ 70</td>
<td></td>
</tr>
<tr>
<td>2 - 12 months</td>
<td>≤ 50</td>
<td>51 - 59</td>
<td>≥ 60</td>
<td></td>
</tr>
<tr>
<td>1 - 2 years</td>
<td>≤ 40</td>
<td>41 - 44</td>
<td>≥ 45</td>
<td></td>
</tr>
<tr>
<td>2 - 3 years</td>
<td>≤ 34</td>
<td>35 - 39</td>
<td>≥ 40</td>
<td></td>
</tr>
<tr>
<td>RETRACTIONS</td>
<td>None</td>
<td>Subcostal or intercostal</td>
<td>2 of the following: Subcostal, Intercostal, Substernal, Nasal flaring (infant)</td>
<td>3 of the following: subcostal, intercostal, substernal, supraclavicular, Nasal flaring or head bobbing (infant)</td>
</tr>
<tr>
<td>DYSPNEA</td>
<td>Normal feeding, vocalizations, and activity</td>
<td>1 of the following: Difficulty feeding, Decreased vocalization, Agitated</td>
<td>2 of the following: Difficulty feeding, Decreased vocalization, Agitated</td>
<td>- Stops feeding OR - No vocalizations OR - Drowsy or confused</td>
</tr>
<tr>
<td>0 - 2 years</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2 - 4 years</td>
<td>Normal feeding, vocalizations, and play</td>
<td>1 of the following: Decreased appetite, Increased coughing after play, Hyperactivity</td>
<td>2 of the following: Decreased appetite, Increased coughing after play, Hyperactivity</td>
<td>- Stops eating or drinking OR - Stops playing OR - Drowsy or confused</td>
</tr>
<tr>
<td>AUSCULTATION</td>
<td>Normal breathing, no wheezing present</td>
<td>End-expiratory wheeze only</td>
<td>Expiratory wheeze only (greater than end-expiratory wheeze)</td>
<td>Inspiratory and expiratory wheeze OR Diminished breath sounds OR Both</td>
</tr>
</tbody>
</table>

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ChildrensOmaha.org/Pathways Updated 09/2022