NAVA Flowchart – Neonates

**NAVA Terminology**

*Edi* is the electrical activity of the diaphragm and can be thought of as a **respiratory vital sign**.

*Edi* _peak_ is the highest value of the Edi signal during a single breath.

*Edi* _min_ represents the spontaneous tonic activity of the diaphragm, which prevents derecruitment of alveoli during expiration.

**NAVA level** is a gain factor that converts the Edi signal into a proportional pressure. The higher the NAVA level the more work of breathing the ventilator provides. The lower the NAVA level the more work of breathing the patient does.

**Edi catheter insertion and positioning**

1. Connect the Edi module and cable
2. Perform the Edi module function check
3. Measure NEX (nose-ear and xiphoid) distance in cm (                )
4. Determine the insertion distance
5. Dip the Edi catheter in water and insert
6. Connect the Edi cable to catheter
7. Verify the position in the catheter positioning screen
8. Check the position of the Edi catheter as a feeding tube according to hospital routines
9. Secure it to the patient, and make a note of the insertion distance
10. Verify the position regularly

**Note:** For neoanates below 1000g use Edi catheter 6Fr / 49 cm.

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**Positioning Window**

**Correct position**

Look for a diminishing ECG waveform progressing from the 1st to the 4th waveform and the presence of a pink color in the 2nd and 3rd waveforms (this may fluctuate to the 1st and 4th waveforms at times).

**Re-Positioning**

**Too deep**

Pull out slightly. QRS gets smaller from the top to bottom leads.

**Too shallow**

Insert further slightly. QRS gets bigger from the top to bottom leads.

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Initial NAVA set-up

<table>
<thead>
<tr>
<th>Parameters</th>
<th>NAVA/NIV NAVA</th>
<th>Management</th>
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| NAVA Level   | Start with a low NAVA level (1.0–2 cm H₂O/µV) | • Titrate to neonates’ comfort and Edi peak 10–15 µV.  
• If the patient is comfortable and the Edi peaks are < 5 µV, decrease the NAVA level in steps of 0.2–0.3 until the Edi Peak values are 5–15 µV.  
• If there is an increased WOB and Edi Peak > 20 µV increase the NAVA level in 0.2–0.3 increments until the patient is comfortable and the Edi peaks are < 15 µV. |
| Edi trigger  | 0.5 µV        | Avoid “artifact self-triggering” which can happen when trigger is too low (lower number is more sensitive). |
| Apnea time   | 2             | Adjust as clinically indicated (minimum rate – 2 seconds = 30 bpm, 1 second = 60 bpm) |
| Ppeak        | 35–40 cm H₂O  | Set Ppeak pressure limit high enough to allow recruiting breaths. Increase if pressure limited alarm is constantly reached. |
| Backup       | If patient is apneic, backup mode (Pressure Control) is activated after the set apnea time is reached. | Set PC level and RR to assure adequate ventilation. |

NOTE: Set appropriate PEEP for the patient and the Back up settings: PC above PEEP and RR.

Troubleshooting

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Investigate the reason</th>
<th>Management</th>
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| High Edi$$\text{peak}$$ > 20 µV | • WOB increased  
• Insufficient backup support  
• Failing NIV treatment  
• Discomfort and Pain  
• Edi catheter dislocated | • Increase NAVA level, increase Ppeak alarm limit  
• Increase backup pressure  
• Intubate and use NAVA  
• Consider light analgesics  
• Reposition Edi catheter |
| Low Edi$$\text{peak}$$ < 5 µV | • Over-assist  
• Poor respiratory drive  
• Sedation too high | • Decrease NAVA level  
• Decrease backup support  
• Decrease sedation |
| Edi$$\text{min}$$ consistently > 5 µV | Atelectasis | • FIO₂ high-increase PEEP by 1  
• Patient clinically stable – no change |

IMPORTANT: Refer to the Servo-u/n User’s manual for operation of the ventilator.