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.

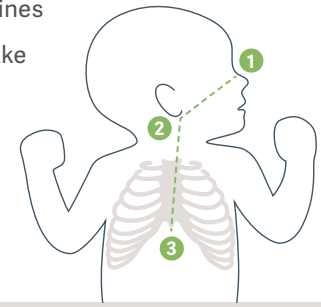
Edi$_{min}$ represents the spontaneous tonic activity of the diaphragm, which prevents derecruitment of alveoli during expiration.

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 xiphold) distance in cm (1 2 3)
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.



Positioning Window

Correct position

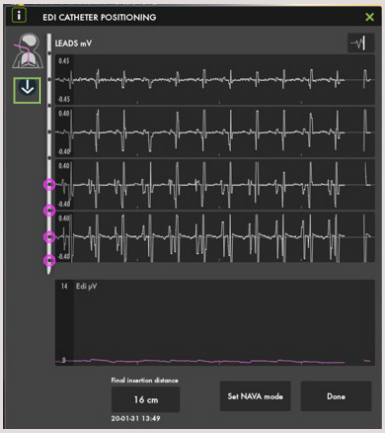
Look for a diminishing ECG waveform progressing from the 1st to the 4th waveform and the presence of a pink color in the 2nd and 3rd waveforms (this may fluctuate to the 1st and 4th waveforms at times).

Re-Positioning

Too deep

Pull out slightly.

P waves gradually decreases and disappear in the lower leads. Dampened QRS.



Too shallow

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

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Initial NAVA set-up

Parameters	NAVA/NIV NAVA	Management
NAVA Level	Start with a low NAVA level (1.0 – 2 $cmH_20\mu V$)	• Titrate to neonates' comfort and Edi peak 10–15 µV. • If the patient is comfortable and the Edi peaks are < 5µV, decrease the NAVA Level in steps of 0.5 until the Edi Peak values are 5–15 µV. • If there is an increased WOB and Edi Peak > 20µV increase the NAVA level in 0.5 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 cmH_20 **NOTE:** The pressure will be limited 5 cmH_20 below the Ppeak alarm limit and generate a blue pressure limited alarm	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

Weaning in NAVA

- Decrease the NAVA level in steps of 0.3–0.5 cm $H_2O/\mu V$
- Decrease back up settings if in backup frequently
- Once at NAVA level 0.5–1 cm $H_2O/\mu V$, extubate to NIV NAVA, go from NIV NAVA to CPAP or High Flow
- Follow local policy and weaning protocol. Integrate NAVA level and Edi as decision criteria
- Monitor the Edi signal in CPAP, CPAP or High Flow therapy

Troubleshooting

Parameter	Investigate the reason	Management
High Edi_{peak} > 20µV	• WOB increased	• Increase NAVA level, increase Ppeak alarm limit
	• Insufficient backup support	• Increase backup pressure
	• Failing NIV treatment	• Intubate and use NAVA
	• Discomfort and Pain	• Consider light analgesics
	• Edi catheter dislocated	• Reposition Edi catheter
Low Edi_{peak} < 5µV	• Over-assist	• Decrease NAVA level
	• Poor respiratory drive	• Decrease backup support
	• Sedation too high	• Decrease sedation
Edi_{min} consistently > 5µV	Atelectasis	• F_iO_2 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.

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