Clinical literature

NAVA, NIV NAVA and Edi monitoring for neonatal and pediatric patients

This document is intended to provide information to an international audience outside of the US

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Meta-analyses & Systematic reviews

Year	Article title	Author	Patients	No	Modes	Link
2026	Comparison of non-invasive neurally adjusted ventilatory assist and non-invasive ventilation modalities for preterm infants with respiratory distress syndrome: a systematic review and meta-analysis of randomized controlled trials.	Paopongsawan	Preterm neonatal	336	NIV NAVA	
2025	Neurally adjusted ventilatory assist (NAVA) in neonatal and pediatric critical care. A scoping review of randomized controlled trials.	Kuitunen	Neonatal and pediatric	433	NAVA	
2025	Non-invasive neurally adjusted ventilatory assist versus nasal continuous positive airway pressure for premature infants: a systematic review and meta-analysis.	Yuan	Premature infants	326	NIV NAVA	
2024	Non-invasive neurally-adjusted ventilatory assist in preterm infants: a systematic review and metaanalysis.	Minamitani	Preterm neonatal	279	NIV NAVA	
2024	Non-invasive neurally adjusted ventilatory assist (NIV-NAVA) reduces extubation failures in preterm neonates-A systematic review and meta-analysis.	Kuitunen	Pretern neonatal	183	NIV NAVA	
2024	Neurally adjusted ventilatory assist in pediatric intensive care units: a systematic review and meta-analysis.	Cai	Pediatric	224	NAVA NIV NAVA	
2024	Neurally adjusted ventilatory assist in preterm infants: A systematic review and meta-analysis.	Lefevere	Preterm neonatal	191	NAVA	
2022	Outcomes of noninvasive neurally adjusted ventilatory assist and nasal continuous positive airway pressure in preterm infants: a systematic review and meta-analysis.	Xu	Preterm neonatal	173	NIV NAVA	
2021	Neurally Adjusted Ventilator Assist in Infants With Acute Respiratory Failure: A Literature Scoping Review.	Harris	Neonatal and pediatric ARF	407	NAVA	
2021	Neurally-Adjusted Ventilatory Assist (NAVA) versus Pneumatically Synchronized Ventilation Modes in Children Admitted to PICU.	Sugunan	Pediatric	285	NAVA	
2020	Diaphragm-triggered non-invasive respiratory support in preterm infants.	Goel	Preterm neonatal	23	NIV NAVA	
2019	Clinical Application of Neurally Adjusted Ventilatory Assist in Neonates with Respiratory Distress: A Systematic Review.	Kadivar	Mixed neonatal RDS	186	NAVA NIV NAVA	
2017	Neurally adjusted ventilatory assist compared to other forms of triggered ventilation for neonatal respiratory support.	Rossor	Term & preterm neonatal	60	NAVA	
2016	Neurally-adjusted ventilatory assist (NAVA) in children: a systematic review.	Beck	Neonatal and pediatric	457	NAVA NIV NAVA	

Narrative reviews

Year	Article title	Author	Patients	No	Modes	Link
2025	Optimizing synchronized non-invasive support: Clinical management guidelines for non-invasive neurally adjusted ventilatory assist.	Firestone	Neonatal	N/A	NAVA NIV NAVA	
2023	Neurally adjusted ventilatory assist in infants: A review article.	Fang	Preterm neonates	134	NAVA NIV NAVA	
2022	The use of neurally-adjusted ventilatory assist (NAVA) for infants with congenital diaphragmatic hernia (CDH).	Poole	Neonatal	N/A	NAVA	
2021	Neurally Adjusted Ventilatory Assist in Newborns.	Beck	Neonatal	–	NAVA NIV NAVA	
2021	Proportional assist and neurally adjusted ventilation: Clinical knowledge and future trials in newborn infants.	Sindelar	Neonatal	–	NAVA NIV NAVA	
2021	A narrative review of advanced ventilator modes in the pediatric intensive care unit.	Miller	Pediatric	–	NAVA	
2019	Neurally adjusted ventilatory assist versus conventional ventilation in the pediatric population: Are there benefits?	Karikari	Pediatric	–	NAVA NIV NAVA	
2017	Neurally adjusted ventilatory assist in pediatrics: why, when, and how?	Andrade	Mixed pediatric	278	NAVA	
2016	Neurally adjusted ventilator assist in very low birthweight infants: Current status.	Narchi	VLBW neonatal	41	NAVA NIV NAVA	
2016	Non-invasive ventilation with neurally adjusted ventilatory assist in newborns.	Stein	Neonatal	–	NIV NAVA	
2013	Interest of Monitoring Diaphragmatic Electrical Activity in the Pediatric Intensive Care Unit.	Ducharme-Crevier	Pediatric	–	Edi mon	

Retrospective studies

Year	Article title	Author	Patients	No	Modes	Link
2026	Neurally Adjusted Ventilatory Assist Compared with Volume-Targeted and Pressure-Controlled Modes in Preterm Infants with Respiratory Distress Syndrome.	Park	Preterm neonatal RDS	79	NAVA	
2026	A survey of parental experiences and perceptions of NAVA in neonatal intensive care.	Tolentino	Neonatal	32	NAVA NIV NAVA	
2025	Impact of Neurally Adjusted Ventilatory Assist Management on Neurodevelopmental Outcomes in Extremely Preterm Infants.	Saito	ELBW neonatal	44	NAVA	
2025	Efficacy of Noninvasive Neurally Adjusted Ventilatory Assist (NIV-NAVA) for Neonates With Transient Tachypnea of the Newborn: A Retrospective Analysis.	Saito	Preterm and term neonates	183	NIV NAVA	
2025	Neurally adjusted ventilatory assist decreases the requirement of corticosteroids.	Araki	Preterm neonatal BPD	64	NAVA	
2024	Comparison of NAVA and SIMV in preterm infants after patent ductus arteriosus ligation: a retrospective study.	Lin	Preterm infants PDAL	50	NAVA	
2024	Neurally adjusted ventilatory assist improves survival, and its early application accelerates weaning in preterm infants.	Lee	VLBW neonatal	122	NAVA	
2024	Non-invasive neurally adjusted ventilatory assist (NIV-NAVA) in the neonatal intensive care unit (NICU): an Australian NICU experience.	Cheng	Premature infants	122	NIV NAVA	
2023	Is neurally adjusted ventilatory assist feasible and safe in the extremely preterm infant?	Lefevere	ELBW neonatal	9	NAVA	
2022	Implementation of neurally adjusted ventilatory assist and high flow nasal cannula in very preterm infants in a tertiary level NICU.	Piatek	Preterm infants	193	NAVA NIV NAVA	
2021	Implementation of noninvasive neurally adjusted ventilatory assist in pediatric acute respiratory failure: a controlled before-after quality improvement study.	Chidini	Pediatric AHRF	64	NIV NAVA	
2021	Is noninvasive neurally adjusted ventilatory assistance (NIV-NAVA) an alternative to NCPAP in preventing extubation failure in preterm infants?	Yagui	Preterm neonatal	49	NIV NAVA	
2021	Neurally adjusted ventilatory assist (NAVA) in very preterm infants: A single tertiary neonatal unit's experience.	Shetty	Preterm neonates	54	NAVA NIV NAVA	

Randomized controlled trials

Year	Article title	Author	Patients	No	Modes	Link
2024	Non-Invasive Ventilation with NAVA improves extubation outcomes in extremely low birth-weight infants.	Louie	ELBW neonatal	60	NIV NAVA	
2024	The Diaphragmatic Initiated Ventilatory Assist (DIVA) trial: study protocol for a randomized controlled trial (incl preliminary data).	Matlock	ELBW neonatal	79	NIV NAVA	
2023	Neurally adjusted ventilatory assist for rapid weaning in preterm infants.	Fang	Preterm neonatal	53	NAVA	
2022	NIV-NAVA versus NCPAP immediately after birth in premature infants: A randomized controlled trial.	Lee	Preterm neonatal	20	NIV NAVA	
2022	Noninvasive Neurally Adjusted Ventilation in Postextubation Stabilization of Preterm Infants: A Randomized Controlled Study.	Shin	Preterm neonatal <30 weeks	78	NIV NAVA	
2020	Comparison of extubation success using noninvasive positive pressure ventilation (NIPPV) versus noninvasive neurally adjusted ventilatory assist (NI-NAVA).	Makker	Preterm neonatal	30	NIV NAVA	
2019	Nasal continuous positive airway pressure (NCPAP) or noninvasive neurally adjusted ventilatory assist (NIV-NAVA) for preterm infants with respiratory distress after birth: A randomized controlled trial.	Yagui	Neonatal VLBW	123	NIV NAVA	
2019	NIV NAVA versus Nasal CPAP in Premature Infants: A Randomized Clinical Trial.	Kallio	Preterm neonatal	40	NIV NAVA	
2016	Early Noninvasive Neurally Adjusted Ventilatory Assist Versus Noninvasive Flow-Triggered Pressure Support Ventilation in Pediatric Acute Respiratory Failure: A Physiologic Randomized Controlled Trial.	Chidini	Pediatric ARF	18	NIV NAVA	
2016	Neurally adjusted ventilatory assist (NAVA) in preterm newborn infants with respiratory distress syndrome – a randomized controlled trial.	Kallio	Preterm neonatal RDS	60	NAVA	
2015	Neurally adjusted ventilatory assist (NAVA) in pediatric intensive care – a randomized controlled trial.	Kallio	Mixed pediatric	170	NAVA	
2014	Neurally adjusted ventilatory assist vs pressure support ventilation in infants recovering from severe acute respiratory distress syndrome: nested study.	Piastra	Mixed pediatric ARDS	30	NAVA	

Family-centered care

Year	Article title	Author	Patients	No	Modes	Link
2026	A survey of parental experiences and perceptions of NAVA in neonatal intensive care.	Tolentino	Neonatal	32	NAVA NIV NAVA	
2022	Improved respiratory parameters with skin-to-skin contact in premature infants with bronchopulmonary dysplasia on NIV-NAVA.	Serrano-Llop	Preterm neonatal BPD	12	NIV NAVA	
2021	Parent-infant skin-to-skin contact reduces the electrical activity of the diaphragm and stabilizes respiratory function in preterm infants.	Lee	Preterm neonatal	17	Edi mon	
2021	Effects of skin-to-skin care on electrical activity of the diaphragm in preterm infants during neurally adjusted ventilatory assist.	Kato	Preterm neonatal	14	Edi mon	
2014	The effects of skin-to-skin care on the diaphragmatic electrical activity in preterm infants.	Soukka	Preterm neonatal	17	Edi mon	

Edi levels & Neural breathing pattern

Table 1 of 2

Year	Article title	Author	Patients	No	Modes	Link
2026	Electrical Activity of the Diaphragm (Edi) metrics in premature infants receiving invasive mechanical ventilation versus non-invasive respiratory support.	Fleishaker	Preterm neonatal	29	Edi mon	
2025	Inspiratory Effort and Dynamic Transpulmonary Driving Pressure in Extremely Preterm Infants.	De Luca	ELBW neonatal BPD and RDS	40	NIV NAVA Edi mon	
2025	Breathing Effort in Preterm Infants Comparing NIV NAVA and CPAP-A Randomised Crossover Study- Brenne.	Brenne	Preterm neonatal	20	NIV NAVA	
2023	Respiratory physiology during NAVA ventilation in neonates born with CDH: The "NAVA-diaph" pilot study.	Dreyfus	Neonatal CDH	8	NAVA	
2022	Reference Values For Diaphragm Electrical Activity (Edi) In Newborn Infants.	Gurumahan	Neonatal	24	Edi mon	
2021	Neurally adjusted ventilatory assist in neonates with congenital diaphragmatic hernia.	Kurland	Neonatal CDH	16	NAVA	
2021	Backup ventilation during neurally adjusted ventilatory assist in preterm infants.	Lee	Preterm neonatal	18	NAVA NIV NAVA	
2021	Non-invasive neurally adjusted ventilatory assist in preterm infants with RDS: effect of changing NAVA levels.	Lefevere	Preterm neonatal	12	Edi mon	
2020	Can visual inspection of the electrical activity of the diaphragm improve the detection of patient-ventilator asynchronies by pediatric critical care physicians?	Di Nardo	Mixed pediatric	10	Edi mon	
2019	Electrical Activity of the Diaphragm in a Small Cohort of Preterm Infants on Noninvasive Neurally Adjusted Ventilatory Assist and Continuous Positive Airway Pressure.	Gupta	Preterm neonatal	10	Edi mon	
2018	A Randomised Cross-Over Study Showed No Difference in Diaphragm Activity During Weaning From Respiratory Support.	Brenne	Preterm neonatal	21	Edi mon	
2018	Neural breathing patterns in preterm newborns supported with non-invasive neurally adjusted ventilatory assist.	Garcia-Munoz	Preterm neonatal	19	Edi mon NIV NAVA	
2018	Neural Breathing Pattern and Patient-Ventilator Interaction During Neurally Adjusted Ventilatory Assist and Conventional Ventilation in Newborns.	Mally	Preterm and term neonatal	23	Edi mon NIV NAVA	
2018	Rapid respiratory transition at birth as evaluated by electrical activity of the diaphragm in very preterm infants supported by nasal CPAP.	Oda	Preterm neonatal	8	Edi mon	

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Edi levels & Neural breathing pattern

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Year	Article title	Author	Patients	No	Modes	Link
2018	Neurally adjusted ventilatory assist in extremely low-birthweight infants.	Oda	ELBW neonatal	8	NAVA	
2017	Neural breathing pattern in newborn infants pre- and post extubation.	Iyer	Preterm neonatal	25	Edi mon	
2017	Patient-ventilator asynchrony during conventional mechanical ventilation in children.	Mortamet	Mixed pediatric	52	Edi mon	
2016	Impact of feeding method on diaphragm electrical activity and central apnea in preterm infants (FEAdi study).	Ng	VLBW Neonatal	10	Edi mon	
2015	The effect of caffeine citrate on neural breathing pattern in preterm infants.	Parikka	Preterm neonatal	17	Edi mon	
2015	Electrical activity of the diaphragm during neurally adjusted ventilatory assist in pediatric patients.	Kallio	Mixed pediatric	81	Edi mon NAVA	
2015	Tonic diaphragmatic activity in critically ill children with and without ventilatory support.	Larouche	Mixed pediatric	55	Edi mon	
2015	High-flow nasal cannulae are associated with increased diaphragm activation compared with nasal continuous positive airway pressure in preterm infants.	Nasef	VLBW neonatal	10	Edi mon	
2014	Evolution of inspiratory diaphragm activity in children over the course of the PICU stay.	Emeriaud	Mixed pediatric	55	Edi mon	
2013	Electrical activity of the diaphragm (Edi) values and Edi catheter placement in non-ventilated preterm neonates.	Stein	Preterm neonatal (non-ventilated)	17	Edi mon	
2012	Synchronized mechanical ventilation using electrical activity of the diaphragm in neonates.	Stein	Term neonatal	3	Edi mon	
2011	Characterization of Neural Breathing Pattern in Spontaneously Breathing Preterm Infants.	Beck	Preterm neonatal	10	Edi mon	
2009	Patient-Ventilator Interaction During Neurally Adjusted Ventilatory Assist in Very Low Birth Weight.	Beck	LBW neonatal	7	Edi mon NAVA NIV NAVA	
2006	Diaphragm electrical activity during expiration in mechanically ventilated infants.	Emeriaud	Ready-to-wean pediatric	16	Edi mon	

Reducing central apneas

Year	Article title	Author	Patients	No	Modes	Link
2023	Evaluation of NAVA-PAP in premature neonates with apnea of prematurity: minimal backup ventilation and clinically significant events.	Protain	Preterm neonatal	28	NIV NAVA	
2021	Effect of electrical activity of the diaphragm waveform patterns on SpO2 for extremely preterm infants ventilated with neurally adjusted ventilatory assist.	Araki	Preterm infants	(105h)	NAVA	
2020	Nasal continuous positive airway pressure versus noninvasive NAVA in preterm neonates with apnea of prematurity: a pilot study with a novel approach.	Firestone	Preterm neonatal	17	NIV NAVA	
2019	NAVA-synchronized compared to nonsynchronized noninvasive ventilation for apnea, bradycardia, and desaturation events in VLBW infants.	Tabacuru	VLBW neonatal	108	NIV NAVA	
2018	Neural Breathing Pattern and Patient-Ventilator Interaction During Neurally Adjusted Ventilatory Assist and Conventional Ventilation in Newborns.	Mally	Preterm neonatal	23	NAVA	
2018	Non-invasive neurally adjusted ventilatory assist versus nasal intermittent positive-pressure ventilation in preterm infants born before 30 weeks' gestation.	Yonehara	Preterm neonatal	34	NIV NAVA	
2017	Feasibility and physiological effects of noninvasive neurally adjusted ventilatory assist in preterm infants.	Gibu	Preterm neonatal	8	NIV NAVA	
2015	The effect of caffeine citrate on neural breathing pattern in preterm infants.	Parikka	Preterm neonatal	17	Edi mon	
2014	Neurally adjusted ventilatory assist in preterm neonates with acute respiratory failure.	Longhini	Preterm neonatal	12	NAVA	
2014	The effects of skin-to-skin care on the diaphragmatic electrical activity in preterm infants.	Soukka	Preterm neonatal	17	Edi mon	
2013	Neurally adjusted ventilatory assist (NAVA) mode as an adjunct diagnostic tool in congenital central hypoventilation syndrome.	Rahmani	CCHS preterm neonatal	1	Edi mon	
2013	Monitoring diaphragm electrical activity and the detection of congenital central hypoventilation syndrome in a newborn.	Szczapa	CCHS term neonate	1	Edi mon	

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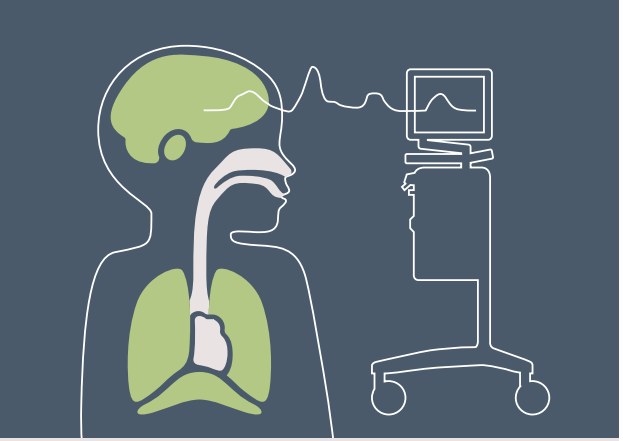
Reducing sedation needs & improving comfort

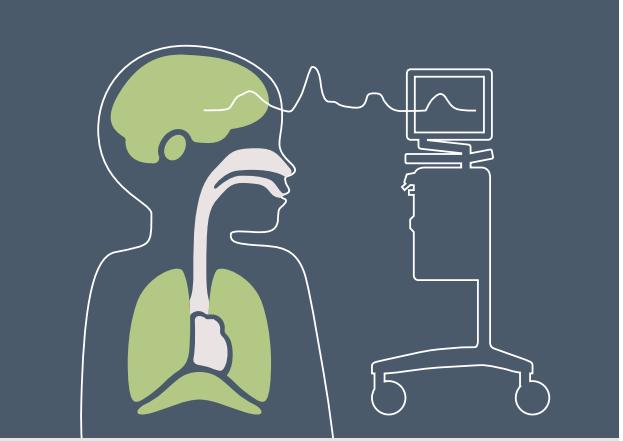
Year	Article title	Author	Patients	No	Modes	Link
2023	Weaning in neurally adjusted ventilatory assist: a prospective interventional study in neonates.	Cosi	Neonatal	34	NAVA	
2021	Brain growth in extremely preterm infants before and after implementing NAVA ventilation.	Soukka	Preterm neonatal	136	NAVA	
2018	Comparison of neurally-adjusted ventilator assist in infants before and after extubation.	Longhini	Term neonatal	10	NAVA NIV NAVA	
2018	Neurally adjusted ventilatory assist in extremely low-birthweight infants.	Oda	ELBW neonatal	35	NAVA	
2017	Neurally adjusted ventilatory assist for infants under prolonged ventilation.	Lee	Preterm neonatal Prolonged MV	14	NAVA	
2016	Neurally adjusted ventilatory assist (NAVA) in preterm newborn infants with respiratory distress syndrome-a randomized controlled trial.	Kallio	Preterm neonatal RDS	60	NAVA	
2015	Effects of propofol on diaphragmatic electrical activity in mechanically ventilated pediatric patients.	Amigoni	Mixed pediatric	20	Edi mon NAVA	
2015	Electrical activity of the diaphragm during neurally adjusted ventilatory assist in pediatric patients.	Kallio	Mixed pediatric	81	Edi mon NAVA	
2015	Neurally adjusted ventilatory assist (NAVA) in pediatric intensive care--a randomized controlled trial.	Kallio	Mixed pediatric	170	NAVA	
2015	Neurally adjusted ventilatory assist in preterm neonates with acute respiratory failure.	Longhini	Preterm neonatal ARF	14	NAVA	
2014	Neurally adjusted ventilatory assist vs pressure support ventilation in infants recovering from severe acute respiratory distress syndrome: nested study.	Piastra	Pediatric ARDS	30	NAVA	
2013	Neurally adjusted ventilatory assist: assessing the comfort and feasibility of use in neonates and children.	Duyndham	Mixed neonatal & pediatric	21	NAVA	
2012	Asynchrony, neural drive, ventilatory variability and COMFORT: NAVA versus pressure support in pediatric patients. A non-randomized cross-over trial.	de la Oliva	Mixed pediatric	12	NAVA	



Improving synchrony

Table 1 of 2

Year	Article title	Author	Patients	No	Modes	Link
2025	Effect of neurally adjusted ventilator assist versus pressure support ventilation on asynchronies and cardiac function in pediatric liver transplantation.	Chiussolo	Pediatric liver transplant	21	NAVA	
2022	Patient-Ventilator Synchrony in Extremely Premature Neonates during NIV-NAVA or SNIPPV: A Randomized Crossover Pilot Trial.	Treussart	ELBW neonatal	14	NIV NAVA	
2022	Neurally Adjusted Ventilatory Assist vs. Conventional Mechanical Ventilation in Adults and Children With Acute Respiratory Failure.	Wu	Pediatric and adult	926	NIV NAVA NAVA	
2021	Can visual inspection of the electrical activity of the diaphragm improve the detection of patient-ventilator asynchronies by pediatric critical care physicians?	Di Nardo	Pediatric	10	Edi mon	
2021	Application of neurally adjusted ventilatory assist in ventilator weaning of infants ventilator weaning.	Xiao	Pediatric	25	NAVA	
2020	Work of Breathing in Premature Neonates: Noninvasive Neurally-Adjusted Ventilatory Assist versus Noninvasive Ventilation.	Matlock	Preterm neonates	15	NIV NAVA NAVA	
2020	Pressure Support Ventilation (PSV) versus Neurally Adjusted Ventilatory Assist (NAVA) in difficult to wean pediatric ARDS patients: a physiologic crossover study.	Spinazzola	Pediatric ARDS Difficult to wean	12	NAVA	
2018	Neural Breathing Pattern and Patient-Ventilator Interaction During Neurally Adjusted Ventilatory Assist and Conventional Ventilation in Newborns.	Mally	Preterm neonatal	23	NAVA	
2016	Early Noninvasive Neurally Adjusted Ventilatory Assist Versus Noninvasive Flow-Triggered Pressure Support Ventilation in Pediatric Acute Respiratory Failure: A Physiologic Randomized Controlled Trial.	Chidini	Pediatric ARF	18	NIV NAVA	
2015	Neurally adjusted ventilatory assist (NAVA) allows patient-ventilator synchrony during pediatric noninvasive ventilation: a crossover physiological study.	Ducharme-Crevier	Mixed pediatric	13	NIV NAVA	
2015	Non-invasive neurally adjusted ventilatory assist in preterm infants: a randomised phase II crossover trial.	Lee	Preterm infants	15	NIV NAVA	
2015	Neurally adjusted ventilatory assist in preterm neonates with acute respiratory failure.	Longhini	Preterm neonatal ARF	14	NIV NAVA	



Improving synchrony

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Year	Article title	Author	Patients	No	Modes	Link
2013	Optimizing patient-ventilator synchrony during invasive ventilator assist in children and infants remains a difficult task.	Vignaux	Mixed pediatric	19	NAVA	
2013	Patient-ventilator asynchrony during noninvasive pressure support ventilation and neurally adjusted ventilatory assist in infants and children.	Vignaux	Mixed pediatric	6	NIV NAVA	
2012	Neurally adjusted ventilatory assist improves patient – ventilator interaction in infants as compared with conventional ventilation.	Bordessoule	Mixed pediatric	10	NAVA	
2012	Asynchrony, neural drive, ventilatory variability and COMFORT: NAVA versus pressure support in pediatric patients. A non-randomized cross-over trial.	de la Oliva	Mixed pediatric	12	NAVA	
2011	Comparison of pressure-, flow-, and NAVA-triggering in pediatric and neonatal ventilatory care.	Ålander	Mixed pediatric	18	NAVA	

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Improving oxygenation

Table 1 of 2

Year	Article title	Author	Patients	No	Modes	Link
2026	Randomised crossover trial of Neurally Adjusted Ventilatory Assist (NAVA) for Neonates with Congenital diaphragmatic hernias.	Shetty	Neonatal CDH	11	NAVA	
2025	The Effect of Body Position on Oxygenation, Ventilation, and Diaphragmatic Workload in Infants Born Premature on Noninvasive Neurally Adjusted Ventilatory Assist.	Darwish	Preterm neonatal	30	NIV NAVA	
2021	Neurally adjusted ventilatory assist in ventilated very preterm infants: A crossover study.	Oda	Preterm infants	19	NAVA	
2021	The using of a neurally adjusted ventilatory assist in premature infants.	Anuriev	Preterm infants	46	NAVA	
2020	Proportional Assist Ventilation (PAV) Versus Neurally Adjusted Ventilator Assist (NAVA): Effect on Oxygenation in Infants With Evolving or Established Bronchopulmonary Dysplasia.	Hunt	Preterm neonatal BPD	18	NAVA	
2020	Pressure Support Ventilation (PSV) versus Neurally Adjusted Ventilatory Assist (NAVA) in difficult to wean pediatric ARDS patients: a physiologic crossover study.	Spinazzola	Pediatric ARDS Difficult to wean	12	NAVA	
2019	When the Children Control the Ventilator, They Adopt an Appropriate Ventilation with a Strict Control of Blood pH.	Veillet	Pediatric	52	NAVA	
2019	NAVA-synchronized compared to nonsynchronized noninvasive ventilation for apnea, bradycardia, and desaturation events in VLBW infants.	Tabacuru	VLBW neonatal	108	NIV NAVA	
2018	Neurally Adjusted Ventilatory Assist After Pediatric Cardiac Surgery: Clinical Experience and Impact on Ventilation Pressures.	Crulli	Post-op cardiac pediatric	28	NAVA NIV NAVA	
2017	Feasibility and physiological effects of noninvasive neurally adjusted ventilatory assist in preterm infants.	Gibu	Preterm neonatal	11	NAVA	
2017	Crossover study of assist control ventilation and neurally adjusted ventilatory assist.	Shetty	Preterm neonatal BPD / ARDS	9	NAVA	
2016	Early Noninvasive Neurally Adjusted Ventilatory Assist Versus Noninvasive Flow-Triggered Pressure Support Ventilation in Pediatric Acute Respiratory Failure.	Chidini	Pediatric ARF	18	NAVA	
2016	Neurally Adjusted Ventilatory Assist in Preterm Infants With Established or Evolving Bronchopulmonary Dysplasia on High-Intensity Mechanical Ventilatory Support.	Jung	Preterm neonatal BPD / RDS	29	NAVA	

Improving oxygenation

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Year	Article title	Author	Patients	No	Modes	Link
2016	Physiological effects of invasive ventilation with neurally adjusted ventilatory assist (NAVA) in a crossover study.	Liet	Post-op cardiac pediatric	6	NAVA	
2016	Mechanical Ventilation After Bidirectional Superior Cavopulmonary Anastomosis for Single-Ventricle Physiology: A Comparison of PSV and NAVA.	Zhu	Post-op BCPA pediatric	21	NAVA	
2015	Neurally adjusted ventilator assist (NAVA) reduces asynchrony during non-invasive ventilation for severe bronchiolitis.	Baudin	Post-op BCPA pediatric	11	NIV NAVA	
2013	Neurally adjusted ventilatory assist in weaning of neonates affected by congenital diaphragmatic hernia.	Gentili	Neonatal CDH	12	NAVA	
2012	Neurally adjusted ventilatory assist in neonates weighing <1500 grams: a retrospective analysis.	Stein	Neonatal CDH	52	NAVA	
2012	Randomized crossover study of neurally adjusted ventilatory assist in preterm infants.	Lee	Preterm neonatal	26	NAVA	
2012	Synchronized mechanical ventilation using electrical activity of the diaphragm in neonates.	Stein	Preterm neonatal	5	NAVA	
2011	Neurally adjusted ventilatory assist mode used in congenital diaphragmatic hernia.	Durrani	Term neonatal	1	NAVA	
2011	Comparison of pressure-, flow-, and NAVA-triggering in pediatric and neonatal ventilatory care.	Ålander	Mixed pediatric	18	NAVA	
2010	A prospective crossover comparison of neurally adjusted ventilatory assist and pressure-support ventilation in a pediatric and neonatal intensive care unit population.	Breatnach	Mixed neonatal & pediatric	16	NAVA	

Reducing inspiratory pressure

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Year	Article title	Author	Patients	No	Modes	Link
2026	Effect of changing NAVA levels on tidal ventilation in extremely preterm infants supported with NIV-NAVA.	Lefevere	ELBW neonatal	16	NIV NAVA	
2021	Application of neurally adjusted ventilatory assist in ventilator weaning of infants ventilator weaning.	Xiao	Pediatric	25	NAVA	
2020	Pressure Support Ventilation (PSV) versus Neurally Adjusted Ventilatory Assist (NAVA) in difficult to wean pediatric ARDS patients: a physiologic crossover study.	Spinazzola	Pediatric ARDS Difficult to wean	12	NAVA	
2018	Neurally Adjusted Ventilatory Assist After Pediatric Cardiac Surgery: Clinical Experience and Impact on Ventilation Pressures.	Crulli	Post-op cardiac pediatric	28	NAVA NIV NAVA	
2018	Neurally adjusted ventilatory assist in extremely low-birthweight infants.	Oda	ELBW neonatal	35	NAVA	
2018	The impact of neurally adjusted ventilatory assist mode on respiratory severity score and energy expenditure in infants: a randomized crossover trial.	Rosterman	Mixed neonatal	24	NAVA	
2017	Feasibility and physiological effects of noninvasive neurally adjusted ventilatory assist in preterm infants.	Gibu	Preterm neonatal	11	NIV NAVA	
2017	Crossover study of assist control ventilation and neurally adjusted ventilatory assist.	Shetty	Preterm neonatal BPD / ARDS	9	NAVA	
2016	Early Noninvasive Neurally Adjusted Ventilatory Assist Versus Noninvasive Flow-Triggered Pressure Support Ventilation in Pediatric Acute Respiratory Failure.	Chidini	Pediatric ARF	18	NIV NAVA	
2016	Neurally adjusted ventilatory assist (NAVA) in preterm newborn infants with respiratory distress syndrome-a randomized controlled trial.	Kallio	Preterm neonatal RDS	60	NAVA	
2016	Neurally Adjusted Ventilatory Assist in Preterm Infants With Established or Evolving Bronchopulmonary Dysplasia on High-Intensity Mechanical Ventilatory Support.	Jung	Preterm neonatal BPD / RDS	29	NAVA	
2016	Physiological effects of invasive ventilation with neurally adjusted ventilatory assist (NAVA) in a crossover study.	Liet	Post-op cardiac pediatric	6	NAVA	

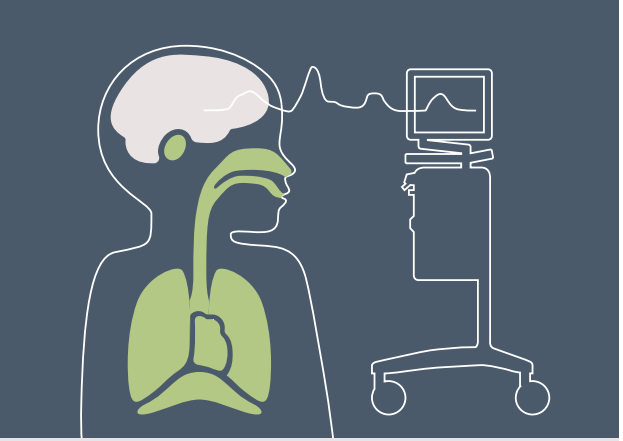
Reducing inspiratory pressure

Table 2 of 2

Year	Article title	Author	Patients	No	Modes	Link
2016	Comparing changing neurally adjusted ventilatory assist (NAVA) levels in intubated and recently extubated neonates.	LoVerde	Preterm neonatal	15	NAVA NIV NAVA	
2016	Mechanical Ventilation After Bidirectional Superior Cavopulmonary Anastomosis for Single-Ventricle Physiology: A Comparison of PSV and NAVA.	Zhu	Post-op BCPA pediatric	21	NAVA	
2015	Non-invasive neurally adjusted ventilatory assist in preterm infants: a randomised phase II crossover trial.	Lee	Preterm infants	15	NIV NAVA	
2015	Effect of changing NAVA levels on peak inspiratory pressures and electrical activity of the diaphragm in premature neonates.	Firestone	Preterm neonates NICU	21	NAVA NIV NAVA	
2015	Neurally adjusted ventilatory assist (NAVA) in pediatric intensive care--a randomized controlled trial.	Kallio	Mixed pediatric	170	NAVA	
2015	Neurally adjusted ventilatory assist in preterm neonates with acute respiratory failure.	Longhini	Preterm neonatal ARF	14	NAVA	
2014	Neurally adjusted ventilatory assist vs pressure support ventilation in infants recovering from severe acute respiratory distress syndrome: nested study.	Piastra	Pediatric ARDS	30	NAVA	
2013	Neurally adjusted ventilatory assist: assessing the comfort and feasibility of use in neonates and children.	Duyndam	Mixed neonatal & pediatric	21	NAVA	
2013	Neurally adjusted ventilatory assist in weaning of neonates affected by congenital diaphragmatic hernia.	Gentili	Neonatal CDH	12	NAVA	
2013	Prospective crossover comparison between NAVA and pressure control ventilation in premature neonates less than 1500 grams.	Stein	VLBW neonatal	5	NAVA	
2012	Randomized crossover study of neurally adjusted ventilatory assist in preterm infants.	Lee	Preterm neonatal	26	NAVA	
2012	Neurally adjusted ventilatory assist in neonates weighing <1500 grams: a retrospective analysis.	Stein	Neonatal VLBW	52	NAVA	
2010	Neurally adjusted ventilatory assist in children: an observational study.	Bengtsson	Mixed neonatal & pediatric	21	NAVA	
2010	A prospective crossover comparison of neurally adjusted ventilatory assist and pressure-support ventilation in a pediatric and neonatal intensive care unit population.	Breatnach	Mixed neonatal & pediatric	16	NAVA	

Improving breathing variability & hemodynamics

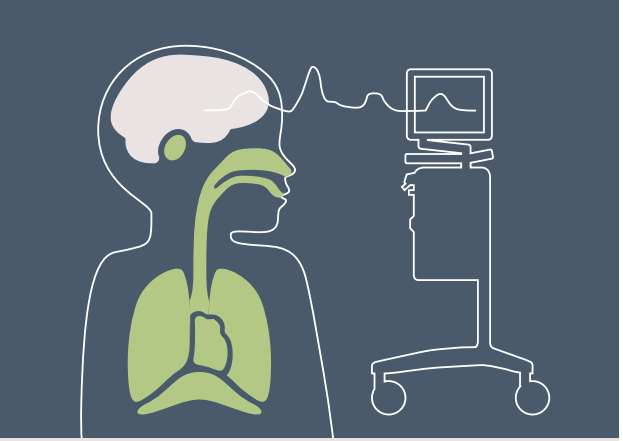
Year	Article title	Author	Patients	No	Modes	Link
2026	A physiologic Comparison of Continuous Neurally Adjusted Ventilation (NeuroPAP) versus NAVA in Infants With Respiratory Failure	Plante	Preterm neonatal	23	NIV NAVA	
2025	Changes in respiratory patterns from PC ventilation to NAVA assessed by Electrical Impedance Tomography	Rahtu	Preterm infants	16	NAVA	
2022	Comparing ventilation modes by electrical impedance segmentography in ventilated children.	Brandt	Pediatric	8	NAVA	
2021	Cardiorespiratory effects of NIV-NAVA, NIPPV, and NCPAP shortly after extubation in extremely preterm infants: A randomized crossover trial.	Latremouille	Preterm neonatal	23	NIV NAVA	
2020	Effects of NAVA Compared to SIMV Ventilation on Cardiac Function in Preterm Neonates.	Hovespyan	Preterm neonatal	14	NAVA	
2019	Utilization of Neurally Adjusted Ventilatory Assist (NAVA) Mode in Infants and Children Undergoing Congenital Heart Surgery: A Retrospective Review.	Baez-Hernandez	CDH post-op pediatric	81	NAVA NIV NAVA	
2019	Neurally Adjusted Ventilatory Assist Mode of Mechanical Ventilation in Neonates with Hypoxic-Ischemic Encephalopathy.	Surkov	Term neonatal Acute HIE	16	NAVA	
2019	NAVA-synchronized compared to nonsynchronized noninvasive ventilation for apnea, bradycardia, and desaturation events in VLBW infants.	Tabacuru	VLBW neonatal	108	NIV NAVA	
2016	Physiological effects of invasive ventilation with neurally adjusted ventilatory assist (NAVA) in a crossover study.	Liet	Post-op cardiac pediatric	6	NAVA	
2016	Mechanical Ventilation After Bidirectional Superior Cavopulmonary Anastomosis for Single-Ventricle Physiology.	Zhu	Post-op BCPA pediatric	21	NAVA	
2014	Impact of Ventilatory Modes on the Breathing Variability in Mechanically Ventilated Infants.	Baudin	Mixed pediatric	11	NAVA	
2012	Neurally adjusted ventilatory assist improves patient–ventilator interaction in infants as compared with conventional ventilation.	Bordessoule	Mixed pediatric	10	NAVA	
2012	Asynchrony, neural drive, ventilatory variability and COMFORT: NAVA versus pressure support in pediatric patients. A non-randomized cross-over trial.	de la Oliva	Mixed pediatric	12	NAVA	
2009	Application of neurally adjusted ventilatory assist in infants who underwent cardiac surgery for congenital heart disease.	Zhu	Post-op CDH neonatal	21	NAVA	



Promoting weaning & extubation

Table 1 of 2

Year	Article title	Author	Patients	No	Modes	Link
2023	Weaning in neurally adjusted ventilatory assist: a prospective interventional study in neonates.	Cosi	Neonatal	34	NAVA	
2022	Ultrasonographic assessment of diaphragmatic function in preterm infants on non-invasive neurally adjusted ventilatory assist (NIV-NAVA) compared to nasal intermittent positive-pressure ventilation (NIPPV).	Elkhouli	Preterm neonatal	40	NIV NAVA	
2022	Diaphragm electrical activity during weaning of nasal high-flow therapy in preterm infants.	Naples	Preterm neonatal	40	Edi mon	
2021	Implementation of noninvasive neurally adjusted ventilatory assist in pediatric acute respiratory failure: a controlled before-after quality improvement study.	Chidini	Pediatric AHRF	64	NIV NAVA	
2021	Is noninvasive neurally adjusted ventilatory assistance (NIV-NAVA) an alternative to NCPAP in preventing extubation failure in preterm infants?	Yagui	Preterm neonatal	49	NIV NAVA	
2020	Neurally-Adjusted Ventilatory Assist Can Facilitate Extubation in Neonates With Congenital Diaphragmatic Hernia.	Meinen	Neonatal CDH	10	NAVA NIV NAVA	
2019	Neurally adjusted ventilatory assist mitigates ventilator-induced diaphragm injury in rabbits.	Shimatani	Rabbits 2.4–2.9 kg	(20)	NAVA	
2019	Feasibility of Non-invasive Neurally Adjusted Ventilator Assist After Congenital Diaphragmatic Hernia Repair.	Amin	CDH post-op neonatal	7	NIV NAVA	
2019	Neurally adjusted ventilatory assist decreases work of breathing during non-invasive ventilation in infants with severe bronchiolitis.	Baudin	Neonatal Bronchiolitis	7	NIV NAVA	
2019	Comparison of NIV-NAVA and NCPAP in facilitating extubation for very preterm infants.	Lee	Preterm neonatal	30	NIV NAVA	



Promoting weaning & extubation

Table 2 of 2

Year	Article title	Author	Patients	No	Modes	Link
2018	Neurally adjusted ventilatory assist can be used to wean infants with congenital diaphragmatic hernias off respiratory support.	Oda	Neonatal CDH	14	NAVA Edi mon	
2018	Does Diaphragmatic Electrical Activity in Preterm Infants Predict Extubation Success?	Singh	Preterm neonatal RDS	21	Edi mon	
2018	Non-invasive neurally adjusted ventilatory assist versus nasal intermittent positive-pressure ventilation in preterm infants born before 30 weeks' gestation.	Yonehara	Preterm neonatal	34	NIV NAVA	
2017	Neural breathing pattern in newborn infants pre- and postextubation.	Iyer	Preterm neonatal	25	Edi mon	
2017	Patient-ventilator asynchrony during conventional mechanical ventilation in children.	Mortamet	Mixed pediatric	52	Edi mon	
2017	Noninvasive Neurally Adjusted Ventilatory Assist in Premature Infants Postextubation.	Colaizy	VLBW neonatal	24	NIV NAVA	
2015	Feasibility Study on Neurally Adjusted Ventilatory Assist in Noninvasive Ventilation After Cardiac Surgery in Infants.	Houtekie	Post-op cardiac pediatric	10	NIV NAVA	
2015	The Effect of High Flow Nasal Cannula Therapy on the Work of Breathing in Infants with Bronchiolitis.	Pham	Neonatal CHD /Bronchiolitis	28	Edi mon	
2013	Neurally adjusted ventilatory assist in weaning of neonates affected by congenital diaphragmatic hernia.	Gentili	Neonatal CDH	12	NAVA	
2012	Mechanisms of ventilator dependence in children with neuromuscular and respiratory control disorders identified by monitoring diaphragm electrical activity.	Fine-Goulden	Pediatric NMD	6	Edi mon	
2011	Electrical activity of the diaphragm during extubation readiness testing in critically ill children.	Wolf	Mixed pediatric (during ERT)	20	Edi mon	

Managing BPD

Year	Article title	Author	Patients	No	Modes	Link
2025	Respiratory physiological changes post initiation of neurally adjusted ventilatory assist in preterm infants with evolving or established bronchopulmonary dysplasia.	Mohamed	Preterm neonatal BPD	88	NAVA	
2025	Neurally adjusted ventilatory assist decreases the requirement of corticosteroids.	Araki	Preterm neonatal BPD	64	NAVA	
2024	Trends in the Incidence of Bronchopulmonary Dysplasia after the Introduction of Neurally Adjusted Ventilatory Assist (NAVA).	Mehra	VLBW neonatal	100	NAVA	
2022	Improved respiratory parameters with skin-to-skin contact in premature infants with bronchopulmonary dysplasia on NIV-NAVA.	Serrano-Llop	Preterm neonatal BPD	12	NIV NAVA	
2021	Neurally Adjusted Ventilatory Assist in Very Prematurely Born Infants with Evolving/Established Bronchopulmonary Dysplasia.	Shetty	Preterm neonatal BPD	54	NAVA NIV NAVA	
2020	Proportional Assist Ventilation (PAV) Versus Neurally Adjusted Ventilator Assist (NAVA): Effect on Oxygenation in Infants With Evolving or Established Bronchopulmonary Dysplasia.	Hunt	Preterm neonatal BPD	18	NAVA	
2020	Multicenter Experience with Neurally Adjusted Ventilatory Assist in Infants with Severe Bronchopulmonary Dysplasia.	McKinney	Neonatal BPD	112	NAVA	
2020	Application of Neurally Adjusted Ventilatory Assist in Premature Neonates Less Than 1,500 Grams With Established or Evolving Bronchopulmonary Dysplasia.	Rong	VLBW neonatal BPD	30	NAVA NIV NAVA	
2017	Crossover study of assist control ventilation and neurally adjusted ventilatory assist.	Shetty	Preterm neonatal BPD / ARDS	9	NAVA	
2016	Neurally Adjusted Ventilatory Assist in Preterm Infants With Established or Evolving Bronchopulmonary Dysplasia on High-Intensity Mechanical Ventilatory Support.	Jung	Preterm neonatal BPD / RDS	29	NAVA	

Managing bronchiolitis

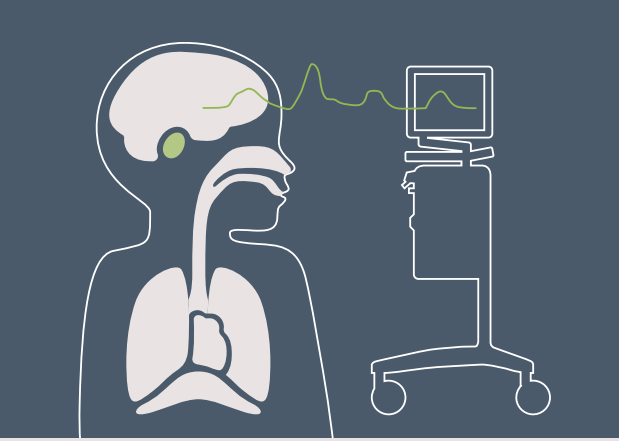
Year	Article title	Author	Patients	No	Modes	Link
2026	Interaction of PEEP and Neurally-Adjusted Ventilatory Assist in Infants With Acute Viral Bronchiolitis	Harris	Neonatal bronchiolitis	13	NAVA	
2025	Effect of Morphine on Respiratory Drive in Infants With Acute Viral Bronchiolitis Receiving Neurally Adjusted Ventilatory Assist	Harris	Neonatal bronchiolitis	13	NAVA	
2024	A descriptive study of niv-nava utilization in children with bronchiolitis admitted to the picu.	Sivakumar	Pediatric bronchiolitis	42	NIV NAVA	
2024	Total face mask with neurally adjusted ventilatory assist as a rescue therapy in infants with severe bronchiolitis.	Cousin	Pediatric bronchiolitis	10	NIV NAVA	
2023	Noninvasive NAVA in Infants With Bronchiolitis: Respiratory Outcomes in a Single-Center, Retrospective Cohort, 2016-2018.	Lepage-Farrell	Pediatric bronchiolitis	64	NIV NAVA	
2021	Non-invasive Neurally Adjusted Ventilatory Assist (NAVA) in the pediatric ICU: assessing optimal Edi compliance.	Lamsal	Pediatric bronchiolitis	63	NIV NAVA	
2015	Neurally adjusted ventilator assist (NAVA) reduces asynchrony during non-invasive ventilation for severe bronchiolitis.	Baudin	Pediatric RSV bronchiolitis	11	NIV NAVA	
2015	The Effect of High Flow Nasal Cannula Therapy on the Work of Breathing in Infants with Bronchiolitis.	Pham	Neonatal CHD /Bronchiolitis	28	Edi mon	
2011	Neurally triggered breaths reduce trigger delay and improve ventilator response times in ventilated infants with bronchiolitis.	Clement	Pediatric bronchiolitis	23	NAVA	
2011	Respiratory support by neurally adjusted ventilatory assist (NAVA) in severe RSV-related bronchiolitis: a case series report.	Liet	Pediatric RSV bronchiolitis	3	NAVA	

Supporting adjunctive therapies

Year	Article title	Author	Patients	No	Modes	Link
2026	Positioning of Diaphragm Electrical Activity Catheter in Premature Infants (PIPI Trial)	Beck	Preterm neonatal	67	Edi mon	
2025	Transition from high-frequency oscillation ventilation to neurally adjusted ventilatory assist in extremely preterm infants.	Ikushima	ELBW neonatal	23	NAVA	
2025	Effect of caffeine citrate on diaphragmatic electrical activity in pre-term newborns.	Zidan	Preterm neonatal	36	Edi mon	
2022	Diaphragmatic Electrical Activity in Preterm Infants on Non-Invasive High Frequency Oscillatory Ventilation (DEAP-NHFO Study).	Wong	Preterm neonatal	20	Edi mon	
2022	Spontaneous breathing during high-frequency oscillation revealed by diaphragm electrical activity.	Takahashi	Preterm neonatal	2	Edi mon	
2022	Improved nutritional outcomes with neurally adjusted ventilatory assist (NAVA) in premature infants: a single tertiary neonatal unit's experience.	Benn	Preterm neonatal	54	NAVA NIV NAVA	
2022	Effect of doxapram on the electrical activity of the diaphragm waveform pattern of preterm infants.	Araki	Preterm neonatal	10	Edi mon NAVA	
2021	Effects of heliox and non-invasive neurally adjusted ventilatory assist (NIV-NAVA) in preterm infants.	Neumann-Klimasinska	Neonatal preterm	23	Edi mon NIV NAVA	
2019	Neurally adjusted ventilatory assist for children on veno-venous ECMO.	Assy	Pediatric ARF/Trauma	6	NAVA Edi mon	
2019	Physiological Effect of Prone Position in Children with Severe Bronchiolitis: A Randomized Cross-Over Study (BRONCHIO-DV).	Baudin	Preterm and term neonatal	14	Edi mon	
2019	The evaluation of the efficacy and safety of non-invasive neurally adjusted ventilatory assist in combination with INtubation-SURfactant-Extubation technique for infants at 28 to 33 weeks of gestation with respiratory distress syndrome.	Miyahara	Preterm neonatal	15	NIV NAVA	
2015	The effect of caffeine citrate on neural breathing pattern in preterm infants.	Parikka	Preterm neonatal	17	Edi mon	
2010	Effect of prone or spine position on mechanically ventilated neonates after cardiac surgery with acute lung injury.	Zhu	Post-op cardiac neonatal	15	NAVA	

Case reports

Year	Article title	Author	Patients	No	Modes	Link
2024	Neurally Adjusted Ventilatory Assist to Monitor Diaphragmatic Activity in Infantile Botulism.	Darwish	Neonatal botulism	1	NAVA	
2023	Neurally adjusted ventilatory assist for congenital lobar emphysema in an infant.	Nakajima	Neonatal CLE	1	NAVA	
2022	Respiratory and Gastrointestinal Management of an Infant with a Birth Weight of 258 Grams.	Itoshima	Preterm neonate	1	NIV NAVA	
2020	Effective neurally-adjusted ventilatory assist weaning off mechanical ventilation in separated conjoined thoraco-omphalopagus twins with sternal MEDPOR implant patch.	Rossetti	Conjoined twins	1	NAVA	
2018	Predicting extubation readiness by monitoring the electrical activity of the diaphragm after prolonged mechanical ventilation: a pediatric case report.	Naito	Pediatric Prolonged MV	1	NAVA	
2017	Combined use of Neurally Adjusted Ventilatory Assist (NAVA) and Vertical Expandable Prostethic Titanium Rib (VEPTR) in a patient with Spondylocostal dysostosis and associated bronchomalacia.	Pons-Odena	Pediatric JLS	1	NAVA	
2010	Neurally adjusted ventilatory assist and lung transplant in a child: A case report.	Vitale	Pediatric CF	1	NAVA	



Abbreviations

Abbreviation	Meaning
ARDS	Acute respiratory distress syndrome
BCPA	Bidirectional superior cavopulmonary anastomosis
BPD	Bronchopulmonary dysplasia
CHS	Central hypoventilation syndrome
CDH	Congenital heart disease
CF	Cystic fibrosis
Edi	Electrical activity of the diaphragm
Edi mon	Edi monitoring
ELBW	Extremely low birthweight , which is less than 1000 g
HIE	Hypoxic-ischemic encephalopathy
NAVA	Neurally adjusted ventilatory assist
NIV	Non-invasive ventilation
NIV NAVA	Non-invasive Neurally adjusted ventilatory assist
NMD	Neuromuscular disorder
PSV	Pressure support ventilation
RDS	Respiratory distress syndrome
RSV	Respiratory syncytial virus
VLBW	Very low birthweight , which is less than 1500 g

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