ECCri 2014
TUCUMÁN

VII CONGRESO ARGENTINO DE EMERGENCIAS Y CUIDADOS CRITICOS EN PEDIATRIA

Por un niño sano en un mundo mejor

V JORNADAS DE KINESIOLOGIA EN EMERGENCIAS Y CUIDADOS CRITICOS EN PEDIATRIA

SAN MIGUEL DE TUCUMAN
11, 12 Y 13 DE SEPTIEMBRE DE 2014

ABORDAJE KINESICO DEL NEONATO CRITICO

11 DE Septiembre de 2014 10:30 Hs

Ventilación No Invasiva en Neonatos

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AREA DE TERAPIA INTENSIVA NEONATAL
HOSPITAL DE PEDIATRIA
PROF. DR. JUAN P. GARRAHAN

Neonatology. 2013;103(4):353-68. doi: 10.1159/000349928. Epub 2013 May 31.

European consensus guidelines on the management of neonatal respiratory distress syndrome in preterm infants--2013 update.

Sweet DG[1], Carnielli V, Greisen G, Hallman M, Ozek E, Plavka R, Saugstad OD, Simeoni U, Speer CP, Vento M, Halliday HL; European Association of Perinatal Medicine.

- La VNI es un modo de soporte respiratorio comúnmente usado en neonatología

- Es un sistema en el cual los recien nacidos respiran espontáneramente y la interfase entre el paciente y el ventilador es una cánula o mascarilla nasal u otro elemento que elimine la necesidad de intubar .

Efectos

S.M. Donn and S.K. Sinha (eds.), *Manual of Neonatal Respiratory Care*,
DOI 10.1007/978-1-4614-2155-9, © Springer Science+Business Media, LLC 2012

- Mejora la CRF
- Estabiliza la caja torácica
- Estabiliza la vía aérea superior
- Previene el colapso alveolar

Efectos

S.M. Donn and S.K. Sinha (eds.), *Manual of Neonatal Respiratory Care*,
DOI 10.1007/978-1-4614-2155-9, © Springer Science+Business Media, LLC 2012

- Mejora el intercambio gaseoso
- Disminuye la asincronía toraco abdominal
- Reduce el trabajo respiratorio
- Reduce la fatiga

Indicaciones

- Dificultad Respiratoria
- Apnea
- Post-extubación

S.M. Donn and S.K. Sinha (eds.), *Manual of Neonatal Respiratory Care*,
DOI 10.1007/978-1-4614-2155-9, © Springer Science+Business Media, LLC 2012

Indicaciones

- Patologías con alteración de la CRF, SDR
- Taquipnea transitoria
- Apneas del prematuro
- Edema Pulmonar
- Destete de la ventilación mecánica
- Parálisis y paresia diafragmática
- Laringomalacia-traqueomalacia
- DBP
- Corto circuito de Izquierda-Derecha a nivel ductal

Contraindicaciones

- Insuficiencia respiratoria grave
- Inestabilidad hemodinámica
- Traumatismos craneofaciales
- Cirugía gastrointestinal reciente
- Hemorragia digestiva
- Vómitos
- Fístula de líquido cefalorraquídeo
- Sangrados de vía aérea

VNI en neonatos

El Éxito depende de:

- una adecuada selección de pacientes e interfases
- método de fijación
- la experiencia del equipo de salud

and only a larger sample will enable us to ascertain whether infants with lower initial severity are indeed more prone to nasal injury during NIV support.

The successful therapeutic use of NIV is linked to proper patient selection, good patient adaptation to the interface and, especially, the team treating the patient.[21] Training and collective involvement to optimize the resources used are keys to good NIV performance. In the present study, the nasal injuries noticeably occurred most frequently during the night, when the physical therapy team was absent from the unit and there were fewer nurses/nursing technicians available. Thus, there is an accumulation of functions for the working team that reduces the surveillance of patients using NIV devices. Constant observation may improve the positioning of the nasal prongs and the infants' position, among other factors that could reduce the skin lesions.

Furthermore, the involvement of professionals in that matter is critical to the improvement of care for those infants. Constant training and analysis of

Journal List › Rev Bras Ter Intensiva › v.25(3); Jul-Sep 2013 › PMC4031841

RBTI REVISTA BRASILEIRA DE TERAPIA INTENSIVA

Rev Bras Ter Intensiva. 2013 Jul-Sep; 25(3): 245–250.
doi: 10.5935/0103-507X.20130042

PMCID: PMC4031841

Language: English | Portuguese

Early nasal injury resulting from the use of nasal prongs in preterm infants with very low birth weight: a pilot study

Nathalie Tiemi Ota, Josy Davidson, and Ruth Guinsburg

Author information ► Article notes ► Copyright and License information ►

UCI Neonatal - Nuestra Experiencia

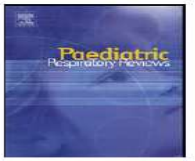
Año	Egresos	ARM	VNI
2011	**633**	**196**	**51**
2012	**635**	**184**	**70**
2013	**646**	**183**	**50**

Equipo de Kinesiología

Paediatric Respiratory Reviews 12 (2011) 196–205

Contents lists available at ScienceDirect

Paediatric Respiratory Reviews



Review

Current methods of non-invasive ventilatory support for neonates

Ramadan A. Mahmoud [1,2], Charles Christoph Roehr [1], Gerd Schmalisch [1,*]

[1] Department of Neonatology, Charité University Medical Center, Berlin, Germany
[2] Department of Pediatrics, Sohag Faculty of Medicine, Sohag University, Egypt

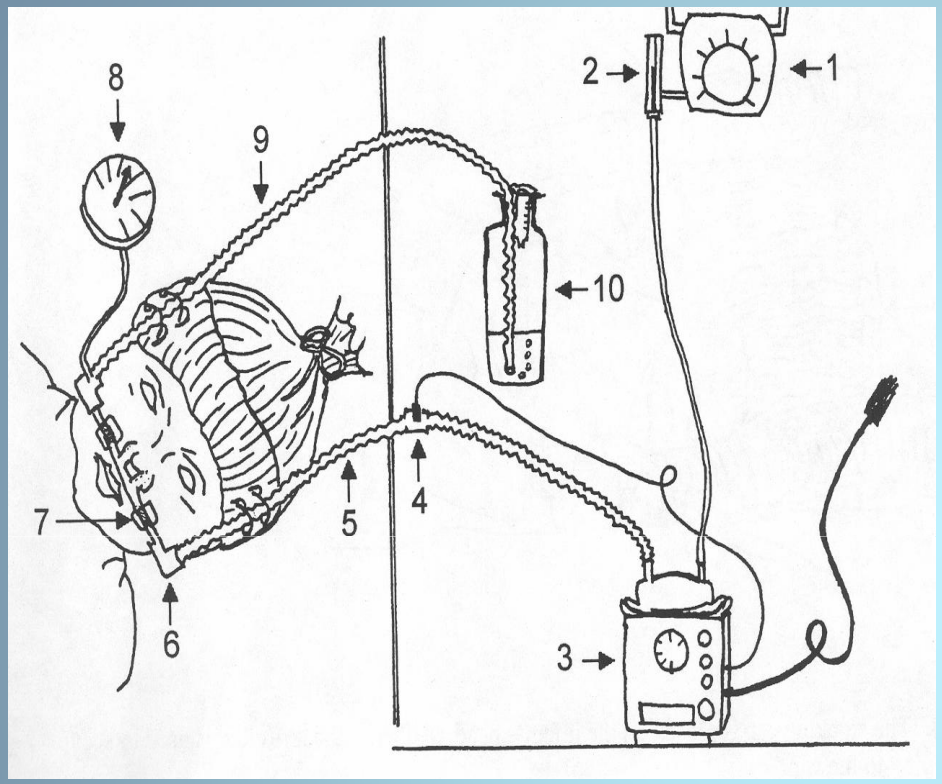
Dispositivo generador de presion:

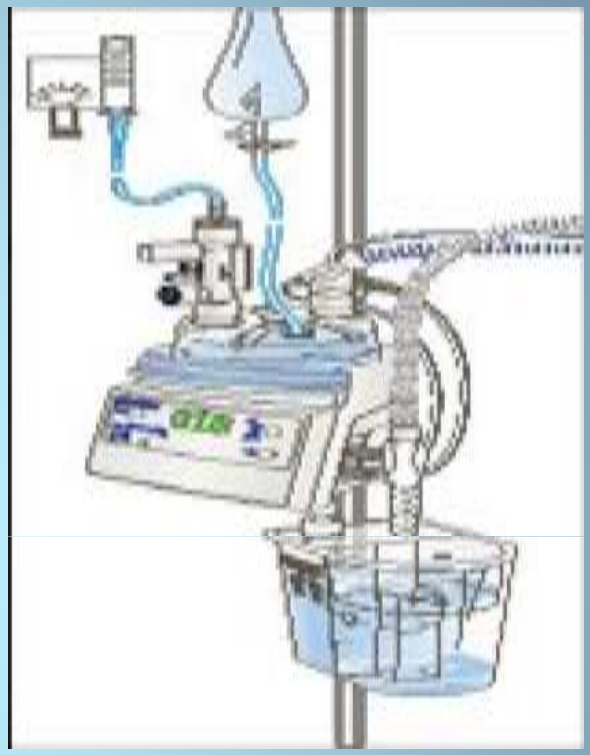
- Respiradores microprocesados
- Modulo de VNI tipo Infant Flow

Interfases

- Canulas bi nasales cortas
- Mascaras nasales

Cpap Burbuja





- El extremo distal del circuito espiratorio es introducido en agua estéril a una profundidad específica para proporcionar el nivel de cpap deseado.

Microprocesados

- **CPAP**
- **CPAP Ciclado (NIPPV)**
- **sNIPPV**
- **NHFV**

CPAP de Flujo Variable

- Flujo estratégico hacia las narinas en la inspiración y fuera del paciente en la espiración
- Ventaja Reduciría el trabajo respiratorio del neonato.
- Desventaja: altos niveles de ruido

Indicaciones	Parámetros
• Post-extubacion	• Similares al del respirador • FR: 20-30 • PEEP 5-6 • PIM 16-18
• Apnea	• PIM 10-14 • PEEP 4-6 • FR: 20
• Dificultad Respiratoria	• PIM > 22 • FR > 30

Interfases

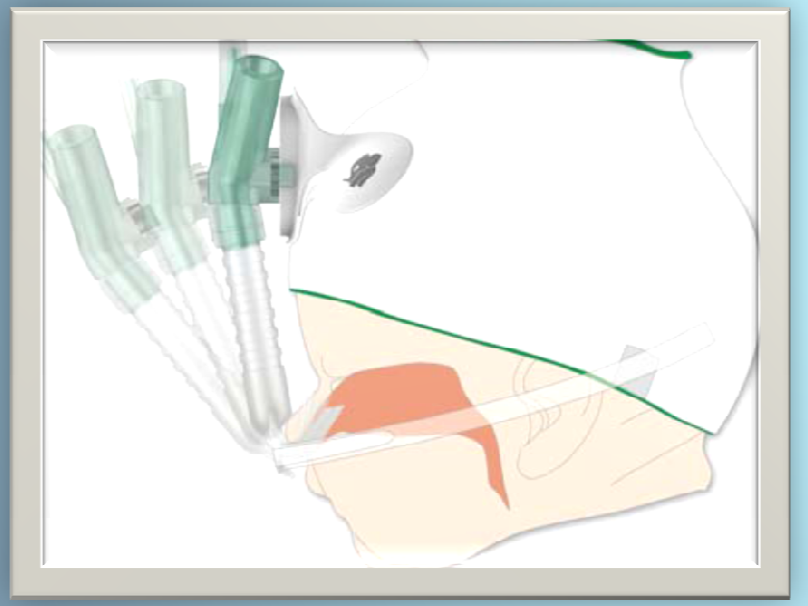
- Prongs bi nasales cortos
- Mascaras nasales

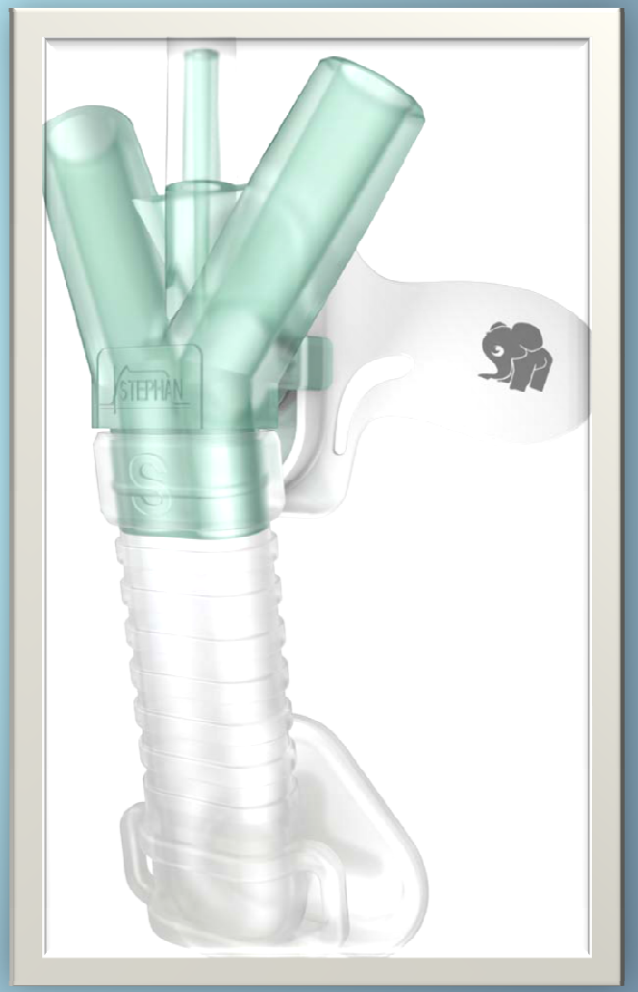
Cánula bi nasal corta

Hidrocoloides y velcros

Métodos de Fijación

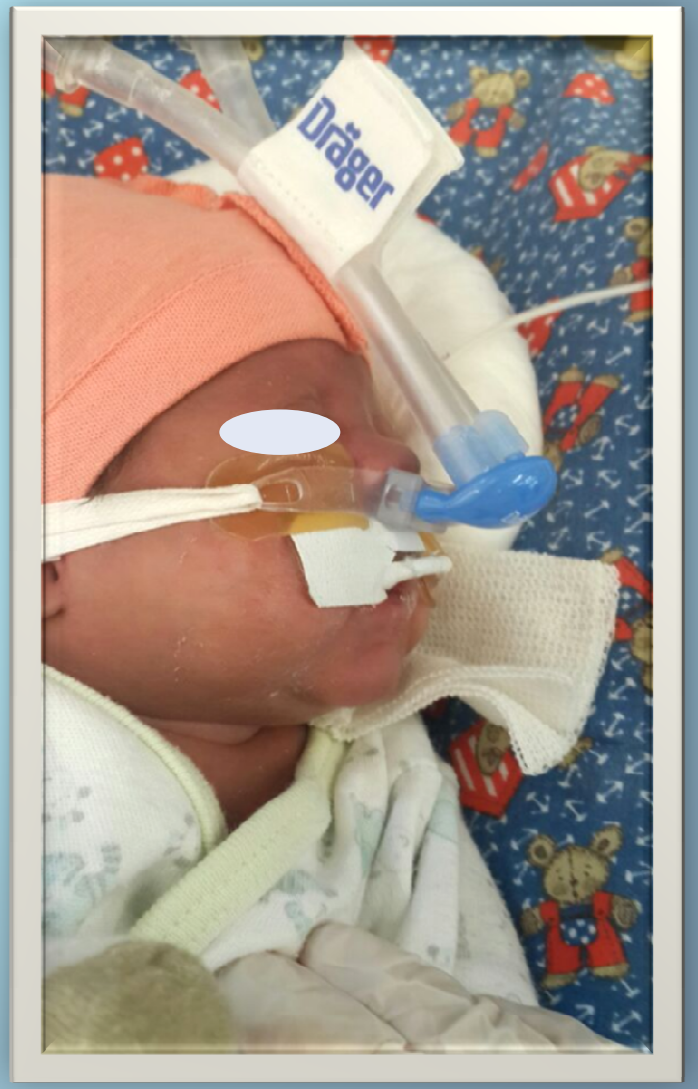
Interfases intercambiables
Cánulas binasales cortas y mascaras





Cánula bi nasal corta

Interfases intercambiables
Prongs-Mascara



Cánula Nasal de Alto Flujo - HHFNC

- Flujo > 1L/m
- 2 a 6 L/m Cpap variable
- 1000 gr. 1.6 L/m
- 500 gr. 1.3 L/m
- CPAP 6 cm H2O

Abordaje del paciente

- Monitoreo de la mecánica respiratoria
- Monitoreo de frecuencia cardiaca y saturación de O2
- Transcutáneo de CO2
- Monitoreo radiológico – volumen pulmonar

Abordaje del paciente

- Posicionamiento adecuado
- Monitoreo de fijaciones
- Monitoreo de zonas de decúbito
- Utilización de técnicas para el clearence que aseguren la permeabilidad de la vía aérea y la efectividad de la terapéutica

Capitulo 20 "Fisioterapia Respiratoria y VNI" M.R. Goncalves

Regular article

The potential of non-invasive ventilation to decrease BPD

Vineet Bhandari, MD, DM

Division of Perinatal Medicine, Department of Pediatrics, Yale University School of Medicine, New Haven, CT, USA

Table 1 – Studies of SNIPPV use in neonates with the primary outcome of BPD.

Author/[ref]	Type	No. of infants	SNIPPV group*	Control group*	Outcomes
Bhandari et al.[44]	Retrospective	469	SNIPPV: Rate: same as prior to extubation; PIP: increased by 2–4 over pre-extubation values; PEEP: ≤6; Flow: 8–10 L/min; FiO_2 adjusted for SpO_2: 85–96%	NCPAP 4–6; Flow: 8–10 L/min; FiO_2 adjusted for SpO_2: 85–96%	SNIPPV group (BW 500–750 g) had decreased BPD, BPD/death, NDI and NDI/death
Bhandari et al.[34]	RCT	41	SNIPPV: Rate: same as prior to extubation; PIP: increased by 2–4 over pre-extubation values; PEEP: ≤5; Flow: 8–10 L/min; FiO_2 adjusted for SpO_2: 90–96%	Continued on CV, until ready to extubate to SNIPPV (secondary mode).	SNIPPV group had decreased BPD/death and BPD

SNIPPV: Synchronized nasal intermittent positive pressure ventilation.

* Initial settings; RCT: randomized controlled trial; Rate: ventilator rate (breaths/min); PIP: peak inspiratory pressure (cmH_2O); PEEP: positive end expiratory pressure (cmH_2O); Ti: inspiratory time (s); FiO_2: fraction of inspired oxygen; SpO_2: pulse oximeter oxygen saturation; NCPAP: nasal continuous positive airway pressure (cmH_2O); BPD: bronchopulmonary dysplasia; BW: birth weight; NDI: neurodevelopmental impairment.

Regular article

The potential of non-invasive ventilation to decrease BPD

Vineet Bhandari, MD, DM

Division of Perinatal Medicine, Department of Pediatrics, Yale University School of Medicine, New Haven, CT, USA

Table 3 – Studies of NIPPV use in neonates with the primary outcome of BPD.

Author/[ref]	Type	No. of infants	NIPPV group*	Control group*	Outcomes
Kugelman et al.[37]	RCT	84	NIPPV: Rate: 12–30; PIP: 14–22; PEEP: 6–7; Ti: 0.3 s; FiO_2 adjusted for SpO_2: 88–92%	NCPAP: 6–7; FiO_2 adjusted for SpO_2 88–92%	NIPPV group had decreased BPD
Kirpalani et al.[45]	RCT	987	NIPPV: Rate: 10; PIP: 10 above PEEP or 2–4 above vent PIP; PEEP: same as prior to extubation; Ti: 0.3 s; Flow: 8–12 L/min; FiO_2 adjusted for SpO_2: 88–92%	NCPAP: Same as when intubated; FiO_2 adjusted for SpO_2: 88–92%	No difference in BPD/death
Ramanathan et al.[46]	RCT	110	NIPPV: Rate: 30–40; PIP: 10–15; PEEP: 5; Ti: 0.5 s; Flow: 8–10 L/min; FiO_2 adjusted for SpO_2: 84–92%	NCPAP: 5–8; FiO_2 adjusted for SpO_2 84–92%	NIPPV group had decreased clinical as well as physiological BPD

NIPPV: Nasal intermittent positive pressure ventilation

* Initial settings; RCT: randomized controlled trial; Rate: ventilator rate (breaths/min); PIP: peak inspiratory pressure (cmH_2O); PEEP: positive end expiratory pressure (cmH_2O); Ti: inspiratory time (s); FiO_2: fraction of inspired oxygen; SpO_2: pulse oximeter oxygen saturation; NCPAP: nasal continuous positive airway pressure (cmH_2O); BPD: bronchopulmonary dysplasia.

Conclusiones

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Table 2
Future research priorities for the non-invasive ventilatory support in neonates

	Research priorities
Methods	• Optimization and validation of new NIV methods (e.g. HFNC[116], variable flow CPAP[117])
	• Combination of different NIV modes (e.g. CPAP + HFO[105])
	• Synchronized pressure support
	• Reduction of noise
Patient Interface	• Gentle and airtight interfaces (face masks, nasal tubes)
	• Optimization of the interface fixation at the patient
	• Reduction of apparatus dead space and expiratory resistance
Monitoring/Data processing	• Development of reliable breath trigger for synchronization
	• Measurement of ventilatory parameters, especially tidal volume and minute ventilation[49]
	• Measurement of air leaks/leak flow[50]
	Improvement of patient's safety (e.g. by detection of hypo- or hyperventilation)

Conclusiones


A review of non-invasive ventilation support in neonates

Raju Narasimhan
Srividyadhari Krishnamurthy

- VNI cada vez mas utilizada como modo primario de soporte ventilatorio en RNPT
- NCPAP mejora la tasa de éxito de extubación
- Existe limitada evidencia sobre HHFNC-nHFV
- RCTs muestran una promisoria disminución en la incidencia de la DBP utilizando SNIPPV, combinado con surfactante precoz

Muchas Gracias!!

Lic. Valeria Villafañe
Hospital de Pediatría J. P. Garrahan