

**Online Table S4.1:** Description of interfaces

Author	Country	Journal	Number of patients	Ages	Type of study	Results
Castro-Codesal et al. [1]	Canada	Paediatric Respir Rev			Review of the mask interfaces for home NIV in infants and children	The selection of the mask interface for NIV is recognized to be an essential part for therapy success. Careful mask selection, a well-fitting headgear and time investment for mask desensitization are some important recommendations for adequate mask adaptation in children. Investing in selection of the mask interface is an important first step in the initiation of long-term NIV.
De Jesus Rojas et al. [2]	USA	The Open Respir Med J	18 children 7 chest wall weakness, 6 CNS, 3 obstructive lung disease, 2 restrictive lung disease	4 m - 19 yrs (average 7 yrs)	Retrospective case series	Indications for Nasal NIV/RAM Cannula initiation included: CPAP/BPAP masks intolerance (11%), dyspnea secondary to chest wall weakness (38%) and tracheostomy avoidance (50%). All patients used a Nasal NIV/RAM Cannula with a portable mechanical ventilator. NIV modes were: BPAP (66%) and CPAP (23%) followed by Synchronized Intermittent Mandatory Ventilation – Pressure Control (SIMV-PC) (11%). Nasal NIV/Ram Cannula was successful in 94%. Analysis of PCO <sub>2</sub> levels showed a significantly lower PCO <sub>2</sub> levels after Nasal NIV/RAM Cannula initiation.
Overbergh et al. [3]	Belgium	Sleep Med	9 tracheobronchomalacia, Down syndrome, cerebral palsy, Trisomy 9	7 m - 15 yrs	Case series	These pilot data suggest that the Optiflow™ interface may be used for chronic CPAP use in infants and children. However, it should not be used for children who require BPAP because of insufficient triggering.
Ramirez et al. [4]	France	Sleep Med	62 children 51 OSA, 6	2-18 yrs mean age	Retrospective study	Most patients (61%) were ventilated with a nasal mask; these patients were significantly younger than

			NMD, 5 lung diseases	10 ± 5 yrs		the patients ventilated with a facial mask or nasal cannula. CPAP and NIV adherence was not affected by the type of the interface. The mean level of unintentional leaks was not different between patients using a nasal mask or a facial mask (not available for patients using nasal cannula).
Ramirez et al. [5]	France	Intensive Care Med	97 children started on CPAP/NIV:35 NMD or scoliosis, 32 craniofacial malformation, OSA without facial malformation, 9 lung disease	1 m to 18 years old	Retrospective study	All 25 children ≤ 2 yrs + 4 older children needed custom made nasal masks. In other patients, an industrial nasal mask, a facial mask, or nasal prongs were used in 50%, 16%, and 2% of pts. Industrial masks without and with manufacturer leaks were used in 35 (36%) and 33 (34%) patients, respectively.
Norregaard et al. [6]	Denmark	Eur Respir J			Review	Nasal masks seem to be the preferred type. Appropriate headgear should be a concern, and in small children custom-made versions are often preferable. Oral leaks can be reduced using a pacifier, or in older children, a chin strap.
Wallis et al. [7]	UK	Paediatric Respir Rev	76 children (survey) 34 craniofacial malformation, 6 mucopolysaccharidosis, 8 NMD, 2 achondroplasia,	0.3-16 years old	Review + results of a survey (home CPAP via nasal mask for OSA: The Great Ormond Street Experience	The greatest cause of failure in the long-term tolerance of NIV is the ill-fitting mask. In children with specific facial deformities such as Crouzon disease or mucopolysaccharidosis, the hospital dental department may assist with custom made masks. In small children and infants, caution is required in the use of the full face mask.

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Abbreviations: m: months, yrs: years, NIV: noninvasive ventilation, NMD: neuromuscular disease, CNS: central nervous system, CPAP: continuous positive airway pressure, BPAP: bilevel positive airway pressure, OSA: obstructive sleep apnea.

## References

1. Castro-Codebal ML, Olmstead DL, MacLean JE. Mask interfaces for home non-invasive ventilation in infants and children. *Paediatr Respir Rev* 2019; 32: 66-72.
2. De Jesus Rojas W, Samuels CL, Gonzales TR, *et al.* Use of nasal non-invasive ventilation with a RAM cannula in the outpatient home setting. *Open Respir Med J* 2017; 11: 41-46.
3. Overbergh C, Installe S, Boudewyns A, *et al.* The Optiflow™ interface for chronic CPAP use in children. *Sleep Med* 2018; 44: 1-3.
4. Ramirez A, Khirani S, Aloui S, *et al.* Continuous positive airway pressure and noninvasive ventilation adherence in children. *Sleep Med* 2013; 14: 1290-1294.
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7. Wallis C. Non-invasive home ventilation. *Paediatr Respir Rev* 2000; 1: 165-171.