Abstract Template

Title: Noninvasive ventilation in prehospital settings

Mohammed D AlAhmari, Jithin K Sreedharan
Department of Respiratory Care, Prince Sultan Military College of Health Sciences, P.O. Box 33048, Dammam 31448
Saudi Arabia

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I. Abstract Body (up to 250 words)

The prehospital use of noninvasive ventilation (NIV) by emergency medical services is increasing. Applying NIV in the prehospital setting began to gain more attention in the late 1990s when the primary form of noninvasive positive pressure ventilation emerged as a substitute to endotracheal intubation. For the last several years, NIV has become the standard of care for acute cardiogenic pulmonary edema and exacerbation of chronic obstructive pulmonary disease patients in the prehospital setting. A remarkable number of studies demonstrate a reduction in mortality and intubation rates in comparison to standard care when NIV is initiated in the prehospital setting, though there is a lack of evidence to strongly recommend the use of prehospital NIV as a first choice. An in-depth understanding of the science and technological background of NIV machines and interfaces can help attending clinicians in the prehospital setting and thus enhance therapeutic effectiveness by maximizing patient comfort, safety, and stability. Selections of the patients, devices, and interfaces, as well as achieving good patient-ventilator synchrony, are the key aspects of a successful outcome.

II. Image:

Table 3: Types, potential advantages and disadvantages of popular products available in the market

Device Type	Advantage	Disadvantage	Products in the market
Valved CPAP Systems Threshold resistors Weighted-ball Spring-loaded	Economical and Easy to use Acceptable range of pressure and FiO_2 Delivery. Pressure delivered is not affected by the flow changes in the system (Sigh/Cough) Gas consumption is low	Gravity dependant Restricted patient movement No Alram or monitoring Noisy	Pulmodyne O2 Max Pulmodyne GO-PAP
Continuous flow generators	Easy to use Fixed & variable flow adjustment is possible. All in our knob pressure/O_2 level adjustment WOB is reduced due to high peak flow rates	Pressure delivered is affected by changes in flow through the system. FIO_2 and pressures delivered are flow dependent. Consumption of gas is high, it varies from 30LPM-100LPM	Respironics Whisperflow Vital Signs-Downs fixed and adjustable flow generators Emergent Respiratory-Port O_2 Veut The Boussignac CPAP - Vygon
Portable Demand-Flow devices	Demand flow system delivers CPAP without wasting oxygen. No batteries required	WOB is comparatively high. Monitoring of the Patient Device interaction is limited	MACS CPAP - Airon Emergent Respiratory-PortO2Veut
Mechanical ventilators for Pre-hospital NIV (Portable, noninvasive, and critical care ventilators.)	Precise oxygen delivery Enhanced patient safety and comfort. Better flow delivery Demand systems to reduce the WOB. Quantify and compensate leaks Patient-monitoring. Alarms for disconnection, System failure. Option to switch to assisted Ventilation. Turbine Operated. Adjustable inspiratory Flow. Back up ventilation	Long triggering delay. Less responsive Trigger sensativity. Risk of rebreathing when there is no adequate flow to facilitate the intentional leak. Flow dependent Expiratory Cycling. No guaranteed VT. Pressure generation varies. Need expertise to operate. Weight varies from 2.3kgs to 27kgs Variable oxygen delivery in the absence of blenders.	Philips Respironics BiPAP S/T, Trilogy100. Resmed Inc. Stellar/Astral/Elisee Series. Draeger Oxylog3000/Carina Hamilton MR1 Maquet Inc. Servo Air Medtronic Inc Newport ht70Plus

CPAP: Continuous positive airway pressure, NIV: Noninvasive ventilation, WOB: Work of Breathing, LPM: Liter per minute, VT: Tidal Volume, BiPAP: Bilevel positive airway pressure, S/T: Spountaneous Time

III. Reference:

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I. Biography:

Mr Jithin has completed his Masters in Respiratory Care at the age of 25 years from Amrita University and currently doing his PhD in respiratory care at Srinivas University, India. He is the Academic Superintendent & Lecturer at Department of Respiratory Care, Prince Sultan Military College of Health Sciences under Ministry of Defense and Aviation, Kingdom of Saudi Arabia a premier alliead health sciences college in the Middle East. He is also the General Secretary of the prestigious Indian Association of Respiratory Care. He has published more than 14 papers in reputed journals and has been serving as an editorial board member of Indian Journal of Respiratory Care. (Up to 100 words)

II. Presenting author details



Full Name: Jithin K Sreedharan
Contact number: 00966590403773
Twitter account: jithinksree
Linked In account: https://www.linkedin.com/in/jithin-k-sree-2b61b964
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