Service Priorities and Programmes

Electronic Presentations

Convention ID: 815
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A Non-invasive Ventilation (NIV) program for Chronic Obstructive Pulmonary Disease (COPD) on acute exacerbation with hypercapnic respiratory failure

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Keywords:
NIV
COPD
Staff competence

Introduction

NIV has been shown to reduce intubation and in-hospital mortality in patients with acute exacerbation of COPD complicated by acute respiratory failure. It has been shown that patients with acute NIV will have better outcomes if they are located in a specialty unit with competent healthcare workers. In order to manage rising the demand of NIV for the life threatening illnesses, a NIV program was initiated in a specialty unit of a district hospital where NIV use was around 300 to 400 times every year since November 2013.

Objectives

To establish a NIV program for NIV service To preliminarily evaluate the effectiveness of the program

Methodology

The considerations of the optimal location for NIV delivery include the monitoring capabilities and staff competency. The key components of the program are as follows: Guideline and Protocol The protocol was developed with reference to HAHO's Nursing Specialty Guideline and best available evidence via a process of Rhoades' model (2011). Competency enhancement Four identical training sessions with 2.5 CNE (Continuous Nursing Education) points provided were conducted in July to August 2013. Pre and post training assessment were done. Monitoring capabilities The types of respiratory equipments were assessed, prepared and maintained according to patient's needs, including different designs of mask, mask related pressure relief dressing, blood gases monitoring devices, designated NIV machine with different modes and physiological monitor. Evaluation The acute NIV service was audited for the compliance with the standard practices. The prevalence of mask related skin problems and healthcare utilization were also evaluated.

Result

Results There were 29 cases and 25 consecutive cases evaluated in designated NIV beds and non-designated NIV beds in December 2013. The means score of the knowledge level of all 26 nurses in the specialty unit was enhanced by 21% from 9.65 to 11.67. The compliance rate with the guideline, mask related skin lesion, and self-reported adverse effects was 99% verse 83%, 3.8% verse 12.5% and 9.11% verse 12.17% for designated NIV beds and non-designated NIV beds respectively. The length of hospital stay, NIV days and NIV hours were 8.28 verse 10.28, 6.04 verse 6.38 and 58.45 verse 91.18 verse for designated NIV beds and non-designated NIV beds respectively. Conclusion The patients with COPD on acute exacerbation with acute hypercapnic respiratory failure would have better healthcare outcomes with less complications and minimized discomfort during the NIV treatment if they were located in designated NIV beds with competent healthcare workers and adequate monitoring capabilities.