Implementing High-Flow Nasal Cannula Therapy in the Emergency Department

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BACKGROUND

- Continuous Positive Airway Pressure (CPAP) and Bilevel Positive Airway Pressure (BiPAP) are considered the modes of non-invasive ventilation (NIV) and are the first lines of treatment among emergency department (ED) patients presenting with respiratory distress or failure.
- In our institution, patients requiring NIV therapy are admitted to the intensive care unit (ICU) for continuous monitoring.
- In addition, non-invasive ventilation therapy is considered a ventilator, which requires orders from providers with ventilator privileges.

LEARNING OBJECTIVES

- Discuss benefits of using high-flow nasal cannula therapy on adult ED patients presenting with respiratory distress as an innovative approach to decreasing ICU admission.
- Generate discussion to identify success, challenges, and the process involved in implementation of high-flow nasal cannula therapy in ED.

HIGH-FLOW NASAL CANNULA THERAPY

- High-flow nasal cannula therapy is a system that has the capability of delivering warmed, humidified oxygen at a higher flow rate of a maximum of 60 liters per minute.

Mechanism of Action

- Physiological dead space washout
- Increased alveolar recruitment
- Humidification of airways

Clinical Effects

- Oxygenation improvement
- Hemodynamic effects
- Patient's comfort

METHODS & DESIGN

Plan

- Gap analysis
- Literature review
- Define project goals

Do

- Development of clinical pathway
- Education and training

Study

- Real-time evaluation and feedback
- Retrospective chart review

Act

- Formative evaluation
- Dissemination of findings

PICOT QUESTION & PROJECT GOALS

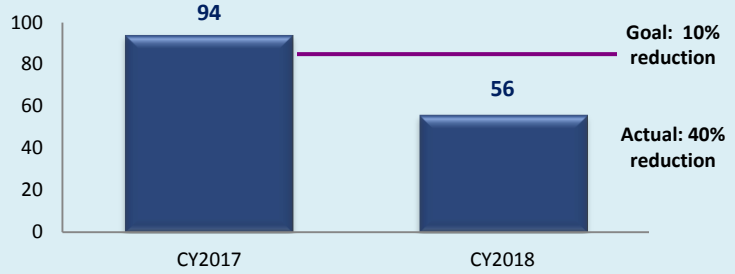
PICOT Question

Among the adult ED patients presenting with respiratory distress or failure (P), does utilizing high-flow nasal cannula therapy (I) compared to using NIV therapy (CPAP and BIPAP) (C) decrease ICU admission (O) during CY2018 (T)?

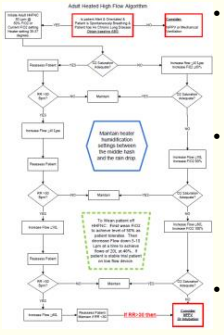
Project Goals

- Initiate high-flow nasal cannula therapy on adult ED patients presenting with respiratory distress or failure based on inclusion criteria.
- Reduce ICU admission of patients on non-invasive ventilation therapy by average of 10% .

Number of ED Patients on Non-Invasive Ventilation Therapy Admitted to ICU during CY2017 – CY2018



FINDINGS



- In January 2018, high-flow nasal cannula therapy was implemented in ED for adult patients meeting criteria.
- The clinical pathway has assisted the respiratory and ED teams in initiating the therapy, which includes arterial blood gas analysis prior to therapy.
- Data were monitored for tracking and trending.

CONCLUSION

- Implementing high-flow nasal cannula therapy in the ED required an interdisciplinary approach, utilization of clinical pathway tool, and education and training for both respiratory and ED teams.
- The use of high-flow nasal cannula therapy on patients meeting criteria reduced ICU admission by **40%** during CY2018, compared to pre-implementation on CY2017.

IMPLICATIONS FOR PRACTICE

- Stakeholder buy-in is necessary in initiating high-flow nasal cannula therapy instead of NIV on patients meeting criteria.
- Reinforcement of utilizing high-flow nasal cannula therapy is highlighted through retrospective chart review and sharing positive patient outcomes.
- External dissemination of current findings will encourage other EDs to use an innovative approach to decrease ICU admission .