

# REDUCING TOTAL COSTS OF AEROSOLIZED MEDICATION DELIVERY USING THE AEROECLIPSE II BREATH ACTUATED NEBULIZER

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## ABSTRACT

### Introduction:

We hypothesized the AeroEclipse® II breath actuated nebulizer combined with an aggressive dosing and frequency protocol would result in cost savings.

### Methods:

We transitioned a 38 bed pulmonary unit from traditional jet nebulizers to BAN nebulizers and developed a medication dosing and frequency protocol. Albuterol was converted to 0.5 ml of a 0.5% solution with 1ml normal saline. Atrovent was converted to one half unit dose. The breath actuated mode via mouthpiece or mask interface with normal saline increased to 2 ml and continuous mode was used. Frequencies were changed from Q4 to Q6 and QID to TID. BANs were changed weekly versus daily with traditional nebulizers. Average hourly rate, treatment time, drug costs, and device costs for June through November 2008 were compared to 2007. To ensure effectiveness of therapy we compared the average number of both scheduled and PRN treatments per patient per day. Subsequently, we utilized this model to convert all inpatient beds to BAN in June 2010 and compared data to a similar time period in 2009.

### Results:

Our initial 2008 conversion resulted in a 20% decrease in total costs with an annualized savings of \$52,360. Additionally a 31% decrease in minutes per day in therapist time to administer medications and 21% increase in duration between treatments was realized. The average number of scheduled treatments per patient per day was 3.4 and 2.8 in 2007 and 2008 respectively while the average number of PRN treatments was 0.16 and 0.15 in 2007 and 2008 respectively. In the 2010 analysis BAN nebulizers account for an 18% decrease in total costs, and a 19% decrease in total treatment time. Use of BAN nebulizers resulted in an annual savings at Forsyth Medical Center of \$186,789 and estimated savings of \$475,411 across Novant Health facilities. Average number of scheduled treatments per patient per day was 3.3 and 3.1 in 2009 and 2010 respectively while the average number of PRN treatments was 0.24 and 0.27 in 2007 and 2008 respectively. Additionally, we compared 2010 data from the units in our initial 2008 group to ensure the improvement reported was maintained in that area.

### Conclusions:

Using the AeroEclipse® II breath actuated nebulizer in conjunction with an aggressive medication dosing and frequency reduction protocol provides significant savings. Greater gains have been realized for the pulmonary specific unit which treats patients with more severe pulmonary conditions.



## INTRODUCTION

We hypothesized the AeroEclipse® II breath actuated nebulizer combined with an aggressive dosing and frequency protocol would result in cost savings.



AeroEclipse® II BAN

## METHODS

- Transitioned a 38 bed pulmonary unit from traditional jet nebulizers to BAN nebulizers
- Developed a medication dosing and frequency protocol
  - Albuterol converted to 0.5 ml of a 0.5% solution with 1ml normal saline
  - Atrovent<sub>f</sub> converted to one half unit dose
  - Breath actuated mode via mouthpiece
  - For mask interface, continuous mode and normal saline increased to 2 ml
  - Frequencies changed from Q4 to Q6 and QID to TID
  - BANs changed weekly versus daily
  - Compared costs for June – November 2007 and 2008
  - Compared scheduled and PRN treatments
- Converted all inpatient beds to BAN in June 2010

## RESULTS

### **Initial 2008 Conversion**

- 20% decrease in total costs
- 31% decrease in medication administration time/day
- \$52,360 annualized savings
- 21% increase in duration between treatments
- 2.8 scheduled treatments/patient/day in 2008 vs. 3.4 in 2007
- 0.15 PRN treatments/patient/day in 2008 vs. 0.16 in 2007

### **2010 Analysis Results**

- 18% decrease in total costs
- 19% decrease in medication administration time/day
- \$186,789 annual savings at Forsyth Medical Center
- \$475,411 estimated potential savings across Novant Health
- 2.8 scheduled treatments/patient/day in 2008 vs. 3.4 in 2007
- 0.15 PRN treatments/patient/day in 2008 vs. 0.16 in 2007
- Our 2010 data also confirmed that we maintained 2008 successes

## RESULTS CON'T

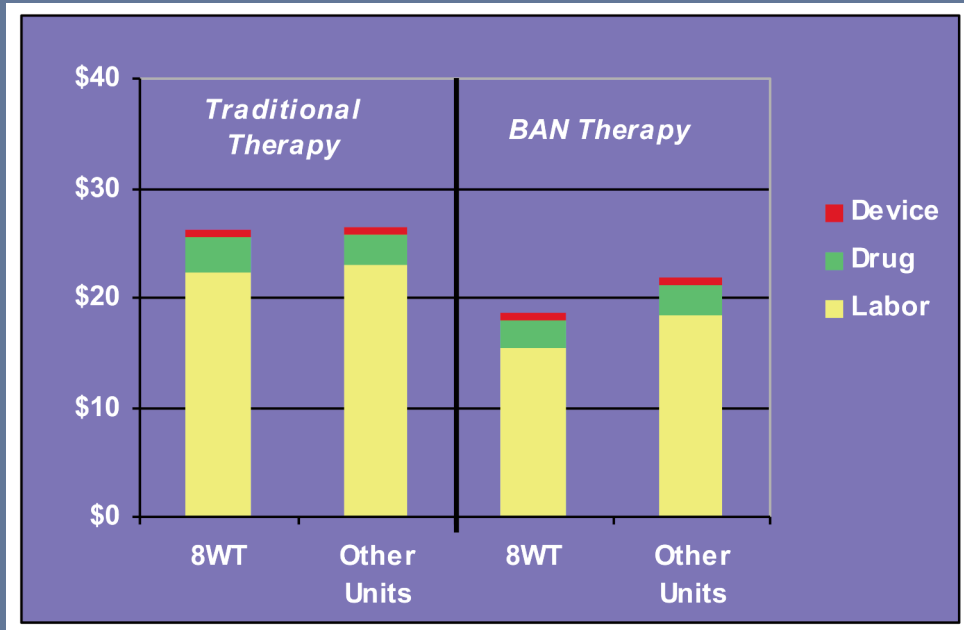


Figure 1. Cost Per Patient Per Day

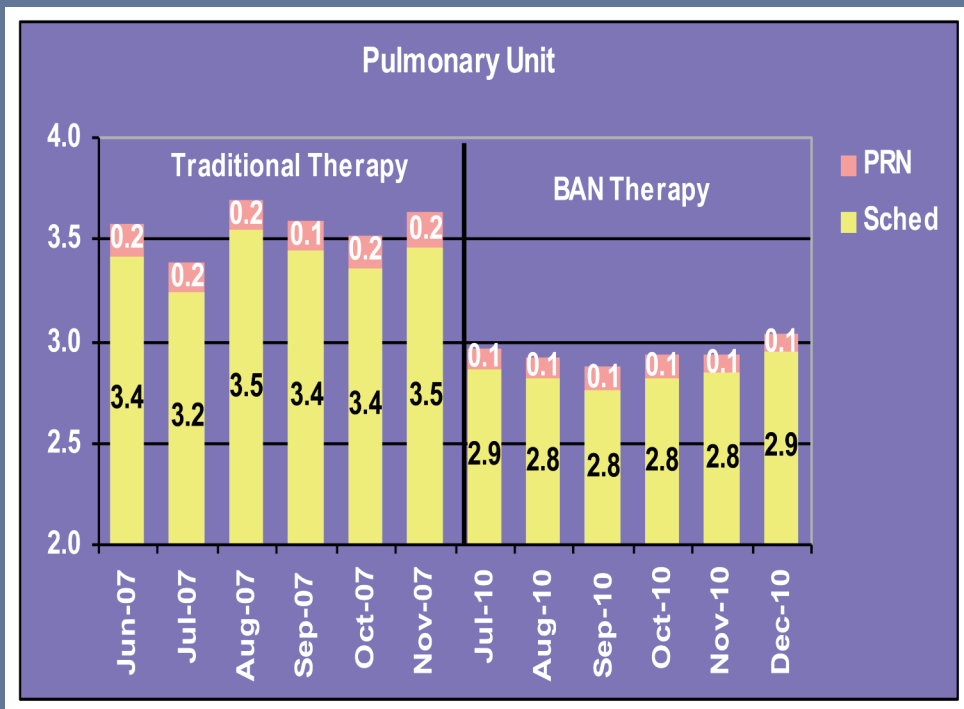


Figure 2. Avg. # Treatments Per Patient Per Day

## DISCUSSION

Using the AeroEclipse® II breath actuated nebulizer in conjunction with an aggressive medication dosing and frequency reduction protocol provides significant savings. Greater gains have been realized for the pulmonary specific unit which treats patients with more severe pulmonary conditions.

