Preventing COPD Re-Admissions by Utilizing NIV and Comprehensive Follow-Up in the Home

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Background

The estimated re-admission costs to the healthcare system for COPD are over $49 billion.[1] In the US, hospital re-admissions for all COPD patients within 30 days occur in 22% of cases.[2] CMS is taking control of reimbursement by imposing fines and denying reimbursement for recurrent re-admissions of several diagnoses including COPD. With COPD re-admissions becoming more costly for hospitals, a more cost effective way must be devised to treat moderate to severe COPD in the home, thus reducing exacerbations and frequent hospital re-admissions. Community Surgical Supply (CSS), a mid-atlantic home medical equipment company, has created a program to reduce re-admissions for severe chronic respiratory failure/COPD patients.

Abstract

To assist hospitals with reducing recurrent re-admissions for exacerbations of COPD, Community Surgical Supply (CSS) has created the *Respiratory Success Program*. This program is specifically tailored to treat moderate to severe COPD/chronic respiratory failure patients. Utilizing advanced NIV technology, superior clinical respiratory services, patient education, and substantial follow-up via home visits and tele-health services, CSS has decreased COPD re-admissions to 10% for the most severely impaired patients.

Problem

In 2012, over a million COPD patients experienced an acute exacerbation that resulted in a hospitalization.[3] Through the U.S Patient Protection and Affordable Care Act (ACA), the U.S. Centers for Medicare and Medicaid Services (CMS) will penalize all hospital facilities and the financial burdens on these facilities will be astronomical. Many facilities have a very large population of Medicare patients with which they provide care. These facilities are at the greatest risk of financial penalties. Many hospitals have initiated their own COPD re-admission reduction programs to cope with this mandate. There is something the can be done on the home front as well.

Proposed Solution

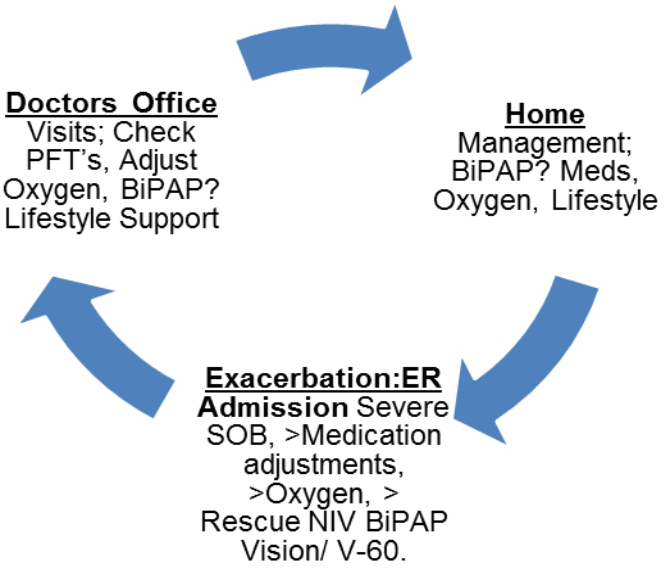
Home medical equipment providers need to become an integral part of the overall patient care plan to assist hospitals with their re-admission reduction endeavors. One way, is through utilizing more advanced technologies to treat COPD patients. Non-Invasive Ventilation (NIV) is an effective therapy option for most COPD patients hospitalized with acute exacerbation, and the economic benefits of using NIV in the hospital setting are well documented for both acute and chronic patients.[4] If NIV works in the hospital setting to treat respiratory failure, it can work in the home.

Current Acute Respiratory Failure Treatment

The 2011 GOLD guidelines[4] state that NIV improves respiratory acidosis, decreases respiratory rate, and severity of breathlessness. Furthermore, complications such as ventilator associated pneumonia and length of hospital stay are also reduced. NIV is currently considered the first line treatment for the majority of patients with respiratory failure resulting from severe acute exacerbation of COPD, in addition to standard medical pharmacologic treatment. Non-Invasive Ventilation (NIV) is an effective therapy option for most COPD patients hospitalized with acute exacerbation.[5] It is applied in various medical settings, including ICUs, emergency rooms, and respiratory units, by trained personnel. It is used early in the course of respiratory insufficiency in severe acute exacerbation of COPD to prevent endotracheal intubation. Current NIV units, such as the Philips Respironics V-60™ Non-Invasive Ventilator, utilizes AVAPS™ (Averaged Volume Assured Pressure Support), which maintains a target tidal volume in a pressure limited mode, and Auto – Trak™ sensitivity, which assists with correct breath triggering to optimize patient/ventilator synchrony and "blow off" excess C02.

Having stabilized the patient's respiratory status with NIV, the standard treatment regime while hospitalized includes intravenous steroid therapy, short acting beta agonists (SABAs), anticholinergic drugs, antibiotic therapy (if infection present), and possibly the beginning of physical rehabilitation. The patient's disease state improves, and it is time for discharge to home. The patient, if qualifies per CMS guidelines, may be ordered BiPAP for nocturnal respiratory support at home. The patient is then expected to follow up with his/her primary care physician (PCP). If the patient doesn't follow discharge instructions, or not follow up with the PCP, another exacerbation occurs.

The Typical COPD Treatment Model:



Why does this happen? Why do a lot of COPD patients end up back in the emergency room with another exacerbation?

- They exacerbate for any number of different reasons, but they have high CO2 levels from poor ability to exhale effectively. Often referred to as: "Air Trapping".
  - They fail to take their medications/nebulizer?
  - They are not properly educated on the medications?
  - They receive a lot of information from a number of different clinicians in a short period of time and it is a challenge to grasp everything.
  - They do not get a good night's rest due to shortness of breath, which then spirals their overall health until they cannot cope with breathlessness.[6]
- They don't have a follow up and support mechanism except the hospital.

Introduction of Solution

Community Surgical Supply, a mid-atlantic medical equipment company, has created a program to reduce chronic respiratory failure/COPD patient re-admissions. The company's *Respiratory Success Program* utilizes advanced NIV technology, superior clinical respiratory services, patient education, and tele-health services to substantially reduce severe chronic respiratory failure/COPD patient exacerbations. The current patient treatment model for chronic respiratory failure does not work. This is evidenced by the 22% re-admission rate. A new model must be created.

How to make Respiratory Failure a 'Success'

After a review of the needs of the severe COPD patient, caregiver, hospital, and marketplace, CSS devised a program to help patients stay home longer, increase quality of life, and assist hospitals with CMS's mandate - The *Respiratory Success Program*. Studies have shown that NIV can help chronic respiratory failure patients cope with their disease process, prevent exacerbations and hospital re-admissions. Once such study showed a decrease of 66% in hospital re-admissions at three months by utilizing NIV at night.[7] Other reviews found that using NIV post COPD acute exacerbation led to improved event-free survival rates and reduced hospital admissions.[8]

Knowing that NIV assists patients with removing excess C02, reduces overall COPD symptoms, and can help prevent frequent hospital re-admissions, CSS investigated what was the best mode of ventilation, and best device for home use, to accomplish it. Since the popular Philips Respironics V-60™ was utilized in many hospitals in our service area, and it provided AVAPS technology, we investigated the Trilogy™ ventilator with the newly released AVAPS-AE™ (Averaged Volume Assured Pressure Support-Auto EPAP) technology. The device utilized Philips Auto-Trak™ technology, that assisted with proper patient-machine breath synchrony to prevent breath stacking, which is a major deficiency of BiPAP therapy, and provided an automatic back up rate when the patient's respiratory rate dropped during the night causing C02 build up and respiratory decompensation.

Community Surgical Supply's *Respiratory Success Program* is aimed at the severe COPD segment by providing the best technology and excellent clinical follow up. When a patient is referred to CSS for Chronic Respiratory Failure subsequent to COPD, the order is obtained to titrate AVAPS-AE™ settings by patient ideal body weight as well as patient comfort and tolerance. It is difficult to just set pressures and volumes without proper patient feedback. The Ventilator Specialist will find the most comfortable interface and sit with the patient in the comfort of his or her home, and adjust each setting that best fits

the patient's disease state and comfort level. This assures adequate patient compliance to therapy. If the patient has difficulty tolerating therapy and does not utilize the device, we have failed. Every effort is made to assure compliance. Be it multiple mask re-fits, or multiple pressure/volume adjustments. Once the proper settings are secured, the attending physician is made aware of the settings and interface choices so that during the office follow up, the physician has a complete view of the patient's therapy.

During the initial visit, a questionnaire is completed to gauge patient's degree of breathlessness so that the patient can be 'graded' on disease severity. This allows the Ventilator Specialist to schedule the proper amount of follow up visits. The more severe the patient's disease state, the more often a visit is completed. Each patient will be followed by a dedicated Ventilator Specialist throughout his/her entire therapy regime. The patient will also have direct cell phone access to the Ventilator Specialist 24 hours per day. This helps build a lasting and trusting bond between patient and clinician.

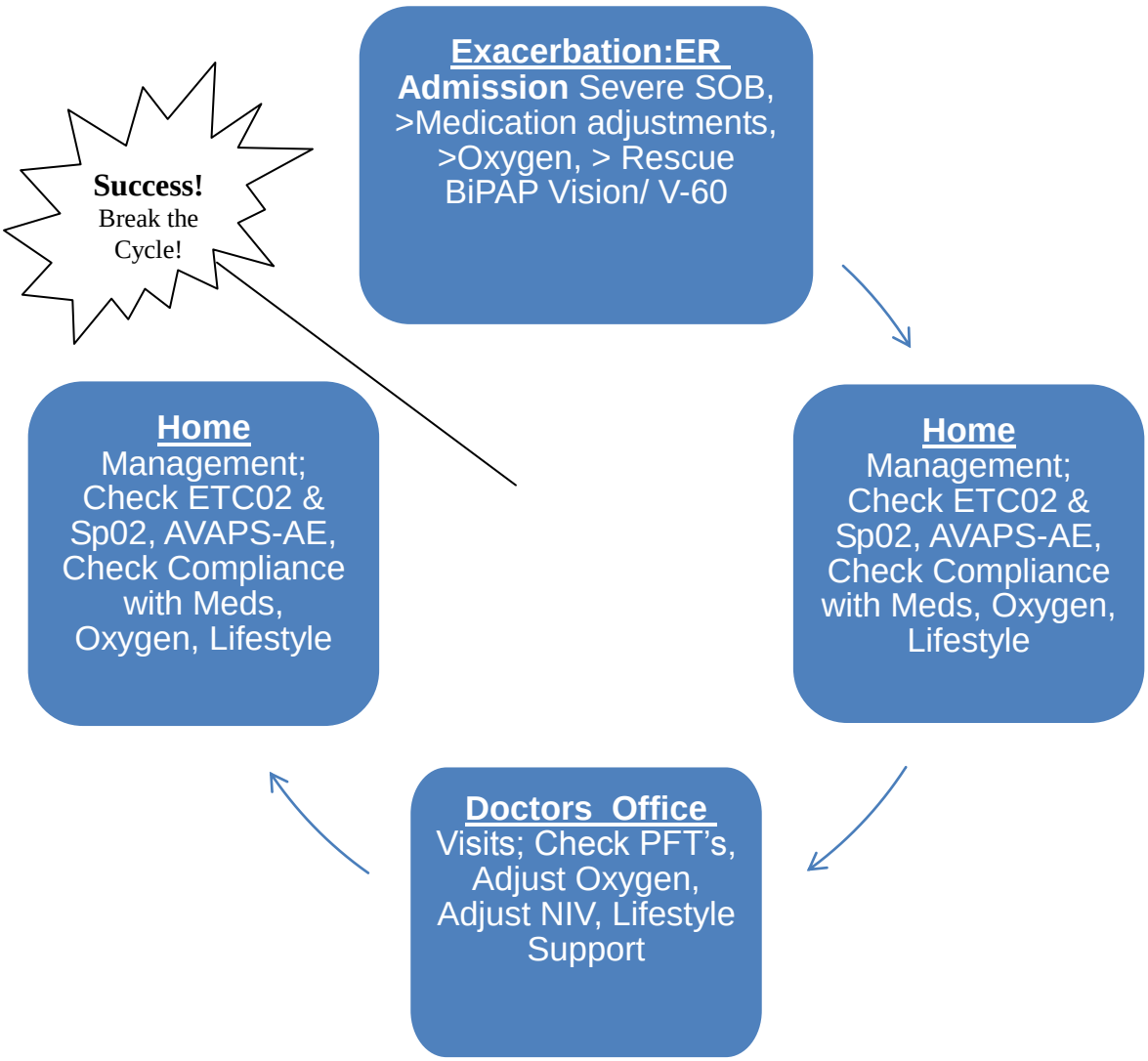
Each and every visit requires a full patient assessment. This assessment includes end-tidal C02 checks, oximetry checks, as well as vitals and respiratory medication reconciliation. All is documented via electronic tablet for easy retrieval of all past assessments to trend results. Patient teaching on disease management is always reviewed and reinforced. If any patient findings do not match with previous visits, i.e. increasing C02 levels or dyspnea, etc., a telephone call to the attending physician is made from the patient's home and an office visit is immediately scheduled. This prevents exacerbations, potential emergency room visits, and readmissions.

To keep up to date on the patient's status, a live tele-health call is placed to the patient at regular intervals for the first 90 days of therapy between the Ventilator Specialist visits. The interactive telephone call asks specific questions pertaining to the patient's health, medication usage, physician follow up visits, and any hospitalizations. If the patient answers a question that is outside of the agreeable list of responses, an email alert is sent to his/her Ventilator Specialist for immediate follow up.

CSS relies not just on the best technology, but also the best clinical expertise, to treat our patients, increase quality of life, and prevent readmissions.

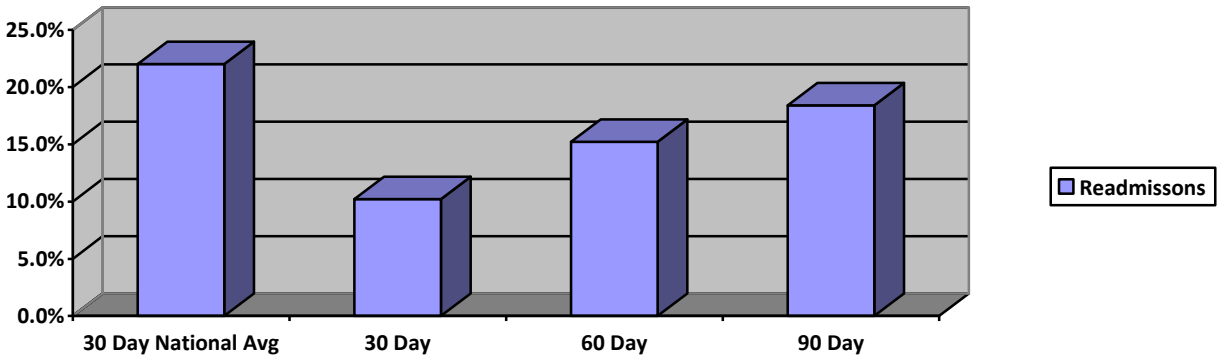
With the *Respiratory Success Program*, Community Surgical Supply is breaking the typical treatment model and cycles of emergency room visits and hospital admissions, short term stays at home, physician office follow up visits, then exacerbation and back to the emergency room. Many severe COPD patients travel this vicious cycle.

The *Respiratory Success Program* Model:



Results of Our *Success*

Via our tele-health call, CSS tracks outcomes for readmissions and has had great success in reducing the 22% average readmission rate down to 10%.



Days in Program	Patients in Program	Readmit Count	Readmit Rate %
30	324	33	10.2
60	264	40	15.2
90	234	43	18.4

As the graph and table above shows, from August 15, 2014 through March 1, 2015, 324 patients entered and completed 30 days in the Respiratory Success Program. Of those 324, 33 were readmitted within 30 days of discharge. This resulted in a 10.2% readmission rate.

40 out of 264 patients and 43 out of 234 patients were readmitted within 60 and 90 days of discharge, for a readmission rate of 15.2% and 18.4%, respectably. Community Surgical Supply's *Respiratory Success Program* has a better readmission rate at 90 days post discharge than the 30 day national average.

Future Direction / Long-Term Focus

CSS is continually refining our program to adjust to patient, caregiver, and hospital needs. Many patients may visit rehabilitative facilities, but those facilities face the same types of dilemmas when it comes to readmissions. A patient is admitted to a rehabilitative facility for 14 days, then discharged home. Without proper follow up, an exacerbation may occur prior to the patient's 30 day post hospital discharge, the patient ends up readmitted, and the hospital penalties occur. We are working on programs to assist these facilities in discharging their patients home safely, with proper follow up, and better quality of life.

Conclusion

Community Surgical Supply's *Respiratory Success Program* utilizes advanced NIV technology, superior clinical respiratory services, patient education, and tele-health services to substantially reduce severe chronic respiratory failure/COPD patient exacerbations. CSS is helping patients, physicians, and

hospitals break the cycle of readmissions, thus potentially saving healthcare facilities thousands of dollars in CMS penalties, as well as saving millions of dollars per year in unnecessary hospitalizations by reducing readmissions for COPD exacerbations within 30 days of hospital discharge by over 50%. The real objective of the *Respiratory Success Program* is to improve patient quality of life. Keeping patients home, with family, is Community Surgical Supply's goal of *Keeping OUR Community Healthy*.

Appendices

Appendix A – About the Author

Edward J. Mehaffey, BS, RRT/CPFT, is the Respiratory Clinical Director at Community Surgical Supply. Ed has over twenty years experience in the rehabilitation, home care, and acute care settings. He plans and coordinates the clinical activities of the Respiratory Care staff, as well as develops and markets new initiatives of Community Surgical Supply.

Additional information about the author can be found at:

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Appendix B – Acknowledgements

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www.communitysurgicalsupply.com www.facebook.com/communitysurgical

Appendix C – References

[1]Jencks Sl, Williams M, Coleman E., Rehospitalizations among Patients in the Medicare Fee –for –Service Program. NE Journal of Med 2009; 360: 1418-28.

[2]Jenks S, Williams M, Coleman E. Re-hospitalization among patients in the Medicare fee-for-service program. *N Eng J Med*. 2009; 360:14.

[3] Pererea et al. Acute Exacerbations of COPD in the United States. Inpatient burden and predictors of cost and mortality. COPD 2012; 9:131-144.

[4]Global Strategy for Diagnosis, Management, and Prevention of COPD. 2011[cited 29/Jun/2012].

[5]Ligtowler JV, Wedzicah JA, Elliott MW, Ram Fs. Non-invasive ventilation positive pressure ventilation to treat respiratory failure resulting from exacerbations of COPD. Cochrane Systematic Review. BMJ 2003 Jan 25: 326 (7382): 185.

[6] Cormick W, Olson LG, Hensley MJ, Saunders NA. Nocturnal hypoxaemia and quality of sleep in patients with chronic obstructive lung disease. *Thorax* 1986; 41: 846–854.

[7] Casanova C, Celli BR, Tosta L, *et al*. Long-term controlled trial of nocturnal nasal positive pressure ventilation in patients with severe COPD. *Chest* 2000; 118: 1582–1590.

[8]Galli JA, et al., Home non-invasive ventilation use following acute hypercapnic respiratory failure in COPD, Respiratory Medicine (2014), http://dx.doi.org/10.1016/j.rmed.2014.03.006.

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