

Chronic Obstructive Pulmonary Disease

Russell Acevedo, MD, FAARC, FCCP, FCCM

Crouse Health



Care Connections



HANYS Care Connections Team



Kathleen Rauch, RN, MSHQS, **BSN, CPHQ**

Vice President, Quality Advocacy, Research and Innovation and Post-acute and Continuing Care



Christina Miller-Foster, MPA Senior Director, Quality Advocacy, Research and Innovation



Morgan Black, MPA Director, **Care Connections**



Maria Baum, MS, RN, CPHQ Project Manager, Western New York



Kira Cramer, MBA Project Manager, New York City

Rachael Brust, MBA Project Manager, North Country



Jonathan Serrano **Communications Coordinator**



Theresa Green, PhD, MBA

Associate Director, Associate Professor, Center for Community Health & Prevention Public Health Sciences URMC, SON



Our partners



OUR FUNDER

Funding from the <u>Mother Cabrini Health Foundation</u> allows HANYS to expand its capacity to provide education, direct support, tools and data to our members. With Care Connections, we strive to build hospital-community partnerships and share evidence-based chronic disease prevention and management strategies to address healthcare access barriers at the local level.



Insights for Healthcare®

OUR PARTNER

DataGen®, Inc. develops custom analytics for participants to help them understand healthcare access barriers and the chronic disease burden in their communities so they can develop tailored interventions.



Today's presenter



Russell Acevedo, MD, FAARC, FCCP, FCCM

Crouse Health



EXAMPLE CROUSE LUNG PARTNERS PRIMARY RESPIRATORY CARE Improving COPD Care Through In-Patient Disease Management

Russ Acevedo, MD, FAARC, FCCP, FCCM

Medical Director, ICU and Respiratory Care, retired Crouse Hospital

Clinical Professor of Medicine Upstate Medical University

Syracuse, NY







Improving COPD Care Through In-Patient Disease Management

Disclosures: Consultant, Monaghan Medical There was no industry support for any of the protocols





...that in addition to your present clinical responsibilities you would be asked to:

- Perform a full disease management assessment
- Anxiety and depression screens
- Nutritional and functionality screens
- Quality of life assessments
- Discharge planning and education
- Home visits
- …and more!





RESPIRATORY



ARMAGEDDON

The Problem: COPD



- COPD is the third leading cause of death and has the third highest 30-day readmission rate
- Clinicians commonly do not provide patients with COPD evidence-based care
- Only 33% of US patients hospitalized for COPD receive guideline-indicated care





The Problem: COPD



- Primary and secondary COPD account for an average of 2,400 Crouse Hospital admissions per year
- COPD care is fractionated in a Hospitalist model with little continuity across the continuum
- COPD 30-day all-cause readmissions are included in reimbursement penalties





The Problem: COPD



- Patients are not being adequately assessed for the knowledge of and ability to use their inhaled medications
- Major co-morbid conditions go unrecognized or untreated
- Issues exist with transition to home and adherence to medications, devices, follow-up appointments and lifestyle changes





Where Our Story Begins

FEE

- 1999: Y2K
- Health Alliance:
 - Crouse
 - Community General
- April 2000:
 - Crouse files for bankruptcy
 - RT department understaffed
 - 45K liquid nebulized meds per year
 - Staffing unable to administer the prescribed medications







What We Did



- In 2001, we systematically reviewed our medications and device use to maximize RT time management
- Breath Actuated Nebulizers were introduced to replace small volume nebulizers to decrease administration time
- Aerosols with longer duration of action replaced Racemic Albuterol and Ipratropium to decrease treatment loads
- Goal is to reach the ceiling effect as quickly as possible and maintain it as long as possible to decrease total treatment administration time.





Bronchodilator Protocols



2001

- Standard updraft nebulizer
- Racemic Albuterol and Ipratropium Q4h and Q2h prn
- 45,000 treatments
- Administration time 15 min per patient 6 times =
- 1.5 hours / day



"Uncontrolled variation is the enemy of quality."

<u>W. Edwards Deming</u> Basic Statistical Tools for Improving Quality

Present

- Breath actuated nebulizers
- Levalbuterol 2.5 3 min 3 times daily
- Tiotropium 2 min once daily
- Arformoterol 3 4 min once or twice daily
- < 15 min / day



Mean Percent Change from Baseline in FEV₁



Same effect for longer duration





Nelson HS, et al. JACI 1998;102:943-52



Breath Actuated Nebulizer: AeroEclipse (BAN)







AeroEclipse







Hess Resp Care 1999;44(10):1289



What's the Dose??



Racemic Albuterol 2500 mcg 180 mcg ?? mcg 90 mcg 420 mcg (1 ml UD) 1250 mcg Levalbuterol

ELCROUSE LUNG PARTNERS

Bronchodilator Protocol



JSE HEALTH



Bronchodilator Protocols Total Cost Savings





EL CROUSE LUNG PARTNERS PRIMARY RESPIRATORY CARE

Total Daily Treatment Cost / Patient





The most expensive cost is the RT!





Financial Impact



Project Part	RT Dept Impact		Pharm Impact		Net Impact	
Levalbuterol Q6h to Q8h	\$	(14,919)	\$	(4,460)	\$	(19,379)
Tiotropium Conversion	\$	(5,768)	\$	4,215	\$	(1,553)
BAN Conversion	\$	(4,174)				
Overall Impact (5 months)	\$	(20,687)	\$	(245)	\$	(20,932)
Overall Impact (Annualized)	\$	(49,649)	\$	(588)	\$	(50,237)



CHEST 2009;136:62S-e









The Lung Partners Project











Lung Partners Overview



- The Primary RT is assigned a patient diagnosed with COPD at their admission and will follow them on all subsequent readmissions
- This will enable them to know the specific needs of their patient
 - Longitudinal model





Lung Partners Overview

- Critical Assessment Elements:
 - A full disease management assessment
 - Anxiety and depression screens
 - Nutritional and functionality screens
 - Quality of life assessments
 - Patient education
 - Discharge planning
 - Accountability model





Lung Partners Overview



- The Primary RT will be the communication link between the patient, their Hospitalist, their primary care physician and pulmonary specialist, if involved
 - Continuity model
- All are important in the transition of care!





Lung Partners Primary Respiratory Care





Why are we doing this?

FFE

- Improve the lung health and quality of life of COPD patients
- Decrease cost per case
- Decrease LOS of COPD patients
- Reduce COPD readmissions
 - 64.3% of Pneumonia readmissions
 - 58.4% of Heart Failure readmissions





Why are we doing this?

- Facilitate the transfer of information between the hospital's clinical staff and the primary care physician
- Reduce fractionation of care
- To deliver care consistent with national COPD guidelines
- This could be fun!





COPD: Because of my breathing, I can only play 9 holes of golf, not my usual 18 holes



COPD: Because of my breathing, I can no longer play as much as I would like with my grandchildren

COPD: Because of my breathing, I can no longer walk as much as I would like

Disease Manager Role



- Assess use of inhalational devices
- Review medication list, specifically looking for duplications
- Obtain PFTs and stage per GOLD* guidelines
- Only 16% of COPD patients have PFTs
- Assessing medications and other interventions based on COPD stage

*Global Initiative for Obstructive Lung Disease





Aerosol Device Use Assessment











Disease Manager Role



- Oxygen delivery, weaning and assessing need for outpatient oxygen
- Matching delivery devices to patient's abilities
 - In-check dial







Disease Manager Role



- Assess ambulation, nutritional status and screen for depression and anxiety
- Address smoking cessation needs
- Arrange for inpatient or outpatient PFTs or sleep studies if needed
- Advance Directives





The real reason dinosaurs became extinct!



Disease Manager Role



- Educate on home action-plan and self-management tools
- Patients are educated on the differences between rescue and maintenance medications
- Post discharge phone follow-up
- 24/7 call in number







Your name:



TOTAL

How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment. For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response

for each question. I am very happy 0 (1) (2) (3) (4) (5) I am very sad Examples SCORE 0 1 2 3 4 5 I cough all the time I never cough I have no phiegm (mucus) My chest is completely 0(1)(2)(3)(4)(5)in my chest at all full of phlegm (mucus) My chest does not feel tight at all My chest feels very tight When I walk up a hill or When I walk up a hill or one flight of stairs I am one flight of stairs I am not breathless very breathless I am not limited doing I am very limited doing any activities at home activities at hom I am confident leaving I am not at all confident my home despite m 0(1(2)(3)(4)(5))leaving my home because lung condition of my lung condition I don't sleep soundly I sleep soundly 0 1 2 3 4 5 because of my lung condition 012345 I have lots of energy I have no energy at all

COPD Assessment Test and the CAT logo is a trade mark of the GlaxoSmithKline group of companies. © 2009 GlaxoSmithKine group of companies. All rights reserved. Last Updated: February 24, 2012



LUNG PARTNERS COPD ACTION PLAN

Green Zone

Sleeping well. My sputurn is clear/white and easily cleared in small amounts. I breathe without difficulty. I can do usual activities/exercise without Appetite is good.

Several More than Nearly

2

days every day

Not

1

Just don't

I have a c I am more

New swell

I am using

Side effec

My medic

My appeti I feel like I

Poor slee

Gain of 3-

pounds in

Rinatori a

Full feeling

I have tro Severe sh

I am confused.

Chest pain.

My sputum contains blood. Not able to do any activity because of breathing.

· Fever or shaking chills.

. It is difficult for me to wake up.

A feeling of impending doom.

1

at all

0

What To Do · Continue taking medications as prescribed. · Keep all doctor appointments. Maintain routine activity. Use oxygen as prescribed. · At all times, avoid cigarette smoke, inhaled irritants.

Yellow Zone

	What To Do
Just don't feel well-unusually restless/ anzious. My sputum is thicker than normal or I am producing more sputum. I have a change in color of phlegm/mucus. I am more short of breath with routine activity. I wheeze or cough more than usual. New swelling in feet or ankles. I tire easily and cannot do usual activities without partices	 Write down (or have someone write for you) what your concerns are and why you feel something is wrong BE VERY SPECIFIC - Write down exactly what you symptoms are, how long you have had them, and how they are different than usual ex. my sputum has changed to color and I'm more short of breath. any mads that have changed since your last visit. any sick contacts.
Iam oct hinking clearly. I am estimiking clearly. I am estimiking clearly. Side effects from medications. My medicine is not helping. My appetite is not good. I sel like I have a "chest cold". Poor sleep and my symptoms woke me up. Gain of 3-4 pounds over 1-2 days or 5 pounds in a week OR a gain of less weight than above AND also have any of the symptoms listed. Biosted abdomen I need to use 2 or more pillows or sleep in a recliner to breathe comtortably.	 2 Call your Pulmonologist. If you don't have a pulmonologist, call your regular doctor. Tell them: Your name Your doctor's name Your history (sc: I have a history of COPD.) What your symptoms are and how they have changed. ex: my sputum is now thick and in color. Anything you written down about your concerns. You need an appointment today. You cannot have an appointment today, insist on talking to the Nurse Practitioner or Doctor. Emphasize that your goal is to stay out of the hospital. Fly ou still can't get an appointment, call your transition coach at
I have trouble coughing up sputum. Severe shortness of breath.	What To Do

CALL 911 NOW!

 Not able to sleep because of breathing. TH CROUSE HOSPITAL LUNG PARTNERS" Primary Respiratory Care

Form #102 (on damand) 4/25/11

When your patient gets dyspneic: Have an Action Plan



LUNG PARTNERS COPD ACTION PLAN

Green Zone

Sleeping well.

- . My sputum is clear/white and easily cleared in small amounts.
- · I breathe without difficulty.
- · I can do usual activities/exercise without tirina.
- · Appetite is good.

What To Do

- · Continue taking medications as prescribed.
- · Keep all doctor appointments.
- Maintain routine activity.
- · Use oxygen as prescribed.
- · At all times, avoid cigarette smoke, inhaled irritants.

Red Zone

- . I have trouble coughing up sputum.
- Severe shortness of breath.
- My sputum contains blood.
- Not able to do any activity because of breathing.
- I am confused.
- Not able to sleep because of breathing.
- Fever or shaking chills.
- . It is difficult for me to wake up.
- Chest pain.
- A feeling of impending doom.

What To Do

CALL 911 NOW!

CROUSE HOSPITAL LUNG PARTNERS" Primary Respiratory Care

Form #102 (on damand) 4/25/11

Yellow Zone

Just don't feel well-unusually restless/

producing more sputum.

My sputum is thicker than normal or I am

I have a change in color of phlegm/mucus.

I tire easily and cannot do usual activities

I am using my nebulizer/rescuhaler more

Poor sleep and my symptoms woke me up.

pounds in a week OR a gain of less weight

I need to use 2 or more pillows or sleep in a

Gain of 3-4 pounds over 1-2 days or 5

than above AND also have any of the

I am more short of breath with routine

I wheeze or cough more than usual.

New swelling in feet or ankles.

Side effects from medications.

My medicine is not helping.

I feel like I have a "chest cold".

My appetite is not good.

symptoms listed.

Bloated abdomen

Full feeling in abdomen

recliner to breathe comfortably.

anxious.

activity.

without resting.

than normal.

I am not thinking clearly.

What To Do

- Write down (or have someone write for you) what your concerns are and why you feel something is wrong
 - BE VERY SPECIFIC Write down exactly what your symptoms are, how long you have had them, and how they are different than usual ex: my sputum has changed to color and I'm more short of breath.
 - any meds that have changed since your last visit
 - any sick contacts.

Call your Pulmonologist. If you don't have a pulmonologist, call your regular doctor. Tell them:

- Your name
- · Your doctor's name
- · Your history (ex: I have a history of COPD.)
- What your symptoms are and how they have changed. ex: my sputum is now thick and in color.
- Anything you written down about your concerns.
- · You need an appointment today.

If you cannot have an appointment today, insist on talking to the Nurse Practitioner or Doctor.

Emphasize that your goal is to stay out of the 🛨 hospital.

🚬 If you still can't get an appointment, call your transition coach at

CROUSE LUNG PARTNERS PRIMARY RESPIRATORY CARE

Care Coordination



- Advanced Practice Nurse
- Dietician
- Hospice Care
- Occupational therapy
- Palliative Care
- Physical Therapist
- Psychiatrist

- Psychologist
- Pulmonary Rehabilitation program
- Pulmonologist
- Social Services
- Spiritual/Pastoral Care
- Thoracic Surgeon



Protocols



We freely share! E-mail me at russacevedomd@crouse.org





Primary Care Model for Respiratory Care Inpatient Disease Management





Partnership with Syracuse University









Why are you doing this?









The "Swarm" - Six Sigma Project with Syracuse University















Decreased Late Treatments





Medication Errors



Respiratory Therapy Med Errors Percentage of Total Potential Medication Completions







Lung Partners 30 Day Readmissions









Lung Partners Impact on Reduction in 30-Day Readmissions Rates







Patient Satisfaction



EALTH

AVATAR Patient Satisfaction The Respiratory Therapist Showed Skill and Experience in Caring for Me



PRIMARY RESPIRATORY CARE

Delivery of Respiratory Care

FEE

- We did a focus study on how our non-RT staff were delivering respiratory care
- Errors discovered included
 - Discarding spacers at discharge
 - Incorrect MDI technique
 - Not using spacers consistently
 - Improper rinsing post anti-inflammatory MDIs
 - Handhaler errors included inability to use due to physical limitations
 - Patients swallowing the capsule
 - Improper extraction of drug from the capsule





Common Canister

FFE

- All MDIs are delivered with a spacer
- With the short LOS of around 5-6 days, most of the drug in an MDI is wasted
- Multiple MDIs are dispensed per patient
- One MDI can be used for multiple patients







Common Canister



Mometasone/Formoterol Canisters Dispensed per 100 Patients



Common Canister









High Flow Nasal Cannula





Successful High Flow Nasal Cannula Use Outside of the Critical Care Areas

Wendy J. Fascia, MA, RRT, RT-NPS; Jennifer Pedley, BS, RRT; Russell A. Acevedo, MD, FAARC, FCCP, FCCM Respiratory Care, Crouse Health, Syracuse, NY, United States

Background

CROUSE

PRIMARY

We continued to monitor and adjust our High Flow Nasal Cannula (HFNC) use in all areas. Our previous success of HFNC use outside of the critical care areas on our medical floors resulted in decreased ICU days and decreased noninvasive positive pressure ventilation (NIPPV) use. This study continues to evaluate the success of our HFNC use, including where to care for the patient, as well as whether we continue to use HFNC instead of NIPPV. Prior to our initiation of HFNC use on the medical floors, all patients on HFNC would have gone to the ICU on NIPPV.

Methods

We evaluated all patients on HFNC from 1/1/2016 to 12/31/2019. We looked at where HFNC was initiated, whether it was used on the medical floors or whether an ICU admission was needed.

If an ICU transfer occurred, we then reviewed each case to determine if that patient required an escalation to NIPPV once in ICU. We then looked at the number of HFNC and NIPPV treatments from 1/1/2011 to 12/31/2019.

Results

From 2016-19 there were 1.517 patients admitted through the Emergency Department that were placed on HFNC. 564 patients were admitted directly to the medical floor on HFNC. 70 of these patients required a transfer to the ICU, where only 26 required NIPPV (26/564, 4.6%). 1,023 patients were admitted to the ICU and 568 were managed without NIPPV (56%). 188 patients were discharged to the floor from the ICU on HFNC, with none requiring rescue NIPPV. 129 HFNC ICU patients required NIPPV. 188 patients initially on NIPPV were transitioned to HFNC, 138 patients were on both during the day of admission to the ICU, not clear which was used first. HFNC patients treated on the medical floors were managed successfully without NIPPV 95.6% of the time. 494 ICU admissions were avoided, and many ICU

days were decreased using HFNC. Over the 9-year period, there was a large increase in treatments with a shrinking percentage of NIPPV use. The average days on NIPPV was 1.65 and on HFNC was 2.96, many of these days on the floors. The average direct cost for patients treated with NIPPV, without HFNC, was \$19,475. The average direct cost for HFNC, and no NIPPV was \$10,194.

Conclusions

Patients requiring HFNC can be safely managed on the medical floor. This can free up ICU resources and decrease NIPPV use. Overall hospital costs were decreased. Decreased NIPPV use allows for increased available therapist time, as NIPPV is time and labor-intensive for RTs.







HFNC and NIPPV Treatment Days

CROUSE LUNG PARTNERS™ PRIMARY RESPIRATORY CARE

E HEALTH

DISCLOSURES: Fascia, Pedley, & Acevedo: consultants for Fisher & Paykel. Acevedo: consultant for Monaghan Medical and Vapotherm.



Education and Clinical Practice How I Do It

Recognition

from

CHEST

(American College

of Chest Physicians)

SCHEST

How to Create a Primary Respiratory Care Ocheck for updates Model

Russell A. Acevedo, MD; Wendy Fascia, MSRT; Jennifer Pedley, BS-RRT; Robert Pikarsky, BS-RRT; and Viren Kaul, MD





What We Have Learned

EFF

- Placing a Respiratory Therapist in a primary care role can be done and improve outcomes
- Fractionation of care can be reduced
- The only constant is change!
- We need to have RTs function at the fullest extent of their licensure to make best use of this valuable underutilized resource





Transition From Task Oriented to Patient Focused Primary Respiratory Care Department



Don't Let the Widgets Get You Down!!





Einstein discovers that time is actually money!

Upcoming sessions

- Tuesday, June 17 | 11 a.m. noon
- Breast Cancer with Nuvance Health
 - Susan Boolbol, MD FACS System Chief, Breast Surgical Oncology and Breast Program
 - Alecia Brophy, RN, BSN, BHCN Navigator
 - Amanda Miller, LMSW Social Worker, Division of Breast Surgery

Remaining sessions in this series:

- June 24 | Mental health and substance use disorders
- July 1| Building Community Partnerships

Questions?

Russell Acevedo, MD, FAARC, FCCP, FCCM Crouse Health russacevedomd@crouse.org

Morgan Black Director, Care Connections mblack@hanys.org

