Quality Improvement Project: Improvement of Quality of Care and Re-Hospitalization Reduction of Patients with COPD

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Faculty Disclosure

- I have nothing to disclose

Outline

- Why a QI Project on COPD Readmissions
- Objectives
- Purpose
- Why it Matters and current literature findings.
- Steps to consider during the QI Project
- Gold Guidelines to implement during the QI Project
- Pre-Posed Care Bundle
- Data Collection and Analysis
- Outcome Measures
- Statistical Analysis & Ethical Consideration
- Anticipated Challenges
- Conclusion
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Why a QI Project on COPD Readmissions

- COPD is one of a leading causes of hospital readmissions
- Has an impact on quality of life, mortality, and contribute to healthcare cost
- Implementation of standard of care and optimizing discharge protocols to improve clinical outcomes
- COPD readmissions after AECOPD is a part of Medicare Hospitalization Readmission Reduction Program since 2014.

Global mortality and readmission rates following COPD exacerbation-related hospitalisation: a meta-analysis of 65 945 individual patients.

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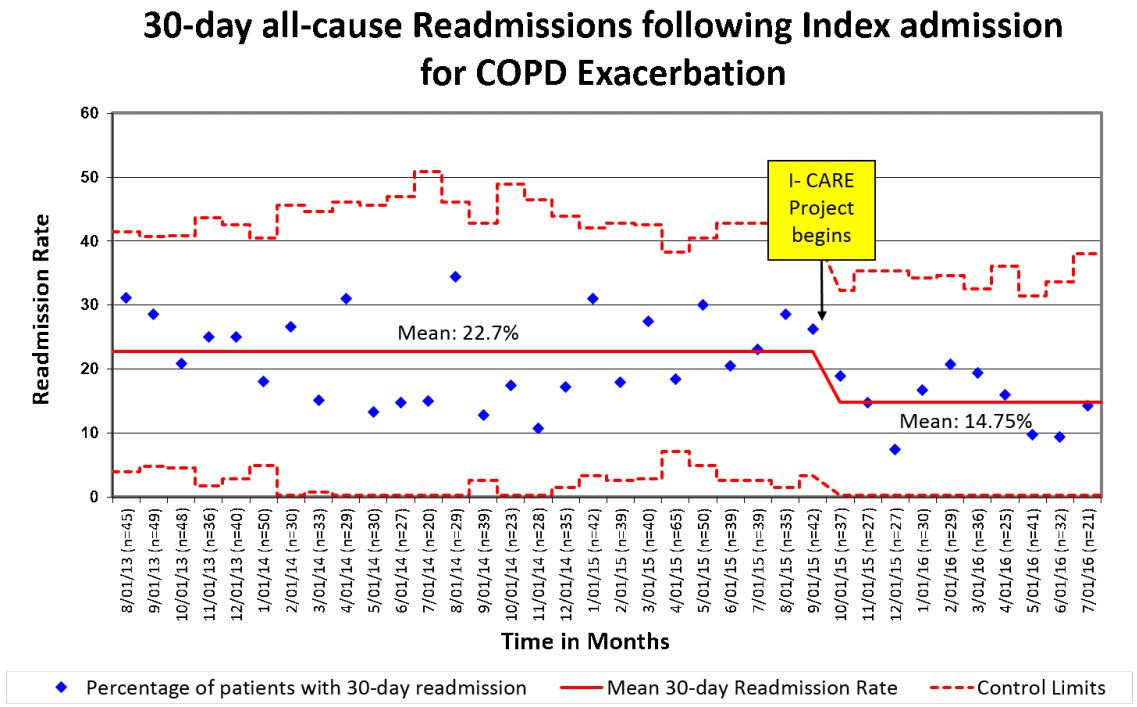
Pooled in-hospital mortality rate was **6.2%**

Pooled 30-, 90- and 365-day post-discharge mortality rates: **2.0%, 6.4% and 12.2**%, respectively

Pooled 30-, 90- and 365-day hospital readmission rates: **11.8%, 26.5% and 38.2%**, respectively

I-CARE Project at University of Cincinnati



Objectives

1. Identify and improve **system-based healthcare delivery failures**, both during the hospital stay and post-hospitalization care.

2. Identify individual **patients' unmet needs**

3. Creation of **COPD care bundle with checklist** and system wide implementation.

QIP: Implementation of GOLD Guidelines

Prescribe appropriate Inhaler regimen

Assessment of Inhaler use technique and Inhaler education on the device - **Respiratory therapist**

Cost effectiveness of Bronchodilator therapy - **Role of Social worker and Transition of care Pharmacist**

For example, assistance programs, Meds to Go and coupons etc.

Implementation of GOLD Guidelines

30 days Bronchodilator supply at discharge

Assess for **Long term Azithromycin or Roflumilast or Dupilumab** at the time of discharge - Reduce exacerbations

Assess for/prescribe **Mucolytic/anti-inflammatory agents (N-acetyl cysteine)** – Reduced exacerbation in select patient population

Implementation of GOLD Guidelines

- Supplemental Oxygen Assessment for home at rest/exertion - Quality of life and increases 6 MWD, and improve survival in select patients
- Identify COPD with Chronic Hypercapnia and ensure a noninvasive ventilator (BiPAP or Trilogy NIV) at discharge - reduces readmission and may reduce mortality
- Malnutrition Screening (reported in 30-60 % pts - associated with increased hospitalization, poor exercise tolerance/QoL, mortality): Referral to Dietitian clinic with a written plan
- Polypharmacy Screening: Patients on combination of Gabapentin + Opioids +/- Benzodiazepines

Implementation of GOLD Guidelines

- Vaccinations at Discharge/clinic.
- Pulmonary Rehabilitation referral and Post pulmonary rehabilitation Maintenance Exercise program (Offer inpatient Spirometry if FEV1 < 50% to qualify)
- Smoking Cessation Program: Prescribe Nicotine replacement therapy, or Varenicline (Chantix) or Wellbutrin.
- 1-800 Quit Now 1-800-QUIT-NOW (784-8669) Kentucky Program introduction and possible enrollment if Patient Desires.

Implementation of GOLD Guidelines

Follow Up within 7-14 days of discharge with pulmonary clinic

Standardized Patient Centered Discharge instructions to help reduce or avoid the risk factors which can lead to COPD exacerbations.

Implementation of GOLD Guidelines

- Assessment of home or work environment
- Palliative care and goals of care discussion for high risk patients
- Screening for lung Cancer Candidacy
- Screen for anxiety and depression and management.
- Screen for Obstructive Sleep Apnea or Obesity Hypoventilation Syndrome - Order Sleep study if screened positive (STOP-Bang)

Summary of COPD Care Bundle

1. Assessment of Inhaler use technique and Inhaler education and appropriate inhaler prescription
2. 30 Days inhalers supply at discharge
3. Transition of Care pharmacist and social worker to check cost effectiveness
4. Assess polypharmacy; Gabapentin use with opioids/benzodiazepines etc.
5. Supplemental Oxygen Assessment for home at rest and on exertion and provision of equipment at time of discharge.
6. Identify COPD with Chronic Hypercapnia and ensure a noninvasive ventilator (BiPAP or Trilogy NIV) is arranged at time of discharge.
7. Pulmonary Rehabilitation referral and Post pulmonary rehabilitation Maintenance Exercise program (Offer inpatient Spirometry if indicated)
8. Palliative care and goals of care discussion about advance directives
9. Malnutrition Screening and Referral to Dietitian clinic with a written plan to improve and track the nutritional status, and provide Nutritional guidance and prescription of supplements.
10. Vaccines Up to-date that qualify (RVS/COVID/Flu/Shingles/Pneumonia)
11. Follow-up within 7-14 days of discharge with pulmonary clinic
12. Screening for Depression/Anxiety
13. Smoking Cessation Plan (Nicotine, bupropion, varenicline)
14. Screen for Obstructive Sleep Apnea or Obesity Hypoventilation Syndrome and Order Sleep study if screened positive.
15. LDCT ordered for outpatient follow up in Qualifies for Lung Cancer Screening

Data Collection for Quality Improvement

- Pre-Intervention: Retrospective review of COPD Admission and re-admissions over 2022-2024.
- Post-Intervention: Track outcomes following the implementation of the discharge bundle.
- Data Sources: EMR data, patient satisfaction surveys, and follow-up logs.

Record Keeping and P-D-S-A

Demographics

Comorbidities

Primary and secondary Diagnosis at admission time

Compliance with COPD bundle checklist

30-day COPD readmission rates and mortality related to COPD

Percentage of patients completing follow-up visits within 7–14 days

Patient satisfaction scores related to discharge education

Statistical Analysis and Ethical Consideration

Statistical Analysis

- Compare pre- and post-intervention readmission rates using chi-square tests.
- Analyze secondary outcomes using t-tests or Wilcoxon signed-rank tests.
- Multivariable logistic regression to adjust for confounding variables.

Ethical Considerations

All interventions are evidence-based and part of standard care. Patient data will remain confidential, and informed consent will be obtained when appropriate.

Anticipated Challenges and Mitigation Strategies

Challenge: Insurance-related delays in medication access.

Mitigation: **TCM pharmacist and social workers**, Collaborate with pharmaceutical companies representative to provide coupons and samples.

Challenge: Variability in patient adherence to follow-up appointments.

Mitigation: Engage case managers/**COPD navigator** for scheduling and reminders.

Challenge: Limited availability of pulmonary rehabilitation programs.

Mitigation: Partner with local rehab facilities and identify alternative community resources.

Conclusion

This QI project aims to standardize and optimize COPD discharge practices, addressing known gaps such as medication access, post-discharge follow-up, and education.

By focusing on high-impact interventions, the project seeks to significantly reduce readmissions and improve overall patient outcomes.

References

1.) Optimizing COPD Acute Care Patient Outcomes Using a Standardized Transition Bundle and Care Coordinator , Atwood, Chantal E. et al. CHEST, Volume 162, Issue 2, 321 - 330 Ethical consideration: Quality improvement initiative project. Intent of the study is to improve the quality of patient care and clinical outcomes. Institutional review board approval will be sought to publish the findings. References 1.Shah T, Press VG, Huisingh-Scheetz M, White SR. COPD Readmissions: Addressing COPD in the Era of Value-based Health Care. Chest. 2016 Oct;150(4):916-926. doi: 10.1016/j.chest.2016.05.002. Epub 2016 May 7. PMID: 27167208; PMCID: PMC5812767.

2.) Waeijen-Smit K, Crutsen M, Keene S, Miravitlles M, Crisafulli E, Torres A, Mueller C, Schuetz P, Ringbæk TJ, Fabbian F, Mekov E, Harries TH, Lun CT, Ergan B, Esteban C, Quintana Lopez JM, López-Campos JL, Chang CL, Hancox RJ, Shafuddin E, Ellis H, Janson C, Suppli Ulrik C, Gudmundsson G, Epstein D, Dominguez J, Lacoma A, Osadnik C, Alia I, Spannella F, Karakurt Z, Mehravaran H, Utens C, de Kruif MD, Ko FWS, Trethewey SP, Turner AM, Bumbacea D, Murphy PB, Vermeersch K, Zilberman-Itskovich S, Steer J, Echevarria C, Bourke SC, Lane N, de Batlle J, Sprooten RTM, Russell R, Faverio P, Cross JL, Prins HJ, Spruit MA, Simons SO, Houben-Wilke S, Franssen FME. Global mortality and readmission rates following COPD exacerbation-related hospitalisation: a meta-analysis of 65 945 individual patients. ERJ Open Res. 2024 Feb 26;10(1):00838-2023. doi: 10.1183/23120541.00838-2023. Erratum in: ERJ Open Res. 2024 Nov 25;10(6):50838-2023. doi: 10.1183/23120541.50838-2023. PMID: 38410700; PMCID: PMC10895439.

3.) Predischarge Bundle for Patients With Acute Exacerbations of COPD to Reduce Readmissions and ED Visits Jennings, Jeffrey H. et al. CHEST, Volume 147, Issue 5, 1227 - 1234

4.) Zafar MA, Panos RJ, Ko J, Otten LC, Gentene A, Guido M, Clark K, Lee C, Robertson J, Alessandrini EA. Reliable adherence to a COPD care bundle mitigates system-level failures and reduces COPD readmissions: a system redesign using improvement science. BMJ Qual Saf. 2017 Nov;26(11):908-918. doi: 10.1136/bmjqs-2017-006529. Epub 2017 Jul 21. PMID: 28733370