HealthCatalyst
ignite outcomes improvement

Driving Down Costly COPD-related Readmissions with NOREADMITS Bundle

HEALTHCARE ORGANIZATION

Integrated Delivery System

PRODUCTS

- Health Catalyst Analytics Platform, including the Late-Binding™ Data Warehouse and broad suite of analytics applications
- Professional Services

EXECUTIVE SUMMARY

Nationally, approximately 700,000 hospitalizations occur each year with the principle diagnosis of Chronic Obstructive Pulmonary Disease (COPD), with one in five patients being readmitted within 30 days. Even with a national cost for each COPD readmission costing between $9,000 and $12,000, evidence-based measures that improve patient outcomes and decrease COPD readmissions are largely lacking.

When reviewing organizational performance for 30-day all cause readmission, MultiCare Health System identified COPD as one of the top two readmission diagnoses, along with a rate higher than expected. This prompted the organization to take action. MultiCare implemented a NOREADMITS bundle, using the Health Catalyst Analytics Platform and integrating performance measures for each element of the bundle, resulting in:

- 16.5 percent reduction in readmission rate.
  - Approximately 34 fewer patients with COPD readmitted each year, saving an estimated $360,000 annually based on national benchmarks.
- 95 percent of COPD patients were assessed for readmission risk.
- Two-fold increase in COPD order set utilization.

REIGNING IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Chronic Obstructive Pulmonary Disease (COPD), a common preventable and treatable disease characterized by persistent respiratory symptoms and airflow limitation caused by significant exposure to particles or gases, is responsible for approximately 135,000 deaths annually, making it the third leading cause of death in the United States.[1]

Even though an estimated 700,000 hospitalizations occur nationally each year with the principle diagnosis of COPD and one in five of these COPD patients are readmitted within 30 days of discharge,

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> I am very proud of this team. The way we have come together as a group to help these patients has been phenomenal. We've focused on the desired outcome, and then worked together as a cohesive team to achieve that goal.
>
> Dr. Madiha Khan
> Medical Director
> Chief Hospitalist Sound Physicians

evidence-based measures specifically for COPD readmission avoidance are lacking. The national cost for such readmissions is between $9,000 and $12,000 each.[2,3,4]

COSTLY COPD READMISSIONS HIGHER THAN EXPECTED

MultiCare Health System is a not-for-profit healthcare organization with more than 10,000 employees and a comprehensive network of services throughout Washington state's Pierce, South King, Thurston, and Kitsap counties. It has long been committed to standardizing patient care to improve the overall quality of care and outcomes for its patients. One priority focus for MultiCare is 30 day-all-cause-readmissions. Through the implementation of standardized workflows, evidence-based guidelines, and analytics, MultiCare has demonstrated success in reducing the readmission rate for patients with heart failure (HF).

When reviewing organizational performance for 30 day-all-cause-readmissions, MultiCare identified that COPD was one of the top two readmission diagnosis, and that rate was higher than expected according to risk-adjusted benchmarks. Additionally, many of the patients being readmitted for HF, the number one readmission diagnosis, also had COPD. This presented a clear opportunity to improve readmission rates for patients with COPD.

Unlike HF, few evidence-based measures specific to COPD are available. Many patients with COPD are managed by primary care providers (PCPs) rather than specialists, substantially widening the number of providers who must have an adequate understanding of the most recent COPD care guidelines. It also makes effective handoff to the outpatient setting a priority, as a PCP could be managing up to 2,000 patients at any given point in time.

MultiCare needed an organizational strategy that would improve patient care processes and readmission rate for patients with COPD.

STANDARDIZING CARE TO IMPROVE OUTCOMES

At MultiCare, Clinical Collaboratives, permanent, interdisciplinary teams of clinicians, support staff, data analysts, and operational leaders, are responsible for improving patient care and outcomes by eliminating variation. To improve the quality of care and outcomes for patients with COPD, MultiCare leadership turned to the Medicine Collaborative, which went to work immediately, developing and implementing a comprehensive strategy for improving care of patients with COPD.

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> The Medicine Collaborative has representation for each discipline involved in the patient's care. Everyone is able to share how their work contributes to the care of a patient with COPD. We learn from each other and continually improve our processes.
>
> Kim Cummins
> Director West Pierce Market
> Personal Health Partners Program

The Medicine Collaborative developed care guidelines, outlining standard, evidence-based practices for the management of COPD. These guidelines standardize and improve the appropriate delivery of pharmacologic treatment and non-pharmacologic treatment, including smoking cessation counseling, vaccinations, medications, oxygen, patient education materials and action plans, and pulmonary rehabilitation.

The care guidelines are then integrated into the standard order sets for both admission and discharge, improving the consistency and reliability of care. To improve utilization of the orders sets, members of the Medicine Collaborative proactively sought feedback from ordering providers, asking how the order sets could be improved, and inquiring what changes could be made to increase usage.

While the development and availability of evidence-based order sets is an incredibly important piece of the improvement plan, the Medicine Collaborative recognized that availability alone would not lead to improvement.

The team needed to hardwire utilization of the order sets, and needed to redesign the workflow of the interdisciplinary team to implement best practices that would reduce the rate of readmission for patients with COPD.

Data and analytics driving NOREADMITS

To ensure improvement goals were achieved, the Medicine Collaborative applied learnings from the Heart Failure (HF) improvement team at MultiCare. The HF improvement team had successfully developed and implemented the NOREADMITS bundle, improving the readmission rate for patients with HF. The Medicine Collaborative elected to follow the HF improvement team's lead, implementing the NOREADMITS bundle for patients with COPD. The NOREADMITS bundle includes key interventions to improve transitions of care and safe discharge from the hospital.

Promoting adoption of the elements of the NOREADMITS bundle, the Medicine Collaborative used the Health Catalyst Analytics Platform, including the Late-Binding™ Data Warehouse and broad suite of analytics applications, integrating performance measures for each element of the bundle into a NOREADMITS analytic application (see Figure 1).

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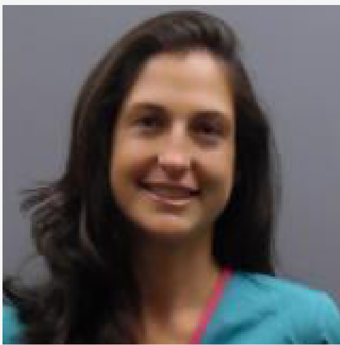

> Asking questions regarding medication and adherence can be challenging, given their personal nature. We've developed our teams' skill in asking open-ended, non-judgmental questions that help to build a relationship with the patient so we can better understand their needs.
>
> Tasheba West, PharmD
> Clinical Pharmacist

The NOREADMITS bundle elements and associated performance metrics include:

- **Notification** to the PCP of the inpatient discharge—the receiving provider must acknowledge notification within 14 day of discharge to meet the metric. With many PCPs managing the care of patients with COPD, effective hand-off and communication to the next care setting is of great importance.
- **Order set utilization**—this metric is considered successful when the condition-specific order set is opened at least once during the encounter. Use of order sets helps ensure each patient receives the most recent, evidence-based care.
- **Readmission risk assessment**—percent of discharges with at least one risk of readmission assessment completed during their hospital stay. Care managers assess and document each patient's risk of readmission and align resources to mitigate risk factors.
- **Education**—percent of discharges for which patient education or teach-back is completed. Teach-back validates understanding of education by having the patient repeat back, in their own words, the education, showing they understand why they have been prescribed a medication and its usage instructions.
    - In addition to using the teach-back method, respiratory therapists now provide patients education about how to properly use their inhalers. This helps identify which patients need additional support and instruction, and which patients have poor lung function, requiring more intensive pulmonary rehab.
- **Advanced care planning**—percent of discharges for which Advanced Care Planning (Health Care Directive, Durable Power of Attorney, Physician Orders for Life-Sustaining Treatment) has been completed and recorded.
- **Discharge instructions**—percent of discharges for which the registered nurse provided condition specific discharge instructions.
- **Medication reconciliation**—percent of discharges for which medication reconciliation was completed.
    - Pharmacists and pharmacy technicians in the emergency department complete this function for each patient upon admission. By collecting a comprehensive medication history, pharmacists can confirm if the patient is taking all medications as prescribed.

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> Patients with COPD are vulnerable. While COPD is a progressive disease, there are interventions that can positively impact these patients.
>
> Amber Theel, RN, MBA
> CPHQ, CPHRM
> Director of Quality

- Technicians who gather medication histories use a standard questionnaire, and are trained to ask questions that are open-ended and stated in a manner that helps to build positive working relationships with the patient. A frequent challenge to medication adherence for patients with COPD is the cost of the medications as COPD is treated with many brand name medications that do not have a lower-cost generic alternative. Performing medication reconciliation upon admission provides the pharmacy team the opportunity to identify if cost is a barrier early on, allowing pharmacy, providers, and care managers to work together to adjust prescriptions where possible, or secure a way to pay for the medication so the patient can successfully take the prescribed medication.

- **Interim follow-up call**—percent of qualifying discharges with a follow-up phone call for patients with HF only.
- **Timely follow-up**—percent of patients with a follow-up appointment after discharge. Lack of timely follow up is a significant factor for readmission. For this metric to be met, the appointment must be scheduled while the patient is in the hospital, and the scheduled appointment date must be within 10 days of the discharge date.
- **Specialist consult**—percent of discharges with a referral to the pulmonary clinic, remote home health, outpatient spirometry, or outpatient smoking cessation.

Enhancing performance for better outcomes

Integrating the NOREADMITS bundle elements into the analytics application supports the Medicine Collaborative, and departmental owners, in monitoring and improving performance. The analytics application supports visualization of bundle element compliance by discharging facility and by the accountable department. Multiple views support quick, easy visualization of trends, and encourage a review of performance during monthly Medicine Collaborative team meetings. Additionally, the detailed reports tab enables users to quickly drill down into patient level detail (see Figure 1).

The analytics application eliminates the need to perform burdensome chart reviews, as patient level detail is easily accessible in the application. Users can simply open the application, access the detailed reports, quickly visualize if the patient was eligible for the bundle element, and confirm if it was provided.

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The Medicine Collaborative and departmental leaders can quickly identify when performance could be improved. For example, when the analytics application revealed low order set utilization, leaders shared ordering provider performance data, allowing ordering providers to see their order set utilization and readmission rates, in comparison to their peers. When ordering providers with a lower order set utilization rate received the performance data, they subsequently increased their order set utilization rate.

FIGURE 1. NOREADMITS BUNDLE COMPLIANCE BY METRIC

1. Filters to select population of interest
2. NOREADMITS bundle element success rate
3. System performance – performance by accountable care provider group
4. Detailed reports – patient level detail

Figure 1. NOREADMITS bundle compliance by metric

RESULTS

Within ten months of implementing the NOREADMITS bundle, MultiCare has achieved the following results:

- 16.5 percent reduction in readmission rate.
  - Approximately 34 fewer patients with COPD readmitted each year, saving an estimated $360,000 annually based on national benchmarks.
- 95 percent of COPD patients assessed for readmission risk.
- Two-fold increase in COPD order set utilization. Nearly 100 percent of patients with COPD received care via the standardized order set.
- 82 percent PCP notification of patient discharge

WHAT'S NEXT

While already achieving impressive results, and demonstrating the effectiveness of the NOREADMITS bundle, the Medicine

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Collaborative is focused on increasing the number of patients who receive all elements of the bundle. It is clear these interventions make a positive impact on patient outcomes, avoiding costly readmissions.

MultiCare is actively expanding the NOREADMITS bundle to patients with pneumonia.

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ABOUT HEALTH CATALYST

Health Catalyst is a next-generation data, analytics, and decision support company committed to being a catalyst for massive, sustained improvements in healthcare outcomes. We are the leaders in a new era of advanced predictive analytics for population health and value-based care. with a suite of machine learning-driven solutions, decades of outcomes-improvement expertise, and an unparalleled ability to integrate data from across the healthcare ecosystem. Our proven data warehousing and analytics platform helps improve quality, add efficiency and lower costs in support of more than 85 million patients and growing, ranging from the largest US health system to forward-thinking physician practices. Our technology and professional services can help you keep patients engaged and healthy in their homes and workplaces, and we can help you optimize care delivery to those patients when it becomes necessary. We are grateful to be recognized by Fortune, Gallup, Glassdoor, Modern Healthcare and a host of others as a Best Place to Work in technology and healthcare.

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