Optimizing Oxygen Therapy

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May 26, 2022
Area of Interest, Background Information, and Problem Statement

- Throughout history, oxygen has been one of the most used drugs. A “more is better” culture in hospitals persists even though the risks of liberal use of oxygen therapy have been proven.
- Hyperoxia induced hypercapnia among COPD patients is a very well studied phenomenon that leads to respiratory acidosis, increased mortality/morbidity, and increased length of stay.
- A prior QI project concluded oxygen is over utilized and inappropriately prescribed in our hospital setting. An oxygen use protocol was instituted to reduce this, but the implementation left much to be desired. We aimed to evaluate the present level of compliance with the oxygen protocol and implement nursing and physician interventions to rectify this

References:


Metrics Description

- **Process Metrics:**
  - Number of patients on O2 with an *active* oxygen order
  - Number of patients with weaning order placed
- **Outcome Metrics:**
  - Percent of patients *within* the desired oxygen parameters
- **Balancing Metrics:**
  - Amount of money spent on oxygen
Spot Check Data

**SPOT CHECK DATA MARCH 2021**

<table>
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<tr>
<th>WARD NAMES</th>
<th>NUMBER OF PATIENTS</th>
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<tr>
<td>A4</td>
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<tr>
<td>C4</td>
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<td>C5</td>
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</tr>
<tr>
<td>B4</td>
<td>0</td>
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<tr>
<td>B3</td>
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- **number of patients on oxygen**
- **number of patients with weaning O2 protocol entered**
- **number of patients with O2 orders entered**

We looked at 42 patients (all GME, non-PUI floors) only 9 on O2, 5 had orders (55%)
This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

**Process Map**

1. **NOTIFIED ABOUT ADMISSION** → **EVALUATE PATIENT ACUITY, QUICK PHYSICAL** → **PLACE ADMISSION ORDERS** → **IS THE PT ON O2 NOW OR DO YOU ANTICIPATE THEM NEEDING IT?**
   - **YES** → **OPTIONAL: CHECK THE O2 ORDER ON THE BUNDLE AND SET PARAMETER AT DEFAULT (92%) OR LOWER FOR HYPERCAPNIC RISK PATIENTS (88%)**
   - **NO** → **PT ADMITTED WITHOUT O2 ORDER**
     - **PT DEVELOPS RESPIRATORY DISTRESS OR SOB** → **NURSES PLACE NC (USUALLY WITHOUT ORDER/WEANING ORDER, NOTIFYING RESIDENT)**
2. **(OPTIONAL) CHECK WEANING ORDER ON ADMISSION BUNDLE, USUALLY DEFAULT**
3. **USUALLY RESIDENTS WEAN O2 THEMSELVES ON ROUNDS, NURSES WEAN IF PT IS AT 100%. USUALLY RT NOT INVOLVED FOR NC UNLESS PT ON NEBS OR CPAP**
4. **EVENTUALLY PT CONDITION RESOLVES AND IS WEANEED OFF, MEDICAL ISSUES STABILIZE AND PATIENT IS DISCHARGED**

**Areas of Implementation**
Root Cause Analysis

Materials
- NC easily available without order unlike other drugs in pyxis

Machine/Plant
- Poor awareness of adverse effects of O2- residents and nursing staff
- If there is no O2 order, RT will not know to wean it or check on pt

Measurement/Policy
- Hard to monitor when patients outside of parameters
- Lack of vital carts
- Residents may not be notified when outside parameters sometimes

Methods/Procedures
- Use of O2 without an Order
- Failure to place weaning protocol order and lack of adherence to it
- Lack of utilization of O2 order set
Aim/Goal of Quality Improvement Project

• Increase the number of GME patients on **O2 with an order** to 80% by 5/1/22. (for non-COVID patients)
• Increase the number of resident **patients with a weaning O2 order** to 80% by 5/1/22. (for non-COVID patients)
• Thereby:
  • Minimize cost of excess O₂ to patient and hospital
  • Minimize risk of harm via excess O₂ to the patients
Interventions

- **Primary Emphasis On Nursing and Resident Education**
  - Readily accessible medical decision making tools/Protocol
    - Oxygen parameters clearly defined on patient door
    - Laminated algorithm on supply room by nasal cannulas

We excluded COVID patients
Omicron surge in 12/21 - 1/22
Took time to get signs approved (2 months +)
3/22: Printed signs but they were too big and interfered with function of the area
Results/Metrics

SPOT CHECK DATA

% Order For O2/total # of patients on O2

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<thead>
<tr>
<th>APR-21</th>
<th>JUL-21</th>
<th>OCT-21</th>
<th>NOV-21</th>
<th>DEC-21</th>
<th>APR-22</th>
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% Order For Weaning O2/total # of patients on O2

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