



# ICU- DO YOU SEE ME? HOW TO FIND VAP AND CLI IN THE SHADOWS OF COVID-19 PANDEMIA

Carla Feltrin, Lindsay Hampton-Hampejskova; Elayn Young; Toni Rogers; Dara Klisowsky; Erica Przepiora

## Issue

The negative impact of COVID-19 pandemic on VAP and CLI has been studied in the ICU's worldwide. Challenges with critical care capacity, staffing, outbreak management, emerging sub-variants, resources, surveillance had significantly affected VAP and CLI data reporting. It was important to look at better processes to identify and report VAP and CLI in the midst of the COVID-19 pandemic for quality improvement and patient safety.

## Project

A multidisciplinary team including Critical Care Management, Decision Support, Educators, and IPAC worked collaboratively steering a retrospective review of VAP and CLI cases from 2020 across 3 Niagara Health (NH) ICU's. An audit was performed and two educational interventions were piloted at the St. Catharines Site (SCS) using PDSA model framework. Analysis was conducted using a cross sectional design.

## Results

An increase of 7 VAP and 10 CLI cases for total of 65.95% ventilator days and 33.36% central line days, were identified when pocket cards were trialed from November 2021 to February 2022. An increase of 1 VAP and 4 CLI cases for a total of 24.59% ventilator days and 28.5% central line days, were identified when unit posters were provided from November 2022 to December 2022. The increase of frequency of VAP and CLI was observed in both trial periods at the SCS.

**What is Ventilator-associated pneumonia (VAP)?**  
Pneumonia occurring in patients requiring mechanically or nonmechanically ventilated through a tracheostomy or endotracheal tube for more than 48 hours.  
- Invasive procedure or procedure sufficient to establish an airway with a cuff  
- Inpatient in an intensive care unit (ICU)  
- Temperature >38°C or <36°C with another significant cause and all of the following:  
- New or increased pulmonary infiltrate on chest x-ray, or increase in respiratory secretions or increase in sputum requirements  
- Worsening gas exchange (e.g., increasing oxygen requirements, increasing P/FiO2 ratio, increasing or increasing endotracheal sputum)  
- The patient is being treated with antibiotics for VAP

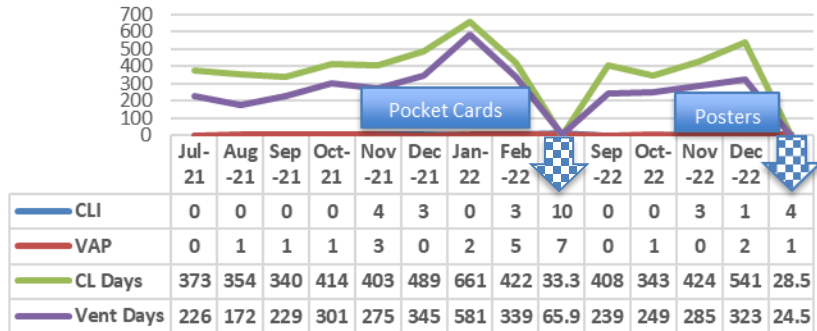
**Prevention of VAP (PDSA):**  
- Minimize the total time the patient is on a ventilator  
- Daily sedation reduction assessment and daily assessment of extubation readiness  
- Deepening oral care and daily chlorhexidine mouth irrigation  
- Minimize oral antibiotic use  
- Minimize catheter insertion within 24-48h of ICU admission  
- Minimize VAP prevention bundle staff at individual primary nurses

**Reporting:**  
1. Inpatient in ICU  
2. Notify Charge Nurse  
3. Notify IPAC  
4. Enter into CCIS

**What is Central Line Infection (CLI)?**  
Pneumonia infection that is attributed to a central line and is defined if the patient has been on the line for 48 hours prior to the development of the CLI. The patient must have been on the line for 48 hours prior to the development of the CLI. The patient must have been on the line for 48 hours prior to the development of the CLI. The patient must have been on the line for 48 hours prior to the development of the CLI.

**Reporting:**  
1. Inpatient in ICU  
2. Notify Charge Nurse  
3. Notify IPAC  
4. Enter into CCIS

SCS ICU Frequency of CLI VAP and VENT/CLI DAYS Pre and Post Interventions 2021-2023



## Lessons Learned

The success with the unit poster implementation resulted with their expansion to the other ICU Sites of NH in 2023 by clinical management. Although confounding factors may have contributed to the increase of VAP and CLI, teamwork was effective in improving ICU education, surveillance, communication, management of patient care, and data collection methods.