# Weill Cornell Medicine - NewYork-Presbyterian

## **Problem Statement**

• Pectoralis nerve (PECs) blocks for mastectomy procedures are associated with improved postoperative pain scores and reduced intra- and postoperative opioid requirements when compared to systemic analgesia or standard of care without PECs blocks.<sup>1</sup>



NYSORA images of PECs Blocks Available at https://www.nysora.com/topics/regional-anesthesia-for-specific-surgical-procedures/thorax/pectoralis-serratus-plane-blocks/

- Blocks are only offered to some mastectomy patients, as some surgeons prefer to provide their own intra-operative block for analgesia or rely on intravenous medications alone, stemming from surgeon belief that blocks substantially delay surgical start time.
- Electronic requests clarifying which patients should be offered PECs blocks is **not standardized or efficient**.
  - Blocks requested the day of surgery (DOS)
  - Previously booked blocks canceled immediately preoperatively
- Inconsistencies lead to **inefficient use** of regional anesthesia team **resources** and a potential failure in providing the highest quality care to patients undergoing mastectomy procedures.

# Improving Accuracy and Efficiency of PECs Block **Administration for Breast Surgeries**

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### **Objectives**

- Improve the accuracy of the block request process by 15% within 5 months.
- Determine the average time needed for block administration

- Collaborative multidisciplinary meeting held to identify areas of improvement:
  - Value stream map (Figure 1) outlining all steps from the initial office visit for surgery to block administration on the day of surgery created
  - First-time Quality (FTQ) calculated for each step
- process. Open, efficient lines of communication between the two services established.
- EMR Audit:
  - Accuracy of block booking and block duration characteristics pulled from EMR
  - Adult patients undergoing mastectomy (simple or with reconstruction)
  - Data four months pre- and post-intervention compared

## Figure 1: Value Stream Map from Booking to Block Completion



Abbreviations: First time quality (FTQ) percent of time process step was accurate and complete the first time

• Increase the percentage of blocks performed that are appropriately requested in advance

#### Methods

• Surgical physician assistants (PAs) identified as key stakeholders in the block booking process

• Intervention: Educational material compiled & distributed to surgical PAs to help streamline booking



#### Results

Block accuracy and frequency of block cancellation improved from pre- to post-intervention (Table 1).

Blocks did not appear to substantially lengthen time before surgeons could start. Approximately 90% of blocks in both groups were performed in less than 10 minutes.

Table 1: PEC Blo	Table 1: PEC Block Administration for Mastectomy Cases		
	<b>PRE</b> (Aug-Nov 2021, N=16)	<b>POST</b> (Dec 2021-Mar 2022, N=12)*	
ock Booking Accuracy boked & Performed)	75%	100%	
OS Canceled Blocks boked & Not Performed)	6	0	
ock Duration edian)	6 minutes	5 minutes	
ocks performed thin 10 minutes	89.5%	93.5%	

\*excludes December cases prior to intervention; DOS, day of surgery

#### **Conclusion & Future Direction**

- The use of **value stream mapping** in collaboration with the surgical service allowed us to identify the booking process in the office as a main area for improvement.
- Use of educational intervention as well as the collaboration itself allowed us to improve from 75% proper booking to 100% proper booking.
- Future focus should be on educating surgeons on the efficacy of PECs blocks for mastectomy and the efficiency with which our regional team can place them (requires less than 10 minutes of OR time). Other focus should emphasize further standardization of PEC block utilization at our institution

# **Weill Cornell Medicine** - NewYork-Presbyterian

## Purpose

PONV in the PACU persists as an issue in our hospital, with consequences such as increased PACU length of stay, increased morbidity, and decreased patient satisfaction. This leads to inefficiencies at an enterprise-wide level. While there is a substanti amount of literature focused on PONV prophylaxis, PONV rescue treatments in the PACU setting are not as well-researched, and no definitive consensus has been reached on best management practices.

There is a lack of standardization in the approach to treatment of PONV in the PACU, leading to inconsistencies in the evaluation and outcomes of post-operative patients.

#### Study Aims:

- Determine incidence of PONV in PACU
- Evaluate the approach to administration of various pharmacologic interventions used for PONV treatment
- Determine the percentage of patients that receive any antiemetics in the PACU

# **Investigation Methods**

- Chart Review (Jan. 24-Feb. 11, 2022) of sample population of 35 patients in PACU to determine what current documentation exists on both the nursing and physician side for PONV
- Literature review for existing PONV treatment
- Informal discussion with PACU nursing regarding assessment, documentation and treatment of PONV

# Improvement of PONV Documentation, Treatment and Rescue Therapy in the PACU

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		Chart Re	
	Results (Jan. 24-Feb. 11, 2022)	Data <b>(N=35)</b>	
ial	Documentation of PONV	20.0%	_
			_
	Received at least 2 agents for PONV intraoperatively	68.5%	- -
4	First-line rescue agent in PACU was ondansetron	80.0%	-
L			e
	Received 2 rescue antiemetics	25.7%	-
			l r
			F
			t
	Baseline Assessment		
n	<ul> <li>There was no mandatory or consistent methodocumenting the incidence of PONV or its resolution</li> <li>PACU</li> </ul>	od of Solution in	
	<ul> <li>Various rescue therapies for PONV were iden there was inadequate documentation to dete efficacy</li> </ul>	tified, but ermine their	
	<ul> <li>Rescue medications that have therapeutic pu separate from PONV treatment (I.e., diphenh</li> </ul>	rposes ydramine)	
	<ul> <li>Impossible to determine the true incidence of PACU</li> </ul>	f PONV in	

#### view Results

the PACU

**Findings/Discussion** 

- Documentation of PONV was found from anesthesia post-procedure notes or surgery postop check notes.
- There is currently no mandatory documentation of PONV.
- Nursing does not have a consistent method to document PONV The majority received dexamethasone and ondansetron
- Seven patients (20%) received 3 agents, with the 3rd agent most often being a low dose propofol infusion.
- Other agents: metoclopramide, diphenhydramine, prochlorperazine, and scopolamine patch.
- **Unclear whether patients who received an antiemetic were** experiencing PONV or were given additional prophylaxis in the setting of their risk factors.
- The second agent was often one with a different mechanism of action from the first. However, one patient received ondansetron 4 mg IV as first-line and 8 mg ondansetron oral dissolved tablet as a 2nd rescue agent.
- It is difficult to ascertain if diphenhydramine was administered for PONV as opposed to other indications such as pruritis/allergies - 3 (8.57%) patients received a scopolamine patch in PACU (ordered by the surgical team) prior to other rescue agents.

#### **Proposed interventions**

 Standardized mandatory EPIC documentation to identify PONV, allowing for calculation of true PONV incidence and precise identification of pharmacologic therapies used in



Given: Yes/No

 Studying the various pharmacologic interventions would allow for assessment of efficacy of the interventions and better inform development of an effective treatment algorithm for PONV

P	<b>ONV Practice Guideli</b>	ne
If a patient in the PACU has the operating room, then the time the time the time the time the time the time time time time time time time tim	nausea & vomiting and has received an ney have failed prophylaxis and must be	ay form of PONV prophylaxis in treated for PONV.
The only FDA-approved me to support the use of amisu	dication for the treatment of PONV is an Ipride in pregnant/nursing mothers and	misulpride. There is insufficient data I in pediatric patients.
Amisulpri CONTRAIL taking dop CAUTION agent due RESTRICT must conf prior to or	de (BARHEMSYS) NDICATED: patient on dopamine agonists ( amine agonists for Parkinson's disease) if droperidol has already been given as to risk of QTc prolongation IONS: restricted to anesthesia for treatm irm the patient has received a prophylae dering	Ex. patient prophylactic nent of PONV, ctic antiemetic
For rescue therapy a	fter amisulpride if nausea and/or vomit	ting persists in PACU:
Diphenhydramine (BENADRYL) 12.5 mg IV, Once	Prochlorperazine (COMPAZINE) 5 mg IV, Once	Ondansetron (ZOFRAN) 4 mg IV, Once
<b>CAUTION:</b> sedating, may provoke delirium in at-risk patients	CAUTION: sedating	CAUTION: prolongs QT
		*Has not been shown to be effective for treatment of PONV*
BEST TREATMENT	= PREVENTION	
	end the following for intraoperative POI	NV prophylaxis:
Thus, we recomme		
Thus, we recomme Ondansetro o Unle	on (ZOFRAN) 4 mg IV ess prolonged QTc	

#### **Future Directions**

 Propose EPIC changes and education for improved documentation of PONV in PACU

Reassess 6 months after implementation

Abbreviations: PACU, Post Anesthesia Care Unit; PONV, Postoperative Nausea and Vomiting



#### Purpose

- **Temperature monitoring** is recommended for
  - All general anesthesia cases
  - Cases lasting 30 minutes or longer
- Exposure to cold OR temperatures and anesthetic induction may significantly decrease body temperature at the onset of patient care.
- Hypothermia impacts wound healing, infection drug metabolism, time to emergence, and myocardial oxygen consumption. Hyperthermia can indicate important physiologic or disease states.
- Temperature alarms are frequently triggered as soon as the probes are connected, even as the temperature reading is equilibrating.
- Alarm fatigue renders the current alarms largely unhelpful for intraoperative temperature management and can affect patient safety by hindering early recognition of a dangerous change in temperature.

Aims: Reduce temperature alarming by 40-50%, as measured by pre/post-intervention surveys. Optimize temperature alarm parameters to reduce alarm fatigue.

## **Investigation Methods**

- Literature Review: paucity of clinical recommendations for temperature alarms in OR
- Electronic Survey of faculty, residents, fellows, and CRNAs evaluating beliefs & practices for managing temperature alarms
- **EMR Audit:** Analysis of temperatures recorded in first ten minutes of temperature data. Sampled from all ambulatory cases over a two-month period.

# Heat Exhaustion: **Reducing Temperature Alarm Fatigue in the OR**

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## **Figure 1: Survey Results**



#### N = 102 participants

Count

### Figure 3: Time for Temperature Readings to Reach a Steady State



# **Figure 2: Fishbone Diagram**





# **Current Alarm Parameters at NYP**

• Current alarm limit ranges:

- 36-39°C: Ttymp, Tvesic, Tcereb, Tamb
- 36-38.3°C: Trect, Tcore, Tskin, Tesoph, Tnaso, Tart, Tven
- 35-38.3°C: Temp

#### • Only "Temp" has a minimum temperature of 35°C

Based on our audit, temperature readings are typically **below 36°C before equilibration**, causing both an audio and visual alarm when the temperature probe is connected.

#### **Proposed Solutions**

- Implement "smart alarms" that allow 7-10 minutes of equilibration before alarming
- Adjust the default ranges for temperature labels
- **Require** selection of a temperature label when a probe is connected to the monitor (*e.g.*, Tskin, Tesoph, Tnaso)

### **Future Directions**

- **Discuss** possible systems changes with our equipment management team
- Collaborate with Biomed, Epic, and anesthesia providers to implement smart alarms and encourage use of temp site labels
- **Create** new parameters for the different temperature labels to decrease inappropriate alarms based on the location of the measured temperature
- **Collect** data and complete a post-intervention study to determine whether the implemented changes improve alarm fatigue and decrease unnecessary alarming

# Weill Cornell Medicine - NewYork-Presbyterian

The identification and management of chronic pain patients in the preoperative screening process, particularly those on chronic opioid therapy, is a critical focus in the field of pain management. Currently, there is no effective method to identify patients at high-risk for perioperative pain, and a history of chronic pain is often not elucidated until the day of surgery. Patients with chronic pain are thus sometimes admitted to the hospital without a thorough perioperative pain management plan delineated.

#### Aims:

- Understand the current preoperative evaluation **process** in screening for chronic pain patients at NYP-Weill Cornell
- **Evaluate literature** for validated preoperative screening tools
- Create a novel perioperative screening tool to better capture chronic pain patients

#### • Literature Review

- Two promising examples of preoperative screening tools for high-risk of prolonged perioperative opioid use or difficult to control pain were uncovered.<sup>1,2</sup>
- However, no data on the implementation of a screening tool to detect patients currently with chronic pain were found.
- Interviews with leadership at the Pre-anesthesia **Evaluation Center** (PEC) to determine current processes for screening preoperative patients for chronic pain and opioid use

# Implementation of Novel Screening Tool to Improve Identification of **Chronic Pain Patients During Preoperative Assessment Process**

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### **Current Pre-operative Evaluation Clinic Workflow and Challenges**





the ANESTHESIOLOGY. annual meeting

### New guestionnaire



Pre-Operative Evaluation of Patients with Chronic Pain Survey Questions. 1. Do you use alcohol (>14 drinks/week) or recreational drugs? c. Unsure 2. Have you seen a physician for chronic pain in past 6 months? c. Unsure Are you on any daily medication for <u>chronic pain</u>? (anti-depressants, antiepileptics, opioids) a. Yes c. Unsure 4. Have you taken prescription or non-prescription opioids in the last 6 months? c. Unsure 5. Do you take buprenorphine or methadone? c. Unsure

dditional Comment

#### **Future Directions**

Select appropriate patient cohort for implementation

• Spinal surgery patients: 368 patients had an outpatient pain clinic appointment in 2021 followed by surgery between Jan and June 2022.

• Of these, 65 patients (18%) had spinal surgeries

**Interview** stakeholders (e.g., preoperative clinic staff, outpatient chronic pain teams, inpatient perioperative pain teams) to assess acceptance and success of implemented changes



### Purpose

Postoperative pulmonary complications are common and may lead to adverse patient outcomes, such as early postoperative mortality, ICU admission, and prolonged hospital stay.

Incentive spirometry is a simple and cost-effective method to prevent atelectasis in postoperative patients, improving postoperative oxygenation and decreasing postoperative pulmonary complications.

**Problem:** Incentive spirometry (IS) use in the PACU is not standardized.

Goal: To increase IS use in PACU by 15% in a 4month period.

## **Investigation Methods**

#### **Literature Review:**

- Postoperative pulmonary complications (PPCs) are common and lead to adverse patient outcomes, such as postoperative mortality, ICU admission, and prolonged hospital stay.
- Poor patient compliance/ failure to use IS as prescribed is a limitation in RCTs

#### **Chart Review**

- 40 PACU patients reviewed from May 14 June 21, 2021
- 45% (n=18) patients had IS ordered for use in the PACU
- 7 of the 18 patients had IS documented during their PACU stay

# Improving Incentive Spirometry Use in the PACU

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