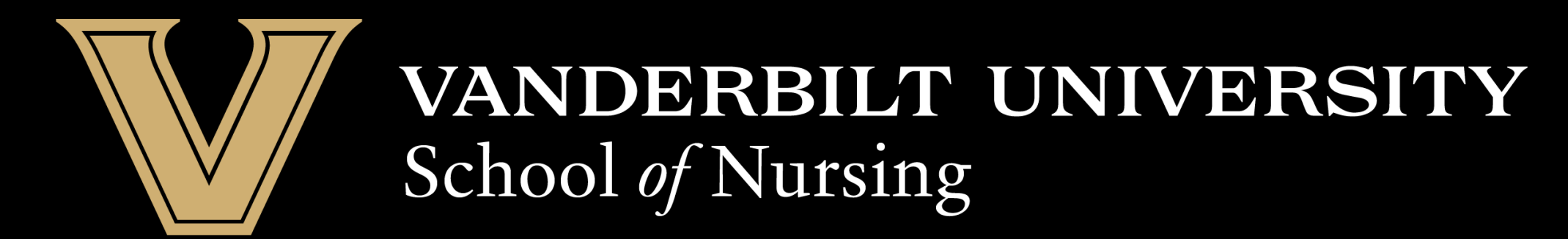


# Team Communication and First Case Starts in the Neurosurgery Setting



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## INTRODUCTION

**Topic**  
Enhancing team communication in neurosurgery to improve Operating Room (OR) efficiency and patient outcomes.

**Problem Statement**  
Delays in starting elective neurosurgery cases on time in the operating room represent a critical operational issue, with only 41% of first cases beginning within the defined start time. These delays lead to underutilized OR capacity, inefficiencies in perioperative workflows, and higher costs due to resource management challenges. Moreover, they adversely affect patient care by postponing essential neurosurgical procedures. Addressing this issue is critical for optimizing OR operations, reducing costs, and improving patient outcomes.

**Purpose**  
The primary objective of this project was to increase the first-case on-time start rate for all elective neurosurgery cases from a monthly average of 41% to a target of 62% or higher by November 2024. This goal will be achieved through evidence-based quality improvement strategies focusing on team communication. "First-case on time start" refers specifically to the patient entering the OR within the organization's defined five-minute grace period relative to the scheduled time. Additionally, inefficiencies addressed include delays in preoperative preparation. Structured interventions such as scheduled updates and collaborative rounding tools were developed by the project team to improve communication, and clearly defined stakeholder roles were implemented. The targeted start times are 7:30 AM on Monday, Tuesday, and Thursday, and 8:00 AM on Wednesday and Friday.

- Objectives**
- Met with perioperative clinical leadership to gain support for approving the DNP QI project by August 2024.
  - Presented to the neurosurgery clinical triad leaders (neurosurgery leader and neuro anesthesia leader) to gain final approval and stakeholders to gain support for the DNP QI project by October 2024.
  - Adapted existing evidence-based strategies and tools to neurosurgery team communication by October 2024.
  - Established a core implementation team and educated the neurosurgical team (surgeons, anesthesia care providers, nurses, surgical technologists, support staff, and surgical residents) on the implementation of team communication strategies by October 2024.
  - Implemented the evidence-based quality improvement project in neurosurgery ORs by November 2024.
  - Evaluated neurosurgery ORs' efficiencies defined by first-case on-time starts (FCOTS) between November 2024 and January 2025.
  - Assessed the impact of team communication strategies (formation of an interprofessional team, use of communication tools: collaborative rounding and bimonthly meetings, and scheduled communication updates) before and after implementation between November 2024 and January 2025.
  - Disseminated quality project outcome to the community and the team virtually via monthly Neuro Pod Meeting starting November 2024.

## METHODS

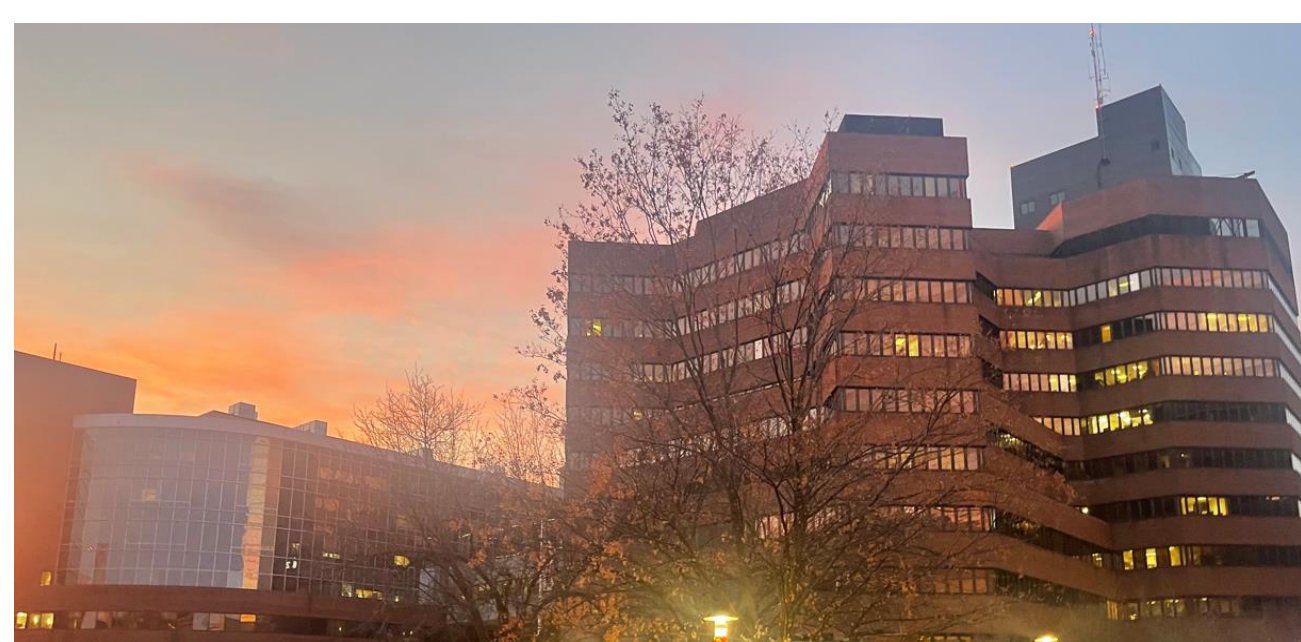
- Methods**
- Utilized Plan-Do-Study-Act (PDSA) model (Christoff, 2018)
  - Combined with the Institute for Healthcare Improvement's Model for Improvement

- Project Setting**
- Project location: Vanderbilt University Medical Center's
  - Specialty: Adult Neurosurgery Operating Room
  - Case Inclusions: elective neurosurgery and neurointerventional procedures

- Developed and Implemented Workflows**
- Created the "First Case On Time Start Process Map and Stakeholder Roles"
  - Introduced a collaborative rounding tool
  - Established tailored communication protocols and scheduled communication updates

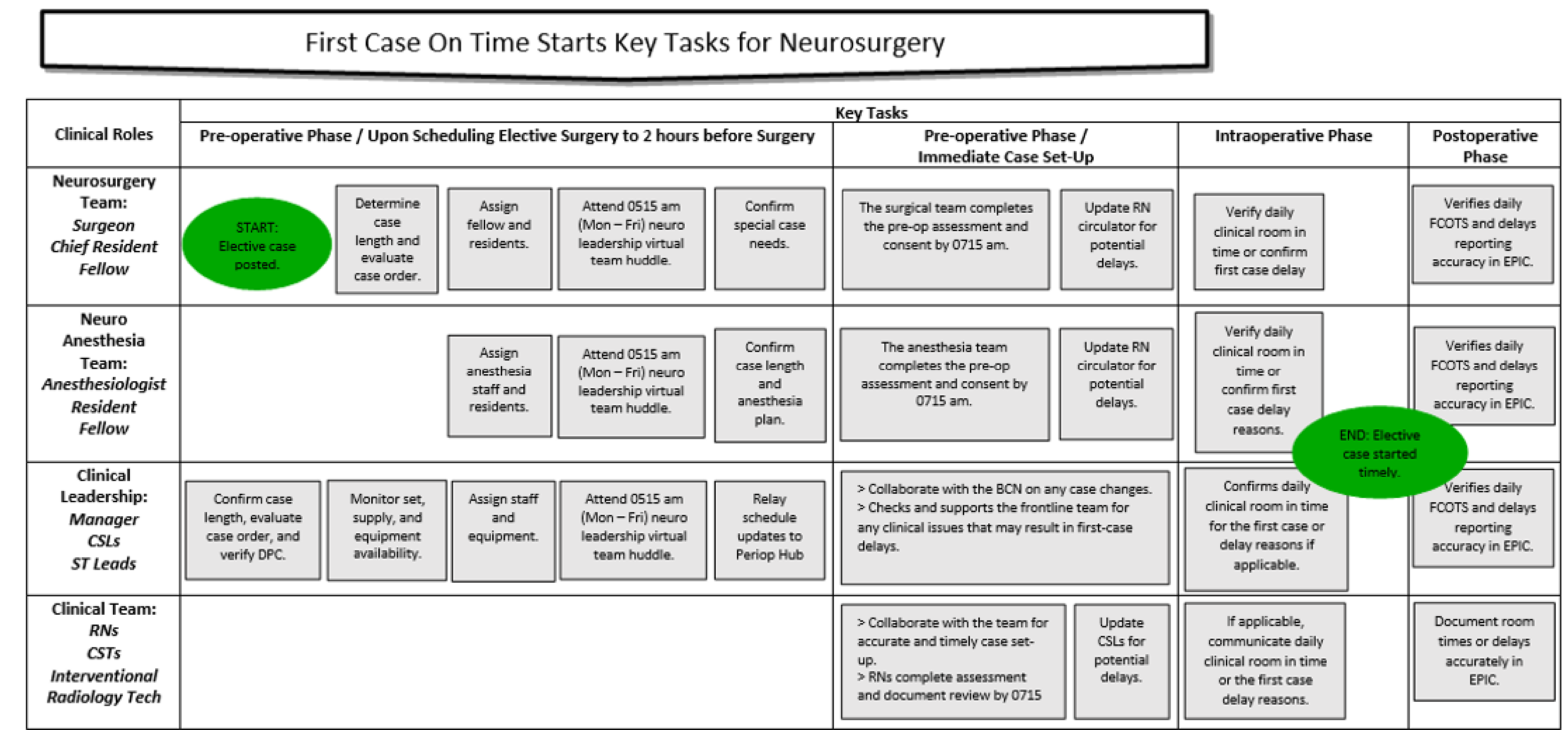
- Stakeholders**
- Chief of Surgery
  - Chief of Neurosurgery
  - Chief of Neuro Anesthesia
  - Interventional Radiology Leaders: Director, Manager, and Coordinator
  - Neurosurgeons
  - Neuro Anesthesia Providers: Physicians and Certified Registered Nurse Anesthetists
  - Perioperative Nursing Executives: Associate Nursing Officer and Directors
  - Staff: Neurosurgery and Neuro Interventional Surgery
  - Ancillary Team Leaders: Operating Room Transporters / Attendants, Sterile Processing, and Supply Chain

Figure 1: Vanderbilt University Adult Hospital



- Team Members and Key Tasks**
- Anesthesia Residents and Fellows
  - Certified Registered Nurse Anesthetists (CRNAs)
  - Certified Surgical Technologists (CSTs) and CST Leads
  - Clinical Manager – Neurosurgery
  - Clinical Staff Leaders
  - First Assistants (PAs, RNFA's, or STFA's)
  - Interventional Radiology Technicians and Coordinator
  - Interventional Radiology Manager
  - Neuro Anesthesiologists
  - Neurosurgeons
  - Neurosurgery Residents and Fellows
  - Registered Nurses

Figure 2: First Case On Time Start Process Map and Stakeholder Roles



- Abbreviation List:**
- BCN - Board Charge Nurse
  - CSL - Clinical Staff Leader
  - CST - Certified Surgical Technologist
  - DPC - Doctor's Preference Card

## RESULTS

- Project Outcomes**
- First case on-time start rate reached 62% in November 2024, and was maintained or exceeded through January 2025
  - Improved timeliness of surgical starts with better overall OR efficiency
  - Most common delay reasons: room not ready (14.2%); instrument contamination, not available, and/or missing (11.4%), and transport delay (6.8%)

Table 1

First Case on Time Starts Monthly Average in 5,10, and 15-Minute Average for All Neurosurgery Cases

Fiscal Year 2024	5 - minute	10 - minute	15 - minute
November 2023	50%	72%	83%
December 2023	56%	76%	85%
January 2024	50%	69%	78%

Table 2

First Case on Time Starts Monthly Average in 5,10, and 15-Minute Average for All Neurosurgery Cases

Fiscal Year 2025	5 - minute	10 - minute	15 - minute
November 2024	62%	77%	85%
December 2024	62%	79%	85%
January 2025	60%	77%	85%

## IMPLICATIONS for PRACTICE

- Implications**
- Significant improvement in on-time starts from 52% monthly average to 62% monthly average with a 5-minute threshold
  - Results show effective team communication enhances OR efficiency, evidenced by 85% of cases starting within the 15-minute threshold since November 2024
  - Timely starts are crucial for neurosurgery patient outcomes

- Strengths**
- Successfully demonstrated the effectiveness of evidence-based communication strategies
    - formation of an interprofessional team (Deldar et al., 2017; Ellis et al., 2019; and Mathews et al., 2015)
    - use of communication tools: collaborative rounding and bimonthly meetings (Bender et al., 2015; Ellis et al., 2019; and Mathews et al., 2015)
    - scheduled communication updates (Ellis et al., 2019; Ibrahim et al., 2019; and Mathews et al., 2015)
  - Development of collaborative rounding form improved tracking of delays and actions

Figure 3: Collaborative Rounding Forms

Vanderbilt University Medical Center - Perioperative Services Collaborative Rounding Form		
Date:	Attendees:	Issues
ORs:	Issues	Actions
10		
15		
17		
19		
21		

Version 1: June 2024

Vanderbilt University Medical Center - Perioperative Services Collaborative Rounding Form			
Date:	Attendees:	Issues	Key Actions
ORs:	Issues	Key Actions	Status
1		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:
3		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:
8		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:
10		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:
15		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:
17		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:
19		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:
21		Called HP/IST Other: Documented: Cessrauc/Ventrua/Epic	Delayed: V/N Total Minutes:

Version 2: January 2025

- Limitations**
- Small sample size and short study duration may limit the generalizability of the findings
  - The study did not account for patient complexity and case mix, which can impact first-case on-time starts

- Recommendations**
- Larger Sample Size and Multiple Specialties:
    - Include a larger sample size in future studies
    - Involve multiple specialties to enhance generalization
    - Assess the effectiveness of communication strategies across specialties
  - Long-Term Studies:
    - Conduct long-term studies to assess the sustainability of interventions
    - Provide insights into the evolution and adaptation of communication strategies
    - Evaluate long-term effects on team dynamics
    - Assess impact on patient outcomes
  - Interdepartmental Collaboration:
    - Encourage collaboration across different departments
    - Involve a diverse range of stakeholders for a comprehensive understanding of OR efficiency

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