

Decreasing Midazolam Exposure in Premature Infants Under 32 Weeks Gestation

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BACKGROUND

- The unfortunate nature of being cared for as a premature infant results in exposure to painful procedures. An infant can be exposed to between 7 and 17 painful procedures a day. Studies have shown that repeated painful stimuli can lead to physiologic instability, altered brain development, abnormal neurodevelopment, and increase sensitivity to future stimuli both painful and non-painful.
- Midazolam is a short-acting benzodiazepine which is utilized in ECU Health Medical Center Neonatal Intensive Care Unit (NICU). It does not have any analgesic properties and is not suitable as a sole agent for patients with pain and agitation. It can also cause significant respiratory depression, hypotension, and seizures. There are studies that have shown while midazolam can be an effective sedative for neonates, it can increase the length of stay and even increase the risk for death or brain injury.

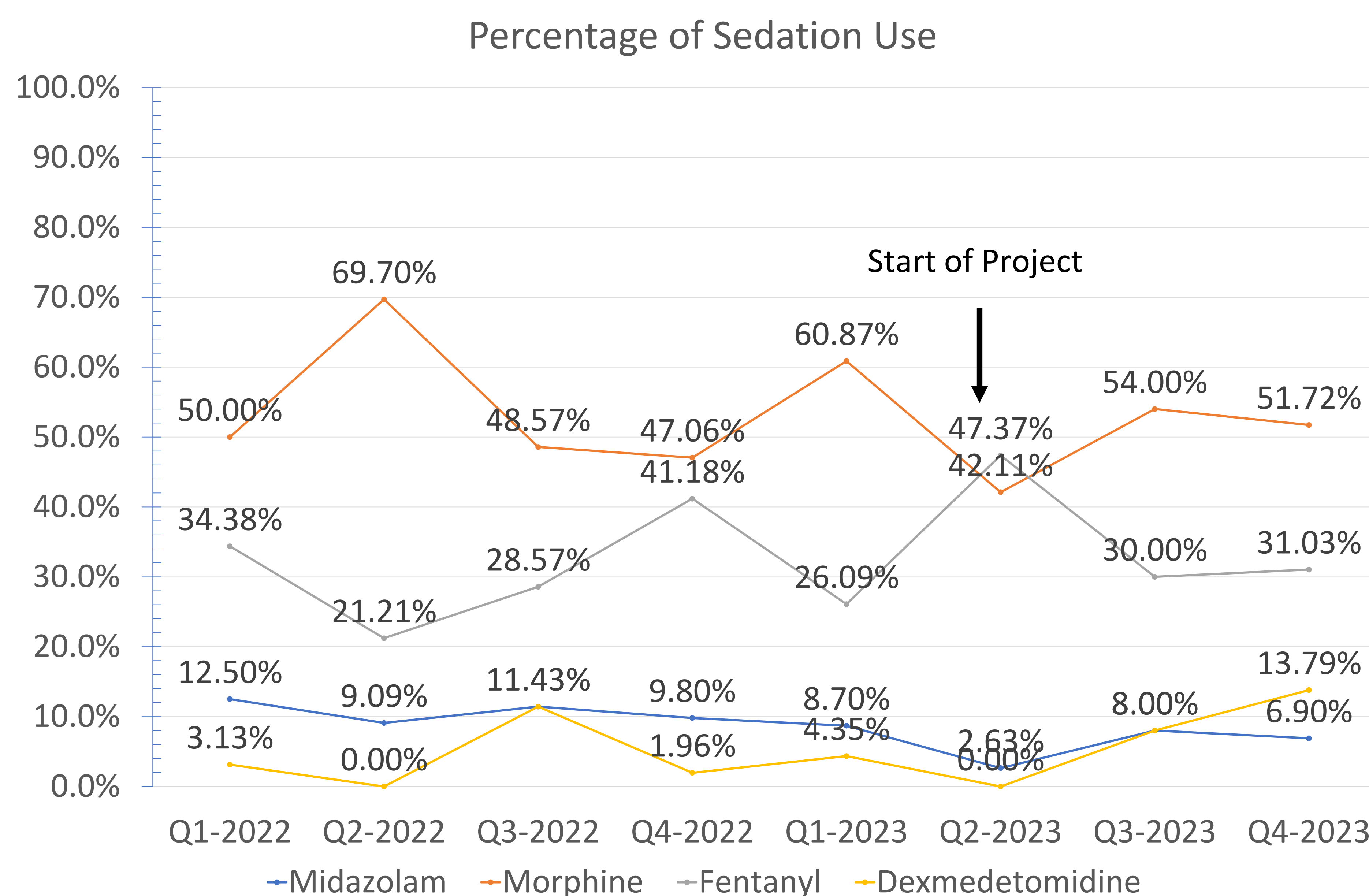
PROJECT AIM

- Global Aim: Implement pain management guideline to increase appropriate use of non-pharmacologic and pharmacologic methodologies for management of pain.
- Specific Aim: Decrease the use of midazolam in less than or equal to 32 week corrected gestational age infants by 10% in 12 months starting March of 2023.

CHANGES MADE (PDSA CYCLES)

- In the first PDSA cycle new pain management guideline was disseminated to providers and staff via email.
- Hard copy of the guideline was added to the work room binder for reference
- Since all team members round in the NICU, references to the guidelines were made during rounds to increase awareness and knowledge

OUTCOMES



- Currently unable to conclude whether the new guideline has decreased midazolam usage.
- There is more discussion of appropriate sedation use noted on rounds, this will help all staff to be more aware of the potential misuse of sedation.

PROJECT DESIGN

- Guideline was first distributed to attendings, fellows, and advanced practitioners that practice in the NICU to elicit feedback.
- Guideline was updated with feedback and implemented on March 1st of 2023
- Data on midazolam, morphine, fentanyl, and dexmedetomidine usage were collected monthly and reported quarterly. Morphine, fentanyl, and dexmedetomidine usage are collected as balancing measures.
- Process measure: For each midazolam use the chart was reviewed to determine if the guideline was followed.
- Outcome measure includes the percentage of patients with gestational age of 32 weeks or less corrected who were exposed to midazolam

NEXT STEPS

- Surveys are planned to elicit feedback and evaluate attitudes about the pain management guideline
- Plans of incorporating the guideline into EPIC so that it can be referenced while orders are being placed
- Plan to increase non-pharmacologic methods for pain prevention as another QI project based on the guideline generated by this project