

End Tidal CO₂ Monitoring During Moderate Sedation

The Problem

In 2011 there was a change in ASA Standards related to monitoring. "During moderate or deep sedation the adequacy of ventilation shall be evaluated by continual observation of qualitative clinical signs and monitoring for the presence of exhaled carbon dioxide unless precluded or invalidated by the nature of the patient, procedure, or equipment."

This impacted 4 major Moderate Sedation Areas at the hospital: the GI Endoscopy Suites, Interventional Radiology, Cardiology and the Pain Center

Respiratory depression is a potential complication of sedation and analgesic administration. Ventilation monitoring using capnography has been determined to be the earliest indicator of hypoventilation and episodes of no-breath.

Monitoring End Tidal CO₂ (ETCO₂) will improve patient safety in procedure areas and the Interventional Procedures Committee has charged all BIDMC areas with complying with this ASA best practice recommendation.

Aim/Goal

Our goal was to ensure that all procedures outside of the OR that used moderate sedation were fully compliant with the new ASA standards for monitoring by 2014

The Team

Sheila Barnett, MD	John Whitlock, RN	Michelle Sheppard, RN
Michele Boucher, RN	Bridgit O'Bryan, RN	Elizabeth Carvelli, RN
Lisa Hird, RN	Paul Anderson, HIMDI	Arthur Durkin, PHILIPS

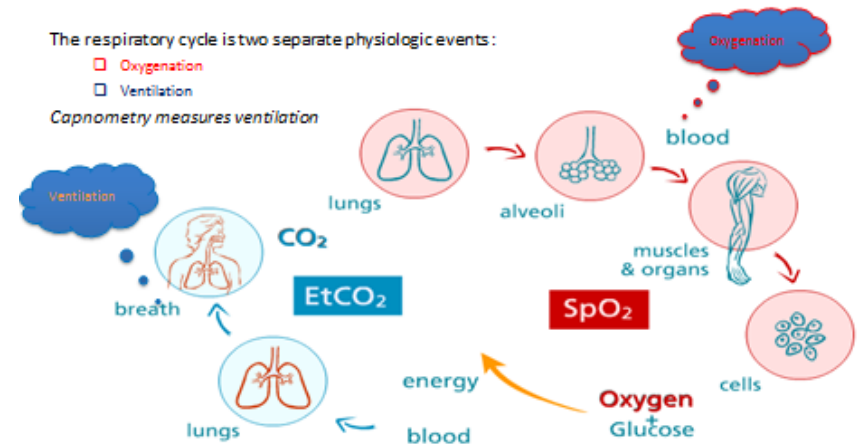
Interventional Procedures Committee Members

The Interventions

- Identified all interventional areas providing deep and moderate sedation
- Did an inventory of the current monitoring capabilities, did a gap analysis of the required equipment to make all areas compliant.
- Through assistance of CVQA committee gained approval to update or replace existing monitoring modules soliciting input from patients, colleagues, and testing potential solutions;
- A team of procedure area staff created an online competency to introduce the ETCO₂ concepts and implementation expectations.
- Partnered with Philips Healthcare to schedule onsite training days for one to one staff training and trouble shooting
- Modified BIDMC Policy – "Moderate Sedation Training for the Non-Anesthesiologist" to include an ETCO₂ component.
- Launched as expected Jan 1, 2014.

The Results/Progress to Date

- 100% of procedure units outside of the OR where moderate sedation is used now have technology and have begun to monitor ETCO₂ during cases.
- 101 Staff have completed the online module titled End Tidal Carbon Dioxide Detection and Monitoring For All Non-Anesthesiologists or received on-site Hands –On ETCO₂ Philips Medical Device training



Lessons Learned

Monitoring End Tidal CO₂ allows for all team members to visually monitor the impact of medication dosage in the same room.

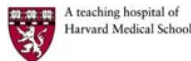
Staff appreciated the on-site personalized training. They had many moments to trouble shoot with the Philips rep. They learned valuable lessons beyond just recognizing wave patterns. They learned how to quickly manipulate the monitor and navigate through screens.

Next Steps/What Should Happen Next

- Will perform follow up surveys on the quality of sedation from patient and proceduralist perspectives. We can then compare this data to baseline data obtained prior to ETCO₂ monitoring.
- Analyze outcome data to see if sedation adverse events or medication patterns have changed following ETCO₂ monitoring.



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