



Capnography Monitoring During Conscious Sedation: Essential for Maintaining "Eyes and Ears" on Patients

Michael Wong:

Welcome to the Health and Safety Podcast. My name is Michael Wong. I am the founder and executive director of the Physician-Patient Alliance for Health and Safety. We're talking today about implementing monitoring with capnography.

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We are pleased to have as our guest Barbara McArthur. Barbara is an advanced practice nurse at Sunnybrook Health Sciences Centre in Toronto, Canada. For the listeners who might not be familiar with you or Sunnybrook - and particularly I'm thinking here of our U.S. audience - could you please give me a brief background?

Barbara McArthur:

Thank you, Michael. As you mentioned, I am an advanced practice nurse at Sunnybrook Health Sciences Center. It's a large trauma academic center and we're one of the largest centers in Canada. My background began in the operating room and I've spent about 25 years in the OR working closely with surgeons and anesthesiologists. I then covered other ambulatory areas, such as the endoscopy and cystoscopy clinics, as well as medical imaging. And, I've now been practicing in medical imaging for the past four years. In this area, I provide practice support for procedural areas, such as interventional radiology and ultrasound.

Wong:

Thank you for sharing your work work experience. What a rich nursing experience you've had. We are all aware of the standard practice of monitoring in the operating room but these practices occur are less frequently used outside the OR. Does Sunnybrook continuously monitor patients receiving sedation outside the OR?

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McArthur:

Yes, we do.

Wong:

So, what prompted Sunnybrook to choose capnography monitoring?

McArthur:

Well, we were in the process of updating our hospital policies and what came across our table was a working group to update the procedure sedation policy. That required us to go back and look in the literature and review the current literature. And, we decided that the evidence was there to include end tidal CO2 monitoring in our policy. We left it as a recommendation, because not all units have the hardware currently on the units and we didn't want to, sort of, set them up for failure. It's recommended, so that when they do buy new hardware, it would be obtained, so that they could incorporate this into their practice.

Wong:

So, what exactly in your literature convinced you that capnography monitoring would be better for patient care than, say, pulse oximetry or other patient monitoring devices?

McArthur:

Well, when we reviewed the literature, we came across a few position statements. The Association of Radiologic and Imaging Nurses (ARIN) published a position statement based on the evidence that has shown that capnography has a clear superiority in evaluating the patient's ventilatory status when it's compared to just the current routine monitoring practices. This is shown to result in safer patient care.

Also, the American Anesthesiology Society practice guideline that was released for sedation and analgesia given by the non-anesthesiologist. They also strongly agree that early detection of hypoxemia through the use oximetry during sedation analgesia decreases the likelihood of adverse outcomes, such as cardiac arrest and death. They therefore recommend that end tidal CO2 be used in situations where direct ventilation cannot be directly observed.

Also, the AORN (Association of periOperative Registered Nurses) put out a guideline for the care of the patients receiving moderate sedation and analgesia that provide guidance based on the quality evidence. And, they also recommend that end tidal CO2 be used to monitor patients when ventilation cannot be directly observed during procedures.

Wong:

These are great recommendations. Thank you so much for pointing out these societies. On our podcast, we will make sure that there are links provided to those recommendations and guidelines. In your experience, have you found capnography to provide a reliable early indicator patient decline?

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McArthur:

It does, because it actually is real time. With pulse oximetry, there is a delay, which could be up to a minute in healthy patients. So, that's a significant sort of time that is delayed that reaction could happen.

Wong:

And, certainly in patient decline, as you point out, minutes count and the early indicator is going to be the best for patient care and patient safety. So, thanks for pointing that out. As an OR nurse, you're familiar with continuous patient monitoring the OR. Why do you think it's important to include patient monitoring during conscious sedation?

McArthur:

Well, in my area, we don't have anesthesiologists administering the sedation. We have nurses giving it, so we have to be more diligent. We know sedation is a continuum. It's not finite. So, patients can easily slip from moderate levels into deep levels very quickly. So I think having the monitor can let you know the patient's status sooner, for example, if they're getting into respiratory problems, the nurses can intervene much quicker.

Wong:

As you point out, even with lightly sedated patients, there is a danger the patient may slip into deep sedation and tragically respiratory compromise, insufficiency, or even death. In your practice, are there certain procedures that you found are more risky or certain patients that are more at risk for respiratory compromise?

McArthur:

For sure, we do an assessment on our patients and obviously look at the co-morbidities- patients with COPD patients. We do a pre-anesthesia assessment and provide an ASA score to determine if it's acceptable for a nurse to be providing sedation without an anesthetist. So, the more co-morbidities, the riskier it is, we will not provide that without anesthesia's presence.

Wong:

Implementing any new technology may necessitate changes in policies and procedures have you had to make changes to policy or policies and procedures at Sunnybrook Health?

McArthur:

As I mentioned, we have updated our current procedural sedation based on the current evidence.

Wong: So, did you have any sense about alarm fatigue. I know, in my discussions with nurses, they have often expressed concerns about increasing their frequency of nuisance alarms when introducing additional patient monitoring devices. Did you have any any of these concerns or how did you get over these concerns?

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McArthur: So, we're fortunate that our facility here at Sunnybrook, we have a policy for physiological monitoring and alarm management, so the staff here are instructed to reassess alarm limits to match every patient's most recent baseline. So, individual parameters are set at the beginning of procedures, by doing this of, this reduces the amount of false alarms and alarm fatigue. So, staff can react appropriately to alarms when they actually happen.

Wong: Excellent. So, it's not just a matter of making sure the monitoring is attached to the patient, it's a matter of also going in individualizing the monitors to the patient's condition.

McArthur: Exactly.

Wong: Since implementing capnography have nurses at Sunnybrook found capnography monitoring valuable in the care of their patients?

McArthur:

Yes, the nurses have embraced this. Although we didn't have many adverse reactions to begin with, but my nurses have given me feedback that they have seen the waveform start to change. They've gone over to assess the patient, had to do like a chin lift or arouse the patient. So, there is some positive feedback coming.

Wong:

So, since monitoring with capnography, have you seen any reduction in adverse events, such as transfers to the ICU, length of stay or decreased use of Narcan?

McArthur: I'm not aware of any patients receiving reversal or any escalation of care with a rapid response team since we've implemented. Going forward I'd like to examine this and do a retrospective examination of both the influence of capnography has had on our adverse events here since we've employed to do it - before and after.

Wong: What do you think are the biggest challenges to implementing capnography in your health care facility?

McArthur: Well, I think some of the biggest challenges would be the cost associated with it. At a time when health care facilities are trying to cut costs, it's really hard to justify implementing something that's going to add to the costs. But, when I look back at some of the older studies, there was once a time where there was literature arguing the fact that pulse oximetry for procedural sedation was necessary. But, now, I feel that this is the next step, which providers need to be aware of the current evidence that's out there. And, capnography time and again has proven to be a safer way to monitor our patients.

Wong:

So, any last words of advice you might give to nursing leaders looking to make the case to improve safety in their own facility?

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McArthur: I think clinicians must continually improve patient care based on the current evidence and make smart decisions where it will most benefit. In my experience, I'm not putting capnography everywhere, I'm choosing where it will have the most effect and starting from there. And, that's going to prove to be a benefit. And, then potentially expanding it to other areas where it could also benefit.

Wong:

What other areas might I ask might you be looking at?

McArthur:

Other areas we're looking at would be in the in the endoscopy area. Also I'm looking in the post-anesthetic area. Some patients are very sleepy and it may be potentially worthwhile looking into that area for benefit.

Wong:

Excellent. In conclusion, I guess with lightly sedated patients monitoring may not bring as many benefits, but it's the moderate to deep sedation patients, as you pointed out, that are going through procedural sedation that might require capnography monitoring.

McArthur:

Exactly.

Wong:

Thank you so much, Barbara, for joining me on this podcast and hopefully clinicians and nurses out there will listen to this and implement capnography in their own facilities.

McArthur: My pleasure. Thank you, Michael.

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