Q & A for Barton Health Seminar, June 19, 2017

Q: I am wondering how you dealt with low EtCO2 numbers and poor waveforms? We started using capnography on all of our patients who receive sedation for regional blocks in our outpatient department as the majority of our patients are ortho as well. We also sample CO2 on all of our endoscopy patients. The problem is, when patients are sedated, respirations become shallower, and patients breathe through the mouth instead of the nose.

We have noticed this really affects the quality of the waveform. Many of our nurses will chart the low number, which makes it look like our patients are experiencing respiratory insufficiency. Others will chart the low number with a note that the waveform is of poor quality. Ideas?

Another problem, we would like to implement EtCO2 in our PACU, but we have not found a good sampling method. The sampling tubes we use now are nasal cannulas, while the vast majority of our PACU patients receive O2 via simple mask. Any suggestions for sampling via a simple mask? What about patients using non-rebreather masks?

A: We also had problems with our mouth breathers and getting a good waveform. Some vendors make an oral/nasal cannula that can detect EtCO2 from both the nose and mouth and these are really useful. It's very important to get a good waveform, so that you can differentiate between respiratory insufficiency vs. artifact because the patient is mouth-breathing. As long as you have a good waveform, then you can probably chart the low number with some confidence.

It's also important to note that EtCO2 can vary from pCO2, so we always identify the patient's baseline and watch the trend. Capnography is a lot different than oximetry!

Our PACU uses capnography monitoring for all of their post-op patients. They use both types of cannulas (nasal and oral/nasal), as well as oxygen masks that also detect EtCO2. It seems like the masks tend to give a lower reading. In the acute care setting, we often use an EtCO2 nasal cannula with an oxygen mask over it, if we need more oxygen than the cannula can provide. I haven't tried it with a non-rebreather, but we do have problems getting good readings on patients using higher gas flows (CPAP, bi-level, HFNC, etc.).
Q: Are you assessing your patients on opiates using a sedation scale (e.g. RASS) outside of the ICU?

A: Yes, the nurses do use sedation scales to assess their patients on opiates, including RASS.

Q: Why do you think compliance is still an obstacle?

A: This is another alarm that they have to deal with and although we've taken many steps to reduce our nuisance alarms, we still get them. I think resistance is worse when they are really busy, but I can't emphasize enough that all the effort has been worth it. This program has been so valuable in improving our patients' safety.

Q: Did you utilize a central monitoring station- or was monitoring at the unit level?

A: We initially plugged the monitors into our call light system, but we just installed a central monitor at each nurses' station. So far, it has really helped because the staff can see the actual monitor values for each patient.

Q: How do you learn about new evidence?

A: The Capnography Workgroup is always researching new evidence and technology through journals, conferences, etc. The Respiratory, Nursing and Anesthesia societies are usually good sources of information. We are also participating in the Hospital Quality Institute’s project to update the Guidelines for Respiratory Monitoring of Patients Outside the ICU.

Q: Did you utilize IPI technology? Integrative Pulmonary Index.

A: It's great technology, but we really don't utilize the IPI technology too much because the algorithm is based on sea level normals and we are at high altitude, so our normal values are different. We actually looked into that!

Q: Thank you for a wonderful presentation. Are you aware the Association for Radiologic and Imagining Nursing published a Position Statement on Capnography use in Radiology Imaging Departments? Are you using Capnography in Procedural Sedation? Thank you! I wasn't aware of that publication, but I will look for it. We do use capnography on all of our procedural
sedations, including those in our Interventional Radiology Dept.

**Q:** When listing ICU mortality 2012-2016, was this only for resp. arrest or did this include all deaths? Was wondering if it included elective withdrawal of mechanical support.

**A:** I believe this included all unanticipated deaths and did not include elective withdrawal of mechanical support, DNR, etc.