

Kim West RN, CGRN

1. Abstract

According to ASGE standards, the endoscopist should achieve cecal intubation in 90% or more of all colonoscopies.¹ Insufflation is a necessary part of this process. The colon is insufflated during colonoscopy procedures so that the entire colon can be viewed for surveillance for adenomatous polyps. The goal is to utilize an agent that both insufflates the colon and causes minimal discomfort to the patient. Insufflation is also an important feature during the upper GI to obtain clear visualization of the esophagus and stomach. Our endoscopy centers have historically used air for insufflation. Over the course of several years, many of our transfers and late complications were the result of pain, caused by air retention. Our DON led the way for our facilities to trial CO₂ for insufflation, to see if this would reduce our patients' discomfort post-procedure. We kept a complication log for trending of all adverse events. Complications were calculated per 1,000 procedures and were trended from 2012 to 2016. Our rate for pain complications had remained above the benchmark for the last 2 years at 0.75/1,000 in 2012 to 0.82/1,000 in 2013. CO₂ was implemented in Q3 2014. Our pain related complications were reduced from 0.82/1,000 in 2013 to 0.35/1,000 in 2016. Overall complications decreased from 4.41/1,000 in 2012 to 1.89/1,000 in 2016. Our transfer rates also decreased from 1.20 in 2012 to 0.88 in 2016.

2. Introduction

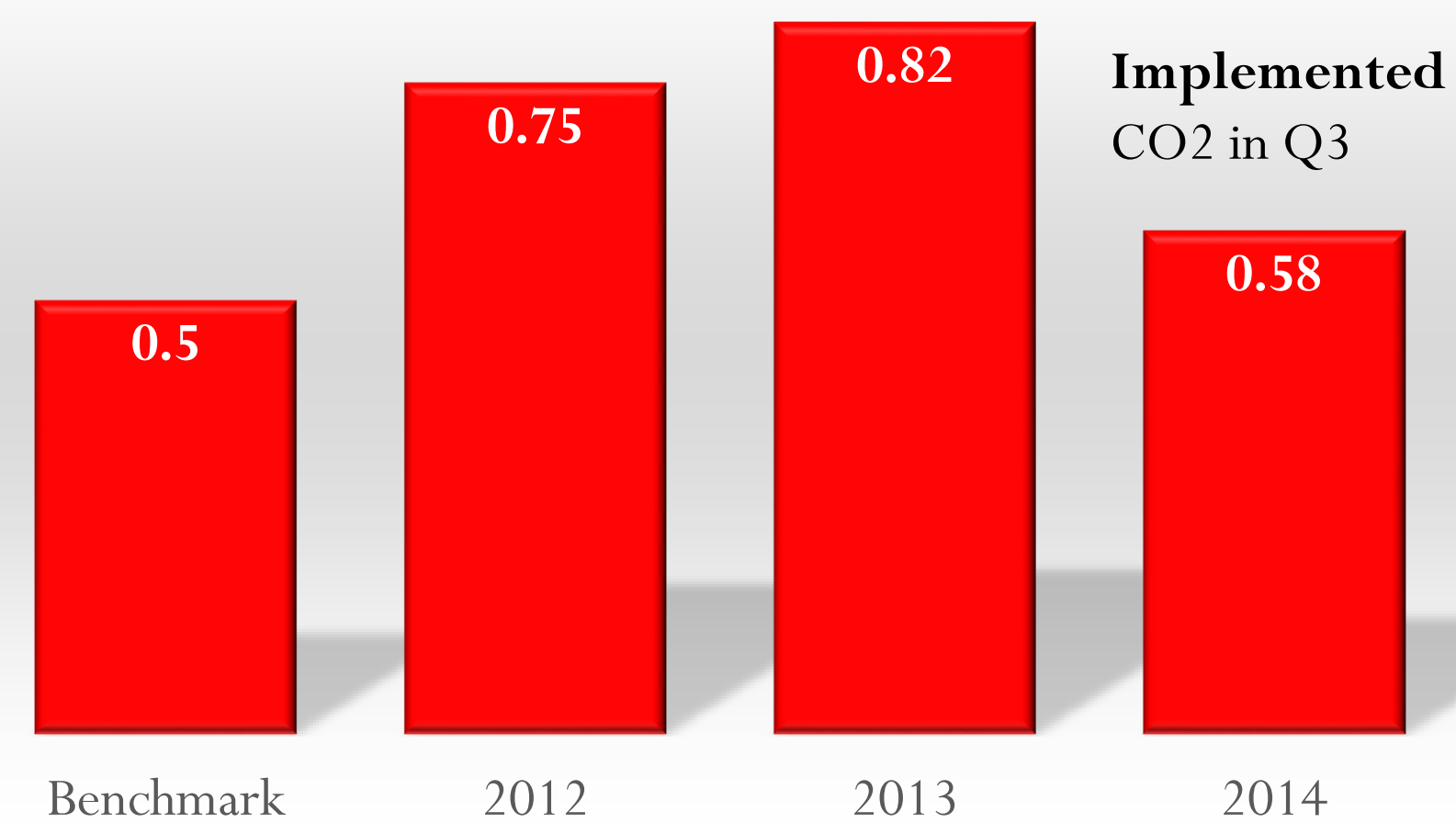
Because CO₂ is absorbed in the intestines 13 times more rapidly than oxygen¹, we believed that the use of CO₂ would reduce discomfort after a procedure, as well as reduce the number of transfers and late complications. Reducing the patient's discomfort after a procedure can also influence their willingness to return for the recommended follow-up.

3. Methods

Utilizing an adverse event log, which includes the patient name, procedure type, DOS, endoscopist, and complication type, along with a full description of the event, allowed us to track and trend all complications related to pain. These rates were calculated per 1,000 patients and were trended from 2012 to 2016.

4. Initial Data : 2012 to 2014

Pain Related Complications per 1,000 Patients



5. Description of Findings

- ❖ Our rates had remained above the benchmark for the last 2 years at 0.75 to 0.82 per 1,000 patients.
- ❖ In the ASGE published guideline entitled "Complications of Colonoscopy," it states that the most commonly reported minor complications of colonoscopy are bloating (25%) and abdominal pain and/or discomfort 5% to 11%² (0.5 to 1.1 per 1,000). We chose to use the lowest range for our benchmarking process.

References

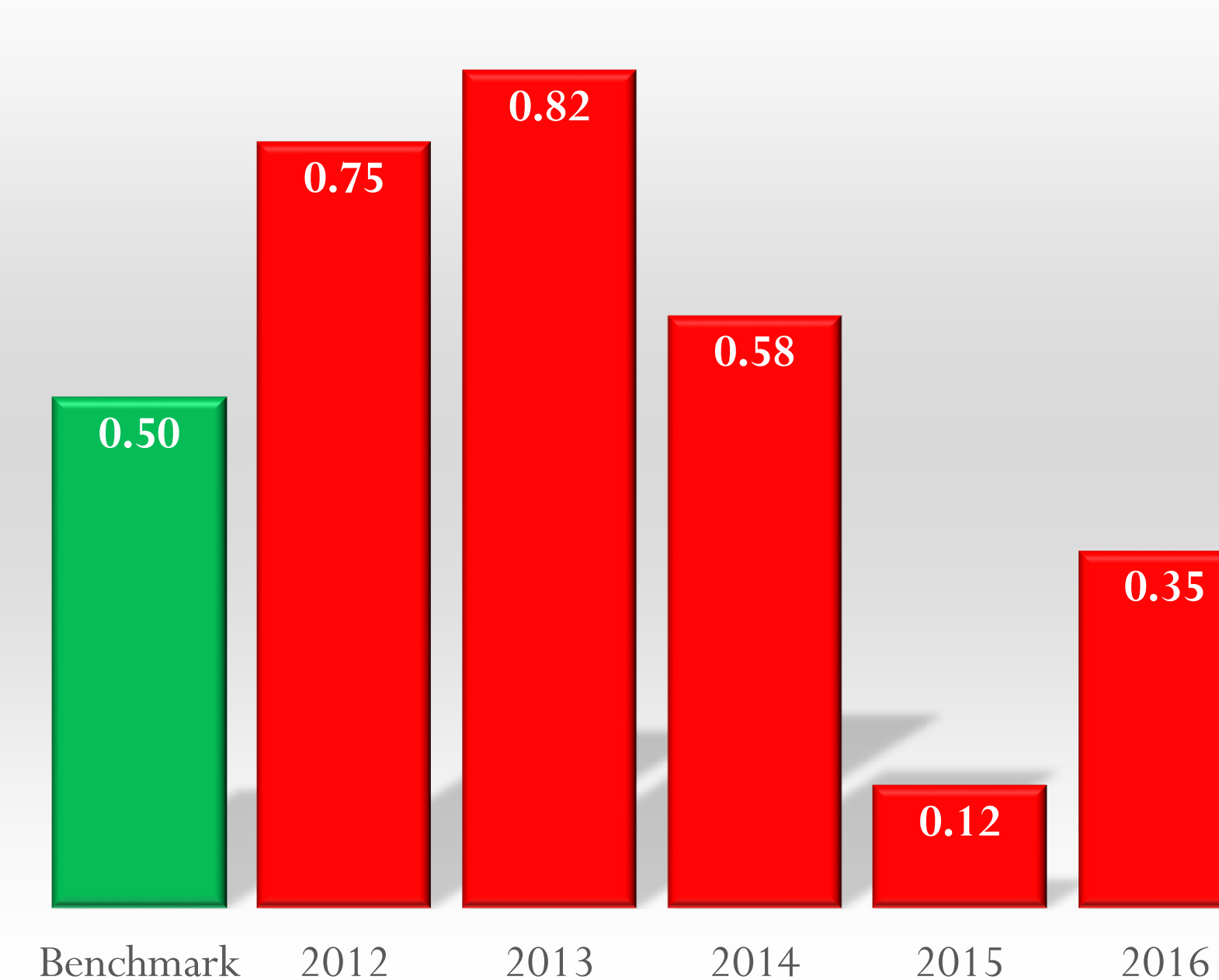
1. Technology Status Evaluation Report: Methods of luminal distention for colonoscopy *Volume 77, No. 4 : 2013 Gastrointestinal Endoscopy.*
2. American Society of Gastrointestinal Endoscopist, Guideline: Complications of Colonoscopy *Volume 74, No. 2 : 2011 Gastrointestinal Endoscopy.*

6. Corrective Actions

- Purchase/lease the CO₂ insufflator units.
- Provide in-service to train procedure room technicians and nurses to set up the CO₂ in the rooms.
- Provide in-service for the physicians.
- Track and trend pain complications and report to the MEC Committee quarterly.

7. Re-Measurement : 2012 to 2016

2016 Pain Related Complications per 1,000 Patients



8. Conclusion

Our pain related complications were reduced from 0.82/1,000 in 2013 to 0.35/1,000 in 2016. Overall, this is a significant reduction after implementation of CO₂ in 2014.

Our adverse events decreased from 4.41 per 1,000 in 2012 to 1.89 per 1,000 in 2016. Our transfer rates also decreased from 1.20 in 2012 to 0.88 in 2016.

Fewer patient comments on patient surveys regarding their pain post-procedure.

The effect of the use of CO₂ on our adverse event rates were discussed at the 4th Quarter MEC meeting. Physicians were very pleased at the significant decrease.

9. Acknowledgments

Our success in this quality improvement project was made possible through the interdisciplinary collaboration of the following dedicated members of our team:

- *Administrator-Jenny Hunter, CASC
- *MEC-Joseph Shelton, MD
- *MEC-Robert Guinan, MD
- *MEC-Susan Moster, DO
- *Medical Director-Kamal Syed, MD
- *Paul Senter, MD
- *Medical Director-Thomas Dewar, MD
- *Gov. Body Pres.-Kumar Gutta, MD

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