



# Practicality and Potential Benefits of Continuous pH Monitoring: Surveying your IVF System

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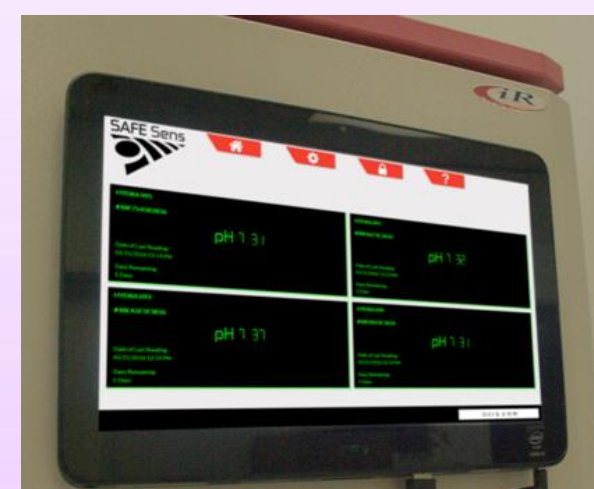


## OBJECTIVE

We conducted a trial investigation of a SAFE Sens<sup>®</sup> continuous pH monitoring device (BCSI, Seattle, WA). The aim of our assessments was to evaluate: 1) the ease of the device set-up and alignment; 2) the practicality of attaining accurate and useful pH measurements; and 3) the clinical relevance of how continuous pH monitoring could improve IVF outcomes.

## STUDY DESIGN

Using a SAFE Sens<sup>®</sup> In Vessel Monitor (IVM) device, we examined the simplicity of the set-up and alignment needed to initiate pH measurements. Once equilibrated, we assessed the relative accuracy of daily pH changes to 0.5% variations in CO<sub>2</sub> set points (5.0%, 5.5% and 6.0%), and how they correlated to our standard, external pH unit (The Oyster; Grainger). Finally, we speculated as to the relative usefulness of the multi-probe SAFE Sens<sup>®</sup> TrakStation system in our embryo culture system.



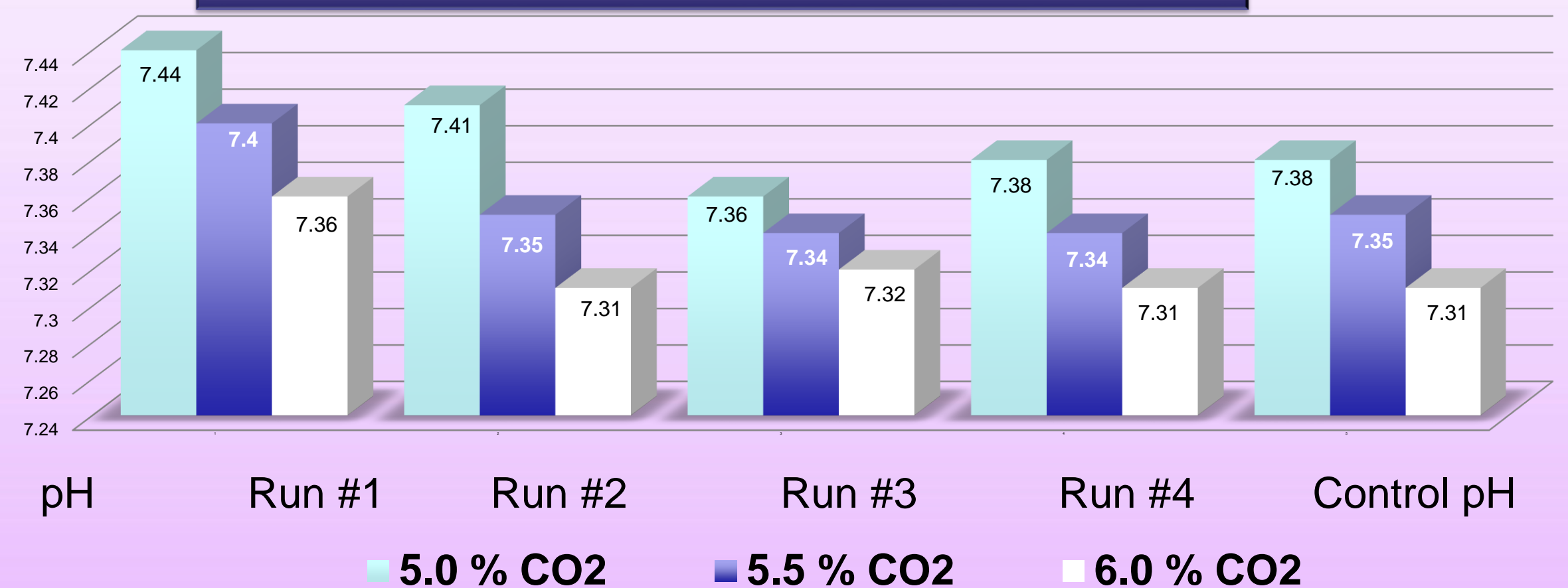
SAFE Sens<sup>®</sup> TrakStation



## METHODS

Conventional pH QC monitoring system : overnight placement of 3 ml of LG culture medium in loosened 10cc snap cap tubes at varying CO<sub>2</sub> levels (5.0%, 5.5% and 6.0%) to create monthly titration curves for new media lots. Tubes were removed in the morning, caps snapped, placed in a warming block and each tube pH determined with an Oyster analyzer. We set up a single SAFE Sens<sup>®</sup> IVM device on the left side, upper shelf of a Panasonic MCO-5 tri-gas incubator, and took twice daily measurements changing the CO<sub>2</sub> set point every other day for 4 weeks assessing 2 different media lots (run#1 and runs#2-4). A mean control value at 5.0% was used to create an “intercept” off-set value calibrating the unit to our standards.

## RESULTS



## CONCLUSION

Sterile, automated fluoroscopic evaluation (SAFE) measurements of real-time, in situ pH was simply achieved using the SAFE Sens<sup>®</sup> IVM device. The probe and fiber optic cable fit seamlessly into an upright incubator and were easily set-up and aligned. After a bit of a learning curve, the unit was dialed in, generating serial measurements which closely paralleled our prior control curve. A SAFE Sens<sup>®</sup> TrakStation can simultaneously non invasively monitor and record up to 8 probes throughout each day. We anticipate that real-time, continuous data will provide us unique insights into understanding our incubation system. Besides facilitating titration curve measurements, we will be able to evaluate and QC incubator recovery times and monitor daily fluctuations in internal gas/pH conditions.