



**INSPIRED TECHNOLOGIES, INC.**

**Case Study – Waco, TX, June 8, 2010**

**Site:** Evaluations were conducted at Providence Healthcare’s Pulmonary Rehabilitation Center under the oversight of Michael Harvey, CRT, RCP. Test subject was a male COPD patient.

**Scope:** To compare the effectiveness of a patient’s prescribed oxygen conserver, Tri Ox and the SmartDose Portable Oxygen device. The patient is to perform like activities under controlled conditions. Performance variables measured include: Breath Rate (BPM), Inhale-to-Exhale Ratio (IE), Oxygen saturation (SaO<sub>2</sub>), Heart Rate (HR), and the delivered O<sub>2</sub> Volume to the patient (ml). These performance variables are to be collected and displayed “real time” via Inspired Technologies’ Clinical Oxygen Dose Recorder (CODR). The duration of exercise and the Patient’s physical state are also to be recorded.

**Conclusion:**

| Conserver Type                      | Tri Ox | SmartDose |
|-------------------------------------|--------|-----------|
| Distance Walked (Yards)             | 150    | 240       |
| Saturation, Before Exercise         | 92     | 97        |
| Saturation Minimum During Exercise  | 81     | 89        |
| Heart Rate, Before Exercise         | 103    | 99        |
| Heart Rate, Maximum During Exercise | 112    | 110       |

While using his own Tri Ox conserver on a setting of “2.5”, the patient walked 150 feet and had to sit due to low 80’s saturation. Recovery was achieved in two minutes to 95% SaO<sub>2</sub>. The Tri-Ox conserver exhibited excess variability in dose volume throughout the study period. The unit was most erratic when the patient’s breath rate exceeded 20 BPM, which was the majority of the exercise period. Dose volume decreased with increased respiration rates. Breath analysis revealed that the conserver dosed the oxygen late on the inhale cycle. This was attributed to the Tri Ox’s high negative trigger pressure (-0.55 cm H<sub>2</sub>O). Trigger pressure is the inhale pressure required for the device to dose the oxygen.

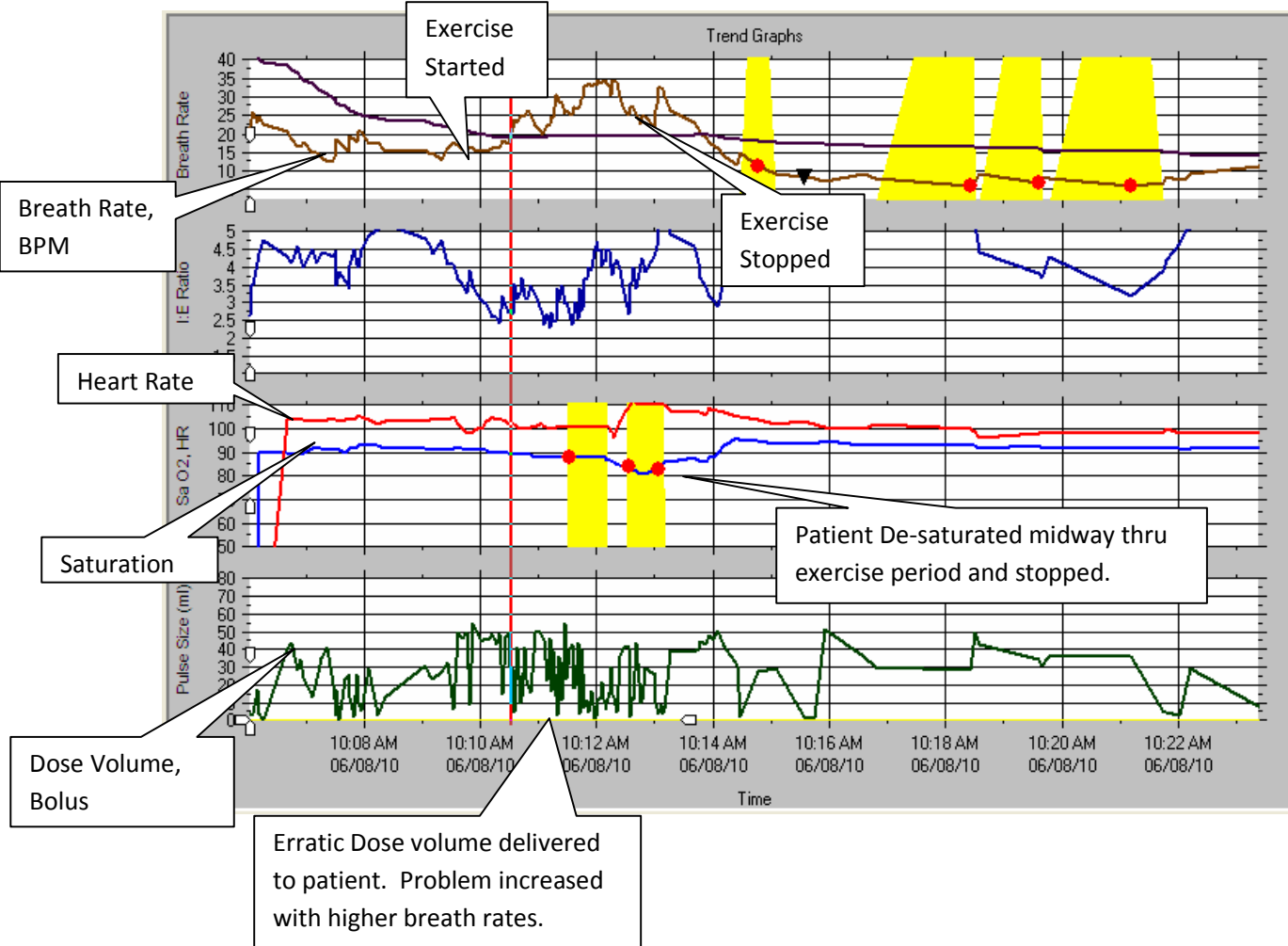
After resting, the patient was switched to the SmartDose oxygen doser on a setting of “3”. Resting SaO<sub>2</sub> was 97%, 5 points higher than Tri Ox. The patient walked 4 laps with saturations hovering around 90%. There was one point on lap one when his SaO<sub>2</sub> dropped to 88 for ten seconds then returned to 90. Afterwards, the patient rested and turned the SmartDose to a setting of “2”. His resting saturation at the “2” setting was 97.

The patient was able to walk 60% further with SmartDose over the Tri Ox conserver and not de-saturate. The test subject would maintain better saturations and would be able to have a more active lifestyle if he was to switch to SmartDose technology.

### Data Analysis:

The resting and exercise data is displayed on figures 1 and 2. Key points have been noted on the chart to simplify the data interpretation.

Figure 1 – Tri Ox, Oxygen conserver, Setting = 2.5

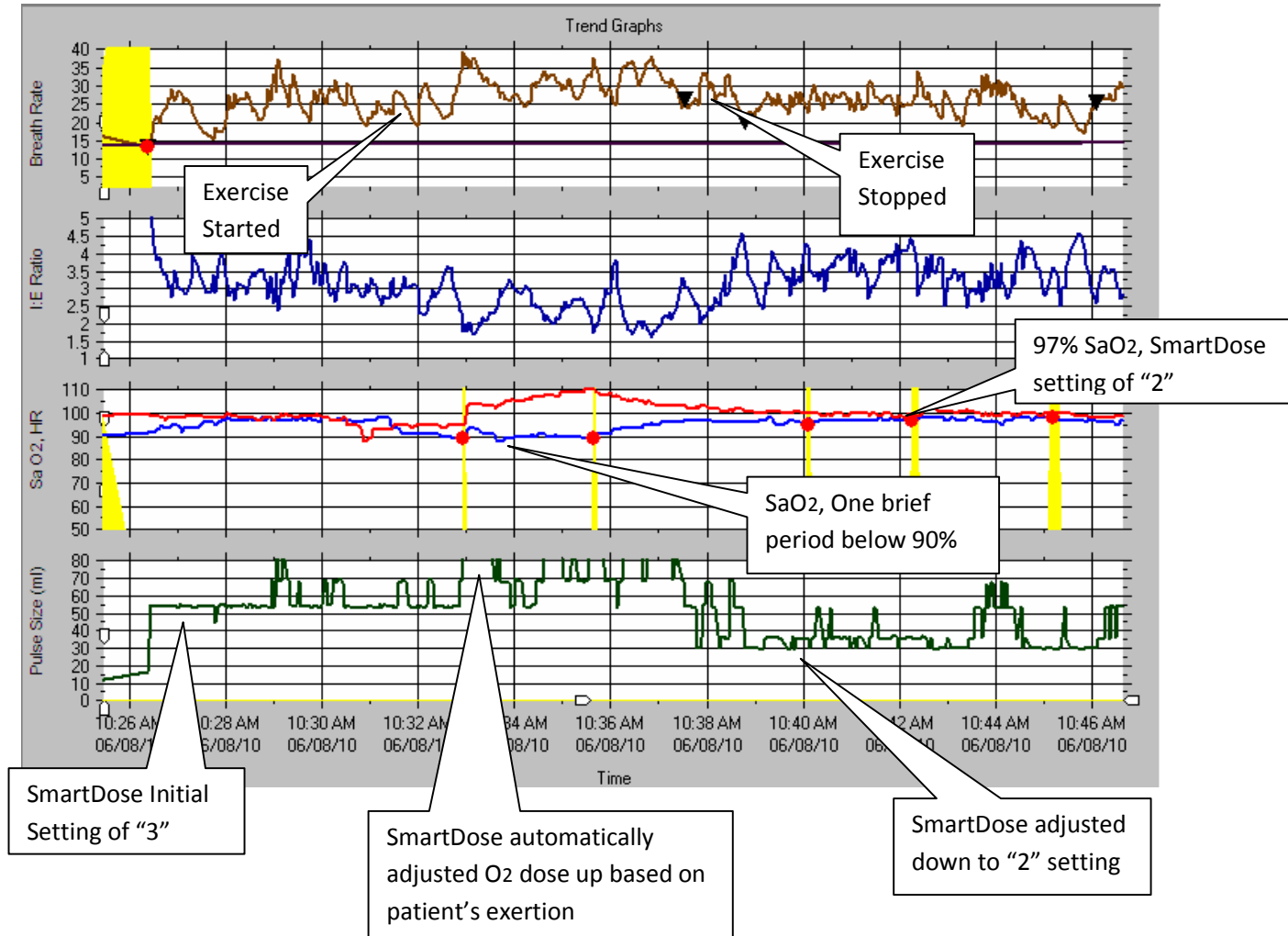


### Comments:

- Erratic dose volumes which worsen as breath rate increases. Bolus tends to decrease with increased respiration rate.
- Several missed pulses resulting from excessive trigger pressure.
- Late delivery of O<sub>2</sub> to the patient from excessive trigger pressure.
- Patient activity limited by insufficient supplemental oxygen; could do more if the oxygen was dosed properly.

**Data Analysis continued:**

Figure 2. SmartDose Oxygen Doser, Setting = 3 & 2



**Comments:**

- No missed doses due to sensitive triggering, (-.1 cm H<sub>2</sub>O).
- All Oxygen pulses were delivered at beginning of inhale.
- Unit automatically adjusted up after detecting increase in exertion, (breath pattern increase).
- Patient's resting saturation levels were the same on a "2" setting as compared to a "3" setting.
- Suggest repeating the exercise with a "2" setting on the SmartDose oxygen doser.
- Patient was not "wiped out" after completing four laps, 240 feet.