Chronic Obstructive Pulmonary Disease (COPD) and Pulse Oximetry (PO) Levels

Salim S. Al-Ani, Ph.D.
Communication Disorders and Sciences Program
Rehabilitation Institute
How does Spock relate to my talk today?
Think About it as We Proceed today
Background on COPD

• COPD is a lung disease that makes it hard to breathe.

• It is caused by damage to the lungs over many years, usually from smoking.

• COPD gets worse over time—it is progressive and degenerative.
COPD is often a mix of two diseases:

**Chronic bronchitis:** airways get inflamed with mucus and narrow—hard to breath

**Emphysema:** the air sacs that move air through your lungs are damaged and are no longer elastic—feel short of breath—less air gets in and out of lungs
• According to the World Health Organization (WHO), COPD is the 6\textsuperscript{th} leading cause of death worldwide ranks behind only heart disease and cancer as the third leading cause of death in the U.S.
COPD and Low Oxygenation Levels

• Those with COPD have trouble breathing and thus have low oxygenation levels
• This is very dangerous so drops in oxygenation levels need to be monitored on a continuous basis
• So how do we do this?
What is Pulse Oximetry (PO)?

- Pulse Oximetry (PO) is an objective and continuous method to measure the level or percent of oxygen in one’s blood
- It is painless, easy, and noninvasive
- Normal levels should ideally be 95% and higher
- Widely used in hospitals, clinics, doctor’s offices and homes
Importance of Measuring Pulse Oximetry (PO) in Individuals with COPD

• Provides the user, or their caregiver, with early warning of impending or existing hypoxemia (low blood oxygen levels)
• Can be used continuously, which is beneficial for monitoring COPD patients who desaturate at night, during sleep
• Provides oxygen saturation trends to monitor oxygen saturation levels to help those with COPD to adjust one’s oxygen flow at home, during exercise, and during social activities
• Can assist your doctor in deciding if one’s COPD is getting worse.
• Pulse oximetry can save those with COPD time, anxiety, and doctor visits, and in general helps one live an active life with COPD
Electrophysiology Research Lab

• Involved in testing people with COPD to determine oxygenation levels while swallowing different amounts, consistencies, and types of liquids and foods
  – While sitting
  – While ambulatory (e.g. walking)
  – Performing low levels of exercise
  – and in so many other ways
sEMG Muscle Activity

PO Levels in Percent

Respiratory Pattern
Science Officer and First Officer Spock, son of Sarek, said: “Live Long and Prosper”
KEEP CALM AND FIGHT COPD