

guidelines for oxygen use, rather than including specific guidelines for each and every protocol. In general, the following recommendations should apply broadly:

- ❖ When "High-Flow" is indicated in the protocol, this should be interpreted to mean 15 l/min by non-rebreather mask. In the case of some patients (e.g. anxious cardiac patients) this can be reduced to 4-6 L/min via cannula, if the patient will not tolerate a mask. Your use of oxygen should be driven by the patient's level of distress or medical condition, not the Pulse Oximeter.
- ❖ When "as indicated" is listed in the protocol, you should gauge your rate of administration by the patient's level of distress. DO NOT withhold high flow oxygen from a COPD patient in severe respiratory distress, simply be prepared to encourage their respirations and support them with appropriate adjuncts (e.g. BVM, intubation, etc.) as needed.

## **PULSE OXIMETRY:**

The pulse oximeter measures the differences in absorption of light waves by oxygen-saturated vs non-saturated hemoglobin to determine what percent of hemoglobin is carrying oxygen. It does not measure the actual amount of oxygen carried by the blood. Tissue oxygen delivery is proportional to the quantity of blood circulated per unit of time as well as the percent of oxygen saturation. When there is insufficient hemoglobin [i.e., anemia] or diminished circulation, blood may be 100% saturated, but still not carry enough total oxygen for tissue needs. **BASE YOUR USE OF OXYGEN ON THE PATIENT'S LEVEL OF DISTRESS.**

Indications: The monitoring of any patient at risk for hypoxemia from any cause including the administration of medications (such as morphine and diazepam), which can cause respiratory depression, and procedures (such as endotracheal intubation and airway suctioning) during which hypoxia may be worsened.

### **Interpretation:**

greater than 95% = Normal

91-94% = Mild Hypoxemia

86-90% = Moderate Hypoxemia (90% O<sub>2</sub> Sat. = PO<sub>2</sub> ~ 60 TORR)

less than 86% = Severe Hypoxemia (Accuracy below 80% is not reliable)

## **Potential Sources of Error:**

- ❖ Movement of the sensor or its cord ("check sensor" alerts or falsely triggered alarm settings)
- ❖ Exposure of sensor to outside source of bright light (optical interference)
- ❖ Use of BP cuff on same extremity (inability to sense)
- ❖ Low circulatory flow states such as cardiac arrest, hypothermia, shock (overestimation of tissue oxygenation: inability to sense)
- ❖ Black, blue or green nail polish (inability to sense)
- ❖ Finger-print dye (inability to sense)
- ❖ Carbon Monoxide toxicity (falsely elevated readings)
- ❖ Severe anemia (inability to sense; overestimation of oxygenation)
- ❖ Hemoglobin disorders such as sickle cell disease, methemoglobinemia, sulfhemoglobinemia

## **Documentation:**

Pulse oximeter printout strips, if available, should be attached to the PCR and any treatments or conditions that may effect oxygen saturation should be noted on the strip. As with ECG tracings, the PCR number and call date should be documented on the oximeter strip.

## **VASCULAR ACCESS:**

Intravenous access is a Standing Order for all adult patients and pediatric patients when an IV is indicated by protocol. Peripheral IV placement is the preferred choice in all patients.

External Jugular (IV) placement is indicated in patients when no other peripheral IV can be established and the patient requires fluid administration or access for IV medications. Generally external jugular IV lines are established in unconscious patients, but may be used in conscious patients with due regard for the patient's sensitivities.

Intraosseous Access (IO) is used in patients with a GCS less than 8 when a peripheral IV cannot be established and the patient requires fluid administration or access for IV medications. These patients should be in extremis and have an urgent need for vascular access such as cardiac arrest, hypovolemic shock, respiratory arrest, near drowning,