Protocol
R-10

SECTION: R-10

PROTOCOL TITLE: Carbon Monoxide Toxicity

REVISED: October 15, 2014

CARBON MONOXIDE TOXICITY

GENERAL COMMENTS:

BLS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Remove patient from potentially toxic environment prior to initiating therapy
- Attempt to ascertain CO content of environment from which patient was removed
    - NIOSH CO IDLH level: 1200 ppm
- Supplemental high flow oxygen via tight fitting non-rebreather mask for even suspected exposures
    - Dry oxygen may not be tolerated in cases of inhalation injury
        - In these instances, nebulized NS may make oxygen therapy more tolerable
- Pulse oximetry (SpO_2) readings will be falsely elevated.
    - Low SpO_2 readings, (i.e. < 90%) however, may be indicative of other concomitant respiratory pathology (e.g. pulmonary edema)

ILS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

ALS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Apply cardiac monitor and multi-function electrode (MFE) pads
- Obtain 12-lead EKG
- Initiate carboxyhemoglobin (HbCO) monitoring as per, “Carbon Monoxide Report,”
    - HbCO monitoring should be initiated in the following cases:
        - Smoke inhalation
        - Burn injuries
        - Medical conditions without clearly identifiable etiologies such as:
            - Altered level of consciousness.
            - Chest pain
            - Headache
            - Nausea and vomiting
            - Dizziness and lightheadedness

Protocol R-10

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- HbCO monitor readings:
  - HbCO > 12% = moderate carbon monoxide toxicity. Patients in this range should be transported to the facility of their choice
  - HbCO > 25 % = severe carbon monoxide toxicity- patients with HbCO levels > 25% should be transported to closest facility
- Major burn injuries (airway burns, full thickness burns > 10% and partial thickness burns > 25%) take precedence over CO toxicity. Patients meeting the aforementioned criteria should be transported to St. Alphonsus Regional Medical Center in Boise

- Complete, "Carbon Monoxide Report," form in its entirety.

    - CO exposure victims with mild toxicity (<12% confirmed by at least 2 readings from separate locations) **and** without signs/symptoms/complaints may be treated and released if they desire
    - For this to occur, the following criteria must be met

  - No alteration in mental status (as verified by a friend or family member)
  - No signs of respiratory distress with SpO_2 > 92%
  - HbCO < 5% in non-smokers and HbCO < 8% in smokers
  - Document HbCO and SpO_2 readings
  - Lungs clear to auscultation
  - No other significant burn or traumatic injury
  - Completion of, **"Refusal of Treatment and/or Transportation,"** form

PHYSICIAN PEARLS

- The CO Oximeter ***may*** return a false-positive reading based on patient and/or environmental conditions. Considerations regarding false-positive readings

    - **Center the nail** directly over the red light preferably by turning the finger upside down (Nail side down) as well as inverting probe so light is flashing facing you. Once the light is flashing facing up simply place the MIDDLE of the nail bed directly over the red light and close sensor. Jamming the finger in too far or not realizing a patient has a **short fingernail bed** utilizing the traditional method of pulse oximetry will cause an elevated reading. Demonstrate this if possible in training
    - Always confirm high readings with 2 additional finger measurements (Use different fingers or hand)
    - Be aware of **ambient light** such as strobes, direct sun, extra bright lights that will affect both pulse and CO oximetry
    - Fingers should be **clean** especially if full of soot from a fire
    - Finger should be **wide enough** to fit the width of sensor. If fingers are too slim (Even with some adults) than there is a chance of a false positive since the light will pass around the finger versus through the middle of the nail. This is the same rule for Pulse Oximetry
    - **Perfusion** index on the left side of the RAD 57 should be at least 2 bars. If very low perfusion exists it may not read CO and provide inaccurate pulse Oximetry as well

Protocol

R-10

CARBON MONOXIDE TOXICITY