Cyanide Exposure

Purpose: This Protocol is intended for EMS personnel at all levels to assess and treat patients exposed to cyanide. The protocol includes the use of inhaled amyl nitrite by trained personnel who are authorized by their local medical control authority. Additionally, the protocol allows trained and authorized paramedics to administer sodium nitrite and sodium thiosulfate when these medications are available.

MFR/EMT/SPECIALIST/PARAMEDIC

Chemical Agents

1. Agents of Concern Include: Cyanide
    A. Hydrogen Cyanide
    B. Potassium / Sodium Cyanide
    C. Cyanogen Chloride
2. Detection: The presence of these agents can be detected through specialized environmental monitoring equipment available to hazardous materials response teams.
3. Modes of Exposure
    A. Inhalation (including smoke inhalation)
    B. Ingestion
    C. Skin absorption unlikely

Assessment

1. Shortness of breath
    A. Possibly accompanied by chest pain
    B. Generally <u>not</u> associated with cyanosis (blue skin membranes)
    C. Pulse oximetry levels usually normal
    D. Usually associated with increased respiratory rate and depth
    E. Potential for rapid respiratory arrest
        a. Confusion, decreased level of consciousness, coma
        b. Seizures
        c. Headache, dizziness, vertigo (sense of things spinning)
        d. Pupils dilate (late)

Personal Protection

1. Be Alert for secondary device in potential terrorist incident
2. Personal Protective Equipment (PPE) as directed by Incident Commander.
3. Assure EMS personnel are operating outside of Hot Zone
4. Avoid contact with vomit if ingestion suspected – off gassing possible
5. Decontamination of victims usually not indicated unless additional unknown chemical(s) suspected

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Patient Management (After Evacuation)

1. Evaluate and maintain the airway, provide oxygenation and support ventilation as needed
2. Note: Patients in respiratory arrest (i.e., not breathing but still having a pulse) have been found to respond to antidote therapy and should receive positive pressure ventilation when operationally feasible.

3. This in contrast to most triage systems that would categorize non-breathing patients as non-survivable.
4. Contact Medical Control
5. Amyl Nitrite Per Amyl Nitrite Procedure*
    A. Requires symptomatic patient(s) *and*
    B. Positive evidence of cyanide exposure through environmental monitoring or credible operational intelligence.

EMT/SPECIALIST/PARAMEDIC

6. Alert receiving hospital ASAP to prepare additional antidotes

SPECIALIST/PARAMEDIC

7. Establish vascular access

PARAMEDIC

8. Cardiac monitoring
9. Sodium Nitrite 10 ml (300 mg) IV over 5 minutes if available and cyanide exposure confirmed and with medical control order* for critical patients
    A. For pediatric patients: 0,15 ml/kg IV over >5 minutes
    B. Monitor BP carefully and slow administration for hypotension
    C. Sodium Thiosulfate: 50 ml (12.5 g) IV over 10 minutes if available and cyanide exposure confirmed and with medical control order* for critical patients
        a. For pediatric patients: 1.65 ml/kg (12.5 g/50 ml solution) IV over 10 minutes
        b. Generally administered after sodium nitrite
        c. If cyanide exposure not confirmed, may receive order for Sodium Thiosulfate with Sodium Nitrite.

* NOTE: A single medical control order in a mass casualty incident may be applied to all symptomatic patients.

These medications are not required to be carried on EMS vehicles and may be available through special response units.