



EMS System for Metropolitan Oklahoma City and Tulsa 2019 Medical Control Board Treatment Protocols



Approved 9/12/18, Effective 1/15/19, replaces all prior versions

12C – CARBON MONOXIDE ADULT & PEDIATRIC

TREATMENT PRIORITIES

1. Personal safety
2. Patient safety
3. Vital signs
4. Oxygenation support
 - O₂ by NC, NRB
 - BVM, Bi/CPAP, ETT if indicated
5. Ventilation support
 - BVM, Bi/CPAP, ETT if indicated
6. OLMC consult for hyperbaric oxygen use direction in serious exposures

EMD

DIRECT TO MOVE AWAY FROM SUSPECTED SOURCE
IF SAFE TO DO SO
OPEN AIRWAY IF NOT ALERT & INEFFECTIVE BREATHING
IF AWAKE, AVOID PHYSICAL EXERTION
OR ENVIRONMENTAL STRESS (TEMP EXTREMES).

EMERGENCY MEDICAL DISPATCHER

EMERGENCY MEDICAL RESPONDER

EMT

EMT-INTERMEDIATE 85

ADVANCED EMT

PARAMEDIC

EMR

EMT

MAINTAIN PERSONAL & PATIENT SAFETY
GENERAL SUPPORTIVE CARE
OBTAIN VITAL SIGNS
O₂ HIGH LITER PER MINUTE FLOW (15 LPM +) VIA NRB, OR BVM AS APPROPRIATE
APPLY CARDIAC MONITOR (if equipped)

MEASURE CARBON MONOXIDE LEVEL – %spCO (if equipped)
IF spCO% NORMAL & NO SYMPTOMS, TREAT PER OTHER APPLICABLE PROTOCOL(S)
IF spCO% ABNORMAL, EVALUATE IF SYMPTOMS INCLUDE ALTERED MENTAL STATUS? PT PREGNANT?
OLMC CONSULT TO DISCUSS HYPERBARIC OXYGEN THERAPY FOR GCS ≤ 13 OR IF PREGNANT

EMT OR HIGHER LICENSE:
MEASURE END-TIDAL CO₂ & MONITOR WAVEFORM CAPNOGRAPHY (if equipped)
ADULT: APPLY Bi/CPAP IF INDICATED (if equipped)

PLACE SUPRAGLOTTIC AIRWAY IF INDICATED & ONLY IF BVM VENTILATIONS INEFFECTIVE

EMT-I85

AEMT

ADULT: INTUBATE IF INDICATED

IV ACCESS
ADULT: IV NS TKO IF SYS BP ≥ 100 mmHg WITHOUT HYPOTENSIVE SYMPTOMS
ADULT: IV NS 250 mL BOLUS IF SYS BP <100 mmHg WITH HYPOTENSIVE SYMPTOMS & NO SIGNS OF PULMONARY EDEMA,
ADULT: REPEAT UP TO 2 LITERS NS IF SYS BP REMAINS < 100 mmHg WITH HYPOTENSIVE SYMPTOMS & NO SIGNS OF PULMONARY EDEMA
PEDIATRIC: IV NS TKO IF SYS BP ≥ (70 + 2x age in years) mmHg
PEDIATRIC: IV NS 20 mL/kg BOLUS IF SYS BP < (70 + 2x age in years) mmHg IF NO SIGNS OF PULMONARY EDEMA

PARAMEDIC

ADULT: MEDICATION ASSISTED INTUBATION IF INDICATED
CONTINUOUS ASSESSMENT & TREATMENT PER APPLICABLE PROTOCOL(S)



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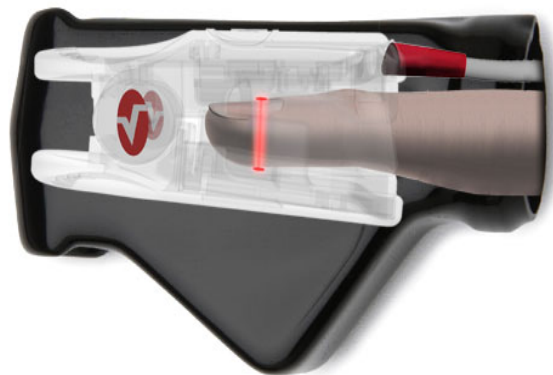
PROTOCOL 12C: Carbon Monoxide, cont.

%SpCO	Expected Signs & Symptoms – * may not correlate w/ individual pt symptoms
0-3%	None - Normal
4-9%	Minor Headache (**Normal for Smokers)
10-19%	Headache, Shortness of Breath
20-29%	Headache, Nausea, Dizziness, Fatigue
30-39%	Severe Headache, Vomiting, Vertigo, AMS
40-49%	AMS, Syncope, Tachycardia
50-59%	Seizures, Shock, Apnea, Coma
60% +	Coma, Death

Technique (Masimo RAD-57™ - see protocol Special Note):

Fingertip Sensor Placement Using Light Shield:

- Using the light shield with correct placement of finger is **VERY IMPORTANT** for accuracy of reading
- Clean and dry finger
- Orient equipment and finger to replicate diagram
- When possible, use ring finger, non-dominant hand (using the dominant hand of smokers has been shown to result in higher level readings that do not correlate with body-wide levels of CO)
- Insert finger until the tip of finger hits the stop block
- Sensor should NOT rotate or move freely on finger
- LED's (red light) should pass through mid-nail, not cuticle
- Connecting cable should be on top (nail side)





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Startup Sequence:

- Place sensor on finger (clean/dry skin)
- Press “POWER” button
- Verify all LED’s light up and a 1 second tone is heard
- Startup mode begins
- All preset configurations are displayed
- Scrolling zeroes 0 – 0 – 0 and flashes dashed lines
- May take up to 25 seconds
- Do not move sensor during startup
- When complete, reading is displayed
- Begin patient monitoring
- Defaults to pulse rate and oxygen saturation reading
- “PI” bar graph displays strength of arterial perfusion

Power Button. Press "ON", Hold for "OFF"

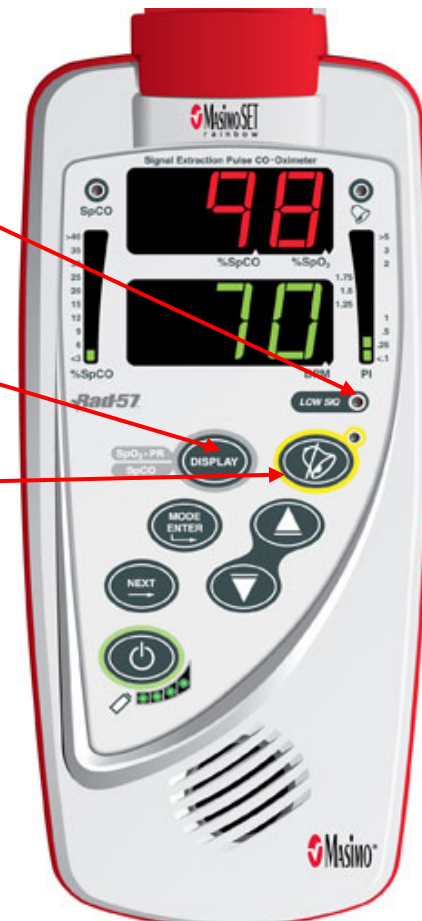
Each green LED window below Power Button that illuminates indicates 25% battery power



Operation / Pulse Oximetry & Pulse Rate:

- Displays after startup sequence described above
- Oxygen Saturation on top in red numbers
- Pulse Rate on bottom in green numbers
- Low Signal I.Q.® (SIQ) LED lit indicates poor pulse ox signal quality - evaluate finger/sensor, use alternate finger
- Press “DISPLAY” to display %spCO

- Press “Bell” to silence alarms (if needed)





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Operation / Carbon Monoxide (Carboxyhemoglobin) Measurement:

- Press “DISPLAY” button as described above to toggle display to show %SpCO reading (to toggle back to pulse oximetry and pulse rate mode, press “DISPLAY” again)
- Carboxyhemoglobin displayed in % on top in numbers
- “CO” displayed on bottom confirming mode
- Real-time SpCO indicator continuously reads SpCO
- Confirm abnormal readings by taking several measurements on different fingers and average the readings



Operation / Troubleshooting:

Error Messages:

- “NO Cbl” = cable not seated properly into device or defective cable
- “SEN OFF” = sensor off finger or misaligned
- “bAd CbL” = defective cable (cable most likely needs replaced)
- “CbL” = incompatible cable (change to appropriate cable)
- “bAd SEN” = defective sensor (sensor most likely needs replaced)
- “SEN” = unrecognized sensor (change to appropriate sensor)
- “Err” = return for service

Will not power on = check battery compartment and replace batteries

Continuously in startup mode (Scrolling zeroes 0 – 0 – 0 and flashes dashed lines) = shield sensor from flashing lights, strobes or high ambient light with Light Shield (best accurate practice is to always use the Light Shield); try another finger

Using Physio-Control LifePak® 15 with Masimo sensing to measure %SpCO:

- Power on, connect pulse oximetry cable to monitor/defibrillator and sensor, place sensor on patient
- To display %SpCO, use the SPEED DIAL to select the pulse oximetry display area
- Select PARAMETER from menu
- Select SpCO. Selected value displays for 10 seconds. If %SpCO is elevated, an advisory event occurs and elevated value flashes and alarm tone sounds