City of Yuma Ambulance Service EMS Protocols
Medical Director Protocol Acceptance

I have reviewed and accept the following protocol documents. I also understand that any changes will be approved by me and that I can limit any EMT's scope of practice as I deem necessary.

Matt Nowland MD

1-24-18
Date

City of Yuma

EMS
Protocols

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(*) Medications that the City of Yuma Ambulance Carries

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Section 100

Abbreviations
Definitions

City of Yuma Ambulance Service EMS Protocols
Section 101 - Abbreviations

Letter "A"

AAA	**=**	Abdominal Aortic Aneurysm.
A/A	**=**	Auto Accident.
AAO	**=**	Awake, Alert, & Oriented.
a	**=**	Before.
ABD	**=**	Abdomen.
ACLS	**=**	Advanced Cardiac Alert Support.
A.D.	**=**	Right Ear.
ALS	**=**	Advanced Life Support.
AMA	**=**	Against Medical Advice.
AMB	**=**	Ambulance. Ambulatory.
AMI	**=**	Acute Myocardial Infarction.
amp	**=**	Ampule.
ant.	**=**	Anterior.
AP	**=**	Apical Pulse.
A.S.	**=**	Left Ear.
ASA	**=**	Aspirin.
ASAP	**=**	Aspirin.
ASHD	**=**	Atherosclerotic Heart Disease.

Letter "B"

BA	**=**	Blood Alcohol.
BBB	**=**	Bundle Branch Block.
BCP	**=**	Birth Control Pills.
BD	=	Birth Date.
Bicarb	**=**	Sodium Bicarbonate.
b.i.d.	**=**	Twice a day.
bi	**=**	Bilateral
BKA	**=**	Below the knee amputation.
BLS	**=**	Basic Life Support.
BM	**=**	Bowel movement.
B/P	**=**	Blood pressure.
bpm	**=**	Beats per minute.
BS	**=**	Breath sounds

Letter "C"

c	**=**	With.
c/c	**=**	Chief Complaint.
CCU	**=**	Coronary care unit. Critical care unit.
CA++	**=**	Calcium.
CAB	**=**	Coronary artery bypass.
CAD	**=**	Coronary artery disease.
CHF	**=**	Congestive heart failure.
CHI	**=**	Closed head injury.
CNS	**=**	Central nervous system.
CO2	**=**	Carbon dioxide.
CO	**=**	Carbon monoxide.
COPD	**=**	Chronic obstructive pulmonary disease.
CODE	**=**	Cardiac arrest.
CPR	**=**	Cardio - pulmonary arrest.
C-section	**=**	Cesarean section.
CSF	**=**	Cerebro-spinal fluid.
CVA	**=**	Cerebro-vascular accident.

Letter "D"

D5LR	**=**	5% Dextrose in Lactated Ringers Solution.
D5W	**=**	5% Dextrose in water.
D50	**=**	50% Dextrose.
DKA	**=**	Diabetic Keto-acidosis.
DM	**=**	Diabetes Mellitus.
DNR	**=**	Do Not Resuscitate.
DO	**=**	Direct Order.
DOA	**=**	Dead on arrival.
DOB	**=**	Date of birth.
DO/P	**=**	Direct Order / Paramedic approval.
DTS	**=**	Delirium tremors.
DUI	**=**	Driving under the influence.
DX	**=**	Diagnosis.

Letter "E"

EBL	**=**	Estimated blood loss.
ECG	**=**	Electrocardiogram.
EKG	**=**	Electrocardiogram.
EENT	**=**	Eyes. Ears. Nose. Throat.
epi	**=**	Epinephrine.
ER	**=**	Emergency room.
est.	**=**	Estimated.
ETA	**=**	Estimated time of arrival.
ETT	=	Endotracheal tube.
ETOH	**=**	Ethyl Alcohol - Ethanol.

Letter "F"

FB	**=**	Foreign body.
FHT	**=**	Fetal heart tones.
FOOSH	**=**	Fell on out stretched hand.
FX	**=**	Fracture

Letter "G"

G	**=**	Gravida.
GI	**=**	Gastrointestinal.
GSW	**=**	Gun shot wound.
gtt(s)	**=**	Drop(s).
GU	**=**	Genitourinary.
GYN	**=**	Gynecology.

Letter "H"

HA	**=**	Headache.
HBP	**=**	High blood pressure.
HEENT	**=**	Head. Eyes. Ears. Nose. Throat.
HHC	**=**	Home health care.
H2O	**=**	Water.
HOH	**=**	Hard of hearing.
HPI	**=**	History of present illness.
HR	**=**	Heart rate.
hr.	**=**	Hour.
HTN	**=**	Hypertension.
HT	**=**	Height.
HX	**=**	History.

Letter "I"

ICU	**=**	Intensive Care Unit.
IDDM	**=**	Insulin Dependent Diabetes Mellitus.
I.M.	**=**	Intramuscular.
IRREG	**=**	Irregular.
I.V.	**=**	Intravenous.
IVP	**=**	Intravenous push.
IVPB	**=**	IV piggy back.

Letter "J"

JVD	**=**	Jugular venous distention.

Letter "K"

K+	**=**	Potassium

Letter "L"

L	=	Left.
L.	=	Liter.
L.A.	=	Left arm.
lac.	=	Laceration.
LAT	=	Lateral.
lg.	=	Large.
LIQ	=	Liquid.
LLQ	=	Left lower quadrant.
LMP	=	Last menstrual period.
LOC	=	Loss of consciousness.
L.O.C.	=	Level of consciousness.
LPM	=	Liters per minute.
LSB	=	Long spine board.
LUH	=	Longmont United Hospital.
LUQ	=	Left upper quadrant.

Letter "M"

m	=	Meter.
MAST	=	Military Anti Shock Trousers.
MCA	=	Motorcycle accident.
mcg	=	Microgram.
MEDS	=	Medications.
mEq	=	Milliequivalent.
MI	=	Myocardial Infarction.
ml.	=	Milliliter.
mm	=	Millimeter.
MMC	=	McKee Medical Center.
MOE	=	Movement of extremities.
mod.	=	Moderate.
MOI	=	Mechanism of injury.
MP	=	Menstrual period.
MS	=	Morphine sulfate.
MVA	=	Motor vehicle accident.

Letter "N"

NA+	**=**	Sodium.
NC	**=**	Nasal cannula.
N/C	**=**	No complaints.
NCMC	**=**	North Colorado Medical Center.
neb.	**=**	Nebulizer.
NEG.	=	Negative.
Neuro.	**=**	Neurologic.
NG	**=**	Nasogastric.
NH	**=**	Nursing home.
NKDA	**=**	No known drug allergies.
NPO	**=**	Nothing by mouth.
N/S	**=**	Normal saline.
NRB	**=**	Non Rebreather Mask.
NSR	**=**	Normal Sinus Rhythm.
NTG	**=**	Nitroglycerin.
N & V	=	Nausea & vomiting.
N/V/D	**=**	Nausea & vomiting & diarrhea.

Letter "O"

O2	**=**	Oxygen.
OAP	**=**	Odor of alcohol present.
OBS	**=**	Organic brain syndrome.
OD	**=**	Overdose.
O.D.	**=**	Right eye.
O.S.	**=**	Left eye.
OT	**=**	Orotracheal.
O.U.	**=**	Both eyes.
OTC	**=**	Over the counter.
oz.	**=**	Ounce.

Letter "P"

p	=	After.
PAC	=	Premature atrial contraction.
PALP	=	Palpation.
PAM	=	Patient assisted medication.
Para	=	Number of successful child births.
PCN	=	Penicillin.
PE	=	Pulmonary embolus.
PERL	=	Pupils equal and reactive to light.
PID	=	Pelvic inflammatory disease.
PMH	=	Past medical history.
P.M.S.C.	=	Pulses. Movement. Sensation. Circulation.
Pn.	=	Pain.
PND	=	Paroxysmal Nocturnal Dyspnea.
POC	=	Position of comfort.
PPA	=	Prior physician approval.
PRN	=	As needed.
PT	=	Physical therapy.
Pt.	=	Patient.
PTA	=	Prior to arrival.
PVH	=	Poudre Valley Hospital.
PVMC	=	Platte Valley Medical Center.

Letter "R"

R	=	Respirations.
(R)	=	Right.
re	=	Regarding.
RLQ	=	Right lower quadrant.
RN	=	Registered nurse.
r/o	=	Rule out.
R.O.M.	=	Range of motion.
RUQ	=	Right upper quadrant.
Rx	=	Treatment. Prescription.

Letter "S"

s	**=**	Without.
s/s	**=**	Signs & symptoms.
SIDS	**=**	Sudden Infant Death Syndrome.
SL	**=**	Sublingual.
SOAP	**=**	Subjective. Objective. Assessment. Plan.
SOB	**=**	Shortness of breath.
SQ	**=**	Subcutaneous.
SSO	**=**	Spanish speaking only.
SVT	**=**	Supraventricular tachycardia.
SW	**=**	Stab wound.
SZ	**=**	Seizure.

Letter "T"

T	**=**	Temperature.
T/A	**=**	Traffic accident.
TB	**=**	Tuberculosis.
TIA	**=**	Transient ischemic attack.
Tib/Fib	**=**	Tibia & Fibula.
t.i.d.	**=**	Three times a day.
TKO	**=**	To keep open.
TX	**=**	Treatment.
tx.	**=**	Transport.

Letter "U"

Unk	**=**	Unknown.
URI	**=**	Upper respiratory infection.
UTI	**=**	Urinary tract infection.

Letter "V"

V.A.	**=**	Veterans Administration.
vag.	**=**	Vaginal.
V-Fib	**=**	Ventricular fibrillation.
VS	**=**	Vital signs.
vs.	**=**	Versus.
VT	**=**	Ventricular tachycardia.

Letter "W"

w/c	**=**	Wheelchair.
WCSO	**=**	Weld County Sheriff's Office.
W/D	**=**	Warm & dry.
w/o	**=**	Without.
W/P/D	**=**	Warm / Pink / Dry.
WPW	**=**	Wolf - Parkinson White Syndrome.
W/S	**=**	Watts per second.
wt.	**=**	Weight.

Letter "X"

x	**=**	Times.
XR	**=**	X - Ray.

Letter "Y"

y/o	**=**	Year old.

City of Yuma Ambulance Service EMS Protocols
Section 102 - Definitions

FR = First Responder:

An individual who has a current First Responder Certificate issued by the Colorado Division of Fire Safety. This person must also have a current BLS Healthcare Provider card (CPR card). The First Responder who has authorization from the Physician advisor to practice as a First Responder may provide basic emergency medical care in accordance with the rules listed within the Weld County Medical Protocols.

EMT - B = Emergency Medical Technician - Basic:

An individual who has a current EMT - Basic certificate issued by the Colorado Department of Public Health & Environment. This person must also have a current BLS Healthcare Provider care (CPR card). The EMT - Basic who has authorization from the Medical Director to practice as an EMT - Basic may provide basic emergency medical care in accordance with the rules listed within the Weld County Medical Protocols.

EMT - IV = Emergency Medical Technician - Basic w/ I.V. Authorization:

An individual who has a current EMT - Basic certificate issued by the Colorado Department of Public Health & Environment and has successfully completed a Colorado Department of Public Health & Environment approved intravenous training course. This person must also have a current BLS healthcare Provider care (CPR card). The EMT - IV, may provide basic emergency medical care and I.V. therapy in accordance with the rules listed within the Weld County Medical Protocols.

AEMT = Emergency Medical Technician - Advanced

An individual who has a current EMT - Advanced certificate issued by the Colorado Department of Public Health & Environment. This person must also have a current BLS Healthcare Provider care (CPR card). The EMT - Advanced who has authorization from the Medical Director to practice as an EMT - Basic may provide basic emergency medical care in accordance with the rules listed within the Weld County Medical Protocols.

EMT - I = Emergency Medical Technician - Intermediate:

An individual who has a current EMT - Intermediate certificate issued by the Colorado Department of Public Health & Environment. This person must also have a current BLS healthcare Provider (CPR card), current Advanced Cardiac Life Support (ACLS card), & a current Pediatric Advanced Life Support provider card (PALS card) or Pediatric Education for Pre-hospital Professionals card (PEPP card). The EMT - Intermediate who has authorization from the Medical Director to practice as an EMT - Intermediate, may provide limited acts of advanced emergency medical care in accordance with the rules listed within the Weld County Medical Protocols.

EMT - P = Emergency Medical Technician - Paramedic:

An individual who has a current EMT - Paramedic certificate issued by the Colorado Department of Public Health & Environment. This person must also have a current BLS Healthcare Provider (CPR card), current Advanced Cardiac Life Support (ACLS card), and a current Pediatric Advanced Life Support (PALS card) or Pediatric Education for Pre-hospital Professionals (PEPP card). The EMT - Paramedic who has authorization from the Medical Director to practice as an EMT - Paramedic, may provide advanced emergency medical care in accordance with the rules listed within the Weld County Medical Protocols.

Medical Director:

A physician who establishes protocols & standing orders for medical acts performed by Colorado Department of Public Health & Environment certified EMT's & First Responders of a pre-hospital EMS service agency & who is specifically identified as being responsible to assure the competency of the performance of those acts by EMT's & First Responders in the physicians continuous quality improvement program. The terms, Medical Director & Physician Advisor are one in the same.

Symbols:

SO = **Standing Order**

Refers to specific medical acts, procedures, and medication administrations that the Emergency Medical Provider in Weld County (Paramedic, Intermediate, Basic with I.V. authorization, Basic, or First Responder) may perform without contacting a base physician.

Make sure you are familiar with the protocols. Some medications may be standing order for one type of emergency, but may require a direct order for another.

DO = **Direct Order**

Refers to specific medical acts, procedures, and medication administrations that the Emergency Medical Provider in Weld County (Paramedic, Intermediate, Basic with I.V. authorization, Basic, or First Responder) may perform, but require a direct order from a base physician prior to administration.

DO / P = **Direct Order / Paramedic Approval**

The DO in this symbol refers to specific medical acts, procedures, and medication administrations that the Emergency Medical Provider in Weld County (Paramedic, Intermediate, Basic with I.V. authorization, Basic, or First Responder) may perform, but require a direct order from base physician prior to administration whenever a Paramedic is not on scene.

The P in this symbol refers to specific medical acts, procedures, and medication administrations that the Emergency Medical Provider in Weld County (Intermediate, Basic with I.V. authorization, Basic, or First Responder) may perform without contacting base physician as long as a Paramedic is on scene and that Paramedic has given his / her approval under his / her Standing Orders and does not require contacting base physician.

PPA = **Prior Physician Approval**

This requires prior physician approval to perform the skills / procedure listed. The Medical Director may choose to allow an agency to train their certified personnel to perform a particular skill (i.e. pulse-oximetry). The agency must develop a quality improvement program for the skill, & maintain the equipment required to perform the skill. A letter of approval from the Medical Director must be kept on file with the agency.

Symbols Continued:

PAM = **Patient Assisted Medication**

This is a medication that is prescribed to the patient by his / her doctor. You may assist the patient with taking the medication to the patient while explaining the side effects the medication may have.

**** = **Extremis Condition Apply****

** An EMT - Basic with I.V. authorization may, under the supervision and authorization of a medical director, administer & monitor medications and classes of medications which exceed those listed in appendices B & D (Rule 500: 3-CCR-713-6) of these rules for an EMT - Basic with I.V. authorization under the direct visual supervision of an EMT Intermediate or Paramedic when the following conditions have been established:

- The patient must be in cardiac arrest or in extremis.
- Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D (Rule 500: 3-CCR-713-6) in accordance with the provisions of Section 3 of these rules.

Section 200

Patient Assessment
Airway Management

SCENE SIZE UP AND ASSESSMENT

UNSAFE

Provide personal safety. Move patient if possible without endangering EMS

SAFE FOR EMS, PATIENTS, AND BYSTANDERS

Evaluate Resources Needed

Initial Assessment

General impression of environment and chief complaint (level of consciousness, airway, breathing, and circulation)

IDENTIFY PRIORITY

STABLE

- Conscious
- Airway secure
- Breathing adequate
- Circulation ensured

Focused History and Physical

Medical

Initiate care as appropriate

Detailed Physical Exam

Transport

Ongoing Assessment

Trauma

Rapidly Stabilize and Transport

Ongoing Assessment

UNSTABLE

- Unconscious → Spinal Motion Restriction if trauma suspected
- Airway compromised → Secure and stabilize
- Breathing absent or abnormal → Begin Ventilation
- Circulation Compromised → Stabilize and resuscitate

Ongoing Assessment and Transport

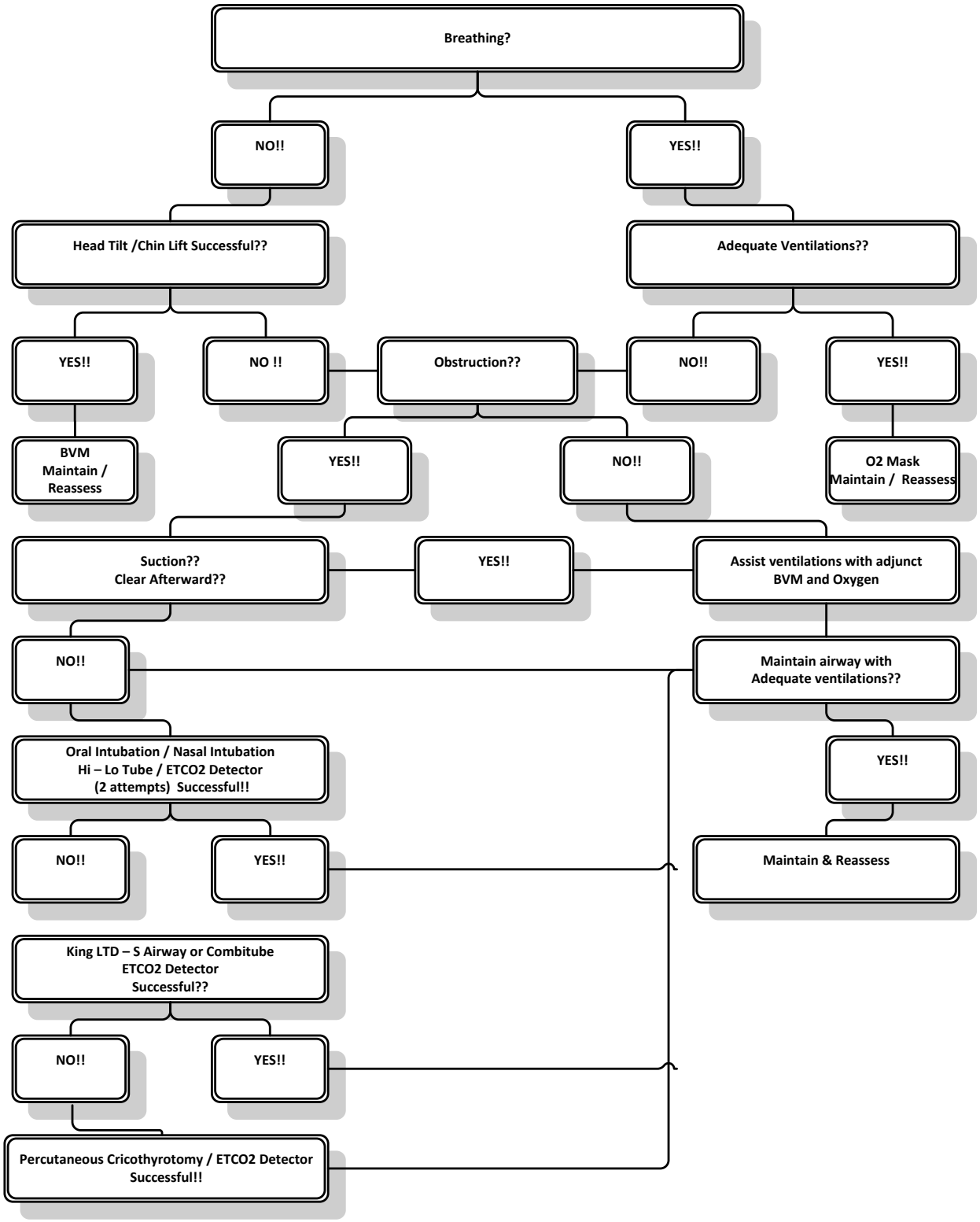
<u>Baseline Vital Signs</u>

- Level of Consciousness
  - o AVPU
  - o GCS
- Blood Pressure
  - o Patients 1 yr or older should have one auscultated BP
- Pulse
- Respiratory Rate and Effort
- Skin Presentation

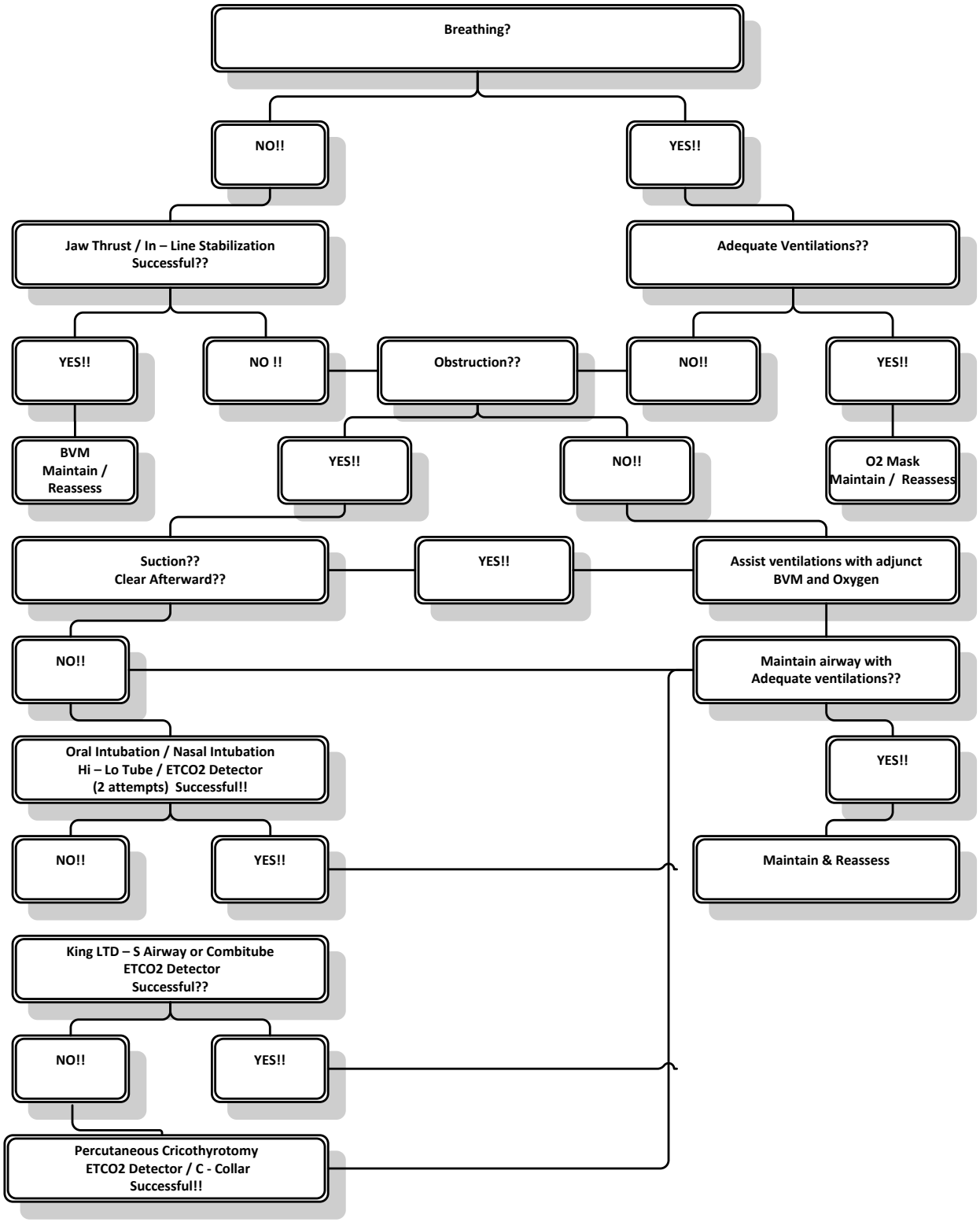
<u>Secondary Vital Signs</u>

- Pulse Oximetry
- Blood Glucose
- Capnography

Airway Management Algorithm: Medical Patients



Airway Management Algorithm: Trauma Patients



Section 300

Medical Protocols

City of Yuma Ambulance Service EMS Protocols
Section 301: Abdominal Pain / Medical

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Pain:**
  - Location. Quality. Radiation. Onset. Changes with position. Referred pain. Point tenderness.
- **Associated Symptoms:**
  - Nausea. Vomiting (blood or coffee ground). Diarrhea or constipation. Syncope. Last menstrual period.
- **Vital Signs:**
  - Orthostatic changes. Comparison of peripheral pulses.
- **History of Current Event:**
  - Medications. Recent surgery. Recent trauma. Possible pregnancy.
- **Past Medical History:**
  - Cardiac history. OB / GYN history. Alcohol abuse. Kidney stones. Travel outside of U.S. Genetic history.

Special Precautions:

- Treat for shock with positioning and fluid administration if indicated.
- Always consider a cardiac etiology.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Monitor orthostatic changes.	SO	SO	SO	SO	SO	SO
• Nothing by mouth. (NPO)	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG acquisition** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO
• **Consider administration of: Zofran (IV, IM, or ODT)** (Reference Protocol: Section 500)	___	SO	SO	SO	SO	SO
• **Consider administration of: Fentanyl / Morphine** (Reference Protocol: Section 500)	___	___	___	___	DO / P	SO

City of Yuma Ambulance Service EMS Protocols
Section 302: Adrenal Insufficiency (Addisonian Crisis)

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **History of Current Events:**
  - Recent nausea / vomiting / diarrhea and abdominal pain.
  - Acute altered mentation (lethargy to comatose)
  - Recent physiologic stressor (illness, trauma, dehydration, myocardial ischemia, etc.)

- **Past Medical History:**
  - Addison's Disease.
  - Congenital Adrenal Hyperplasia (CAH)
  - Chronic systemic corticosteroid use (these medications typically end in lone / sone)

Special Precautions:

- These patients will present with signs of decompensated, hypovolemic shock. (ALOC, pallor, diaphoresis, tachycardia & hypotension). Treat with large crystalloid boluses.
- These patients will also be hypoglycemic. Assess BGL and treat hypoglycemia with IV Dextrose.
- Recognizing key assessment findings, past medical history, and identifying home medications are critical in the management of adrenal insufficiency patients.
- The Addison's / CAH patient is unable to produce critical hormones synthesized in the adrenal cortex (chiefly cortisol). In times of stress, these hormones assist our "fight or flight" response. Without them, the body cannot raise blood glucose. Furthermore, the lack of cortisol exacerbates hypovolemia due to vomiting / diarrhea. Lastly cortisol aids in vascular tone and cardiac contractility, low serum levels contribute to further hypotension.
- Sudden cessation of corticosteroids after long term use will present as adrenal insufficiency / Addisonian crisis, and the treatment is the same. Identifying "lones and sones" in home medications will aid in correctly identifying and treating these potentially critically ill patients.
- The mainstays in treating the Addisonian crisis are fluid, Dextrose, and early IM / IV corticosteroid administration. Early recognition and SoluMedrol can be life saving.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess & maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Establish communication with patient.	SO	SO	SO	SO	SO	SO
• Establish a rapport with the patient.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO

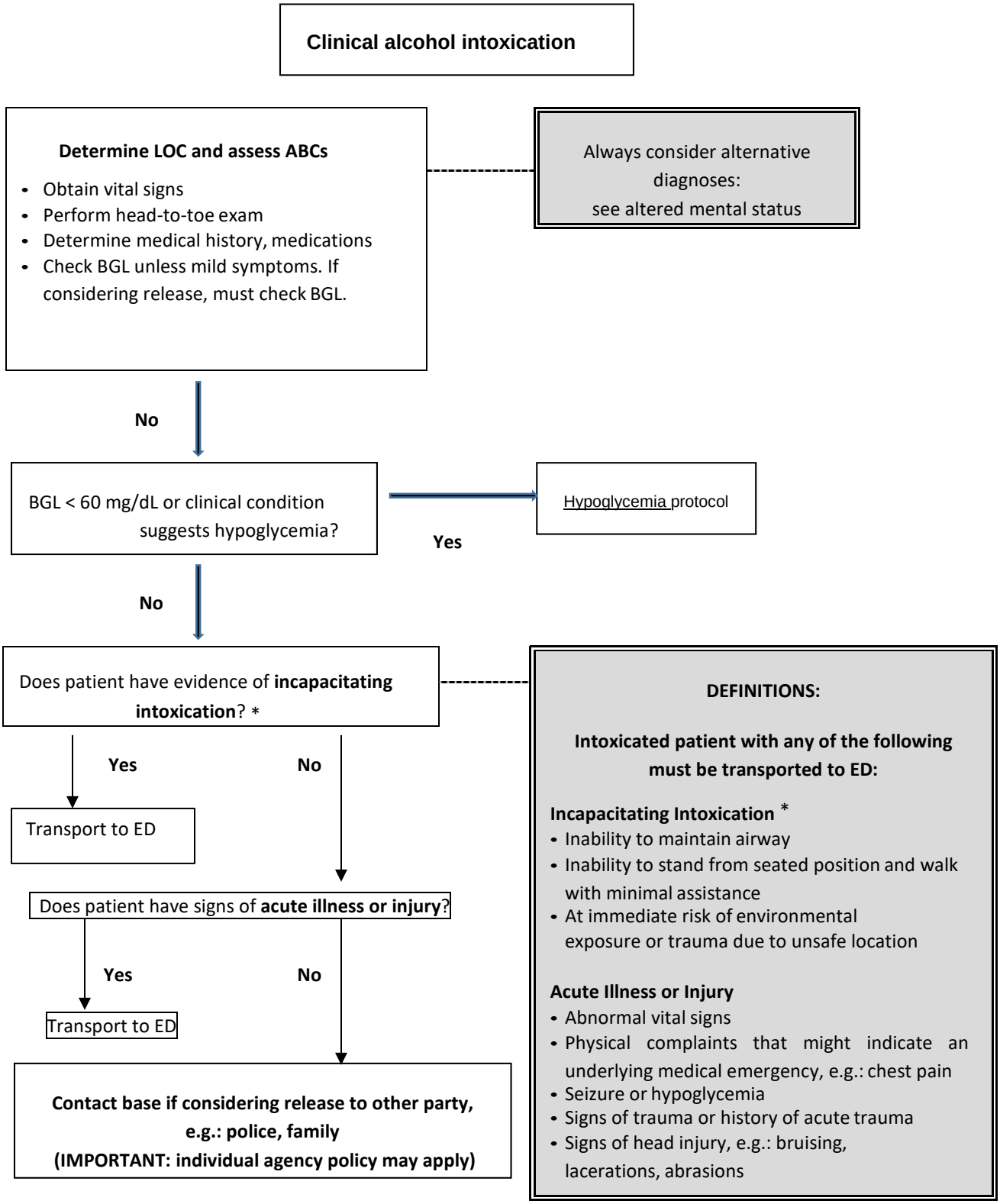
Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Obtain blood glucose level:** (Reference Protocol: Section 700)	PPA	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Dextrose 50%** (If BGS is < 60 mg / dL with associated symptoms)	___	___	SO	SO	SO	SO
• **Consider administration of: 20 ml / kg NS Bolus** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Consider administration of: SoluMedrol** (Reference Protocol: Section 700)	___	___	___	___	DO / P	SO

City of Yuma Ambulance Service EMS Protocols
Section 303: Alcohol Intoxication

Specific Findings:

Patient Assessment:



City of Yuma Ambulance Service EMS Protocols
Section 304: Allergic Reactions - Anaphylaxis

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Type of Exposure:**
  - Injection: Bite or sting. Medication.
  - Ingestion: Food or medication.
  - Absorption: Latex or plants.
  - Inhalation: Chemicals
- **Length of Exposure:**
  - Rapid or slow onset.
- **Past Medical History:**
  - Previous history of allergies / anaphylaxis.
  - Cardiac history.
  - Respiratory history.
  - Diabetes.
- **Vital Signs:**
  - Heart rate: Tachycardia.
  - Blood pressure: Hypotensive.
  - Breath sounds: Wheezes. Stridor. Diminished.
- **Respiratory Distress:**
  - Tachypnea.
  - Tongue swelling.
  - Throat swelling.

Special Precautions:

- Allergies. Local systemic reactions to include hives, uticaria, angioedema and itching of the skin.
- Anaphylaxis. Overabundant release of histamines & other mediators causing in addition to the skin reactions, smooth muscle spasms and capillary leakage and vasodilation. These can present with severe throat and tongue swelling, and mucus development within the bronchioles causing severe respiratory distress.
- Early epinephrine is paramount in the treatment of acute onset of severe anaphylactic reactions.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess & maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Consider intubation early if severe anaphylaxis.** (Use the Hi - Lo Evac endotracheal tube if available)	___	___	___	___	SO	SO

Medications: (Allergic Reactions)	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Epi Auto Injector** (Reference Protocol: Section 500 & 600)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Epinephrine 1 : 1,000** (Reference Protocol: Section 500)	___	SO	SO	SO	SO	SO
• **Consider administration of : Benadryl** (Reference Protocol: Section 500)	___	___	___	DO / P	DO / P	SO
• **Consider administration of : Albuterol** (Reference Protocol: Section 500)	___	SO	SO	SO	SO	SO

Medications: (Anaphylactic Reactions)	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Epinephrine 1 : 10,000** (Reference Protocol: Section 500)	___	___	___	___	DO / P	SO
• **Consider administration of: Solumedrol** (Reference Protocol: Section 500)	___	___	___	___	DO / P	SO

City of Yuma Ambulance Service EMS Protocols
Section 305: Altered Mental Status

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **History of Current Event:**
  - Recent trauma.
  - Recent surgery.
  - Any drug or alcohol abuse.
  - Syncope.
  - Metabolic / electrolyte disorders.
  - Exposure to toxic substances.
  - Carbon monoxide poisonings.
  - Pregnancy.
  - Fever.

- **Past Medical History:**
  - Stroke / CVA.
  - Cardiac History.
  - Diabetes.
  - Seizures.
  - Head injury.

Special Precautions:

- Safety is paramount for you and all rescuers on scene.
- Assure that adequate personnel are available. Ask for assistance if necessary. (Example: Law Enforcement)
- Restraints may be necessary if patient becomes a threat to himself / herself or others.
- Consider hypothermia with all patients with an altered mental status.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Be prepared to suction the airway if necessary.	SO	SO	SO	SO	SO	SO
• Place patient in recovery position if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Nothing by mouth. (NPO)	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	PPA	SO	SO	SO	SO	SO
• **Carbon monoxide monitoring.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	SO	SO	SO	SO
• **Consider administration of: Narcan** (Reference Protocol: Section 500)	___	___	SO	SO	SO	SO
• **Consider administration of: Glucagon** (Reference Protocol: Section 500)	___	___	___	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 306: Autonomic Hyper-reflexia

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **History of Current Event:**
  - Onset.
  - Headache.
  - Sweating above the level of the injury.
  - Nasal obstruction.
  - Recent catheter or bowel problems.

- **Past Medical History: (may include)**
  - Spinal cord injury.
  - Level of injury.
  - Previous similar events.

- **Causes:**
  - May be bladder, bowel, or rectal obstruction.
  - Fractures, burns, or other associated trauma.
  - Pregnancy and other medical complications.

Special Precautions:

- Untreated autonomic hyper-reflexia can cause a brain attack. (Intra-cranial hemorrhage).
- Blood pressure greater than 140 / 90 and tachycardia in high cervical injuries.
- Blood pressure greater than 140 / 90 and bradycardia in low cervical injuries from T4 to T6.
- If vital signs vary from those listed above, consider both medical and trauma underlying causes.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Elevate head if possible.	SO	SO	SO	SO	SO	SO
• Check bladder drainage.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Pt. Assist Nitroglycerin** (Reference Protocol: Section 600)	___	DO / P	DO / P	SO	SO	SO
• **Consider administration of: Nitroglycerin** (Reference Protocol: Section 500)	___	___	___	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 307: Behavioral Emergencies

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.
- Patients presenting with psychiatric decompensation often have an organic etiology. Be suspicious for hypoglycemia, hypoxia, head injury, intoxication or toxic ingestion.
- Providers transporting a patient over his or her objections should reassure the patient. The provider should strongly consider whether the patient may need restraint and/or sedation for safety. Beware of weapons. These patients can become combative.

Specific Findings:

Patient Assessment:

History of Current Event:

- Evaluate general appearance. (Well groomed, disheveled, debilitated, bizarrely dressed)
- Thoughts of suicide. Bizarre or abrupt behavior changes.
- Significant past medical history.
- Is patient a threat to self or others?
- Determine ability to relate to reality.
- Hallucinations. Delusional. Profound psychosis. Animalistic behavior. Disrobing or naked patient.
- Is there a medical problem? (Medic alert tag, breath odors suggesting intoxication.)
- Drug or alcohol abuse. (Specifically stimulants like cocaine or meth when considering excited delirium)
- Signs of trauma.
- Inquire about recent crisis, toxic exposure, emotional trauma

Signs and Symptoms of Excited Delirium

- Aggressive behavior with altered sensorium.
- May manifest as “manic” behavior
- Hyperthermia
- Exhibition of “superhuman” strength
- Diaphoresis
- Lack of willingness to yield to overwhelming force
- Paranoia and hallucinations
- Disorientation
- Tachycardia

Special Precautions:

- Safety is paramount for you and all rescuers on scene.
- Assure that adequate personnel are available. Ask for assistance if necessary. (Example: Law Enforcement)
- Patients being transported on a 72 hour mental health hold that are being transported to a destination other than YDH, contact medical control for approval.
- Documentation of a 72 hour mental health hold authorization on the patient care report is required.
- Consider a medical cause. (Hypoglycemia, Hypoxia, CVA, Alcohol abuse, Drug ingestion)
- Consider a trauma cause. (Increased intracranial pressure)
- Consider social services or law enforcement referral in cases of abuse or neglect.
- Consider law enforcement assistance or law enforcement transport of patient for patient and ambulance crew safety.
- Allow patient personal space if treatment is not necessarily indicated.
- Restraints may be necessary if patient becomes a threat to himself / herself or others.
- If restraints are necessary, two attendants are required. (Law enforcement, Fire department, Partner) Patient will be restrained in the position described in the restraint protocol.
- Elevated levels of Dopamine for Excited Delirium causes hyperthermia and explains the "disrobing" of those patients.
- Metabolic acidosis and rhabdomyolysis occur causing renal failure.

Excited Delirium

- For excited delirium focus on early recognition, early sedation, and management of hyperthermia & metabolic acidosis.
- Attempt to control and restrain patient.
- O2 if it can be tolerated. Obtain vital signs including temperature and blood glucose. Suction patient if needed.
- If the patient has been sedated and airway control is needed, consider BVM ventilation.
- If patient is medicated, apply cardiac monitor. Monitor SpO2 and EtCO2. Observe for hypoventilation and provide care as needed per protocols.

Assessment:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Assess and maintain a patent airway & be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Establish communication & rapport with patient.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs. Check blood glucose level.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Patient is agitated and a danger to self or others
-Attempt to reasonably address patient concerns
-Assemble personnel

Assume the patient has a medical cause of agitation and treat reversible causes.

Does the patient have signs of Excited Delirium Syndrome?

Patient does not respond to verbal de-escalation techniques

Restraint Policy Obtain IV access as soon as may be safely accomplished.

Still significantly agitated?

Sedate. Consider cause of agitation.
Options: Benzodiazepine or butyrophenone.

Still significantly agitated?

Repeat sedation dose. If still significantly agitated 5 minutes after 2nd dose sedative.
Contact medical control.

General Guideline:
Emphasis should be placed on scene safety, appropriate use of restraints and aggressive treatment of the patient's agitation.

Excited Delirium
These patients are truly out of control and have a life-threatening medical emergency; they will have some or all of the following symptoms:

Paranoia, disorientation, hyperaggression, hallucination, tachycardia, increased strength, hyperthermia

Restraints
No transport in hobble or prone position. Do not inhibit patient breathing, ventilations

For adult patients with profound agitation that poses a risk to the patient and providers:
Give: Ketamine Alternative: Midazolam

Consider cause of agitation:
Both benzodiazepines and butyrophenones are acceptable options for agitated patients. In certain clinical scenarios individual medications may be preferred.

EtOH (butyrophenone)
Sympathomimetic (benzo)
Psych (butyrophenone)
Head Injury (butyrophenone)

Patient Restraint Policy

Reassess ABCs post sedation
High flow O2
Monitor for laryngospasm
If needed, provide suction and BVM for respiratory support
Start 2 large bore IVs as soon as may be safely accomplished
Administer 2 liters NS bolus

Full cardiac, SpO2, EtCO2 monitoring and rapid transport
Start external cooling measures

Procedures:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• **Consider verbal & physical restraints.** (Reference Protocol: Section 800)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	**PPA**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **End Tidal CO^2 Monitoring / Capnography** (Reference Protocol: Section 700)	___	**PPA**	**PPA**	**SO**	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**

Medications:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Narcan** (Reference Protocol: Section 500)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Inapsine** (Reference Protocol: Section 500)	___	___	___	___	**DO / P**	**SO**
• **Consider administration of: Versed** (Known ETOH or drug OD with severe agitation)	___	___	___	___	**DO / P**	**SO**
• **Consider administration of: Ketamine** (Reference Protocol: Section 500)*Waiver approval	___	___	___	___	___	**SO**
• **Consider administration of: Ativan** (Known ETOH or drug OD with severe agitation)	___	___	___	___	**DO / P**	**SO**
• **Consider administration of: Sodium Bicarbonate** (Infusion with Normal Saline for Excited Delirium)	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 308: Cardiac Arrest - Medical

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Environmental hazards or clues. (Examples: Drug overdose. Toxic exposure)
- Duration of "down time".
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **History of Current Event:**
  - Pulseless.
  - Apneic.
  - Patient history and medications.

Special Precautions:

- Honor "Do Not Resuscitate" (DNR) orders, Colorado Advanced Directives orders, and the Colorado MOST form.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Ventilate with 100% oxygen. (BVM)** (American Heart Association Guidelines)	SO	SO	SO	SO	SO	SO
• **Initiate Cardio Pulmonary Resuscitation (CPR)** (American Heart Association Guidelines)	SO	SO	SO	SO	SO	SO
• **Apply Automated External Defibrillator (AED)** (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO
• **Apply Automated Compression Device (Auto - Pulse)** (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **King Tube Placement:** (Reference Protocol: Section 700)	___	PPA	PPA	PPA	SO	SO
• **Oral endotracheal intubation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **End Tidal CO2 Capnography** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG acquisition.** (Reference Protocol: Section 700 with R.O.S.C.)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG interpretation.** (Reference Protocol: Section 700 with R.O.S.C.)	___	___	___	___	SO	SO
• **Consider Nasal Gastric tube placement.** (Reference Protocol: Section 700)	___	___	___	___	___	SO
• **Consider Debriefing after patient handoff** (A debriefing with EMS personnel involved has proven to improve future treatment & patient outcomes)	SO	SO	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Medication administration. (Arrest rhythms)** (Reference Protocol: Section 500 & ACLS guidelines)	___	___	**	**	DO / P	SO

• **Medication administration. (Direct supervision)** (Reference Protocol: Section 500 & ACLS guidelines)	___	___	**	**	SO	SO

Special Notes:

- In the initial management of the medical cardiac arrest patient, the King Tube airway should be the first airway management device considered to replace an oral pharyngeal airway. King Tube airway should be left in place unless the patient develops a gag reflex or ventilation and/or capnography readings indicate the King Tube airway is not providing adequate airway protection or ventilation.
- If an ALS provider is on scene and an oral endotracheal intubation can be performed without interrupting chest compressions, the oral endotracheal intubation can be the first airway management device to replace the oral pharyngeal airway.
- Consider field pronouncement and make base physician contact for approval if patient EKG rhythm is Asystole and remains Asystole after 2 rounds of ACLS medications have been administered, high quality CPR has been in place, and appropriate airway management has been maintained during that time frame.
- Consider field pronouncement and make base physician contact for approval if patient EKG rhythm is PEA and remains PEA after 20 minutes of high quality CPR, appropriate airway management has been maintained, and a capnography reading that remains less than 10 mm/Hg.

** An EMT Basic with I.V. authorization and an Advanced EMT may, under the supervision and authorization of a medical director, administer and monitor medications and classes of medications which exceed those listed in Appendices B and D of these rules for an EMT Basic with I.V. authorization and an Advanced EMT under the direct visual supervision of an EMT Intermediate or Paramedic when the following conditions have been established.

  - The patient must be in cardiac arrest or in extremis.
  - Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D in accordance with the provisions of these rules.

City of Yuma Ambulance Service EMS Protocols
Section 309: Chest Pain - Medical

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- American Heart Association Acute Coronary Syndrome Algorithm.
- Cardiac Alert Protocol.

With the above specific findings, the following should occur:

- Early notification of the Emergency Department.
- Emergency transport to the appropriate closest facility.
- Helicopter utilization for ground transports that may exceed 15 minutes.
- Acquisition of a 12 lead EKG.

Special Precautions:

- **Consider possible causes:**
  - Chronic obstructive pulmonary disease.
  - Pulmonary edema.
  - Pleurisy.
  - Pulmonary embolus.
  - Pericarditis.

In cases of suspected acute myocardial infarction, nasal endotracheal intubation is contra-indicated

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Place patient in position of comfort and assure them.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Check breath sounds regularly.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Establish 2nd vascular access if AMI is suspected.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 12 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 12 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Consider activation of: Cardiac Alert** (If AMI is suspected: Reference Section 800)	___	___	___	___	___	**SO**

Note: Consider the acquisition and interpretation of subsequent 12 lead EKG's after each medication administration.

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Aspirin** (Reference Protocol: Section 500)	____	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Pt. Assisted Nitroglycerin** (Reference Protocol: Section 500)	____	**DO / P**	**DO / P**	**SO**	**SO**	**SO**
• **Consider administration of: Nitroglycerin (SL)** (Reference Protocol: Section 500)	____	____	____	**SO**	**SO**	**SO**
• **Consider administration of: Morphine** (Reference Protocol: Section 500)	____	____	____	____	**DO / P**	**SO**
• **Consider administration of : Fentanyl** (Reference Protocol: Section 500)	____	____	____	____	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 310: Childbirth - Emergencies

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- Determine gestational age.
- Presence of hypertension, edema, and / or protein in urine after the 20th week of pregnancy.
- Previous cesarean sections.
- Sudden abdominal pain described as "steady or tearing". Active labor or early signs of shock.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Patient on her left side if delivery is not imminent.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor fetal heart tones.	___	**PPA**	**PPA**	**SO**	**SO**	**SO**
• Palpate fundus for frequency of contractions.	___	___	___	___	___	**SO**

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

- Consider administration of medications for **Obstetrical Emergencies.**
- See tables on the following pages for specific obstetrical emergencies and medications to administer.

Emergency: Premature Labor

Signs & Symptoms:

- Contractions prior to 36 weeks gestation.

Treatment:

- Lay on left side unless delivery is imminent.

Emergency: Pre - Ecclampsia

Signs & Symptoms:

- Blood pressure greater than 140 / 90.

Treatment:

- Lay on left side unless delivery is imminent.
- Elevate patient's head 6 to 12 inches.

Medications:

- Consider administration of **Magnesium Sulfate** with base physician contact. (Per protocol)

Emergency: Ecclampsia

Signs & Symptoms:

- Seizures.
- Altered mental status.

Treatment:

- Lay on left side unless delivery is imminent.
- Elevate patient's head 6 to 12 inches.

Medications:

- Consider administration of **Magnesium Sulfate** with base physician contact. (Per protocol)
- Consider administration of **Ativan.** (Per protocol)

Emergency: Uterine Rupture

Signs & Symptoms:

- Sudden diffuse abdominal pain.
- Early signs of shock.
- Vaginal bleeding.

Treatment:

- Treat for hemorrhagic shock.

Medications:

- Establish 2 large bore I.V.'s.
- Consider a fluid bolus.

Emergency: Prolapsed Cord

Signs & Symptoms:

- Umbilical cord presentation.

Treatment:

- Place in knee-chest position.
- Palpate cord for pulsations.
- If absent, push presenting part of infant off of the cord.
- Keep cord moist with normal saline.

Medications:

- None.

Emergency: Nuchal Cord

Signs & Symptoms:

- Cord will be visibly wrapped around the infant's neck.

Treatment:

- Slip the cord off of the infant's neck or:
- Clamp cord in two places

Medications:

- None

Emergency: Breech Presentation

Signs & Symptoms:

- Arms, legs, or buttocks of infant will be visible.

Treatment:

- Place mother in knee - chest position.
- Urge her not to bear down.

Medications:

- None.

Emergency: Placenta Previa

Signs & Symptoms:

- Abdominal pain and / or cramping.
- Vaginal bleeding may or may not be present.

Treatment:

- Treat for hemorrhagic shock.
- Raise mother's right side with a pillow or blanket.

Medications:

- Establish 2 large bore I.V.'s.
- Consider a fluid bolus.

Emergency: Placenta Abruptio

Signs & Symptoms:

- Abdominal pain.
- Vaginal bleeding may or may not be present.
- May be a result of trauma

Treatment:

- Treat for hemorrhagic shock.
- Raise mother's right side with a pillow or blanket.

Medications:

- Establish 2 large bore I.V.'s.
- Consider a fluid bolus.

City of Yuma Ambulance Service EMS Protocols
Section 311: Childbirth - Uncomplicated

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **History of Pregnancy:**
  - Due date.
  - Vaginal bleeding.
  - Previous pregnancies.
  - Complications / Prenatal care.
- **Past Medical History:**
  - Miscarriages / Abortions.
  - Live births.
- **Presentation:**
  - Crowning.
  - Vaginal discharge.
  - Blood.
  - Fluid. (color & odor)
- **Abnormal Presentation:**
  - Foot.
  - Arm.
  - Umbilical cord. (See Obstetrical Emergencies)

Special Precautions:

- Ask the patient if she feels the urge to push or has a feeling of a bowel movement.
- Do not pull on the cord or attempt to expedite the birth.
- It is always safe to assume that any medical or trauma condition will be complicated by pregnancy.
- Spinal immobilization for pregnant patients should be supine with the board tilted to the left and secured for transport.
- Be sure to monitor maternal blood pressure and fetal heart tones during transport.
- When establishing I.V. access, the forearm or hand is the preferred sites.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Place patient in position of comfort and assure them.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Monitor fetal heart tones.	___	PPA	PPA	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO

Imminent Delivery:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Support the head as it emerges. Gentle pressure to prevent an explosive delivery	SO	SO	SO	SO	SO	SO
• Suction the mouth and then the nose with a bulb syringe. Do not use mechanical suction.	SO	SO	SO	SO	SO	SO
• When the infant is delivered, clamp the cord in 2 places 8 to 10 inches from the infant.	SO	SO	SO	SO	SO	SO
• Cut the cord in between the clamps	SO	SO	SO	SO	SO	SO

Post Delivery:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• If the infant does not begin breathing spontaneously, begin resuscitation immediately.	SO	SO	SO	SO	SO	SO
• Placenta normally delivers within 30 minutes. Do not delay transport or force delivery.	SO	SO	SO	SO	SO	SO
• APGAR score at 1 and 5 minutes after delivery.	___	SO	SO	SO	SO	SO
• If excessive maternal bleeding occurs, massage the uterus and treat for shock.	___	SO	SO	SO	SO	SO

APGAR Score:

Score	0	1	2
Color	Cyanotic / Pale	Cyanotic Extremities	Pink
Heart Rate	Absent	Below 100 bpm	Above 100 bpm
Respiratory Rate	Absent	Weak Cry	Strong Cry
Muscle Tone	Limp	Some Flexion	Active Motion
Grimace	No Response	Grimace	Cry

City of Yuma Ambulance Service EMS Protocols
Section 312: CVA - Cerebro Vascular Accident

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- Use the Pre - hospital Stroke Screen for all suspected stroke patients. (Follow the protocol)
- Establish onset of symptoms.
- Assess the patient:
- Early notification of the Emergency Department to be done by ALS transport crew for a "Potential Code Stroke"

Special Precautions:

- Nasal intubation is contraindicated unless base contact with medical control.
- Dextrose 50% is only indicated in patients with a documented blood glucose level less than 60 mg / dL.
- In patients with suspected head injury, refer to the "Head Injury" protocol.
- Patients with an altered mental status should be assessed to determine proper treatment.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Elevate head 6 to 12 inches. Recovery position	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	PPA	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Consider: Oral endotracheal intubation.** (Use the Hi - Lo Evac endotracheal tube if available)	___	___	___	___	SO	SO
• **Consider activation of: Potential Code Stroke:** (Reference criteria on Page 3)	___	___	___	___	___	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Orange Juice or Glucose** (If BGL is < 60 mg /dL but awake and able to swallow)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	SO	SO	SO	SO

Stroke Alert Checklist

Patient Name: _____ **Date of Birth:** _____

Information / History From: _____ **Phone:** _____

Bring contact person to the hospital with patient if possible

Facial Droop: (Have Patient Smile) — Abnormal

Normal: Both sides of face move equally

Abnormal: One side of the face does not move as well ☐

Arm Drift: (Have Patient Hold Arms Out For 10 Seconds)

Normal: Both arms move equally or not at all

Abnormal: One arm drifts compared to the other or not at all ☐

Speech: (Have Patient Speak a Simple Sentence)

Normal: Patient uses correct words with no slurring

Abnormal: Slurred or inappropriate words or mute ☐

Time: (Last Known Time Patient Was at Baseline or Deficit Free)

Less Than 7 Hours

Time: _____ Date: _____ ☐

To activate a "Stroke Alert" from the field, at least one of the above neurological criteria AND time less than 7 hours must be checked!!

Patient Information Only:	Yes	No
1. Blood Glucose is between 50 mg / dL and 400 mg / dL: _____ mg / dL	☐	☐
2. Hypertension: (Systolic is > 185. Diastolic is > 110): _____ / _____	☐	☐
3. Seizure at onset of stroke:	☐	☐
4. Current use of anticoagulation (Coumadin , Pradaxa, Xarelto)	☐	☐
5. Neurosurgery (Head / Spine) or serious head trauma or stroke within last 3 months.	☐	☐
6. Major Surgery within the last 12 weeks.	☐	☐

City of Yuma Ambulance Service EMS Protocols
Section 313: Diabetic Emergencies

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **History of Current Event:**
  - Onset. (Rapid or gradual)
  - Recent physical or emotional stress.
  - Illness. (Headache or inability to concentrate)
  - Confusion.
  - Seizures.
- **Last oral intake.**
- **Medications.**
  - Insulin.
  - Other medications.
- **Medic alert tag.**
- **Nausea. Vomiting. Diarrhea.**
- **Skin:**
  - Color.
  - Temperature.
  - Hydration.
- **Past Medical History.**

Special Precautions:

- Patient's can become combative and violent. Be prepared.
- If glucometer not available & patient has assoc. symptoms & is able to swallow, administer orange juice or oral glucose.
- Hypoglycemia can very closely mimic a cerebral vascular accident.
- Diet drinks do not contain sugar and will not have the desired effect.
- Hyperglycemia can cause dehydration or hypovolemia. Treat the patient.
- Medications can alter signs & symptoms & response to glucose administration.

Assessment:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to suction the airway if needed.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Place patient in the recovery position if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Check breath sounds on a regular basis.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Procedures:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	**PPA**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Re-check blood glucose level.** (After medication administration)	**PPA**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**

Medications:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Orange Juice or Glucose** (If BGL is < 60 mg /dL but awake and able to swallow)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Fluid Bolus** **(**If BGL is > 300 mg/dL with associated symptoms)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Glucagon** (Reference Protocol: Section 500)	___	___	___	**SO**	**SO**	**SO**

Pediatric Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Consider administration of: Dextrose 25%** (If BGL is < 60 mg / dL with associated symptoms)	____	____	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 314: Dive Emergencies

Purpose:

The purpose of this protocol is to ensure prompt and appropriate treatment of any diver related illness or injury. As Public Safety Divers, members of the Dive Team are at an increased risk for injury. The physical and emotional demands of these activities can be very high. This protocol will aide in diagnosis and treatment of diving disorders. Immediate recompression therapy is indicated for treating decompression sickness, arterial gas embolism and several other disorders. Therefore, a destination policy and transport algorithm will be delineated within this protocol.

Med Dive Paramedics:

Dive Rescue International certifies Paramedics in the prevention, recognition and the treatment of injured dive team members. These Med Dive Paramedics will be utilized in training and emergency situations. In the case of an injured diver, one of these specially trained Med Dive Paramedics will maintain medical authority when working with other Paramedics and work collaboratively with providers licensed at higher levels of care throughout transport to an appropriate medical facility. These Med Dive Paramedics will stay with the injured diver and act as a liaison with the medical facility, Divers Alert Network, and the divers' family.

Destination Policy:

Any diver with signs and symptoms consistent with need for recompression therapy shall be transported directly to the nearest Hyperbaric Chamber rated for diving injuries. Presbyterian St. Luke's Hospital shall be the primary destination for all injured divers needing recompression therapy.

Presbyterian St. Luke's Hospital (24/7)
1719 E. 19th Avenue
Denver, CO 80218
Phone: (303) 839-6900 **Access One (888) 796-6378 to page HBO doctor
(303)563-3111 ER

If Presbyterian St. Luke's Hospital Hyperbaric Chamber is down or unavailable, Med Dive Medics will consult with DAN (919)684-9111.

Transportation:

Air Transport Preferred Provider:

Greeley Med Evac is the preferred transport agency for Dive Team injuries. Greeley Med Evac shall be requested to respond to any injury that requires transport for decompression therapy. As per agreement with Greeley Med Evac, the Med Dive Paramedic will be allowed to stay with the injured diver for transport to the recompression therapy facility. If Greeley Med Evac is unavailable, consultation with the responding air transport unit can take place on scene.

Specific Findings:

Any emergency buoyant ascent, uncontrolled ascent from a depth of greater than 5 foot will be considered a possible diver related injury. The diver MUST be evaluated for injury and DAN will be consulted for treatment/transport options.

Dive Related Injuries:

- Decompression Sickness (DCS) – Any DCS MUST be treated by recompression
    - This term is used to describe either decompression sickness (bends) or lung expansion injury (air embolism). Both conditions are due to problems with "bubbles" forming out of solution. DCS is most frequently observed in the joints "bends" (shoulders, elbows, knees, and ankles).
    - Type I decompression sickness includes joint pain (musculoskeletal or pain only symptoms) and symptoms involving the skin (cutaneous symptoms), or swelling and pain in the lymph nodes.
    - Type II, or serious, symptoms are divided into three categories: neurological, inner ear (staggers), and cardiopulmonary (chokes).
- Pulmonary Over Inflation Syndrome (POIS)
    - Pulmonary Over Inflation Syndrome (POIS) are a group of disorders caused by the over expansion of the lung. This group includes: pneumothorax, subcutaneous emphysema, and air gas embolism (AGE). Pulmonary over inflation is most commonly found by inadvertent breath holding during an uncontrolled ascent.
    - If no other symptoms of DCS/AGE are present, diver to be transported to the nearest Trauma Center.
    - If there are other symptoms of DCS/AGE, diver shall be transported via Greeley Med Evac to nearest recompression chamber.
- Mediastinal Emphysema – MUST be treated by recompression
    - Air is trapped centrally, in the area between the lungs, beneath the sternum.
- Nitrogen Narcosis
    - Nitrogen narcosis is a condition of euphoria, impaired judgment and decreased coordination caused by an increased concentration of nitrogen in the body tissues. The diver resurfacing typically resolves nitrogen narcosis. However, if a diver is noted to have bizarre thoughts, nonsensical speech the safety diver will be deployed to help the diver ascend safely. If these symptoms subside, the diver will be treated with oxygen for 30 minutes. If these symptoms have not subsided by the time diver has reached the surface, consider other cause.

Assessment & Treatment:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Med Dive Paramedic Medical Authority	___	___	___	___	___	**PPA**
• High Flow Oxygen regardless of oxygen saturation	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 315: Pain Management

Indications:

- This protocol allows the treatment of pain at the provider's discretion for pain not specifically addressed in other protocols.
- Medical complaint or traumatic injury.

Contra - Indications:

- Respiratory depression or insufficiency.
- Uncorrected hypotension.

Precautions / Notes:

- **Review medication protocols for precautions.**

Technique / Procedure:

- Obtain vital signs.
- Consider pulse oximetry.
- Consider End Tidal CO2
- Follow individual protocols for medication administration, positioning, splinting, ice packs.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Adjuncts for pain control (positioning, splinting, ice packs)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Medications for pain control (see individual protocols)	--	--	--	--	**DO/P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 316: Poisonings & Overdoses

Scene Size Up:

- Conduct a thorough investigation of the scene as you arrive and approach the patient.
- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Method of exposure:**
  - Ingestion.
  - Inhalation.
  - Injection.
  - Absorption.
- **What substance?**
- **How long?**
- **How long was the exposure?**
- **Was the patient in a confined space?**
- **Signs & Symptoms:**
  - See chart below for specific information.

Special Precautions:

- Medical conditions or associated trauma may complicate a patient's presentation.
- Assess mental status and vital signs frequently.
- Attempt to establish patient's intent. (Example: Accidental. Abuse. Suicidal.)
- Secure a mental health hold through law enforcement or physician contact if indicated.
- Restraints may be indicated. Document carefully and check distal pulses at regular intervals.
- Bring all containers, pill bottles. Get as much information as possible.
- Contact emergency department as soon as possible.
- Decontamination in the field may be required. If decontamination is required - wrap patient in a clean dry sheet to prevent further contamination.
- Pepper mace is best treated with large amounts of plain water. Avoid using saline. Keep patient covered with wet sheet to control exposure to others on scene or at the Emergency Department.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Be prepared to suction the airway if necessary.	SO	SO	SO	SO	SO	SO
• Remove the patient from the environment.	SO	SO	SO	SO	SO	SO
• Remove any contaminated clothing.	SO	SO	SO	SO	SO	SO
• Brush and flush with sterile water as indicated.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Check breath sounds regularly.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	PPA	SO	SO	SO	SO	SO
• **Carbon monoxide monitoring.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO

Alcohol Emergencies

Condition:

- Overdoses.
- Chronic abuse

Effects:

- CNS Depression.
- Gastrointestinal bleeds.
- Liver failure.

Signs & Symptoms

- Slurred speech.
- Ataxia.
- Altered LOC.
- Respiratory depression.

Special Considerations:

- Vomiting and / or aspirations.
- Protect the patient's airway.
- Suspect trauma.
- Use caution with administration.

Condition:

- Alcohol withdrawal.

Effects:

- Occurs 12 to 24 hours after last ingestion.

Signs & Symptoms

- Tremors.
- Seizures.
- Hallucinations.
- Coma.

Special Considerations:

- Patients taking Antabuse with alcohol ingestion / exposure. (Example: Cough syrup. Cologne. Deodorant.)

Aspirin Overdose:

Types

- Over the counter. (OTC)
- Analgesic.
- Anti - inflammatories.

Signs & Symptoms:

- Tinnitus.
- Lethargy.
- Nausea.
- Dyspnea.
- Tachypnea.
- Seizures.
- Pulmonary edema.

Special Considerations:

- Suspect metabolic acidosis.
- Assure proper oxygenation.
- Gastrointestinal bleeds.

Acetaminophen Overdose:

Types

- Tylenol.
- Sominex.
- Nyquil.
- Over the counter analgesics.
- Cold medicines.

Signs & Symptoms:

- Nausea and vomiting.
- Right upper quadrant abdominal pain.
- Symptoms may be delayed 12 to 24 hours.

Special Considerations:

- Liver failure within 72 to 96 hours.

Barbiturate Overdose:

Types

- Phenobarbitol.
- Quaaludes.

Effects:

- CNS depression.
- Sedative effect.
- Anti - convulsant.

Signs & Symptoms:

- Slurred speech.
- Respiratory depression.

Special Considerations:

- Alcohol will exaggerate the sedative effects.

Benzodiazepines Overdose:

Types

- Valium.
- Ativan.
- Clonopin.
- Xanax.

Effects:

- CNS depression.
- Tranquilizer.

Signs & Symptoms:

- Sedation.
- Slurred speech.
- Altered level of consciousness.
- Dilated pupils.
- Respiratory depression.

Special Considerations:

- Extra - pyramidal reactions may occur.
- Alcohol will exaggerate the sedative effects.

Carbon Monoxide Exposure:

Types

- Combustion from fires and engines.

Effects:

- Carbon monoxide binds to the hemoglobin.
- Causes cellular asphyxia.

Signs & Symptoms:

- Headache.
- Syncope.
- Dyspnea.
- Nausea and vomiting.
- Seizures and coma.

Special Considerations:

- High flow oxygen is indicated.
- Hyperbaric treatment may be needed.
- Consider the administration of Cyano Kit (Hydroxocobalamin) for known cyanide poisonings or victims of fires.

Caustic Substance Exposure:

Types

- Drano.
- Detergent.
- Gasoline.
- Ethylene glycol.
- Anti -freeze.

Effects:

- Acid and alkaline.
- Petroleum products.

Signs & Symptoms:

- Tissue burns.
- Dyspnea.
- Pulmonary edema.
- Vomiting.
- Gastrointestinal bleed.

Special Considerations:

- Airway management is a priority.
- Do not induce vomiting.
- Brush powders from skin.
- Flush with copious amounts of water.

Hallucinogens:

Types

- LSD.
- Peyote.
- Mescaline.
- PCP.
- Designer drugs.

Effects:

- Causes auditory and visual disturbances.

Signs & Symptoms:

- Headaches.
- Psychosis.
- Dilated pupils.
- May have increased temperature. (PCP)

Special Considerations:

- Protect self.
- Patient may be violent.
- Check for secondary trauma.

Narcotics / Opiates Overdose:

Types

- Heroin.
- Morphine.
- Darvon.
- Demerol.
- Dilaudid.

Effects:

- CNS depression.

Signs & Symptoms:

- Sedation.
- Constricted pupils.
- Respiratory depression.
- Bradycardia.
- Pulmonary edema.
- Hypothermia.

Special Considerations:

- Reverse effects with Narcan.
- Patient may become violent with rapid or excessive administration.

Organophosphate / Nerve Agent Exposure:

Types

- Paraquat.
- Insecticides.
- Fertilizers.

Effects:

- Systemic cholinergic.

Signs & Symptoms:

- SLUDGE effects.
- Pulmonary edema.
- Cardiovascular effects.
- Seizures.
- Coma.

Special Considerations:

- Personal protective equipment is critical for safety of crews.
- Lots of **Atropine.** More than you carry on your ambulance.
- Transport ASAP!!

Stimulants Overdose:

Types

- Cocaine.
- Amphetamines.
- Crack cocaine. (Crank)
- Designer drugs.
- Diet herbal supplements.

Effects:

- CNS stimulants.
- Appetite suppressant.

Signs & Symptoms:

- Tachycardia arrhythmias.
- Dyspnea.
- Increased body temperature.
- Dehydration.

Special Considerations:

- Supportive measures.
- ABC's are especially important with these patients.
- Cardioversion may be indicated.

Tricyclic Anti - Depressants Overdose:

Types

- Elavil.
- Amitriptyline.
- Pamelor.
- Sinequan.
- Imipramine.

Effects:

- Prescription anti - depressant causing sedation.
- Flushed skin.

Signs & Symptoms:

- Sedation.
- Anti - cholinergic response.
- Tachycardia.
- Hypotension.
- Cardiac dysrhythmias.
- Seizures.
- Metabolic acidosis.

Special Considerations:

- Protect airway.
- Widening of QRS complex greater than .12 seconds on the EKG.
- May indicate the need for the administration of **Sodium Bicarbonate.**
- Contact base physician for orders.

City of Yuma Ambulance Service EMS Protocols
Section 317: Respiratory Emergencies

Scene Size Up:

- Conduct a thorough investigation of the scene as you arrive and approach the patient.
- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Past Medical History:**
  - Chronic lung or heart problems. Intubation. Medications. Past allergic reactions. Recent surgery. Trauma. Toxic inhalation. Burns. Recent physical exertion. Emotional stress.
- **Present Chief Complaint:**
  - Onset and duration. Shortness of breath. Itching and rashes. Edema in the extremities. Use of accessory muscles. Skin color. Position of patient. (Example: tri-pod positioning) Productive cough. Drooling.
- **Breath Sounds:**
  - Wheezing. Stridor. Coughing. Crackles.
- **Word Dyspnea:**
  - Example: 1 to 2 word dyspnea.
- **Jugular Venous Distention:**
  - Semi - Fowler's position.

Special Precautions:

- Pediatric patients require special equipment, techniques and considerations. Be prepared.
- Patients suspected of having epiglottitis or croup should not be intubated unless all other airway management techniques have been exhausted.
- Nebulized treatments are only effective if oxygen flow is a 6 to 8 lpm.
- Albuterol may precipitate pulmonary edema in congestive heart failure patients.
- Asthma patients with absent breath sounds are close to respiratory arrest.
- Consider the use of an N - 95 masks for both patient and rescuer.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess & maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Check breath sounds regularly.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **End Tidal CO^2 monitoring. Side stream capnography.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Carbon monoxide monitoring.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Consider application of CPAP:** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO

- Consider administration of medications for **Respiratory Emergencies.**
- See tables on the following pages for specific respiratory emergencies and medications to administer.

Adult Asthma:

Signs & Symptoms

- Dyspnea.
- Coughing.
- Wheezing.
- Diminished breath sounds.

Medications:

- Consider administration of: **Nebulized Albuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,000** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,10,000** (Per protocol)
- Consider administration of: **Terbutaline** (Per protocol)
- Consider administration of: **Magnesium Sulfate** (Per protocol)
- Consider administration of: **Solu - Medrol** (Per protocol)

Pediatric Asthma:

Signs & Symptoms

- Dyspnea.
- Coughing.
- Wheezing.
- Diminished breath sounds.

Medications:

- Consider administration of: **Nebulized Albuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)
- Consider administration of: **Solu - Medrol** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,000** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,10,000** (Per protocol)

Congestive Heart Failure:

Signs & Symptoms

- Dyspnea.
- Orthopnea.
- Tachycardia.
- Jugular Venous Distention.
- Hypertension.
- Peripheral edema.
- Pulmonary edema.

Medications:

- Consider administration of: **Nitroglycerin** (Per protocol)
- Consider administration of: **Lasix** (Per protocol)

Adult Croup:

Signs & Symptoms

- Seal like bark.
- Stridor.
- History of fever or cold.
- Shortness of breath.

Medications:

- Consider administration of: **Nebulized Albuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)
- Consider administration of: **Racemic Epinephrine** (Per protocol)

Pediatric Croup:

Signs & Symptoms

- Seal like bark.
- Stridor.
- History of fever or cold.
- Shortness of breath.

Medications:

- Consider administration of: **Nebulized Albuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)
- Consider administration of: **Racemic Epinephrine** (Per protocol)

Epiglottitis:

Signs & Symptoms

- High grade fever.
- Drooling.
- Tri - pod positioning.
- Try to keep child calm.

Medications:

- Oxygen therapy preferred over intubation.
- Ventilation with bag valve mask if necessary.

Pneumothorax:

Signs & Symptoms

- Sudden onset.
- Localized pain.
- Cough.
- Dyspnea.
- Diminished breath sounds.

Medications:

- Administer: **Oxygen** (Per protocol)

Adult Pneumonia:

Signs & Symptoms

- Fever.
- Dyspnea.
- Productive cough.
- Rales lower lobes.

Medications:

- Administer: **Oxygen** (Per protocol)
- Consider administration of: **Nebulized Albuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)

Pediatric Pneumonia:

Signs & Symptoms

- Fever.
- Dyspnea.
- Productive cough.
- Rales lower lobes.

Medications:

- Administer: **Oxygen** (Per protocol)
- Consider administration of: **Nebulized Albuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)

City of Yuma Ambulance Service EMS Protocols
Section 318: Seizures

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **History of Current Event:**
  - Witnessed seizure activity. Grand mal. Focal. Status.
  - Incontinence. Urine or feces.
  - Related or recent trauma.

- **Environmental Clues:**
  - Pills. Alcohol. Chemical bottles / containers.

- **Current Medications:**
  - Prescribed. Over the counter (OTC). Illegal drugs.

- **Medical History:**
  - Diabetes.
  - Fever.
  - Overdose.
  - Alcohol abuse / withdrawal.
  - Epilepsy.
  - Pregnancy.

Special Precautions:

- Protect patient from injury if another seizure occurs.
- Many things can cause seizures. Careful examination of patient history is important.
- Nasal intubation is contra - indicated in cases of suspected AMI or CVA and used only with on line medical control.
- Do not restrain the patient or force oral airway or ETT tube into the mouth of a patient that is seizing.
- When administering I.V. Dextrose, the I.V. should be double checked for patency & good blood return before continuing with the administration of I.V. Dextrose.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Check breath sounds on a regular basis.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Consider other causes.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	**PPA**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Carbon monoxide monitoring.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider Intubation: Oral Endotracheal** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Consider Intubation: Nasal Endotracheal** (Reference Protocol: Section 700)	___	___	___	___	___	**SO**

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Ativan** (Reference Protocol: Section 500)	___	___	___	___	**DO / P**	**SO**
• **Consider administration of: Versed (Intra-Nasal)** (Reference Protocol: Section 500)	___	___	___	___	**DO / P**	**SO**

Procedures: (Pediatric)	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Suspected febrile seizures, remove clothes.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be careful not to cause shiver or hypothermia.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Medications: (Pediatric)	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• **Consider administration of: Dextrose 25%** (If BGL is < 60 mg / dL with associated symptoms)	____	____	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Ativan** (Reference Protocol: Section 500)	____	____	____	____	**DO / P**	**SO**
• **Consider administration of: Versed (Intra - Nasal)** (Reference Protocol: Section 500)	____	____	____	____	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 319: Sepsis Criteria

Background:

- In the clinical picture of suspected infection research has shown a strong correlation to lactate levels > 4 mM/L with increased mortality if patients also have a Systemic Inflammatory Response Syndrome (SIRS) score $\geq$ 2 ***and*** an $ETCO_2$ measurement of $\leq$ 25 mmHg,. Therefore, in the correct clinical picture $ETCO_2$monitoring is a proven diagnostic tool for identifying sepsis, predicting mortality and assessing the impact of therapies designed to improve perfusion.

3 Steps For Determining Sepsis Criteria:

- ***First and foremost you must suspect an infection based on your clinical findings.*** This is a critical step and cannot be understated because the SIRS scoring system is not specific to sepsis. Also, the capnography of shock is non-specific as well. That is, shock causes low $ETCO_2$ levels. However, there is no way to use $ETCO_2$ to differentiate between different types of shock.
- Second, if the clinical picture supports infection, the patient must have at least 2 of the following SIRS criteria:
    - Temperature > 38 degrees C (100.4 degrees F) OR < 36 degrees C (96.8 degrees F)
    - Respiratory Rate > 20 breaths per minute
    - Heart Rate > 90 beats per minute
    - Elevated WBC > 12.0 or < 4.0
- Third, if the patient's $ETCO_2$ is $\leq$ 25 mmHg and the above criteria are also met, the patient "meets sepsis criteria" and this verbiage should be included in your patient report to the receiving ED.
- **Treatment if Criteria is Met:** 10-30 mL/kg fluid bolus. Ensure the patient has clear lung sounds before administration and throughout treatment.

Additional Considerations:

- Reasons to suspect infection: Open wounds/sores, Cellulitis, UTI, Pneumonia, Meningitis, Vomiting, Recent surgery/procedure.
- Altered mental status changes, particularly of rapid onset in the elderly with no history of trauma or diabetes, creates a high suspicion of a possible infection.
- Immunosuppressed patients, such as chemotherapy within 6 weeks, and chronic steroid use increase the risk for infection.
- Signs of Severe Shock:
    - SBP < 90 or MAP < 65 or SBP drop of 40 mmHg from prior baseline
    - $ETCO_2 \leq 20$ mmHg
    - O2 sat < 92 on room air
    - Mottled or cold extremities
    - Central cap refill > 3 seconds
    - Purpuric rash
    - No radial pulse

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Check breath sounds regularly.	SO	SO	SO	SO	SO	SO
• Consider "shock" position.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **ETCO2 monitoring.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Establish vascular access.** **(Reference Protocol: Section 700)**	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** **(Reference Protocol: Section 700)**	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (10-30 cc/kg NS if lungs remain clear and maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO
• **Consider administration of: Dopamine** (If no response to fluid administration)	___	___	___	___	___	SO

Scope of Practice:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Sepsis Assessment & Notification to ED	___	___	___	___	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 320: Shock

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Medications:**

- **Mechanism of Injury:**

- **Vital Signs in Early Stages:**
  - Tachycardia. Normal blood pressure.

- **Vital Signs in Late Stages:**
  - Tachycardia. Hypotension.

- **Level of Consciousness:**
  - Confusion. Anxiety or restlessness. Apathy. Combativeness. Stupor. Coma.

- **Skin:**
  - Pale. Dusky. Ashen. Cyanotic. Diaphoretic.

Special Precautions:

- Patients on cardiac & blood pressure medications such as Beta Blockers may not be able to show signs of shock.
- Orthostatic changes in vital signs indicate hypovolemia.
- Hypotension is usually not observed in pediatrics unless the child has lost approximately 25% of their blood volume.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Check breath sounds regularly.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Consider "shock" position.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Dopamine** (If no response to fluid administration)	___	___	___	___	___	**SO**

- Consider administration of medications for **Shock Type Emergencies.**
- See tables on the following pages for specific shock type emergencies and medications to administer.

Procedures: (Pediatric)	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Establish vascular access. (Per protocol)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Consider intra-osseous Infusion. (Per protocol)	___	___	**SO**	**SO**	**SO**	**SO**

Medications: (Pediatric)	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Consider administration of: **Fluid Bolus (20 cc/kg x 3)** (To maintain a blood pressure ≥ 90 mm / Hg)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Consider administration of: **Dopamine** (If no response to fluid administration)	___	___	___	___	___	**SO**

- Consider administration of medications for **Shock Type Emergencies.**
- See tables on the following pages for specific shock type emergencies and medications to administer.

Anaphylactic Shock:

Pathophysiology:

Severe allergic reactions / anaphylactic reactions cause edema to the airway.

Signs & Symptoms

- Hives.
- Uticaria.
- Edema to lips & face.
- Dyspnea.
- Wheezes.
- Diminished breath sounds.

Treatment:

- Consider administration of: **Benadryl** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,000** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,10,000** (Per protocol)
- Consider administration of: **Solumedrol** (Per protocol)

Cardiogenic Shock:

Pathophysiology:

A weakened heart is unable to pump the blood to meet the body's needs.

- Acute myocardial infarction.
- Chest trauma.

Signs & Symptoms

- Tachycardia.
- Bradycardia.
- Jugular venous distention.
- Dyspnea.
- Rales.
- Peripheral edema.
- Consider tension pneumothorax.

Treatment:

- Sit upright. Position of comfort.
- Consider administration of: **Fluid Bolus** (Per protocol)
- Consider administration of: **Dopamine** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,10,000** (Per protocol)
- Evaluate and treat dysrhythmias. (Per protocol)

Hypovolemic / Hemorrhagic Shock: Dehydration / Blood Loss

Pathophysiology:

Blunt or penetrating trauma to chest, abdomen, pelvis, or major vessels.
Gastrointestinal bleeds.
Nausea and vomiting and diarrhea.

Signs & Symptoms

- Weakness.
- Confusion.
- Tachypnea.
- Tachycardia.
- Orthostatic changes.
- Peripheral vasoconstriction.

Treatment:

- Control obvious bleeding.
- Consider administration of: **Fluid Bolus** (Per protocol)
- Rapid transport.

Neurogenic Shock

Pathophysiology:

Loss of vascular sympathetic tone resulting in vasodilation below the site of the spinal cord injury.

Signs & Symptoms

- Warm, dry, and pink skin below the level of the spinal cord injury.
- Bradycardia.
- Labored breathing with use of accessory muscles.
- Muscular paralysis corresponding to level of injury.
- Priprism.

Treatment:

- Full C - Spine immobilization.
- Consider administration of: **Fluid Bolus** (Per protocol)
- Consider administration of: **Dopamine** (Per protocol)
- Treat hypothermia.

Septic Shock

Pathophysiology:

Systemic bacterial infection causing vasodilation and vessel wall instability
Commonly seen in the very young and elderly.
Commonly seen in spinal cord injured patients with urinary tract infections.

Signs & Symptoms

- **Early:** Vasodilation. Warm, flushed skin. Tachycardia. Blood pressure normal to slightly decreased.
- **Late:** Cool, pale, and cyanotic skin. Tachypnea with pulmonary edema. Tachycardia. Hypotension.

Treatment:

- Consider administration of: **Fluid Bolus** (Per protocol)
- Consider administration of: **Dopamine** (Per protocol)

City of Yuma Ambulance Service EMS Protocols
Section 321: Syncope

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Associated Symptoms:**
  - Vertigo.
  - Nausea. Vomiting. Diarrhea.
  - Chest or abdominal pain.
  - Vomiting blood.
  - Vaginal or rectal bleeding.
  - Fever and / or heat exposure.

- **History of Current Event:**
  - Onset. Duration. Altered mental status. Seizure activity.

- **Precipitating factors:**
  - Was the patient sitting, standing, or lying down?
  - Is the patient pregnant?

- **Past Medical History:**
  - Medications. Diseases. Prior to syncope.

- **Trauma:**
  - Recent or past.

Special Precautions:

- Most syncope in young patients (under 30) is from a vagal response and not generally a cardiac origin.
- Syncope while in the recumbent position or the elderly patient is more commonly a cardiac origin.
- Consider a gastrointestinal bleed or dehydration.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Monitor orthostatic vital signs.	SO	SO	SO	SO	SO	SO
• Check breath sounds on a regular basis.	SO	SO	SO	SO	SO	SO
• Consider "shock" position.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	PPA	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO
• **Consider administration of: Narcan** (Reference Protocol: Section 500)	___	SO IN	SO	SO	SO	SO

Section 400

Trauma Protocols

City of Yuma Ambulance Service EMS Protocols
Section 401: Abdominal Trauma

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Mechanism of Injury:**
  - Blunt versus penetrating trauma. Consider the 3 minute protocol & associated trauma.

- **Precipitating Factors:**
  - Medical history.
  - Illnesses.
  - Drug or alcohol use.

- **Vital Signs:**

- **Early notification of the ED or appropriate facility:**

- **Helicopter utilization:**
  - With ground transports that exceed 15 minutes.

Special Precautions:

- Abdominal trauma patients should be assumed to have a chest injury unless proven otherwise.
- Significant injuries can occur without external indications, such as bruising or bleeding.
  - Kehr's sign: Referred pain to shoulder secondary to abdominal injury due to phrenic nerve.
  - Cullen's sign: A yellow – blue discoloration / bruising around the umbilicus.
  - Gray - Turner's sign: A yellow – blue discoloration / bruising around the flank areas.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Consider "shock" position.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Consider spinal motion restriction.** (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO
• **Control hemorrhage.** Dress open wounds to prevent further contamination.	SO	SO	SO	SO	SO	SO
• **Evisceration should be:** Covered with sterile, saline soaked occlusive dressing.	SO	SO	SO	SO	SO	SO
• **Impaled objects should be:** Stabilized for transport.	SO	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 402: Amputations

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Assessment**
  - Soft tissue versus skeletal injury.
  - Spinal precautions may be necessary.
  - Time / Mechanism of injury.
  - Crush injury versus incised injury.
  - Neurologic function of injured extremity.
  - Monitor vital signs.

Special Precautions:

- Control bleeding with: Direct pressure. Pressure points. Elevation, Tourniquet.
- Care of an amputated part:
  - Wrap in moist, saline soaked sterile gauze.
  - Do not place in water.
  - Place in appropriate container.
  - Keep cool. Do not freeze.
  - Transport with patient.
- If splinting is necessary on partial amputations, splint and bandage in neutral alignment.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Consider "shock" position.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Control hemorrhage: With 1 of the techniques:** (As described above)	SO	SO	SO	SO	SO	SO
• **Care of the amputated part.** (As described above)	SO	SO	SO	SO	SO	SO
• **Splint extremity.** (As described above)	SO	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration: Fentanyl / Morphine** (Reference Protocol: Section 500)	___	___	___	___	DO / P	SO

City of Yuma Ambulance Service EMS Protocols
Section 403: Burns

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Mechanism of Burn:**
  - Localized. Steam. Thermal. Radiation. Chemical. Electrical: (High or Low voltage)

- **Environmental Clues:**
  - Open space. Confined space. Time of exposure. Explosion. Toxic fumes. Remove patient to safe environment.

- **Location / Percentage of Burn:**
  - Rule of nines.
  - Palm surface of patient.
  - Singed facial hair.

- **Associated Symptoms:**
  - Nausea. Chest pain. Syncope. Underlying fractures or spinal injuries in setting of an explosion.

- **Age of Patient:**
  - Severity a factor and is greater if the patient's age is over 35 or under 10 years of age.

- **Vital Signs:**
  - Level of consciousness.
  - Watch for signs of shock.

Special Precautions:

- Assess and treat additional trauma that may be present. Consider mechanism of injury.
- Edema will occur quickly in burned tissue. This can be lethal in airway burns.
- Pre - existing medical conditions frequently complicate burn management and will prolong recovery.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assure & maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Monitor respirations frequently.	SO	SO	SO	SO	SO	SO
• Check breath sounds regularly.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Brush off all dry chemicals.**	SO	SO	SO	SO	SO	SO
• **Stop the burning with water.** (Monitor for hypothermia)	SO	SO	SO	SO	SO	SO
• **Remove constrictive clothing.** (Jewelry or bands)	SO	SO	SO	SO	SO	SO
• **Protect patient from further contamination.** (Cover burns with dry dressing)	SO	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Consider endotracheal intubation early.**	___	___	___	___	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Fluid Bolus** See below:	____	____	**SO**	**SO**	**SO**	**SO**
• **Consider administration of appropriate pain medication** (Reference Protocol: Section 500)	____	____	____	____	**DO / P**	**SO**

Fluid Resuscitation:

- 14 & older 500ml/hr NS or LR
- 5 – 13 years 250ml/hr NS or LR
- <5 years 125ml/hr D5W, NS or LR

City of Yuma Ambulance Service EMS Protocols
Section 404: Chest Trauma

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Mechanism of Injury:**
  - Blunt versus penetrating trauma. Consider the 3 minute protocol & associated trauma.

- **Precipitating Factors:**
  - Past medical history.

- **Pain:**
  - Location and description.

- **Shortness of Breath:**
  - Subcutaneous emphysema and / or crepitus.
  - Tracheal shift.
  - Jugular venous distention.
  - Hemoptysis.
  - Heart tones.
  - Pulse pressure.

Special Precautions:

- Impaled objects obstructing the airway or compromising chest compressions (CPR) may be removed. All others should be stabilized for transport as found.
- Chest injuries sufficient to cause respiratory distress are commonly associated with significant blood loss.
- Significant chest injuries may also include abdominal injuries.
- Control bleeding with:
  - Cover open chest wounds with an occlusive dressing or Asherman Seal.
  - Stabilize flail and / or impaled segments with a pillow or blankets by positioning patient.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Check breath sounds regularly	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Consider spinal motion restriction.** (Per protocol)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 405: Crush Injury

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Mechanism of Injury:**
  - Trapped or pinned greater than 30 minutes with significant impact/destruction of tissue (not just stuck)

Special Precautions:

- Coordinate time of release with rescue personnel prior to extrication

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Check breath sounds regularly	SO	SO	SO	SO	SO	SO
• Anticipate arrhythmia or arrest in severe crush	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Consider spinal motion restriction.** (Per protocol)	SO	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **After Extrication: Additional 1 liter Fluid Bolus.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Transport to Trauma Center**	SO	SO	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Sodium Bicarbonate** (Reference Protocol: Section 500)	___	___	___	___	DO / P	SO
• **Consider administration of: Pain Medication** (Reference Protocol: Section 500)	___	___	___	___	DO / P	SO

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **Length of Exposure:**

- **Drug Ingestion:**
  - Alcohol. Tranquilizers. Anti - convulsant.

- **Past Medical History / Problems:**
  - Diabetes. Epilepsy. Alcoholism.

- **Shortness of Breath:**

Special Precautions:

- Abdominal trauma patients should be assumed to have a chest injury unless proven otherwise.
- Significant injuries can occur without external indications, such as bruising or bleeding.
  - Kehr's sign.
  - Cullen's sign.
  - Gray - Turner's sign.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Obtain blood glucose level.** (Reference Protocol: Section 700)	PPA	SO	SO	SO	SO	SO
• **Carbon monoxide monitoring.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Dextrose 50%** (If BGL is < 60 mg / dL with associated symptoms)	___	___	SO	SO	SO	SO

Hyperthermia:

Pathophysiology:

- Body temperature greater than 104° Fahrenheit.

Signs & Symptoms:

- Confusion. Seizures. Coma. Leg cramps. Increased temperature. Increased pulse. Increased respirations.

Treatment:

- Move to cooler location.
- Do not allow shivering.
- Heat stroke patients should be cooled rapidly.

Special Precautions:

- Consideration administration of: **Ativan or Versed** (Per protocol)

Hypothermia:

Pathophysiology:

- Can be categorized into mild, moderate, or severe hypothermia.

Signs & Symptoms:

- Confusion. Aphasia. Unresponsive. Shivering may or may not be present. Consider the presence of localized frostbite.

Treatment:

- Remove from environment.
- Remove wet clothing.
- Handle patient gently.
- Initiate cardio - pulmonary resuscitation if indicated.
- Hypothermia may occur in the setting of warmer outside temperatures.
    - Drug ingestions.
    - Pre - existing medical conditions.

Special Precautions:

- Use care while inserting airway adjuncts.
- Consider initial defibrillation and administration of first line medications per protocol.
- Further defibrillation or medication administration may be ineffective until patient is rewarmed.

Drowning / Near Drowning:

Signs & Symptoms:

- Time submerged.
- Fresh or salt water diving accident.
- Temperature of the water.
- Resuscitative measures PTA.
- Vital signs.
- Neurologic status.

Treatment:

- Keep warm.
- All submersions should be transported.
- Consider the administration of: **Lasix** (Per protocol)
  - Secondary to pulmonary edema.

Special Precautions:

- Respiratory distress. Apnea. Rales. Rhonchi.
- Consider nasogastric insertion for the unconscious.

Decompression Sickness:

Signs & Symptoms:

- Pneumomediastinum.
- Pneumopericardium pneumothorax.
- Subcutaneous emphysema.

Treatment:

- Oxygen therapy.
- Hyperbaric therapy.

Special Precautions:

- Lay on left lateral recumbent position.
- 15° elevation of the thorax.

High Altitude Pulmonary Edema

Signs & Symptoms:

- Shortness of breath.
- Rhonchi.
- Tachycardia.
- Cyanosis.

Treatment:

- Oxygen therapy.
- Hyperbaric therapy.

Special Precautions:

- Descent to a lower altitude.

Snake Bites

Specific Information Needed:

- Appearance of the snake. (Example: Rattle. Color. Banding)
- Time of bite.
- Prior first aid by patient or friends.
- Symptoms: Local pain and swelling. Peculiar or metallic taste sensations. Severe envenomations may result in hypotension, coma, and bleeding.

Specific Information Needed:

- Bite wound. Location. Configuration (1, 2, or 3 fang marks. Entire jaw imprint. None)
- Snake identification. Look for elliptical pupils. Thermal pit. Rattle.
- Signs of envenomation. Spreading numbness and tingling from the site. Local edema and pain. Ecchymosis. Bleeding. Hypotension. Mark time and extent of erythema and edema with pen.

Treatment:

- Remove patient and rescuers from area of snake to avoid further injury.
- Remove rings or other bands which may become tight with local swelling.
- Immobilize bitten part at heart level.
- Minimize venom absorption by keeping bite area still and patient quiet.
- Transport promptly for definitive observation and treatment.
- Do not use ice or refrigerants.
- Do not use tourniquets or constricting bands.
- For all suspected envenomations, establish venous access and administer oxygen.
- Monitor vital signs, cardiac rhythm, and swilling.

Special Precautions:

- The prairie rattlesnake is native to the region. If the snake is dead, bring it in for examination. Do not jeopardize fellow rescuers by attempting to round it up. Be careful: a dead snake may still reflexively bite and envenomate. Do not pick up with hands, even if dead. Use a shovel or stick.
- At least 25% of poisonous snake strikes do not result in envenomation. Conversely, the initial appearance of the bite may not reflect the severity of the envenomation.
- Fang marks are characteristic of pit viper bites, such as from the rattlesnake, water moccasin, or copperhead, which are all native to North America. Jaw prints (without fangs) are more characteristic of non - venomous species.
- Ice can cause serious tissue damage. Never use!!
- Exotic poisonous snakes, such as those found in zoos, have different signs and symptoms than those of pit vipers.

City of Yuma Ambulance Service EMS Protocols
Section 407: Head Injuries

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- **A.V.P.U.**

- **History:**
  - Mechanism of injury.
  - Estimated force involved.
  - Change in the level of consciousness.
  - Amnesia.
  - Was a protective equipment worn?

- **Past Medical History:**
  - Medical problems or medications.

- **Vital Signs:**
  - Hypertension.
  - Bradycardia.
  - Chyene - Stokes respirations.

- **Nausea / Vomiting:**

Special Precautions:

- Cerebral anoxia is the most frequent cause of death in head injured patients.
- Patients with head injuries can present as combative patients. Be prepared to protect yourself and patient.
- Take extra care when measuring cervical collars, to assure proper fit.
- Assume cervical spine injury in all patients with head injury.
- Elevate the head of the patient 6 to 10 inches to increase venous drainage.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to suction the airway if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Glascow Coma Scale every five minutes.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Spinal motion restriction w/ head elevated 6 - 10 inches.** (Reference Protocol: Section 700)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Control any hemorrhage:** (Reference Protocol: Section 700	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Be prepared to intubate: Oral Endotracheal** (Reference Protocol: Section 700)	____	____	____	____	**SO**	**SO**
• **Be prepared to intubate: Nasal Endotracheal** (Reference Protocol: Section 700)	____	____	____	____		**SO**
• **Capnography** (Reference Protocol: Section 700)	____	**PPA**	**PPA**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	____	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	____	____	____	____	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	____	____	**SO**	**SO**	**SO**	**SO**
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	____	____	**SO**	**SO**	**SO**	**SO**

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Zofran (IV, IM, or ODT)** (Reference Protocol: Section 500)	____	**DO / P**	**DO / P**	**SO**	**SO**	**SO**
• **Consider administration of: Versed** (Sedation for combative patients)	____	____	____	____	**DO / P**	**SO**
• **Consider administration of: Ativan** (Sedation for combative patients)	____	____	____	____	**DO / P**	**SO**

Specific Head Injuries:

Concussion:

- Temporary loss of neurological function. No tissue damage.

Signs & Symptoms:

- Loss of consciousness.
- Amnesia.
- Headache.
- Altered mentation.

Vital Signs:

- Vital Signs should not be affected and should be within normal limits.

Special Considerations:

- All signs and symptoms should be resolved within 24 hours.

Contusion:

- Bruising to the brain results in swelling of tissue.

Signs & Symptoms:

- Loss of consciousness.
- Amnesia.
- Headache.
- Altered mentation.

Vital Signs:

- Bradycardia. Hypertension. Abnormal respirations. Posturing. Pupil changes.

Special Considerations:

- Severe swelling can result in brain damage and death.

Specific Head Injuries Continued:

Epidural Hematoma:

- Arterial bleed occurs in the epidural space associated with skull fractures.

Signs & Symptoms:

- Associated with a "lucid interval".
- Loss of consciousness.
- Amnesia.
- Headache.
- Altered mentation.

Vital Signs:

- Bradycardia. Hypertension. Abnormal respirations. Posturing. Pupil changes.

Special Considerations:

- Associated with skull fractures. Especially in the temporal and spenoid area.
- Carries a high mortality rate.

Subdural Hematoma:

- Venous blood occurs in the subdural space.

Signs & Symptoms:

- Loss of consciousness.
- Amnesia.
- Headache.
- Altered mentation.
- Dilated pupils.
- Hemiparesis.

Vital Signs:

- Bradycardia. Hypertension. Abnormal respirations. Posturing. Pupil changes.

Special Considerations:

- Can be acute or chronic as seen in the elderly and alcoholics.

Specific Head Injuries Continued:

Subarachnoid Hematoma:

- Bleeding occurs in the subarachnoid space.

Signs & Symptoms:

- Loss of consciousness.
- Amnesia.
- Headache.
- Altered mentation.
- Neck or back stiffness or pain.

Vital Signs: (If ICP Increases)

- Bradycardia. Hypertension. Abnormal respirations. Posturing. Pupil changes.

Special Considerations:

- CSF is found in the subarachnoid space.
- Blood will irritate the meninges causing neck and back pain or stiffness.

Basilar Skull Fracture:

- The base of the skull is broken.

Signs & Symptoms:

- Head pain.
- Raccoon eyes.
- Battle signs.
- CSF in ears, nose, or mouth.

Vital Signs:

- Vital signs may vary.

Special Considerations:

- Do not attempt to restrict CSF flow.

Specific Head Injuries:

Open Skull Fracture:

- Brain matter will be visible in the wound.

Signs & Symptoms:

- Associated with a large amount of bleeding.

Vital Signs:

- Vital signs may vary.

Special Considerations:

- Keep any exposed brain tissue covered with a sterile dressing moistened with saline.

Depressed Skull Fracture:

- Bone in which fragments are driven into the brain.

Signs & Symptoms:

- Depressed deformity to the skull.
- Often a comminuted fracture.

Vital Signs:

- Vital signs may vary.

Special Considerations:

- Do not use direct pressure to control bleeding on these areas.

City of Yuma Ambulance Service EMS Protocols
Section 408: Spinal Injury Assessment

Spinal Injury Clearance:

Spinal motion restriction should be initiated for any "YES" answer		
If all of the below are negative, spinal motion restriction may be withheld	→ ←	**If any of the below are present, spinal motion restriction must be done**
NO	Glascow Coma Scale < 15	**YES**
NO	Drug or Alcohol Impairment	**YES**
NO	Any presence of mid-line spinal pain or tenderness	**YES**
NO	Any presence of neurological deficits	**YES**
NO	Other distracting injuries	**YES**
NO	Any presence of pain with active range of motion of the neck. Extension, Flexion, or side to side	**YES**
NO	Provider Concern for injury	**YES**

- No spinal motion restriction will be removed unless the call results in a refusal!!
- In addition, any blunt trauma injury resulting in a trauma activation, should strongly be considered a distracting injury with initiation of spinal motion restriction.
- If the patient is refusing spinal care, the Paramedic must obtain a refusal of treatment documenting the potential for serious injuries and complications.

City of Yuma Ambulance Service EMS Protocols
Section 409: Three Minute Protocol

Indication:

Penetrating Trauma:

- Head. Neck. Chest. Abdomen. Pelvis.

Medical conditions that might require immediate surgical intervention:

- Thoracic or abdominal aneurysm.
- Uterine rupture.
- Pulmonary embolus.

With the above specific findings the following should occur:

- Early notification of the emergency department.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Assess mental status.	SO	SO	SO	SO	SO	SO
• Obtain vital signs.	SO	SO	SO	SO	SO	SO
• Maximum of 3 minutes on scene, unless documented extenuating circumstances.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	____	____	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 410: Trauma - Blunt / Penetrating

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Identify the nature of illness or the mechanism of injury and perform spinal precautions if indicated.
- Identify the number of patients and initiate triage if necessary.
- Call for assistance if necessary.
- Emergency transport to the appropriate facility.
- If patient condition warrants, consider helicopter utilization with ground transport times that will exceed 30 minutes.
- Early notification of the Emergency Department or appropriate facility.

Specific Findings:

Patient Assessment:

- Signs of irreversible death.
  - Reference: Section 800 (Exceptions to initiating resuscitation)
- Time of injury.
- Down time.
- Valid DNR order or Colorado Advanced Medical Directive.

Special Precautions:

- Triage all patients when arriving on scene.
- Do not allow the patient without vital signs to take precedence over patients that need your attention, treatment, and rapid transport.

Special Precautions:

- Trauma Arrest: (See pages 4 &5)
- Exceptions to the Trauma Arrest Protocol include the following:
  - Pregnancy.
  - Pediatric patients.
  - Hypothermia patients.

Blunt Trauma: Non Arrest

History & Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Contact ALS crew to advise of situation.	SO	SO	SO	SO	SO	SO

Treatment Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Follow Trauma Team Activation Guidelines:** (Reference Protocol: Section 400)	SO	SO	SO	SO	SO	SO
• **Consider spinal motion restriction.** (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO
• **Be prepared to assist ventilations via BVM.** (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO
• **Be prepared to intubate: Oral Endotracheal.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Be prepared to intubate: Nasal Endotracheal.** (Reference Protocol: Section 700)	___	___	___	___		SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medication Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO

Penetrating Trauma: Non Arrest

History & Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Monitor vital signs and contact ALS crew to advise.	SO	SO	SO	SO	SO	SO
• Utilize 3 minute protocol. Prepare for rapid transport.	SO	SO	SO	SO	SO	SO

Treatment Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Follow Trauma Team Activation Guidelines:** (Reference Protocol: Section 400)	SO	SO	SO	SO	SO	SO
• **Consider motion restriction.** (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO
• **Be prepared to assist ventilations via BVM.** (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO
• **Be prepared to intubate: Oral Endotracheal.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Be prepared to intubate: Nasal Endotracheal.** (Reference Protocol: Section 700)	___	___	___	___		SO
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO

Medication Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	___	___	SO	SO	SO	SO

Blunt & Penetrating Trauma: Arrest

History & Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway and ventilation.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Initiate Cardio Pulmonary Resuscitation: (CPR)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Contact ALS crew to advise of situation.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Utilize 3 minute protocol. Prepare for rapid transport.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• If spontaneous return of pulse or rhythm, prepare for rapid transport. Call base physician.	___	___	___	___	___	**SO**
• If no spontaneous return of pulse or rhythm. Contact base physician for instructions.	___	___	___	___	___	**SO**

Treatment Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Follow Trauma Team Activation Guidelines:** (Reference Protocol: Section 400)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider motion restriction.** (Reference Protocol: Section 700)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Be prepared to assist ventilations via BVM.** (Reference Protocol: Section 700)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Be prepared to intubate: Oral Endotracheal.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Establish 2nd vascular access. If necessary.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Bilateral / chest decompression procedure:** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**

Medication Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Consider administration of: Fluid Bolus** (To maintain a blood pressure ≥ 90 mm / Hg)	____	____	**SO**	**SO**	**SO**	**SO**

***** If Event Occurred within 24 hours, Call TTA as below*****
****No TTA for any patient presenting w/o injury from TTA event****

TRAUMA TEAM ACTIVATION

Physiologic Indicators:

- Pulse > 120 Systolic Blood Pressure < 90 (SBP<100 if patient >65yo)
- Respiratory Rate <10 or >29 with distress
- Respiratory arrest or Intubation
- O_2 Sat < 90% on room air
- Traumatic hemo or pneumothorax
- Glasgow Coma Score < 13
- Traumatic Paralysis (NOT numbness/tingling)

Pediatric Parameters
Tachycardia For Age PLUS Poor Perfusion
BP Not Appropriate For Age (70 + 2x age)
RR Not Appropriate For Age

Anatomic Indicators:

Penetrating Injuries To:

- Head – Neck – Torso
- Extremities Proximal To Elbow & Knee
- Anything with neurovascular deficit, arterial bleeding, or high energy (ex. GSW)

Amputation proximal to wrist or ankle

Fractures: Unstable Pelvis
2 or more proximal long bone:
any combination: femur, tibia, humerus

Head Injuries:

- Neuro deficits that are trauma related
- Pediatric LOC > 3 Min, Skull Fx, GCS ≤ 13

Consider Activation or Consultation for CoMorbid Factors Including:

- Age <5 yrs or >55 yrs
- Medical Illness (COPD, renal failure, anticoag RX, etc.)
- Pregnancy
- Extreme heat or cold
- Presence of intoxicants
- Clinical suspicion of occult injury

Motor Vehicle Crash (MVC): (Any of the following)

- With ejection
- High speed (≥ 40 mph)
- Unrestrained (≥ 20 mph)
- Death in same car
- Rollover
- Major vehicle damage (windshield starred, broken steering wheel, intrusion > 1 Ft passenger compartment, prolonged extrication)

Falls

- ≥ 15 feet
- 2x height if child ≤ 6 yrs

(Fall down stairs are NOT considered a fall from height)

MCC/Bike/ATV/Large Animal

- Crash speed ≥ 20 mph
  or
- Separation of rider ≥ 10 mph

Skier, Snowboarder, etc.

- Skier vs tree
- Skier vs skier
- High energy fall or jump

Burns

- ≥ 20% TBSA
- Circumferential Extremity burns
- Partial/Full thickness burns of head or neck with risk of airway compromise
- Significant smoke inhalation

Pediatric Parameters Burns > 10% if ≤ 6 yrs

Other

- NAT
- Auto/pedestrian (any speed with injury)

Effective 8/17

Blank for future use

City of Yuma Ambulance Service EMS Protocols
Section 412 - Triage Destination Protocol

Triage Destination Protocol:

<table>
<tr><th colspan="5">NCRETAC Pre-Hospital Trauma Algorithm</th></tr>
<tr><td colspan="2">Step 1 - Respiratory</td><td></td><td>Ground Transport</td><td>Air Transport</td></tr>
<tr><td colspan="2">• Unable to adequately ventilate</td><td>Yes
→</td><td>Transport to most rapidly accessible trauma center for advanced airway control</td><td>Transport to highest level trauma center unless otherwise indicated.</td></tr>
<tr><td colspan="2"></td><td>No
↓</td><td colspan="2"></td></tr>
<tr><td colspan="2">Step 2 - Physiology</td><td></td><td colspan="2">Ground & Air Transport</td></tr>
<tr><td>Child (Age 0-12) or
< 5 feet height</td><td>Adult</td><td rowspan="2">Yes
→</td><td colspan="2" rowspan="2">ADULTS: Transport to most rapidly accessible highest level trauma center within 15 minutes additional transport time.

CHILDREN: Transport to regional Pediatric Trauma Center unless more than 15 minutes additional transport time, then transport to most rapidly accessible highest level facility.</td></tr>
<tr><td>• Intubation (or)
• Respiratory Distress (or)
• Cap Refill > 2 sec (or)
• B/P abnormal for age
• [<70 + 2 x age] (or)
• GCS Motor Score ≤ 5</td><td>• Intubation (or)
• Systolic BP < 90 (or)
• Resp Rate <10 or >29 with distress (or)
• GCS Motor Score ≤ 5</td></tr>
<tr><td colspan="2"></td><td>No
↓</td><td colspan="2"></td></tr>
<tr><td colspan="2">Step 3 - Anatomy (Any one of the below)</td><td></td><td colspan="2">Ground & Air Transport</td></tr>
<tr><td colspan="2">• Penetrating injuries – head, neck, torso, pelvis
• Flail Chest
• Bilateral femur fractures
• Unstable pelvis or suspected pelvic fracture
• Paralysis or evidence of spinal cord injury
• Amputation above the wrist or ankle
• Significant Burns (Using American Burn
• Association Criteria for transfer to a Burn Unit)
• Un-reactive or unequal pupils</td><td>Yes
→</td><td colspan="2">ADULTS: Transport to most rapidly accessible highest level trauma center within 15 minutes additional transport time.

CHILDREN: Transport to regional Pediatric Trauma Center unless more than 15 minutes additional transport time, then transport to most rapidly accessible highest level facility.

BURNS: Transport to regional Burn Center unless more than 15 minutes additional transport time then most rapidly accessible highest level facility.</td></tr>
<tr><td colspan="2"></td><td>No
↓</td><td colspan="2"></td></tr>
<tr><td colspan="2">Step 4 - Mechanism (Any one of the below)</td><td></td><td>Ground Transport</td><td>Air Transport</td></tr>
<tr><td colspan="2">• Ejection from motor vehicle / conveyance.
• High energy dissipation
• Extrication > 20 min with injury
• Falls > 15 adults; 2x height of child or elderly with suspected rib fracture.
• Pedestrian, motorcyclist or pedal cyclist thrown >15 feet or run over.
• Unrestrained occupant in vehicle roll over
• Death of same car occupant
• Significant Assault
• Exposure to blast or explosion
• Significant crush injury.
• Intrusion of vehicle of ≥ 12” in occupant compartment
• Suspected non-accidental trauma</td><td>Yes
→</td><td>Transport to most rapidly accessible trauma center</td><td>Transport to Level I or II trauma center unless otherwise indicated.</td></tr>
</table>

Triage Destination Protocol Continued:

Continued from Page 1	No ↓		
Step 5 - Co-morbidity Considerations (Any of the below)		**Ground Transport**	**Air Transport**
• Extremes of ages: <5 & > 55 years of age • Extreme heat or cold • Medical Illness (such as COPD, CHF, renal failure,diabetes, etc.) • Presence of intoxicants • Pregnancy • EMT clinical suspicion of occult injury	**Yes →**	Transport to any trauma center.	Transport to Level I or II trauma center unless otherwise indicated.
	No ↓		
STEP 6 – None of the above apply		**Ground Transport**	**Air Transport**
Transport to the most rapidly accessible trauma center.	**Yes →**	Transport to any appropriate trauma center.	Transport to any appropriate trauma center.
Note: This algorithm may be modified in multiple casualty events.			

Section 500

Medications

City of Yuma Ambulance Service EMS Protocols
Section 501: Acetylsalicylic Acid (ASA)

Pharmacology / Actions:

- Inhibits formation of thromboxane A^2, a platelet aggregating and vasoconstricting prostaglandin.
- Maintains vessel patency after thrombolytic therapy.

Indications:

The administration of **Acetylsalicylic Acid (ASA)** should be considered in the following situations:

- For patients that are suspected of having a myocardial infarction.

Contra - Indications:

- A known hypersensitivity or allergy to the medication.
- Bleeding disorders or gastro - intestinal bleed.
- A hemorrhagic CVA.

Precautions:

- Patients must have a patent airway and must be able to chew and swallow tablets.
- Can be given to the patient even though the patient may have taken their own prior to arrival.
- Patients with a past medical history of asthma.

Medication Dose:

- One time dose: 324 milligrams: (4 children's chewable tablets that are 81 milligrams each)

Route of Administration:

- By mouth.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of 324 mg. ASA orally.	___	SO	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 502: Adenosine (Adenocard)

Pharmacology / Actions:

- Slows AV nodal conduction and / or sinus nodal conduction secondary to re - entry pathways.
- Rapid onset of action. Has a half-life of approximately 10 seconds.
- Transient effects can include heart block, asystole, arrhythmias, flushing, dyspnea, chest pain and anxiety.

Indications:

The administration of **Adenosine (Adenocard)** should be considered in the following situations:

- An EKG rhythm that reveals a supra - ventricular tachycardia. (SVT)
- An EKG rhythm that reveals a monomorphic wide complex tachycardia of unknown origin refractory to the administration of Amiodarone or Lidocaine or Magnesium Sulfate.

Contra - Indications:

- A past medical history of severe asthma.
- Polymorphic wide complex tachycardia.

Precautions:

- In those patients with an EKG rhythm that reveals a wide complex tachycardia of unknown origin, you should use Amiodarone or Lidocaine first, and then try Adenosine.

Medication Dose: Adult

- Initial dose: 6 milligrams.
- Repeat dose: 12 milligrams.
- Repeat dose: 12 milligrams VO
- **Maximum dose: 30 milligrams.**

Medication Dose: Pediatric

- Initial dose: 0.1 milligrams / kilogram.
- Repeat dose: 0.2 milligrams / kilogram.
- **Maximum 1st dose: 6 milligrams.**
- **Maximum 2nd dose: 12 milligrams.**

Route of Administration: Adult

- Intra-venous administration.
- Intra-osseous administration.
- Each dose is to be a rapid push of the medication followed by a 20 cc bolus of normal saline.

Route of Administration: Pediatric

- Intra-venous administration.
- Intra-osseous administration.
- Each dose is to be a rapid push of the medication followed by a 5 cc bolus of normal saline.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Adenosine (Adenocard):	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 503: Albuterol (Proventil)

Pharmacology / Actions:

- Beta - adrenergic agent used to relieve bronchospasm.

Indications:

The administration of **Albuterol (Proventil)** should be considered in the following situations:

- Acute bronchial spasm secondary to the following:
  - Acute asthma.
  - Acute allergic reactions.
  - Chronic Obstructive Pulmonary Disease (COPD)

Contra - Indications:

- A known history of sensitivity to the contents of Proventil.
- Cardiac dysrhythmias associated with tachycardia.

Precautions:

- Use with caution in patients with the following conditions:
  - Acute hypertension. Systolic blood pressure > 200 mm / Hg. Diastolic blood pressure > 120 mm / Hg.
  - Coronary insufficiency.
  - Diabetes and seizure disorders.
  - Recent use. (Within 30 minutes)

- Adverse reactions include:
  - Seizures and nausea.
  - Dizziness.
  - Bronchospasm.
  - Tachycardias and arrhythmias.

Medication Dose: Adult

- 2.5 milligrams in 3 cc of a saline solution. (Pre - mixed)

Medication Dose: Pediatrics - (Children younger than 1 year of age)

- 2.5 milligrams in 6 cc of a saline solution.

Route of Administration: Adult & Pediatrics

- To be administered via oxygen nebulizer device with the flow rate set at 6 to 8 liters per minute for 5 to 10 minutes.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Albuterol: (Proventil / Ventolin)	____	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 504: Amiodarone (Cordarone)

Pharmacology / Actions:

- Slows sinus rate.
- Increases the PR & QT intervals.
- Decreases peripheral vascular resistance.
- Increases the refractory period of the AV node.

Indications:

The administration of **Amiodarone (Cordarone)** should be considered in the following situations:

- An EKG rhythm that reveals ventricular fibrillation refractory to defibrillation.
- An EKG rhythm that reveals persistent ventricular fibrillation.
- An EKG rhythm that reveals ventricular tachycardia and is without pulses.
- An EKG rhythm that reveals ventricular tachycardia with pulses, and is considered unstable.
- An EKG rhythm that reveals significant ventricular ectopy with signs & symptoms of hemodynamic compromise.

Contra - Indications:

- An EKG rhythm that reveals sinus bradycardia.
- An EKG rhythm that reveals a second degree and third degree A.V. blocks.
- Cardiogenic shock.
- A known hypersensitivity to Amiodarone (Cordarone).
- A known hypersensitivity to Iodine.

Precautions:

- May produce vasodilation and hypotension.
- May have negative inotropic effects.
- May prolong QT interval.
- Terminal elimination is extremely long. (Half life lasts up to 40 days)
- In the presence of bradycardia with PVC's, Atropine should be considered prior to the administration of Amiodarone.
- In the presence of suspected Tor Sades de Pointes, Magnesium Sulfate is the medication of choice.

Medication Dose: Adult

Cardiac Arrest:

- Initial Dose: 300 milligrams.
- Second dose: 150 milligrams.

Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin / Significant Ectopy

- Initial dose: 150 milligrams infusion over 10 minutes. (15 mg / min)
- Repeat dose: 150 milligrams dose after 10 minutes as needed.

Medication Dose: Pediatric

Cardiac Arrest:

- Initial dose: 5 milligrams / kilogram initial bolus.
- Subsequent doses: Direct order.

Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin / Significant Ectopy

- Initial dose: Infusion: 5 milligrams / kilogram over 20 to 60 minutes.

Route of Administration: Adult & Pediatric

Cardiac Arrest / Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin / Significant Ectopy

- Intra-venous administration
- Intra-osseous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Amiodarone: (Cordarone) **Cardiac Arrest Situations**	____	____	**	**	**DO / P**	**SO**
• Administration of Amiodarone: (Cordarone) **Ventricular Tachycardia**	____	____	____	____	**DO / P**	**SO**
• Administration of Amiodarone: (Cordarone) **Wide Complex Tachycardia / Unknown Origin**	____	____	____	____	**DO / P**	**SO**
• Administration of Amiodarone: (Cordarone) **Significant Ventricular Ectopy**	____	____	____	____	**DO / P**	**SO**

** An EMT Basic with I.V. authorization and an Advanced EMT may, under the supervision and authorization of a medical director, administer and monitor medications and classes of medications which exceed those listed in Appendices B and D of these rules for an EMT Basic with I.V. authorization and an Advanced EMT under the direct visual supervision of an EMT Intermediate or Paramedic when the following conditions have been established.

- The patient must be in cardiac arrest or in extremis.
- Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D in accordance with the provisions of these rules.

City of Yuma Ambulance Service EMS Protocols
Section 505: Ativan (Lorazepam)

Pharmacology / Actions:

- Benzodiazepine category.
- Anti - convulsant.
- Skeletal muscle relaxant.
- Tranquilizer.
- Anti - anxiety agent.
- Long acting.

Indications:

The administration of **Ativan (Lorazepam)** should be considered in the following situations:

- Status epilepticus.
  - Seizures lasting longer than 3 minutes.
  - Concurrent seizures without regaining period of consciousness.
- Chemical restraint for uncontrollable / hysterical patients with the possibility spinal injuries.
- Chemical restraint for uncontrollable / hysterical patients.
- Acute alcohol withdrawal.
- Sedation prior to cardioversion.
- Non - traumatic musculoskeletal spasms.
- Control shivering in hyperthermia.

Contra - Indications:

- A known hypersensitivity to Ativan (Lorazepam)
- Respiratory depression.
- Hypotension.

Precautions:

- Administer slowly over 20 to 30 seconds.
- Use caution for patients with a history of using depressants such as using alcohol.
- Be prepared to manage the airway in case of significant respiratory depression.
- Avoid mixing with other medications. I.V. line should be flushed prior to administration.
- Common side effects: Respiratory depression. Hypotension. Flushing. Drowsiness. Dizziness. Fatigue. Ataxia.
- Use caution in pregnancy.

Combination Benzodiazepine and Opiate Therapy:

The administration of a combination of benzodiazepines and opiates, for the purpose of severe pain management and/or muscle relaxation is permitted.

Safeguards shall be taken to maximize patient safety including but not limited to the patient's ability to:

- Independently maintain an open airway and normal breathing pattern
- Maintain normal hemodynamics
- Respond appropriately to physical stimulation and verbal commands

The administration of combination therapy requires appropriate monitoring and care including but not limited to:

- **IV or IO access**
- **Continuous waveform capnography**
- **Pulse oximetry**
- **ECG monitoring**
- **Blood pressure monitoring**
- **Administration of supplemental oxygen**

Medication Dose: Adult

Status Epilepticus:

- Initial dose: 2.0 milligrams
- Subsequent doses: 1.0 - 2.0 milligrams

Chemical Restraint:

- Initial dose: 1.0 milligram to 2.0 milligrams.
- Subsequent doses: Direct order.

Non - traumatic Musculoskeletal Spasms:

- Initial dose: 1.0 milligram to 2.0 milligrams
- Subsequent doses: Direct order.

Medication Dose: Pediatric

Status Epilepticus:

- Initial dose 0.05 milligrams to 0.1 milligram / kilogram.
- Subsequent doses: 0.05 milligrams to 0.1 milligrams / kilogram
- **Maximum dose of 2 mg in pediatric patients.**

Route of Administration: Adult

Status Epilepticus / Chemical Restraint / Non - Traumatic Musculoskeletal Spasms:

- Intra-venous administration.

- Intra-osseous administration.
- Intra-muscular injection.
- Each dose is to be given over 20 to 30 seconds.

Route of Administration: Pediatric

Status Epilepticus:

- Intra-venous administration.
- Intra-osseous administration.
- Intra-muscular injection.
- Each dose is to be given over 20 to 30 seconds.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Ativan: (Lorazepam) **Seizures**	____	____	____	____	**DO / P**	**SO**
• Administration of Ativan: (Lorazepam) **Musculoskeletal Spasms**	____	____	____	____	**DO / P**	**SO**
• Administration of Ativan: (Lorazepam) **Chemical Restraint**	____	____	____	____	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 506: Atropine

Pharmacology / Actions:

- Parasympathetic / cholinergic blocking agent that:
  - Increases heart rate.
  - Increases conduction through the AV node.
  - Decreases motility and tone to the gastro - intestinal tract.
  - Decreases action and tone of the urinary bladder.
  - Dilate pupils.

Indications:

The administration of **Atropine** should be considered in the following situations:

- An EKG rhythm that reveals a bradycardia and is considered unstable. (To increase heart rate)
- An EKG rhythm that reveals a 2nd degree and 3rd degree A.V. block as well as pacemaker failures.
- Organophosphate poisonings and or Nerve Agent poisonings that exhibit cholinergic reactions.
- Hypersalivation secondary to Ketamine administration
- **SLUDGE:**
  - Salivation.
  - Lacrimation.
  - Urination.
  - Defecation.
  - Gastro - intestinal motility.
  - Emesis.

Contra - Indications:

- An EKG rhythm that reveals atrial fibrillation.
- An EKG rhythm that reveals atrial flutter.
- An EKG rhythm that reveals any type of tachycardia.

Precautions:

- Headache, blurred vision, disorientation, and restlessness.
- Tachycardia. Palpitations. Hypertension.
- Possibility of additive anti - cholinergic effects with Procainamide and Quinidine.
- Bradycardias in the setting of an acute M.I. are often a protective mechanism to lower the hearts demand for oxygen.
- Bradycardias in pediatrics are primarily caused by hypoxia. Atropine in pediatric / infant patients is only indicated if the cause is suspected to be a vagal response, otherwise Epinephrine is the medication of choice for pediatric bradycardias.

Medication Dose: Adult

Bradycardia:

- Initial dose: 0.5 milligrams.

Organophosphate Poisoning and / or Nerve Agent Poisonings:

- General dose: 1.0 milligram to 2.0 milligram increments.
- Subsequent doses: As directed by a Base Physician.

Hypersalivation secondary to Ketamine administration

- 0.5 milligrams

Medication Dose: Pediatric

Bradycardia:

- Initial dose: 0.02 milligrams / kilogram.

Hypersalivation secondary to Ketamine administration:

- 0.02mg/kg One time. Max dose 0.5mg.

Route of Administration: Adult & Pediatric

Bradycardia / Organophosphate Poisoning / Nerve Agent Poisonings

- Intra-venous administration.
- Intra-osseous administration.
- Endotracheal administration. (Note: 2 to 2½ times the intra-venous dose)

Hypersalivation secondary to Ketamine administration

- Intra-venous administration.
- Intra-osseous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Atropine: **Bradycardia**	____	____	____	____	**DO / P**	**SO**
• Administration of Atropine: **Organophosphate and / or Nerve Agent Poisonings**	____	____	____	____	**DO / P**	**SO**

- Administration of Atropine:

Hypersalivation secondary to Ketamine administration	___	__	__	__	__	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 507: Atrovent (Ipratoprium Bromide)

Pharmacology / Actions:

- Anti - cholinergic agent that relaxes bronchial smooth muscle.
- Increased pulmonary function through bronchial dilation.
- Acetylcholine antagonist.
- Inhibits vagal influence.

Indications:

The administration of **Atrovent (Ipratoprium Bromide)** should be considered in the following situations:

- Respiratory distress secondary to:
  - Asthma.
  - Chronic Obstructive Pulmonary Disease. (COPD)
- Acute bronchial spasm secondary to:
  - Allergies.
  - Anaphylaxis.

****Note:** Atrovent can be used in conjunction with Albuterol for the medical conditions listed above.

Contra - Indications:

- A known hypersensitivity to Atrovent.
- A known sensitivity to soybean, peanuts, or Atropine.
- Infant patients under 12 months of age.

Precautions:

- Extreme tachycardia can occur with use. In those cases discontinue the nebulizer.
- Allergic reactions can be produced by Atrovent including uticaria, angioedema, and or worsening bronchial spasm.
- Atrovent is use to prevent bronchial spasm attacks and will not treat bronchial spasm while it is happening.

Medication Dose: Adult

- General dose: 500 micrograms mixed in 2.5 cc of normal saline.
- Note: May be mixed with 2.5 milligrams of Albuterol & given a maximum 3 times every 20 minutes.

Medication Dose: Pediatric

- General dose: 500 micrograms mixed in with 6.0 cc of respiratory saline.
- Note: May be mixed with 2.5 milligrams of Albuterol & given a maximum 3 times every 20 minutes.

City of Yuma Ambulance Service EMS Protocols
Section 507: Atrovent (Ipratoprium Bromide)

Route of Administration: Adult & Pediatric

- To be administered via oxygen nebulizer device with the flow rate set at 6 to 8 liters per minute for 5 to 10 minutes.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Atrovent: (Ipratoprium Bromide)	____	____	____	**DO / P**	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 508: Benadryl (Diphenhydramine)

Pharmacology / Actions:

- Antihistamine.
- Anti - parkinsonian effect.
- Anti - cholinergic.

Indications:

The administration of **Benadryl (Diphenhydramine)** should be considered in the following situations:

- An acute allergic reaction.
- An acute dystonic reaction to anti - psychotic medications.

****Note:** Benadryl is to be used as a second line medication for anaphylaxis.

Contra - Indications:

- None. (See Special Precautions for Pregnant patients & nursing mothers)

Precautions:

- May have additive depressant effect with alcohol and other central nervous system depressants.
- Use with caution patients with asthma, glaucoma, cardiovascular disease, and hypertension due to atropine like effect.
- May see central nervous system stimulation in children.
- If patient presents with moderate to severe allergic reaction or anaphylaxis, the use of Benadryl is prudent and indicated as benefits outweigh risks to the mother / child.

Medication Dose: Adult

- General dose: 10 milligrams to 50 milligrams.

Medication Dose: Pediatric

- General dose: 1 to 2 milligrams / kilogram.
- **Not to exceed: 50 milligrams total.**

Routes of Administration: Adult

- Intra-venous administration.
- Intra-muscular injection.

Routes of Administration: Pediatric

- Intra-venous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Benadryl: (Diphenhydramine) **Allergic reactions / Anaphylaxis**	___	___	___	**DO / P**	**DO / P**	**SO**
• Administration of Benadryl: (Diphenhydramine) **Acute dystonic reactions**	___	___	___	**DO / P**	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 509: Cardizem - Diltiazem

Pharmacology / Actions:

- Inhibits the influx of calcium ions during membrane depolarization of cardiac and vascular smooth muscle.
- Therapeutic effects of Diltiazem for SVT's are related to slowing AV nodal conduction & prolong AV nodal refractory.
- Diltiazem slows ventricular rates, interrupts the re-entry circuit in AV nodal re-entrant tachycardias.
- Diltiazem also prolongs the sinus cycle length and decreases peripheral vascular resistance.

Indications:

The administration of **Cardizem (Diltiazem)** should be considered in the following situations:

- For patients with atrial fibrillation or atrial flutter with a rapid ventricular response.
- For patients with Supra-ventricular Tachycardias refractory to the administration of Adenosine.

Contra - Indications:

- Severe hypotension.
- Sick sinus syndrome or 2nd and 3rd Degree AV Nodal Blocks.
- Wolf Parkinson White Syndrome.
- Demonstrated hypersensitivity to Diltiazem.

Precautions:

- Diltiazem should be use with caution in patients with impaired liver or renal function.
- Diltiazem administered to a patient who is taking oral beta-blockers may cause bradycardia or AV Nodal blocks.
- Caution should be used when administering Diltiazem and anesthetics.
- Caution should be use in pregnant females that are nursing, or patients with suspected CHF.

Medication Dose:

- Initial Dose: .25 mg / kg over two (2) minutes. Maximum Dose: 20 mg.
- Repeat Dose: .35 mg / kg over two (2) minutes. Maximum Dose: 30 mg. (Given 15 minutes after initial dose)

Route of Administration:

- Intravenous.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Cardizem - Diltiazem	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 510: Cyano Kit (Hydroxocobalamin)

Pharmacology / Actions:

- Hydroxocobalamin forms a strong bond with cyanide (CN), forming not-toxic cyanocobalamin, which is another form of vitamin B_{12}, which is then safely excreted in the urine.
- Onset of action is within a few minutes.
- **Note**: Amyl nitrite, methylene blue, and sodium thiosulfate are not FDA approved cyanide antidotes and can be lethal in smoke inhalation victims.

Indications:

The administration of **Cyano Kit (Hydroxocobalamin)** should be considered in the following situations:

- Altered mentation with suspected cyanide poisoning in the following situations:
- Signs and symptoms of cyanide poisoning:
  - Altered mentation.
  - Headache.
  - Dyspnea with either Tachypnea / Hyperpnea in the early stages.
  - Dyspnea with either Bradypnea / Apnea in the late stages.
  - Chest tightness.
  - Nausea and / or vomiting.
  - Seizures / Coma.
  - Mydriasis.
  - Hypertension in the early stages.
  - Hypotension in the late stages.
- Signs and symptoms that similar to carbon monoxide poisoning that must be differentiated:
  - Headache.
  - Altered mental status.
  - Nausea.
  - Cardiac dysrhythmias.
  - Seizures.
  - Respiratory arrest.

Contra - Indications:

- Allergy to Hydroxocobalamin or Cyanocobalamin.

Precautions:

- Hydroxocobalamin is a Class C drug. Safety during pregnancy has not been studied. Should only be used in pregnant patients if the potential benefits outweigh the potential risks.
- Not compatible with most drugs used in cardiac arrest and not recommended to be mixed with blood products. If using during these situations, make sure to have a designated I.V. line just for the Hydroxocobalamin infusion.
- Consult with medical control and / or the Denver Poison Control (1-800-222-1222) center for questions / situations not addressed in this protocol.

Medication Dose:

Adult:

- 5.0 grams. (Both 2.5 gram vials)
- Maximum dose of 5.0 grams.

Pediatric:

- 70 mg/kg via IVP.
- Maximum dose of 5.0 grams.

Route of Administration:

Adult:

- Administered via I.V. infusion over 15 minutes, which is approximately 15 mL/min.
- **Note:** Mix the first 2.5-gram vial with 100 mL of 0.9% normal saline using the transfer spike. Fill to the line with the vial in the upright position. Rock or rotate for 30 seconds (do not shake); infuse over 7.5 minutes. Repeat the process for the second 2.5-gram vial.

Pediatric:

- Administered via I.V. infusion over 15 minutes.
- **Note:** Mix one 2.5-gram vial with 100 mL of 0.9% normal saline as described in the adult dosing. Then, administer the Ml of solution (at a rate of roughly 15 mL/min) to achieve a dose of 70 mg/kg.
- You may need to use part of the 2nd vial preparing and administering it the same way as you did the first vial.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Cyano Kit (Hydroxocobalamin)	___	___	___	___	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 511: Dextrose (D^{50} & D^{25})

Pharmacology / Actions:

- Dextrose describes the sugar, d - glucose.
- Primary carbohydrate fuel used in the body.

Indications:

The administration of **Dextrose (D^{50} or D^{25})** should be considered in the following situations:

- A known hypoglycemia event. (Example: Insulin shock in the diabetic patient)
- A blood glucose level below 60 mg /dL with altered mental status and symptomatic (i.e. a patient could be shaky or diaphoretic but not yet altered and still need glucose).
- Unconscious patients with unknown history.
- Acute alcohol induced hypoglycemia event.
- Status seizures that are refractory to the administration of benzodiazepines.
- Hypothermia.

Contra - Indications:

- A known or suspected CVA in the absence of hypoglycemia.

Precautions:

- Obtain blood glucose level.
- Assure patency of I.V. Infiltration of glucose will cause necrosis of tissue. If there is a doubt to the patency of the line, do not administer D50 through it. Start another IV
- Get a blood return before and during administration of medication.
- If infiltration does occur, stop administration immediately and notify receiving facility.
- Administer D50 in 15-20 ml increments, flushing the line with saline in between. This will minimize the effect of the hypertonic D50 on the vessel walls.
- Effects may be delayed in elderly patients with poor circulation. One bolus should be sufficient to raise blood glucose levels 50% to 100%. The patient's level of consciousness should improve within 10 minutes of administration.
- Patients with an unchanged mental status should be evaluated for other causes.

Medication Dose: Adult - (Dextrose 50% Solution: D^{50})

- Initial dose: 12.5 to 25 grams. (50 cc)
- Subsequent doses: 12.5 to 25 grams. (50 cc)
- Only consider a second dose for patients with a slow response

Medication Dose: Pediatric - (Dextrose 25% Solution: D^{25})

- Initial dose: 2 cc / kilogram

Routes of Administration: Adult & Pediatric

- Intra-venous administration.
- Intra-osseous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Dextrose 50% (D^{50}) **Adult patients**	____	____	**SO**	**SO**	**SO**	**SO**
• Administration of Dextrose 25% (D^{25}) **Pediatric patients**	____	____	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 512: Dopamine (Intropin)

Pharmacology / Actions:

- Vasopressor that increases cardiac output.
- Dosage dependant effects:
  - 1 to 2 micrograms / kilogram / minute: Dilates renal and mesenteric vessels.
  - 2 to 10 micrograms / kilogram / minute: Beta effects on the heart. Increasing cardiac output.
  - 10 to 20 micrograms / kilogram /minute: Alpha effects on the heart. Vasoconstriction. Increased BP.
  - 20 to 40 micrograms / kilogram /minute: Alpha effects on the heart. Reverses dilation of renal & mesenteric.

Indications:

The administration of **Dopamine (Intropin)** should be considered in the following situations:

- Shock (hypoperfusion) related to decreased cardiac output.
- Hypotension after hypovolemia has been treated.
- Unstable bradycardia. (2 to 10 mcg / kg / min)

Contra - Indications:

- An EKG rhythm that reveals any tachycardia dysrhythmias.
- Hypertension.

Precautions:

- Treat hypoperfusion (hypovolemic shock) with fluids prior to the administration of Dopamine.
- Uncorrected tachycardias or ventricular fibrillation. Dopamine may induce arrhythmias.
- Inactivated in Sodium Bicarbonate or other alkaline solutions.
- Very damaging to tissues.
- Low dosages may cause hypotension.
- Reduce dose for patients on MAO inhibitors.
- Most common effect:
  - Ectopic beats.
  - Nausea and vomiting.
  - Tachycardia.

Medication Dose: Adult & Pediatric

- 400 milligrams in 250 cc crystalloid. Yields a concentration of 1600 micrograms / cc.
- Dose: Refer to chart below for dosing.

City of Yuma Ambulance Service EMS Protocols
Section 512: Dopamine (Intropin)

Routes of Administration: Adult & Pediatric

- Intra-venous administration.
- Intra-osseous administration.

mcg /kg / min	20 kg	30 kg	40 kg	50 kg	60 kg	70 kg	80 kg	90 kg	100 kg
2 mcg	1.5	2	3	4	5	5	6	7	8
5 mcg	4	6	8	9	11	13	15	17	19
10 mcg	8	11	15	19	23	26	30	34	38
15 mcg	11	17	23	28	34	39	45	51	56
20 mcg	15	23	30	38	45	53	60	68	75

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Dopamine: (Intropin) **Adult & Pediatric patients**	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 513: DuoDote Auto Injector ®

Pharmacology / Actions:

- Atropine: Anticholinergic agent that acts as a competitive antagonist on muscarinic parasympathetic nerve receptors. Acts on **SLUDGE** symptoms of **SLUDGE MM.**
- Pralidoxime Chloride (2-PAM): Anticholinergic agent that acts as a competitive antagonist on nicotinic nerve receptors. Acts on **M**uscle twitching in **SLUDGE (M)M.**
- **Note**: Antidotes do not act on the **M**iosis symptoms.

Indications:

The administration of **DuoDote Auto Injector** should be considered in the following situations:

- Known or suspected symptomatic organophosphate or carbamate insecticide, or nerve agent poisonings to include:
  - Tabun.
  - Sarin.
  - Soman.
  - Cyclohexyl Sarin.
  - V - Agent.

- A patient that is experiencing the following symptoms:
  - **SLUDGEMM**
    - Salivation.
    - Lacrimation.
    - Urination.
    - Defecation.
    - GI Motility.
    - Emesis.
    - Muscle Twitching.
    - Miosis (Constricted Pupils)

Contra - Indications:

- None if the patient presents with life threatening symptoms.
- **DO NOT** use prophylactically!! Patient must be symptomatic

Precautions:

- When symptoms of nerve agent or insecticide poisoning are not severe, DuoDote ® should be used with extreme caution in those patients with:
  - Cardiac diseases.
  - Pulmonary diseases.
  - Arrhythmias.
  - Narrow angle glaucoma.
  - Pyloric stenosis.
  - Prostatic hypertrophy.
  - Significant renal insufficiency.
- DuoDote ® is Pregnancy Category C and should be used during pregnancy **ONLY** if the potential benefit justifies the potential risk to the fetus.

Medication Dose:

Adult:

- 2.1 milligrams of Atropine Sulfate in 0.7 ml and 600 milligrams of 2-PAM in 2 ml.

Route of Administration:

For Severe Symptoms:

- Immediately administer three (3) DuoDote ® injections into the patient's mid-lateral thigh in rapid succession.

For Mild Symptoms:

- Administer one (1) DuoDote ® injection into the patient's mid-lateral thigh.
- If symptoms continue after 10 minutes, administer a second dose.
- If symptoms continue after and additional 10 minutes, administer the third and final dose.

Consider the administration of a benzodiazepine (Ativan or Versed) for patients with continued convulsions.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of DuoDote ®	**PPA**	**PPA**	**PPA**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 514: Epinephrine

Pharmacology / Actions:

- Catecholamine with both alpha and beta effects.
  - Positive inotropic, chronotropic, and dromotropic effects.
  - Increases peripheral vascular resistance.
  - Increases arterial blood pressure.
  - Increases myocardial oxygen consumption.
  - Potent bronchodilator.

Indications:

The administration of **Epinephrine** should be considered in the following situations:

- An EKG rhythm that reveals ventricular fibrillation.
- An EKG rhythm that reveals asystole.
- An EKG rhythm that reveals pulseless electrical activity. (PEA)
- Acute bronchial spasm secondary to asthma.
  - Generally for patients less than 50 years of age.
- Allergic reactions / anaphylaxis.
- Symptomatic bradycardia in pediatric patients.

Contra - Indications:

- The use of epinephrine should be avoided (non cardiac arrest patients) in the following situations:
  - Hypertension.
  - Hyperthyroidism.
  - Ischemic heart disease.
  - Cerebrovascular insufficiency.
  - Patients in labor.
  - Hypovolemic shock.
  - DO NOT add to solutions containing Sodium Bicarbonate.

Precautions:

- Use of epinephrine may precipitate angina and / or an acute myocardial infarction in susceptible patients.
- Peripheral vasoconstriction can lead to pulmonary edema or CVA in susceptible patients.
- May cause:
  - Dysrhythmias.
  - Anxiety and tremors.
  - Palpitations.
  - Headaches.
  - Nausea and vomiting.

Medication Dose: Adult

Cardiac Arrest: (1 : 10,000 Solution)

- Initial dose: 1.0 milligram.
- Subsequent doses: 1.0 milligram.
- Dose can be repeated every 3 to 5 minutes.

Allergic Reactions / Acute Asthma / Bronchial Spasm: (1 : 1,000 Solution)

- General dose: 0.3 milligrams IM.

Severe Asthma / Anaphylaxis: (1 : 10,000 Solution)

- General dose: 0.1 to 0.3 milligrams IV.

Medication Dose: Pediatric

Cardiac Arrest: (1 : 10,000 Solution)

- Initial dose: 0.01 milligram / kilogram.
- Subsequent doses: 0.01 milligram / kilogram.
- Dose can be repeated every 3 to 5 minutes.

Symptomatic Bradycardia:

- General dose: 0.01 milligram / kilogram.

Allergic Reactions / Acute Asthma / Bronchial Spasm: (1 : 1,000 Solution)

- General dose: 0.01 milligram / kilogram IM.

Severe Asthma / Anaphylaxis: (1: 10,000 Solution)

- General dose: 0.01 milligram / kilogram IV.

Routes of Administration: Adult

Cardiac Arrest:

- Intra-venous administration.
- Intra -osseous administration.
- Endotracheal administration. (Note: 2 to 2½ times the intra-venous dose)

Allergic Reactions / Acute Asthma / Bronchial Spasm:

- Subcutaneous injection.
- Intra-muscular injection.

Severe Asthma / Anaphylaxis:

- Intra-venous administration.
- Intra-osseous administration.

Routes of Administration: Pediatric

Cardiac Arrest:

- Intra-venous administration.
- Intra-osseous administration.
- Endotracheal administration. (Note: 2 to 2½ times the intra-venous dose)

Symptomatic Bradycardia:

- Intra-venous administration.
- Intra-osseous administration.

Allergic Reactions / Acute Asthma / Bronchial Spasm:

- Intra-muscular injection.

Severe Asthma / Anaphylaxis:

- Intra-venous administration.
- Intra-osseous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Epinephrine: **Cardiac Arrest**	___	___	**	**	DO / P	SO
• Administration of Epinephrine: **Allergic Reactions IM**	___	SO	SO	SO	SO	SO
• Administration of Epinephrine: **Severe Asthma / Anaphylaxis IM**	___	SO	SO	SO	SO	SO
• Administration of Epinephrine: **Severe Asthma / Anaphylaxis IV**	___	___	___	___	DO / P	SO
• Administration of Epinephrine: **Symptomatic Bradycardia (Pediatrics)**	___	___	___	___	DO / P	SO

** An EMT Basic with I.V. authorization and an Advanced EMT may, under the supervision and authorization of a medical director, administer and monitor medications and classes of medications which exceed those listed in Appendices B and D of these rules for an EMT Basic with I.V. authorization and an Advanced EMT under the direct visual supervision of an EMT Intermediate or Paramedic when the following conditions have been established.

- The patient must be in cardiac arrest or in extremis.
- Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D in accordance with the provisions of these rules.

City of Yuma Ambulance Service EMS Protocols
Section 515: Epinephrine Auto Injector

Pharmacology / Actions:

- Catecholamine with both alpha and beta effects.
  - Positive inotropic, chronotropic, and dromotropic effects.
  - Increases peripheral vascular resistance.
  - Increases arterial blood pressure.
  - Increases myocardial oxygen consumption.
  - Potent bronchodilator.

Special Information Needed:

- Patient assessment.
- Assure type of medications is correct.
- Treatment prior to arrival.

Indications:

The administration of an **Epinephrine Auto Injector** should be considered in the following situations:

- Signs and symptoms of an allergic reaction / anaphylaxis.

Contra - Indications:

- Avoid using epinephrine (non cardiac arrest patients) in the following situations:
  - Hypertension.
  - Hyperthyroidism.
  - Ischemic heart disease.
  - Cerebrovascular insufficiency.
  - Patients in labor.
  - Hypovolemic shock.

Precautions:

- Other medications can use the auto injection system. Read the labels carefully.

Procedure:

- Administer oxygen.
- Direct order required for additional doses.
- Correct medication. Correct patient. Correct route. Medication not cloudy / discolored / or expired.
- Document dosage, route, and time administered.
- Reassess the patient for possible side effects:
  - Increased heart rate.
  - Pallor.
  - Chest pain.
  - Headache.
  - Nausea.
  - Vomiting.
  - Anxiousness.
  - Excitability.
  - Dizziness.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Epinephrine Auto Injector	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 516: Fentanyl (Sublimaze)

Pharmacology / Actions:

- Synthetic opioid agonist.
- Analgesic with short duration of action.
- Minimal histamine release.
- Less hemodynamic compromise.

Indications:

The administration of **Fentanyl (Sublimaze)** should be considered in the following situations:

- Severe pain secondary to injury / trauma.
- Severe pain secondary to back spasms or kidney stones.
- Severe pain secondary to severe burns.
- Severe pain secondary to cancer.
- Severe pain secondary to abdominal pain.
- Can be used as an alternative to Morphine for those patients with chest pain.
- To be used as an alternative pain medication for those patients with an allergy to Morphine.
- To be used as an alternative pain medication for those patients unable to tolerate Morphine due to compromised hemodynamics.

Contra - Indications:

- Respiratory depression or insufficiency.
- Uncorrected hypotension.

Precautions:

- Fentanyl may cause respiratory depression. Have resuscitation equipment available.
- May cause nausea and / or vomiting.
- High doses may cause jaw muscular rigidity with resultant difficult ventilation.
- A 100 mcg dose of Fentanyl is equal to approximately 10 mg of Morphine.
- Respiratory depression may outlast pain control effects. Monitor your patient.
- Medication administered should be titrated to pain relief and blood pressure.

Combination Benzodiazepine and Opiate Therapy:

The administration of a combination of benzodiazepines and opiates, for the purpose of severe pain management and/or muscle relaxation is permitted.

Safeguards shall be taken to maximize patient safety including but not limited to the patient's ability to:

- Independently maintain an open airway and normal breathing pattern
- Maintain normal hemodynamics

- Respond appropriately to physical stimulation and verbal commands

Combination Benzodiazepine and Opiate Therapy:

The administration of combination therapy requires appropriate monitoring and care including but not limited to:

- **IV or IO access**
- **Continuous waveform capnography**
- **Pulse oximetry**
- **ECG monitoring**
- **Blood pressure monitoring**
- **Administration of supplemental oxygen**

Medication Dose: Adult

- General dose: 1.0 to 2.0 micrograms / kilogram. (Usual dose is 50 micrograms to 100 micrograms)
- Maximum dose: 200 micrograms.
- Subsequent doses: Direct physician order after maximum dose of 200 micrograms has been reached.

Medication Dose: Pediatric

- General dose: 1.0 to 2.0 micrograms / kilogram.
- Maximum dose: 2.0 micrograms / kilogram.
- Subsequent doses: Direct physician order after maximum dose of 2.0 micrograms / kilogram has been reached.

Routes of Administration: Adult & Pediatric

- Intra-venous administration.
- Intra-nasal administration.
- Intra-muscular administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Fentanyl: (Sublimaze)	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 517: Glucagon

Pharmacology / Actions:

- Causes glucose mobilization in the body.
- Can be helpful with patients that have an overdose of beta blocking agents, raising blood pressure and heart rate.

Indications:

The administration of **Glucagon** should be considered in the following situations:

- Unconscious patients secondary to insulin shock
  - When Dextrose 50% is not available or an I.V. / I.O. line can't be established.
- Suspected overdose of beta blockers.
- Esophageal food obstruction.

Contra - Indications:

- None listed.

Precautions:

- I.V. glucose is the treatment of choice for insulin shock.
- Patients without liver glycogen stores may not be able to respond to Glucagon administration.
- Nausea or vomiting may occur.

Medication Dose: Adult

Hypoglycemia:

- General dose: 1.0 milligram.

Beta Blocker Overdose:

- General dose: 3.0 milligrams or 0.03 milligrams / kilogram to be administered over 30 seconds.

Esophageal Food Obstruction:

- General dose: 1.0 milligram.

Medication Dose: Pediatric

Hypoglycemia:

- General dose: 0.1 milligram / kilogram up to 1.0 milligram.

Beta Blocker Overdose:

- General dose: 0.1 milligram / kilogram up to 1.0 milligram.

Route of Administration: Adult

Hypoglycemia:

- Intra-muscular injection.
- Intra-nasal administration.

Beta Blocker Overdose:

- Intra-venous administration.
- Intra-osseous administration.

Esophageal Food Obstruction:

- Intravenous administration.

Route of Administration: Pediatric

Hypoglycemia:

- Intra-muscular injection.
- Intra-nasal administration.

Beta Blocker Overdose:

- Intra-venous administration.
- Intra-osseous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Glucagon: **Hypoglycemia**	___	___	___	**SO**	**SO**	**SO**
• Administration of Glucagon: **Beta Blocker Overdose**	___	___	___	**DO / P**	**DO / P**	**SO**
• Administration of Glucagon: **Esophageal Food Obstruction**	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 518: Oral Glucose

Pharmacology / Actions:

- Increases blood glucose levels.

Special Information Needed:

- **Generic Names:**
  - Oral glucose.
- **Trade Names:**
  - Glutose.
  - Glucose.
  - Insta - Glucose.

- Assure patient is conscious, can swallow, and can maintain an airway.
- Patient assessment.
- Patient vital signs.

Indications:

The administration of **Oral Glucose** should be considered in the following situations:

- A known hypoglycemic event and are conscious enough to swallow.
- A known history of diabetes and conscious enough to swallow contents.

Contra - Indications:

- Unresponsive patients.
- Patients that are unable to swallow the contents.

Precautions:

- Do not squeeze the entire tube into the patient's mouth all at once.
- Take medications with the patient, including home medications.

Procedure:

- Administer glucose between the cheek and gum (buccal) in small doses, using a tongue depressor.
- One (1) dose = 15 grams.
- Document time, amount given, and patient response.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Oral Glucose	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 519: Inapsine (Droperidol)

Pharmacology / Actions:

- A potent neuroleptic tranquilizer agent with effects that can last up to 2 to 4 hours.
- Produced a mild alpha-adrenergic blockage, peripheral vascular dilation and reduction of the pressor effect of epinephrine, resulting in hypotension and decreased peripheral vascular resistance.

Indications:

The administration of **Inapsine (Droperidol)** should be considered in the following situations:

- Chemical restraint in combative patients.

Contra - Indications:

- Patient taking cardiac medications or with a known cardiac history especially prolonged QT syndrome.
- Should not be used in the presence of narcotics or barbiturates. May result in respiratory depression or apnea.
- Should not be administered to children less than 2 years of age.
- Renal failure or hepatic disease.
- Known hypersensitivity to Inapsine (Droperidol).
- Pregnancy.

Precautions:

- Hypotension, tachycardia, respiratory depression, apnea.
- Extrapyramidal reactions may occur. Administer Benadryl if necessary.
- Dosage should be reduced in elderly or debilitated patients.
- Hypotension may occur, but is generally well treated with fluid administration.
- Patient's administered Inapsine (Droperidol) should have cardiac monitoring as well.

Medication Dose:

- General dose: 2.5 to 5.0 milligrams.
- Subsequent doses: Contact base physician.

Route of Administration:

- Intra-venous administration.
- Intra-muscular administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Inapsine (Droperidol) **Chemical Restraint in combative patients.**	___	___	___	___	**DO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 520: Lasix (Furosemide)

Pharmacology / Actions:

- A potent diuretic.
- Inhibits sodium re-absorption. Increases potassium excretion.
- I.V. administration results in an increase in venous capacitance. Usually in 3 to 4 minutes.
- Peak effect is 30 to 60 minutes. Duration of 2 hours.
- Oral administration peak effect in 1 to 2 hours. Duration of 6 to 8 hours.

Indications:

The administration of **Lasix (Furosemide)** should be considered in the following situations:

- Acute pulmonary edema secondary to congestive heart failure.

Contra - Indications:

- A known or suspected history of recent pneumonia.
- Hypovolemia.
- Dehydration.
- Hypokalemia.
- A known sensitivity to sulfa drugs.
- Pregnant patients.
- Pediatric patients.

Precautions:

- Can lead to hypokalemia. Especially in patients taking digitalis.
- Can induce profound diuresis with resulting hypoperfusion symptoms.
- Anticipate rapid effects and have a urinal ready.
- Hyponatremia, hypokalemia, and hypoperfusion are possible.
- May cause acute diarrhea.
- Advise base physician of patient's usual daily dose when requesting order.

Medication Dose:

- General dose: 20 to 40 milligrams. To be administered slowly. Consider doubling the patient's daily dose.
    - Do not administer Lasix with systolic Blood pressure < 110.

Route of Administration:

- Intra-venous administration.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Lasix: **Acute Pulmonary Edema 2° Congestive Heart Failure**	____	____	____	____	**DO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 521: Lidocaine

Pharmacology / Actions:

- Depresses myocardial automaticity.
- Raises the fibrillation threshold.
- Decreased cough reflex.

Indications:

The administration of **Lidocaine** should be considered in the following situations:

- An EKG rhythm that reveals ventricular fibrillation refractory to defibrillation.
- An EKG rhythm that reveals persistent ventricular fibrillation.
- An EKG rhythm that reveals ventricular tachycardia without pulses or is considered unstable.
- An EKG rhythm that reveals a wide complex tachycardia of unknown origin and is considered unstable.
- An EKG rhythm that reveals significant ventricular ectopy with signs and symptoms of hemodynamic compromise.
- To be used for pain control for intra-osseous infusion of a conscious patient.
- To be used as preparation prior to nasal endotracheal intubation. Lidocaine Jelly 2%.

Contra - Indications:

- An EKG rhythm that reveals the presence of bundle branch blocks.
- An EKG rhythm that reveals a bradycardia with the presence of A.V. blocks.
- An EKG rhythm that reveals periods of sinus arrest.
- An EKG rhythm that reveals atrial fibrillation / atrial flutter. (May experience tachycardia)
- Hypotension. (Systolic less than 80 mm / Hg)

Precautions:

- Can cause:
  - CNS disturbances.
  - Sleepiness.
  - Dizziness.
  - Tinnitus.
  - Parasthesia.
  - Disorientation / confusion.
  - Seizures.

Medication Dose: Adult

Cardiac Arrest:

- Initial dose: 1.0 milligram / kilogram to 1.5 milligram / kilogram.
- Subsequent doses: 0.5 milligram / kilogram to 0.75 milligram / kilogram every 5 to 10 minutes.
- Maximum dose: 3.0 milligram / kilogram.

Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin

- Initial dose: 1.0 milligram / kilogram to 1.5 milligram / kilogram.
- Subsequent doses: 0.5 milligram / kilogram to 0.75 milligram / kilogram every 5 to 10 minutes.
- Maximum dose: 3.0 milligram / kilogram.

After Successful Cardioversion / Defibrillation / Return of Spontaneous Circulation

- Initial dose: 1.0 milligram / kilogram to 1.5 milligram / kilogram.
- I.V. infusion: 1.0 to 4.0 milligrams / minute.

Intra-osseous Bolus for Anesthetic Effect:

- General dose:
- Prime EZ-Connect extension set with lidocaine
  Note that the priming volume of the EZ-Connect is approximately 1.0mL
- Slowly infuse lidocaine 40mg IO over 120 seconds - Allow lidocaine to dwell in IO space 60 seconds
- Flush with 5 to 10mL of normal saline
- Slowly administer an additional 20mg of lidocaine IO over 60 seconds if needed for pain
- Consider systemic pain control for patients not responding to IO lidocaine

Preparation for Nasal Endotracheal Intubation: (Lidocaine Hydrochloride Jelly 2%)

- General dose: Lubricate endotracheal tube thoroughly prior to insertion.

Medication Dose: Pediatric

Cardiac Indications:

- Initial dose: 1.0 milligram / kilogram
- Subsequent doses: 0.5 milligram / kilogram to 0.75 milligram / kilogram every 5 to 10 minutes.
- Maximum dose: 3.0 milligram / kilogram.

Intra-osseous Bolus for Anesthetic Effect:

- General dose: 0.5mg/kg, not to exceed 40mg
- Prime EZ-Connect extension set with lidocaine
  Note that the priming volume of the EZ-Connect is approximately 1.0mL
  For small doses of lidocaine, consider administering by carefully attaching syringe directly to needle hub (prime EZ-Connect with normal saline)
- Slowly infuse lidocaine over 120 seconds - Allow lidocaine to dwell in IO space 60 seconds

- Flush with 2-5 mL of normal saline
- Slowly administer subsequent lidocaine (half the initial dose) IO over 60 seconds if needed for pain
- Consider systemic pain control for patients not responding to IO lidocaine

Routes of Administration: Adult

Cardiac Arrest:

- Intra-venous administration.
- Intra-osseous administration.
- Endotracheal administration. (Note: 2 to 2½ times the intra-venous dose)

Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin

- Intra-venous administration.
- Intra-osseous administration.

After Successful Cardioversion / Defibrillation / Return of Spontaneous Circulation

- Intra-venous administration.
- Intra-osseous administration.

Intra-osseous Bolus for Anesthetic Effect:

- Intra-osseous administration.

Routes of Administration: Pediatric

Cardiac Arrest:

- Intra-venous administration.
- Intra-osseous administration.
- Endotracheal administration. (Note: 2 to 2½ times the intra-venous dose)

Intra-osseous Bolus for Anesthetic Effect:

- Intra-osseous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Lidocaine: **Cardiac Arrest**	___	___	**	**	DO / P	SO
• Administration of Lidocaine: **Ventricular Tachycardia / Wide Complex Tachycardia**	___	___	___	___	DO / P	SO
• Administration of Lidocaine: **After Successful Cardioversion / Defibrillation / ROSC**	___	___	___	___	DO / P	SO

• Administration of Lidocaine: **Intra-osseous Bolus for Anesthetic Effect**	___	___	**	**SO**	**SO**	**SO**
• Administration of Lidocaine Jelly 2%: **Preparation for Nasal Endotracheal Intubation**	___	___	___	___	___	**SO**

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- The patient must be in cardiac arrest or in extremis.
- Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D in accordance with the provisions of these rules.

City of Yuma Ambulance Service EMS Protocols
Section 522: Magnesium Sulfate

Pharmacology / Actions:

- Corrects repolarization in cardiac tissue.
- Blocks neuromuscular transmission in seizure patients.
- Decreases cerebral vasospasm.
- Lowers blood pressure.

Indications:

The administration of **Magnesium Sulfate** should be considered in the following situations:

- An EKG rhythm that reveals Torsades de Pointes.
- Seizures secondary to ecclampsia.
- An acute bronchial spasm that is unresponsive to treatment from:
  - Albuterol.
  - Atrovent.
  - Epinephrine.
  - Terbutaline.

Contra - Indications:

- An EKG rhythm that reveals 2nd degree and 3rd degree A. V. nodal blocks.

Precautions:

- Watch for the following:
  - Hypotension.
  - Respiratory depression.
  - Hypo - reflexia.

Medication Dose: Adult

Torsades de Pointes with a pulse

- General dose: 1.0 to 2.0 grams. (Diluted in 50 to 100 ml saline given over 5-10 minutes)

Cardiac Arrest:

- General dose: 1.0 to 2.0 grams. (Diluted)

Seizures Secondary to Eclampsia:

- General dose: 4.0 grams. (Diluted) Dose to be given over 10 to 15 minutes

Bronchial Spam:

- General dose: 1.0 to 2.0 grams. (Diluted) To be administered slowly.

Routes of Administration: Adult

Cardiac Arrest:

- Intra-venous administration.
- Intra -osseous administration.

Seizures Secondary to Ecclampsia:

- Intra-venous administration.

Bronchial Spam:

- Intra-venous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Magnesium Sulfate: **Cardiac Arrest / Torsades de Pointes**	___	___	**	**	**	SO
• Administration of Magnesium Sulfate: **Seizures Secondary to Ecclampsia**	___	___	___	___	DO / P	SO
• Administration of Magnesium Sulfate: **Bronchial Spasm**	___	___	___	___	___	SO

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- The patient must be in cardiac arrest or in extremis.
- Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D in accordance with the provisions of these rules.

City of Yuma Ambulance Service EMS Protocols
Section 523: Morphine

Pharmacology / Actions:

- Narcotic analgesic.
- Decreases respiratory rate and volume.
- Peripheral vasodilation.
- Constricts pupils.
- Decreases cardiac work, myocardial oxygen consumption, and blood pressure.

Indications:

The administration of **Morphine** should be considered in the following situations:

- Severe pain secondary to severe extremity fractures / sprains / strains.
- Severe pain secondary to burns.
- Chest pain that is secondary to:
  - Suspected myocardial infarction.
  - Unstable angina.

Contra - Indications:

- Head injury.
- Altered mental status.
- Respiratory depression.
- Hypotension.
- Hypovolemia.
- Patients taking an MAO inhibitor within 14 days.

Precautions:

- Dizziness. Convulsions. Nausea. Vomiting.
- Multi systems trauma.
- Use with caution in right ventricular infarction.
- Have Narcan readily available.
- Do not expect complete relief of pain.
- To be administered slowly, except as directed by Base Physician.

Combination Benzodiazepine and Opiate Therapy:

The administration of a combination of benzodiazepines and opiates, for the purpose of severe pain management and/or muscle relaxation is permitted.

Safeguards shall be taken to maximize patient safety including but not limited to the patient's ability to:

- Independently maintain an open airway and normal breathing pattern
- Maintain normal hemodynamics
- Respond appropriately to physical stimulation and verbal commands

The administration of combination therapy requires appropriate monitoring and care including but not limited to:

- **IV or IO access**
- **Continuous waveform capnography**
- **Pulse oximetry**
- **ECG monitoring**
- **Blood pressure monitoring**
- **Administration of supplemental oxygen**

Medication Dose: Adult

- General dose: 2.0 milligrams to 10.0 milligrams. Titrate to effect.
- Usual dose: 2.0 milligrams to 5.0 milligrams every 5 to 10 minutes.
- Maximum dose: 10 milligrams.
- Subsequent doses: Direct physician order after maximum dose of 10.0 milligrams has been reached.

Medication Dose: Pediatric

- General dose: 0.1 milligram / kilogram to 0.2 milligrams / kilogram.

Routes of Administration: Adult & Pediatric

- Intra-venous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Morphine:	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 524: Narcan (Naloxone)

Pharmacology / Actions:

- Narcotic antagonist.

Indications:

The administration of **Narcan (Naloxone)** should be considered in the following situations:

- A known narcotic overdose.
  - Reverse the narcotic effects.
  - Primarily respiratory depression.
- An altered mental status of unknown etiology.

Contra - Indications:

- None listed.

Precautions:

- Patients may become violent as Narcan reverses narcotic effects.
- Titrate to keep patient's respiratory and cardiac status acceptable. (1.0 milligram to 2.0 milligrams at a time)
- Large doses may be necessary to reverse the effects of Darvon. (4.0 milligrams to 6.0 milligrams)
- Narcotic effects may outlast Narcan. Repeat dosages may be necessary.
- Extreme caution in those patients with history of chronic narcotic use.

Medication Dose: Adult

- General dose: 0.4 milligrams to 2.0 milligrams.
- Subsequent doses: 0.4 milligrams to 2.0 milligrams. May be repeated after 5 minutes if necessary

Medication Dose: Pediatric

- General dose: 0.4 milligrams to 2.0 milligrams.
- Subsequent doses: 0.4 milligrams to 2.0 milligrams. May be repeated after 5 minutes if necessary

Routes of Administration: Adult & Pediatric

- Intra-venous administration.
- Intra-muscular injection.
- Subcutaneous injection.
- Endotracheal administration.
- Intra-nasal administration. (½ dose is given in each nare with MAD)

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Narcan: (Naloxone)	____	____	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 525: Nitroglycerin

Pharmacology / Actions:

- Smooth muscle relaxant.
- Dilates coronary blood vessels.
- Decreases peripheral vascular resistance.

Indications:

The administration of **Nitroglycerin** should be considered in the following situations:

- Stable or unstable angina.
  - Chest, arm, or neck pain thought to be cardiac in origin.
- Hypertension and acute pulmonary edema secondary to:
  - Congestive heart failure with the use of CPAP in place. (Transdermal)
- Hypertension secondary to:
  - Autonomic hyper - reflexia.

Contra - Indications:

- Hypotension.
- Head injury.
- A known or suspected cerebral hemorrhage.
- Patients taking any medications for erectile dysfunction.
- Patients taking the medication Adempas.
- Right ventricular myocardial infarction.

Precautions:

- I.V. establishment recommended prior to administration.
- Obtain blood pressure 2 minutes after each administration.
- Vasodilation may cause hypotension and reflex tachycardia.
- Potency can diminish quickly with exposure to light.
- Therapeutic effects are enhanced and side effects increased when patient is upright.
- Side effects include: Headache. Flushing. Dizziness. Burning under the tongue. Weakness. Hypotension. Bradycardia. Discontinue when severe headache occurs.
- Patients experiencing an inferior wall myocardial infarction may also be having a right ventricular wall myocardial infarction. The administration of nitroglycerin to these patients is contra-indicated as it can cause profound hypotension. Therefore patients with an inferior wall myocardial infarction should also have a V^4R lead view run in addition to a 12 lead EKG to rule out right ventricular involvement.
- Use with caution in those patients that are hypotensive. Contact Base Physician for patients with a blood pressure of less than 100 mm / Hg or a heart rate below 60 beats per minute or above 110 beats per minute.

Medication Dose:

- General dose: 0.4 milligrams. (1 pill = 1 metered spray)
- Subsequent doses: 0.4 milligrams. May be repeated every 5 minutes if necessary.
- Transdermal: 1-inch application of nitro paste in the following medical conditions.
  - Hypertensive CHF patient with CPAP in place.
  - Patient with Autonomic Hyper-Reflexia.

Routes of Administration:

- Sublingual Administration
- Transdermal.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Nitroglycerin: **Chest Pain: Cardiac Origin**	___	___	___	**SO**	**SO**	**SO**
• Administration of Nitroglycerin: **Pulmonary Edema 2° to Congestive Heart Failure**	___	___	___	**SO**	**SO**	**SO**
• Administration of Nitroglycerin: **Hypertension 2° to Autonomic Hyper - Reflexia**	___	___	___	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 526: Oxygen

Pharmacology / Actions:

- Essential for tissue metabolism.

Indications:

The administration of **Oxygen** should be considered in the following situations:

- Suspected hypoxemia or respiratory distress of any kind.
- Any toxic inhalation event.
- Shock. (Hypoperfusion) associated with major trauma or gastro-intestinal hemorrhage.
- Restlessness may be an important sign of hypoxia.

Contra - Indications:

- Do not withhold oxygen therapy, even in those patients with chronic lung disease.

Precautions:

- Be prepared to assist ventilations via bag valve mask or FROPVD.
- Use the most efficient delivery system of oxygen your patient will tolerate.
- Safety is paramount. Be sure that gauges and regulators are free from residue, especially hydrocarbons.
- Avoid standing the bottle up. Lay it down before it gets knocked over.
- For patients suspected of having a myocardial infarction, stroke, post cardiac arrest and head injuries use the oxygen level and device to maintain a pulse oximetry reading between 94% to 99% in an attempt to avoid reperfusion injuries.

Medication Dose: Adult & Pediatric

- Titrate oxygen administration to maintain a pulse oximetry reading between 94% to 99%
- 0.5 to 25 liters per minute depending on administration device.

Routes of Administration: Adult & Pediatric

- Nasal cannula: 24% to 40% at 5 to 6 liters per minute.
- Non Rebreather: Up to 90% at 15 liters per minute.
- Bag Valve Mask" 80% to 100% with supplemental oxygen at 15 liters per minute.
- FROPVD: 100% at 40 liters per minute. 100% at 100 liters per minute.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Oxygen:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 527: Phenylephrine (Neo Synephrine)

Pharmacology / Actions:

- Used for topical nasal administration, Phenylephrine primarily exhibits alpha-adrenergic stimulation. This stimulation can produce moderate to marked vasoconstriction and subsequent nasal decongestion.

Special Information Needed:

- **Generic Names:**
  - Neo Synephrine

Indications:

The administration of **Phenylephrine** should be considered in the following situations:

- Prior to nasal endotracheal intubation to induce vasoconstriction of nasal mucosa.
- Nose bleed.

Contra - Indications:

- None.

Precautions:

- Avoid administration into the eyes, which will dilate pupil.

Procedure:

- Instill two drops of 1% solution in the nostril prior to attempting nasal endotracheal intubation.
- Administer 2 sprays in affected naris of patient with active nosebleed after having patient blow nose to expel clots.
- Document time, amount given, and patient response.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Phenylephrine	--	SO	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 528: Racemic Epinephrine

Pharmacology / Actions:

- Vasoconstriction to reduce swelling of the upper airway.
- Relief of bronchospasm.

Indications:

The administration of **Racemic Epinephrine** should be considered in the following situations:

- Croup with life threatening airway obstruction.
- Severe stridor and / or accessory muscle use.

Contra - Indications:

- A known history of allergies / hypersensitivity to the medications.
- Epiglottitis

Precautions:

- Store in a cool, dark space. Light sensitive.
- May cause tachycardias or arrhythmias.
- Symptoms of overdose include:
  - Nausea.
  - Palpitations.
  - Headache.
  - Arrhythmias.

Medication Dose: Adult

- General dose: 0.5 cc mixed with 3 cc respiratory saline.

Medication Dose: Pediatrics

- General dose: 0.5 cc mixed with 6 cc respiratory saline.

Route of Administration: Adult & Pediatrics

- To be administered via oxygen nebulizer device with the flow rate set at 6 to 8 liters per minute for 5 to 10 minutes.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Racemic Epinephrine:	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 529: Sodium Bicarbonate

Pharmacology / Actions:

- Alkalotic solution.

Indications:

The administration of **Sodium Bicarbonate** should be considered in the following situations:

- Patients in cardio-pulmonary arrest after 10 minutes of effective CPR and ventilations.
- Excited delirium.
- Tricyclic anti - depressant overdose.
- Crush injury

Contra - Indications:

- DO NOT administer in mixtures with catecholamine, calcium, or Dilantin.
- Metabolic or respiratory alkalosis.
- Severe pulmonary edema.
- Abdominal pain of unknown origin.
- Electrolyte imbalances to include:
  - Hypocalcemia.
  - Hypokalemia.
  - Hypernatremia.

Precautions:

- 8.4% solution. 50 milliequivalents in a pre -filled syringe. (1.0 milliequivalent / cc)

Medication Dose: Adult & Pediatric

Cardiac Arrest:

- Initial dose: 1.0 milliequivalent / kilogram after 10 minutes of adequate ventilation.
- Subsequent doses: 0.5 milliequivalent / kilogram to be repeated every 10 minutes thereafter.

Excited Delirium:

- General dose: 1.0 ampule of Sodium Bicarbonate mixed with 1000 cc Normal Saline bolus infusion.

Tricyclic Anti - Depressant Overdose

- General dose: 1.0 Ampule of Sodium Bicarbonate. Base physician or poison control for subsequent doses.

Crush Injury:

- General Dose: 50 milliequivalents mixed in 1000 cc Normal Saline Infused over 30 minutes.

Routes of Administration: Adult & Pediatric

Cardiac Arrest:

- Intra-venous administration.
- Intra-osseous administration.

Excited Delirium:

- Intra-venous administration.
- Intra-osseous administration.

Tricyclic Anti - Depressant Overdose

- Intra-venous administration.
- Intra-osseous administration.

Crush Injury:

- Intra-venous administration.
- Intra-osseous administration.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Sodium Bicarbonate: **Cardiac Arrest**	____	____	**	**	**DO / P**	**SO**
• Administration of Sodium Bicarbonate: **Excited Delirium**	____	____	____	____	**DO / P**	**SO**
• Administration of Sodium Bicarbonate: **Tricyclic Anti - Depressant Overdose**	____	____	____	____	____	**SO**
• Administration of Sodium Bicarbonate: **Crush Injury**	____	____	____	____	**DO / P**	**SO**

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- The patient must be in cardiac arrest or in extremis.
- Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D in accordance with the provisions of these rules.

City of Yuma Ambulance Service EMS Protocols
Section 530: Solumedrol (Methylprednisolone)

Pharmacology / Actions:

- Gluco - corticoid.
- Anti - inflammatory.
- Suppresses immune / allergic response.

Indications:

The administration of **Solumedrol (Methylprednisolone)** should be considered in the following situations:

- Patients found to be suffering from severe respiratory distress secondary to:
  - Severe asthma.
  - Chronic obstructive pulmonary disease. (COPD)
  - Anaphylaxis.
- Adrenal Insufficiency (Addisonian Crisis)

Contra - Indications:

- A known hypersensitivity to the medication.

Precautions:

- Use during pregnancy only if benefits outweigh the risks.
- Once medication is re - constituted, it should be use promptly.
- May cause gastro - intestinal bleeding.
- Solumedrol is not considered a first line medication. Be sure to attend to the patient's primary treatment priorities first. Do not delay transport to administer the medication.
- The effects of Solumedrol are generally delayed for several hours and the effects of the medication may not be seen for several hours. Do not expect to see immediate responses to treatment.

Medication Dose: Adult

- General dose: 125 milligrams.

Medication Dose: Pediatric

- General dose: 2 milligrams / kilogram.
- Maximum dose: 125 milligrams.

Routes of Administration: Adult & Pediatric

- Intra-venous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Solumedrol (Methylprednisolone)	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 531: Terbutaline (Brethine)

Pharmacology / Actions:

- Beta - adrenergic receptor agonist.
- Bronchial dilator.

Indications:

The administration of **Terbutaline (Brethine)** should be considered in the following situations:

- Acute bronchial spasm secondary to:
  - Asthma.
  - Bronchitis.
  - Emphysema.

Note: Terbutaline should be considered for use in patients over the age of 50 when the use of Epinephrine is not advisable.

Contra - Indications:

- Patients with a known allergy or hypersensitivity to the medication.

Precautions:

- Use of Terbutaline with other sympathomimetic medications is not recommended.
- Solution is light and heat sensitive.
- Use with caution for the following conditions:
  - Diabetes.
  - Hypertensive patients.
  - Hyperthyroidism.
  - Cardiac patients. Especially those with arrhythmias.
- Watch for the following:
  - Increased heart rate.
  - Nervousness. & tremors.
  - Palpitations.
  - Dizziness.
  - Muscle cramps.
  - Headache.
  - Nausea & vomiting is usually transient.

Medication Dose:

Asthma / Bronchitis / Emphysema

- General dose: 0.25 milligrams.
- Subsequent dose: 0.25 milligrams. May be administered after 15 to 30 minutes if improvement does not occur.

Routes of Administration:

Asthma / Bronchitis / Emphysema

- Subcutaneous injection.
- IM injection.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Terbutaline: (Brethine) **Asthma / Bronchitis / Emphysema**	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 532: Tetracaine Hydrochloride

Pharmacology / Actions:

- Topical anesthetic.
- Effects begin within 20 seconds.

Indications:

The administration of **Tetracaine Hydrochloride** should be considered in the following situations:

- Reduce patient discomfort / pain in cases of foreign body irritation / burns when irrigation or exam is necessary.

Contra - Indications:

- A known allergy or hypersensitivity to the medication.
- Any possible penetrating injury to the eye.

Precautions:

- Not to be used for injection.
- Contact lenses should be removed.
- Patient should be instructed not to rub eyes.
- Solution should be discarded after one use.
- Repeated use decreases healing process.
- Transient symptoms include: Redness. Stinging. Burning.
- Corneal infection may result in permanent loss of vision.

Medication Dose:

- General dose: 1 to 2 drops in the eyes as needed.

Routes of Administration:

- Opthamolic administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Tetracaine Hydrochloride:	___	___	___	___	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 533: Thiamine (Vitamin B_1)

Pharmacology / Actions:

- A water soluble vitamin that is necessary for carbohydrate metabolism.
- Most vitamins required by the body are obtained through diet, however, certain states such as alcoholism and malnourishment may affect the intake, absorption, and utilization of Thiamine.
- Severe Thiamine deficiency may result in the development of Wernicke's encephalopathy. Signs may include:
  - Ocular motility disorders (nystagmus and opthalmoplegia).
  - Ataxia and mental changes (confusion, drowsiness, obtundation, clouding of consciousness, pre - coma & coma.
- Administering Thiamine to Thiamine deficient patients who receive a bolus of Dextrose 50% prevents the occurrence of severe neurologic symptoms collectively called Wernicke - Korsakoff syndrome. An appropriate treatment may correct most of these abnormalities. The lack of a diagnosis of Wernicke's encephalopathy may result in serious consequence.

Indications:

The administration of **Thiamine (Vitamin B_1)** should be considered in the following situations:

- Thiamine is to be administered along with Dextrose 50% in patients with comas of unknown origin who have a history of poor nutrition, untreated illness, and are suspected of chronic alcoholism.

Contra - Indications:

- A known allergy or hypersensitivity to the medication.

Precautions:

- Hypotension if administered to rapidly or following a large dose.
- Anxiety. Feeling of warmth. Diaphoresis. Nausea. Vomiting.
- Not recommended for pediatric use.

Medication Dose:

- General dose: 100 milligrams. To be administered slowly.

Routes of Administration:

- Intra-venous administration.
- Intra-muscular injection.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Thiamine: (Vitamin B_1)	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 534: Versed (Midazolam)

Pharmacology / Actions:

- Schedule 4 controlled substance.
- Benzodiazepine. Short activing, sedative and hypnotic.
- Relaxes skeletal muscle.
- General anesthetic properties, with amnesic properties.
- Onset effects in 1 to 5 minutes to 1 hour.

Indications:

The administration of **Versed (Midazolam)** should be considered in the following situations:

- Status epilepticus. (Second line medication refractory to the administration of Ativan)
  - Seizures lasting longer than 3 minutes.
  - Concurrent seizures without regaining period of consciousness.
- Pediatric seizures. (Intra-nasal administration via the MAD).
- Chemical restraint for uncontrollable / hysterical patients with the possibility spinal injuries.
- Chemical restraint for uncontrollable / hysterical patients.
- Sedation prior to cardioversion or transcutaneous cardiac pacing.
- Sedation after patient has been successfully intubated.
- Angulated fracture that requires re-positioning or splinting in the field.
- Non - traumatic musculoskeletal spasms.
- Control shivering in hyperthermia.
- Adjunct to pain medication where muscular relaxation is needed for pain control.

Contra - Indications:

- A known hypersensitivity to Versed (Midazolam)
- Use with caution in patients already respiratory depressed. Be prepared to provide respiratory and vascular support.
- Hypotension.

Precautions:

- Intra-venous use has been associated with severe respiratory depression. Especially in the setting of pre-existing CNS depression.
- After intra-nasal administration, subsequent doses must be half of the original dose via any route.
- Use caution in patients with the following: COPD. Hepatic/renal disease. Elderly patients. Patients with acute or uncompensated illness.

City of Yuma Ambulance Service EMS Protocols
Section 534: Versed (Midazolam)

Precautions:

- Aggressive ventilator management and constant assessment will prevent most adverse reactions: Retrograde amnesia and drowsiness. Headache and slurred speech. Confusion. Anxiety. Restlessness. Tonic/Clonic movements/muscle tremors. Hypotension. Dysrhythmias. Respiratory depression including apnea.

Note: The combination of Versed for muscular spasms along with a pain medication (Fentanyl / Morphine) for pain relief can cause a severe altered level of consciousness in the patient as well as severe respiratory depression. Extreme caution should be taken when administering the combination of these medications. It is recommended attempting to administer one class of medication to achieve the desired result of pain relief before administering the combination of these medications, and only doing so if unable to achieve pain relief with just one class of medication.

If the combination of a benzodiazepine along with a pain medication is administered, the patient is to be on continuous pulse oximetry monitoring as well as continuous sidestream capnography monitoring.

Medication Dose: Adult

- **General dose**: 1mg-5mg. Titrated to effect.
- **Maintenance dose**: Must be ½ of the original dose. Administered at not less than 15 minute intervals.

Medication Dose: Pediatric

- **General dose:** 0.05mg / kg. Administered over at least 2 minutes.
- **Rectal dose:** 0.1mg / kg.
- **Intra-nasal dose:** 0.1mg / kg.
- **Maximum dose:** 2mg

Route of Administration: Adult

- Intra-venous administration.
- Intra-osseous administration
- Endotracheal administration
- Intra-muscular injection.
- Rectal administration.
- Intra-nasal administration. (1/2 dose given in each nare)

City of Yuma Ambulance Service EMS Protocols
Section 534: Versed (Midazolam)

Route of Administration: Pediatric

- Intra-venous administration.
- Intra-osseous administration.
- Endotracheal administration.
- Intra-muscular injection.
- Rectal administration.
- Intra-nasal administration. (1/2 dose given in each nare)

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Versed: (Midazolam)	_____	_____	_____	_____	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 535: Zofran (Ondansteron)

Pharmacology / Actions:

- Anti - emetic.
- A selective 5 - HT_3 serotonin receptor antagonist. Present both peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone of the area postrema.
- Causes QT prolongation.

Indications:

The administration of **Zofran (Ondansteron)** should be considered in the following situations:

- Severe nausea and vomiting.
- Can be used for both adult and pediatric patients.

Contra - Indications:

- Patients with noted or known QT prolongation.
- A known hypersensitivity to Zofran.
- Patients that are less than 2 years of age.

Precautions:

- Use with caution in patients on multiple anti-depressants or multiple psychiatric medications.
- Use with caution in patients with impaired liver function.
- Rate of administration should not be less than 30 seconds.
- Note: Zofran has no effect on motion sickness.

Medication Dose: Adult

- General dose: 4.0 milligrams I.V. or IM Administration.
- General dose: 4.0 milligrams ODT Administration.

Medication Dose: Pediatric (Patients 2 to 12 years of age)

- General dose: 0.1 milligram / kilogram. Single dose for pediatrics.
- Maximum dose: 4.0 milligrams.

Routes of Administration: Adult & Pediatric

- Intra-venous administration.

- Intra-muscular injection.
- By mouth – oral ingestion.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Zofran: (Ondansteron) – IV or IM	____	____	**SO**	**SO**	**SO**	**SO**
• Administration of Zofran: (Ondansteron) - ODT	____	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 536: Dilaudid (Hydromorphone HCL)

Pharmacology / Actions:

- Narcotic analgesic and sedation through stimulation of opiate receptor sites.
- Alters perception of and response to painful stimuli while producing generalized CNS depression.
- Onset of action within 15 minutes, peak effect within 20 minutes and duration 2-5 hours.
- Dilaudid 0.5mg is roughly equivalent to 100mcg of Fentanyl.
- Half-life is greater than that of Fentanyl, but less than Morphine.

Indications:

The administration of **Dilaudid (Hydromorphone HCL)** should be considered in the following situations:

- Moderate to severe pain.

Contra - Indications:

- Hypersensitivity
- Head trauma
- Increased intracranial pressure
- Severe renal disease
- Severe hepatic disease
- Severe pulmonary disease
- Undiagnosed abdominal pain

Precautions:

- Adverse reactions include dizziness, convulsions, nausea, vomiting, sweating and flushing, hypotension, respiratory depression, delirium, histamine release in vein used for administration that may appear red and swollen.
- Multi systems trauma.
- Have Narcan readily available.
- Do not expect complete relief of pain.
- To be administered slowly, titrated to patient's need, except as directed by Base Physician.

Combination Benzodiazepine and Opiate Therapy:

The administration of a combination of benzodiazepines and opiates, for the purpose of severe pain management and/or muscle relaxation is permitted.

City of Yuma Ambulance Service EMS Protocols
Section 536: Dilaudid (Hydromorphone HCL)

Safeguards shall be taken to maximize patient safety including but not limited to the patient's ability to:

- Independently maintain an open airway and normal breathing pattern
- Maintain normal hemodynamics
- Respond appropriately to physical stimulation and verbal commands

The administration of combination therapy requires appropriate monitoring and care including but not limited to:

- **IV or IO access**
- **Continuous waveform capnography**
- **Pulse oximetry**
- **ECG monitoring**
- **Blood pressure monitoring**
- **Administration of supplemental oxygen**

Medication Dose: Adult

- General dose:

0.5mg – 1 mg slow IVP or IM every 2 hours as needed for pain or as directed by base physician. Titrate to effect. Administer only the amount necessary to achieve patient comfort and less anxiety.

Medication Dose: Pediatric

- General dose:

0.015 milligrams / kilogram slow IVP or IM every 2 hours as needed for pain or as directed by base physician. Administer only the amount necessary to achieve patient comfort and less anxiety.

Routes of Administration: Adult & Pediatric

- Intra-venous administration.
- Intramuscular administration

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Dilaudid:	_____	_____	_____	_____	_____	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 537: Valium (Diazepam)

Pharmacology / Actions:

- Benzodiazepine category. Central nervous system depressant.
- Anti - convulsant.
- Skeletal muscle relaxant.
- Tranquilizer.
- Anti - anxiety agent.
- Long acting.

Indications:

The administration of **Valium (Diazepam)** should be considered in the following situations:

- Status epilepticus.
  - Seizures lasting longer than 3 minutes.
  - Concurrent seizures without regaining period of consciousness.
- Chemical restraint for uncontrollable / hysterical patients with the possibility spinal injuries.
- Chemical restraint for uncontrollable / hysterical patients.
- Acute alcohol withdrawal.
- Sedation prior to cardioversion.
- Non - traumatic musculoskeletal spasms.
- Control shivering in hyperthermia.
- Adjunct to pain medication where muscular relaxation is needed for pain control.

Contra - Indications:

- A known hypersensitivity to Valium (Diazepam)
- Use with caution in patients already respiratory depressed. Be prepared to provide respiratory and vascular support.
- Hypotension.
- Patients with glaucoma.
- Children under 1 month.
- Pregnancy or lactation.

Precautions:

- Use caution for patients with a history of using depressants such as using alcohol.
- Be prepared to manage the airway in case of significant respiratory depression.
- Avoid mixing with other medications. I.V. line should be flushed prior to administration.
- Common side effects: Respiratory depression. Hypotension. Flushing. Drowsiness. Dizziness. Fatigue. Ataxia.

City of Yuma Ambulance Service EMS Protocols
Section 537: Valium (Diazepam)

Combination Benzodiazepine and Opiate Therapy:

The administration of a combination of benzodiazepines and opiates, for the purpose of severe pain management and/or muscle relaxation is permitted.

Safeguards shall be taken to maximize patient safety including but not limited to the patient's ability to:

- Independently maintain an open airway and normal breathing pattern
- Maintain normal hemodynamics
- Respond appropriately to physical stimulation and verbal commands

The administration of combination therapy requires appropriate monitoring and care including but not limited to:

- **IV or IO access**
- **Continuous waveform capnography**
- **Pulse oximetry**
- **ECG monitoring**
- **Blood pressure monitoring**
- **Administration of supplemental oxygen**

Medication Dose: Adult

- **General dose**: 5mg -10mg slow IV push (Each 5mg over at least one minute) Every 10-15 minutes. Maximum 30mg cumulative dose.

Medication Dose: Pediatric

1 month to 4 years

0.1 – 0.3mg / kg slow IV push every 5-10 minutes. Maximum 5mg cumulative dose.

5 – 12 years

0.1-0.3mg / kg slow IV push every 5-10 minutes. Maximum 10mg cumulative dose.

Medication Dose: Rectal

Adult	0.2mg / kg
2-6 years	0.5mg / kg
6-12 years	0.3mg / kg

City of Yuma Ambulance Service EMS Protocols
Section 537: Valium (Diazepam)

Route of Administration: Adult

- Intra-venous administration.
- Intra-osseous administration
- Rectal Valium may be used for children or status epilepticus when IV cannot be established immediately.

Route of Administration: Pediatric

Status Epilepticus:

- Intra-venous administration.
- Intra-osseous administration.
- Rectal Valium may be used for children or status epilepticus when IV cannot be established immediately.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Valium (Diazepam)	_____	_____	_____	_____	DO / P	SO

City of Yuma Ambulance Service EMS Protocols
Section 538: Xopenex (Levalbuterol)

Pharmacology / Actions:

- Binds to beta-adrenergic receptors in airway smooth muscle leading to activation of adenylcyclase and increased levels of cyclic adenosine monophosphate (cAMP).
- Increases in cAMP activate kinases, which inhibit the phosphorylation of myosin and decrease intracellular calcium.
- Relaxation of airway smooth muscle with subsequent bronchodilation.

Indications:

The administration of **Xopenex (Levabuterol)** should be considered in the following situations:

- Treatment/prevention of bronchospasm due to reversible airway disease.

Contra - Indications:

- Hypersensitivity to Xopenex (Levalbuterol)

Precautions:

- Use with caution in patients with the following conditions:
  - Cardiovascular disorders
  - History of seizures
  - Pregnancy and lactation
  - Children under 12 years of age

- Adverse reactions include:
  - Seizures and tremor.
  - Nausea.
  - Increased cough.
  - Hyperglycemia.
  - Anxiety, dizziness, headache.
  - Bronchospasm.
  - Tachycardias and arrhythmias.

Medication Dose: Adult

- .63mg - 1.25mg diluted in 3ml saline via nebulizer every 6-8 hours

City of Yuma Ambulance Service EMS Protocols
Section 538: Xopenex (Levalbuterol)

Medication Dose: Pediatrics - (Children younger than 1 year of age)

- Not recommended for children under 12 years of age.

Route of Administration: Adult & Pediatrics

- To be administered via oxygen nebulizer device with the flow rate set at 6 to 8 liters per minute for 5 to 10 minutes.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Xopenex (Levalbuterol)	_____	VO	VO	VO	VO	SO

City of Yuma Ambulance Service EMS Protocols
Section 539: Phenergan (Promethazine HCL)

Pharmacology / Actions:

- A phenothiazine derivative, possesses antihistaminic, sedative, anti-motion-sickness, anti-emetic and anticholinergic effects.
- Duration of action is generally from four to six hours.

Indications:

The administration of **Phenergan (Promethazine HCL)** should be considered in the following situations:

- Primarily for control of nausea and vomiting refractory to Zofran.
- Anaphylactic reactions, as adjunctive therapy to epinephrine and other standard measures, after the acute manifestations have been controlled.

Contra - Indications:

- Alcohol or sedative ingestion
- Allergy to phenothiazines
- Use with caution in patients with glaucoma, urinary obstruction or asthma
- Coma

Precautions:

- Potentiates the effect of narcotics.
- Assure patency of I.V. Get blood return before administration of medication.
- May cause hallucinations, drowsiness, dizziness, blurred or double vision, nervousness and tremor, increase or decrease of pulse and/or blood pressure.

Medication Dose: Adult

- General dose: 6.25mg – 25mg deep IM or slow IV push.

Medication Dose: Pediatric (Patients 2 to 12 years of age)

- General dose: .25 - .5 milligram / kilogram.

Routes of Administration: Adult & Pediatric

- Intra-venous administration.

- Intra-muscular injection.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Phenergan (Premethazine) – IV or IM	____	____	____	____	**DO/P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 540: Haldol (Haloperidol)

Pharmacology / Actions:

- Haldol is an antipsychotic which depresses cerebral cortex, hypothalamus and limbic systems. These systems control activity and aggression by blocking neurotransmission produced by dopamine at the synapse, exhibits strong alpha adrenergic and anticholinergic blocking agent.

Indications:

The administration of **Haldol (Haloperidol)** should be considered in the following situations:

- Symptomatic management of psychotic disorders.
- Combative, explosive behavior-unprovoked, especially if patient and/or crew safety is at risk.
- Tourette's disorder in adults or children.

Contra - Indications:

- Hypersensitivity to the drug
- Central nervous system depression
- Comatose state from any cause
- Parkinson's disease
- Any child under three years of age

Precautions:

- Administer cautiously to patients already treated with antipsychotic, anti-convulsant or other central nervous system drugs, patients with severe cardiac disorders-may cause hypotension or precipitate angina, and patients with hepatic disease.
- Administer cautiously to patients who are pregnant.
- Haldol may lower convulsive threshold in patients with a seizure history.

Medication Dose:

- General dose: 2 to 10 milligrams IM or IV every 1 to 4 hours not to exceed 100mg.

Note: Use of this drug is not recommended in children. A physician order is required.
Pediatric dose: 1-3 milligrams IM every 4-8 hours. Maximum 0.15mg / kg / day.

Route of Administration:

- Intra-venous administration.
- Intra-muscular administration.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Haldol (Haloperidol)	____	____	____	____	**DO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 541: Decadron (Dexamethasone)

Pharmacology / Actions:

- Decadron is a corticosteroid which inhibits inflammatory response of tissues, which results in, or inhibition of edema.

Indications:

The administration of **Decadron (Dexamethasone)** should be considered in the following situations:

- Cerebral edema or tumors
- Spinal trauma
- Anaphylactic shock
- Status asthmaticus
- Croup or pediatric airway edema/inflammation

Contra - Indications:

- A known hypersensitivity to the medication.

Precautions:

- Documentation of neurological status is essential prior to administration of Decadron.

Medication Dose: Adult

- General dose: 10 mg IV

Medication Dose: Pediatric

- General dose: 0.6 milligrams / kilogram. IM/IV
- Maximum dose: 16 mg

Routes of Administration: Adult & Pediatric

- Intra-venous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Decadron (Dexamethasone)	___	___	___	___	**DO / P**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 542: Calcium Chloride

Pharmacology / Actions:

- A cation which increases cardiac contractility, increases excitability of muscle fibers, increases amplitude of contractions, decreases heart rate.

Indications:

The administration of **Calcium Chloride** should be considered in the following situations:

- Calcium channel blocker toxicity
- Hypocalcemia, septic shock, hyperkalemia, hypermagnesia

Contra - Indications:

- Ventricular fibrillation

Precautions:

- Effects are similar to and additive with those of digitalis.
- Extravasation causes tissue irritation leading to necrosis.
- Rapid administration can cause bradycardia or asystole.
- In digitalized patients, additive effects may cause PVC's, ventricular fibrillation or cardiac arrest.
- Adverse reactions include cardiac irritability, ventricular fibrillation or arrest.
- Calcium salts precipitate in Sodium Bicarbonate.

Medication Dose: Adult & Pediatric

Adult Dose 500mg – 1000mg slow IV push. Not to exceed 1mL / minute.

Pediatric Dose 20mg / kg slow IV push. Not to exceed 1mL / minute.

Routes of Administration: Adult & Pediatric

- Intra-venous administration.
- Intra-osseous administration.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Calcium Chloride:	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 543: Nitroglycerin Infusion (Hospital initiated)

Pharmacology / Actions:

Relaxation of vascular smooth muscle, thus promoting peripheral pooling of blood, decreased preload and afterload and decreased myocardial oxygen consumption and demand. Therapeutic doses reduce systolic, diastolic and mean arterial blood pressure.

Indications:

The administration of **Nitroglycerin Infusion** should be considered in the following situations:

- Treatment of angina pectoris.
- Congestive heart failure associated with acute myocardial infarction.
- Acute hypertension.

Contra - Indications:

- Patients with a known allergy or hypersensitivity to the medication.
- Hypotension or uncorrected hypovolemia.
- Increased intracranial pressure.
- Pericardial tamponade.
- Inadequate cerebral circulation.

Precautions:

- Use with caution in patients who have severe hepatic or renal disease.
- Nitroglycerin is light sensitive
- Monitor blood pressure closely for hypotension. Always use an IV pump.

Medication Dose:

Start drip at 5mcg / minute and titrate to effect by 5mcg / minute every 5 minutes as ordered by the physician.

Physician order required.
Not indicated for pediatric use.

Routes of Administration:

- Intravenous administration

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Nitroglycerin Infusion	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 544: Heparin (Hospital initiated)

Pharmacology / Actions:

Heparin inhibits reactions that lead to the clotting of blood and the formation of fibrin clots.

Indications:

The administration of **Heparin** should be considered in the following situations:

- Heparin is indicated for anticoagulant therapy in prophylaxis and treatment of venous clots.

Contra - Indications:

- Not to be used in patients with severe thrombocytopenia.
- Patients with uncontrollable bleeding.

Precautions:

- Patients may develop new thrombus formations in association with thrombocytopenia resulting from irreversible aggregation of platelets induced by Heparin.
- Hemorrhage which may become uncontrollable.
- Local irritation at injection site.
- General hypersensitivity.

Medication Dose:

The dosage of Heparin should be set and adjusted according to the patient's coagulation test results.
Physician order required.

Routes of Administration:

- Intravenous administration

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Heparin	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 545: Hospital initiated antibiotic administration monitoring

Indications:

Antibiotics are indicated for the prevention and elimination of bacterial infections.

Contra - Indications:

- Documented hypersensitivity to the medication

Precautions:

- All antibiotics shall be initiated at the hospital for a minimum of 15 minutes prior to transport if at all possible.
- Monitor for signs of allergic reactions.
- Assess IV site for redness, tenderness and swelling.
- Receive a full patient report from hospital staff including patient medical history.
- Assess patient.
- If patient experiences symptoms of an allergic reaction, discontinue antibiotic infusion, reference Allergic Reactions/Anaphylaxis protocol, and contact medical control for further orders.

Medication Dose:

The medication, dosage and administration rate will be determined by the Physician directing treatment at the hospital.
Physician order required.

Routes of Administration:

- Intravenous administration

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of antibiotics	___	___	___	___	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 546: Hospital initiated blood product administration

Indications:

To provide a standardized procedure to be followed in the administration of blood products so as to assure accuracy and safety for the patient.

Precautions:

- Blood products must be ordered by the Physician.
- A Physician, Paramedic or Registered Nurse may administer blood products.
- Monitoring and maintenance of medical facility initiated blood as well as initiation of hospital supplied during IFT will be allowed by EMT-P.
- No additives may be injected into the blood bag, the exception being 50-100mL of normal saline to dilute PRBCs.
- All blood is to be administered through an approved blood filter set.
- The flow rate for whole blood is 240mL/hour, packed cells is 120mL/hour unless otherwise specified by the physician.
- Normal saline is the only solution approved for use during a transfusion.
- Blood must be completed within 4 hours of release from the lab (time of removal from the refrigerator).

Technique:

- Establish baseline vital signs and record on the transfusion record. If patient's temperature is elevated, notify the Physician prior to starting the infusion.
- Obtain a unit of blood from the lab. If more than one unit is available for the patient, use in order assigned in blood bank.
    1. Check blood bank log for unit # listed on same line as the patient's name.
    2. Remove the specified unit from the blood bank refrigerator. Check unit and logbook for the same #. Name, blood group, and type. Cross match requisition slip and compatibility. O.K. by the lab tech signature if lab is available.
    3. If there is any discrepancy noted in matching identification items, the blood is not to be removed from the lab until the discrepancy is satisfactorily resolved.
- Before administering the unit to the patient the above information will be rechecked against the cross match slip in the patients chart by two personnel. (Two RN's preferred).
    1. Identify the blood type, unit #, GLG #, expiration date and patient name. Check this information on the blood bag and the transfusion record (donor unit slip). Also check this information against the patient's transfusion ID bracelet.
- Before administering the unit of blood have the patient sign the consent for blood transfusion. Attached to transfusion record sent with blood. If patient is unable to sign, have responsible party sign.
- Gently agitate the blood bag to mix cells.
- If other IV medication is ordered to be given during the transfusion, it must be given through a secondary IV site or the blood turned off and the medication given IVP or IVPB into the primary site.
- Adjust flow rate to physicians order 40gtts/min for whole blood, 20gtts/min for packed cells if not specified.
    1. This is according to blood administration set 10gtts/mL.
    2. The administration time will be approximately two hours unless specified by the physician.

- A member of the nursing staff or EMT-P will remain with the patient for the duration of the transfusion.
    1. The majority of reactions due to incompatibility occur during the first 20 minutes.
- Recheck vital signs 5 minutes after the blood has started and every 15 minutes until transfusion is complete. Record on the transfusion record. Vital signs may be checked more often if patient condition warrants.
- At the completion of the transfusion, flush remaining blood in the tubing through with normal saline and discontinue blood. Return blood bag to lab. DO NOT DISPOSE OF BLOOD BAG. If more than 2 units of blood are to be administered, change filter tubing after the second unit.
- Change tubing before hanging any other solution.
- One hour after completion of the transfusion, take and record the vital signs.
- Complete documentation of the blood transfusion record. (Blood bank chart copy)
- Return the yellow portion of the transfusion record (blood bank chart copy) to lab.

Technique for blood transfusion reactions:

- Stop the transfusion.
- Administer saline solution IV to keep the vein open.
- Take the patient's vital signs.
- Notify the Physician.
- Change the IV tubing to prevent infusing any more blood.
- Save the tubing and blood for analysis.
- Prepare for further treatment.
- Document transfusion reaction on PCR.

Complications and Special Notes

- Careful identification of the recipient and blood product is essential. All information should be matched, item by item to prevent potentially life threatening errors.
- Blood should not be taken from the refrigerator unless it will be used within 30 minutes.
- Any non-hanging blood will be placed in a cooler, which will be provided by the lab.
- Reactions:
    1. Hemolytic. Includes chills, fever, low back pain, headache, chest pain, tachycardia, dyspnea, hypotension, nausea, vomiting, shock, restlessness and anxiety.
        - Action. Place patient in a supine position, with legs elevated 20-30 degrees and administer oxygen. Expect to administer fluids and Epinephrine to correct shock. Consider placing a Foley catheter to monitor the patient's urinary output. (Should by 100mL/hour)
    2. Plasma Protein Incompatibility. Includes chills, fever, abdominal pain, flushing, diarrhea, dyspnea and hypotension.
        - Action. Place patient in a supine position, with legs elevated 20-30 degrees and administer oxygen. Expect to administer fluids and Epinephrine to correct shock. Expect to administer corticosteroids.

3. Blood Contamination. Includes chills, fever, abdominal pain, nausea and vomiting, bloody diarrhea and hypotension.
   - Action. Expect to administer fluids, corticosteroids, vasopressors and a fresh transfusion.
4. Febrile. Range from mild chills, flushing and fever to extreme signs and symptoms resembling a hemolytic reaction.
   - Action. Expect to administer an antipyretic and an antihistamine for a mild reaction. Treat a severe reaction the same as a hemolytic reaction.
5. Allergic. Range from pruritus, urticarial, hives, facial swelling, chills, fever, nausea and vomiting, headache and wheezing to laryngeal edema, respiratory distress and shock.
   - Action. Expect to administer parenteral antihistamines or for a severe reaction, Epinephrine or corticosteroids. If the patient's only sign of reaction is hives or fever, expect to restart the infusion, as ordered at a slower rate.
6. Temperature increase of 1.8 degrees with no other symptoms is considered a reaction. Notify base Physician and follow orders.
7. Tachycardia or Hypertension with no other symptoms: Slow IV rate and recheck vital signs in 10-15 minutes with close observation of patient. May continue transfusion unless otherwise indicated.

***For severe reactions during interfacility transports, contact base Physician and consider diverting to the closest facility.**

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Blood Products	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 547a: Ketamine (Ketalar) *Extreme Agitation/Excited Delirium

Pharmacology / Actions:

- Ketamine is a non-competitive NMDA receptor antagonist and dissociative, amnestic, analgesic anesthetic agent.

Indications:

The administration of **Ketamine (Ketalar)** should be considered in the following situations:

- Patients over the age of 13 years who are combative, show signs of excited delirium or extreme agitation uncontrolled by other mechanisms and where the safety of the patient and/or provider is of substantial concern.

Contra - Indications:

- Relatively contraindicated in penetrating eye trauma.
- Relatively contraindicated in patients with known cardiovascular disease (causes tachycardia).
- Known hypersensitivity to Ketamine (Ketalar).

Side Effects and Special Considerations:

- Laryngospasm: this very rare adverse reaction presents with stridor and respiratory distress.
- Emergence reaction: presents as anxiety, agitation, apparent hallucinations, or nightmares as ketamine is wearing off. For severe reactions, consider benzodiazepines.
- Nausea and vomiting: always have suction available after ketamine administration. Give antiemetic as needed.
- Hypersalivation: Suction is usually sufficient. If profound hypersalivation causing airway difficulty, administer atropine.

  Atropine dosing: Adult patients 0.5mg IV. Pediatric patients 0.02mg/kg One time dose. Max dose of 0.5mg.
- Anaphylaxis is rare.
- May cause a rise in pulse rate or blood pressure.
- May cause renal and hepatic impairment.
- All cases of Ketamine use will be reviewed by the medical director.

With every administration of ketamine:

- Prepare to provide respiratory support including BVM ventilation and suction which are generally sufficient in rare cases of laryngospasm.
- Institute cardiac monitoring, pulse oximetry and continuous waveform capnography.
- Establish IV or IO access, check blood glucose
- Establish and maintain physical restraint with agitated patients.

Medication Dose: Adult

- Extreme Agitation/Excited Delirium 5mg/kg IM

  * One time dose. Contact medical control for additional dosing if needed.

  Patients 13 years of age and older

Route of Administration: Extreme Agitation/Excited Delirium

- Intra-muscular administration.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Ketamine (Ketalar)	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 547b: Ketamine (Ketalar) *Analgesia

Pharmacology / Actions:

- Ketamine is a non-competitive NMDA receptor antagonist and dissociative, amnestic, analgesic anesthetic agent.

Indications:

The administration of **Ketamine (Ketalar)** should be considered in the following situations:

- Secondary adjunct analgesic for severe pain

Contra - Indications:

- Relatively contraindicated in penetrating eye trauma.
- Relatively contraindicated in patients with known cardiovascular disease (causes tachycardia).
- Known hypersensitivity to Ketamine (Ketalar).

Side Effects and Special Considerations:

- Laryngospasm: this very rare adverse reaction presents with stridor and respiratory distress.
- Emergence reaction: presents as anxiety, agitation, apparent hallucinations, or nightmares as ketamine is wearing off. For severe reactions, consider benzodiazepines.
- Nausea and vomiting: always have suction available after ketamine administration. Give antiemetic as needed.
- Hypersalivation: Suction is usually sufficient. If profound hypersalivation causing airway difficulty, administer atropine.
  Atropine dosing: Adult patients 0.5mg IV. Pediatric patients 0.02mg/kg IV. One time dose. Max dose of 0.5mg.
- Anaphylaxis is rare.
- May cause a rise in pulse rate or blood pressure.
- May cause renal and hepatic impairment.
- All cases of Ketamine use will be reviewed by the medical director.

With every administration of ketamine:

- Prepare to provide respiratory support including BVM ventilation and suction which are generally sufficient in rare cases of laryngospasm.
- Institute cardiac monitoring, pulse oximetry and continuous waveform capnography.
- Establish IV or IO access, check blood glucose
- Establish and maintain physical restraint with agitated patients.

Medication Dose: Adult and Pediatric

- Severe pain
  IV 0.3mg/kg q 20 minutes; May repeat times two for a maximum of 3 total doses. Contact Medical Control for additional dosing if needed.

  IN / IM 0.5mg/kg q 20 minutes; May repeat once for a maximum of two total doses. Contact Medical Control for additional dosing if needed.

Route of Administration: Severe pain

- Intra-venous administration.
- Intra-nasal administration.
- Intra-muscular administration.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Ketamine (Ketalar)	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 548: Mini Dosages Page

Acetylsalicylic Acid: Aspirin (ASA)
- **ROUTE:** Oral
- **DOSE:** 324 mg. (Four 81 mg Children's Tablets)

Adenosine: (Adenocard)
- **ROUTE:** IV. IO.
- **DOSE:** 1st Dose of 6 mg followed by a 20 cc fluid bolus.
- **DOSE:** 2nd Dose of 12 mg followed by a 20 cc fluid bolus.
- **PEDS:** 0.1 to 0.2 mg/kg.

Albuterol: (Proventil / Ventolin)
- **ROUTE:** Nebulizer with Oxygen set to 6 to 8 LPM.
- **DOSE:** 2.5 mg. in 3cc normal saline.
- **DOSE:** 2.5 mg. in 6cc normal saline. Patients less than 1 year of age.

Amiodarone: (Cordarone)
- **ROUTE:** IV. IO.
- **DOSE:** **Cardiac Arrest:** First dose 300 mg.; Second dose 150 mg.
- **DOSE:** **Perfusing Dysrhythmias: 150 mg infusion over 10 minutes.**
- **PEDS:** **5.0 mg / kg. bolus for cardiac arrest.**

Ativan: (Lorazepam)
- **ROUTE:** IV. IM. IO.
- **DOSE:** 1.0 to 2.0 mg.
- **PEDS:** 0.05 to 0.1 mg / kg. Maximum dose of 2.0 mg.

Atropine Sulfate:
- **ROUTE:** IV. IO. ETT.
- **DOSE:** Bradycardia: 0.5 mg.
- **DOSE:** ETT: 2 to 2.5 times the IV dose.
- **DOSE:** Insecticide: 1.0 to 2.0 mg increments to alleviate symptoms.
- **PEDS:** 0.02 mg / kg. Minimum dose of 0.1 mg.

Atrovent: (Ipratoprium Bromide)
- **ROUTE:** Nebulizer with Oxygen set to 6 to 8 LPM.
- **DOSE:** 500 mcg in 3 cc normal saline. May mix with Albuterol.
- **DOSE:** Minimum of 20 minutes apart. Maximum of 3 doses in 1 hour.
- **PEDS:** 500 mcg in 6 cc normal saline.

Benadryl: (Diphenhydramine)
- **ROUTE:** Slow IV. Deep IM.
- **DOSE:** 10.0 to 50.0 mg.
- **PEDS:** 1.0 to 2.0 mg / kg. Maximum dose of 50.0 mg. Up to 8 years.

Cardizem: (Diltiazem)
- **ROUTE:** IV
- **DOSE:** 1st Dose: .25 mg / kg over 2 minutes. Max. dose = 20 mg.
- **DOSE:** 2nd Dose: .35 mg / kg over 2 minutes. Max. dose = 30 mg.

Dextrose:
- **ROUTE:** IV. IO.
- **DOSE:** Dextrose 50%: 12.5 - 25 grams of D50.
- **PEDS:** Dextrose 25%: 2 cc / kg.

Dopamine: (Intropin)
- **ROUTE:** IV/ IO Infusion. (Concentration 1600 mcg / ml.)
- **DOSE:** 2 – 20 mcg / kg /min; Unstable bradycardia 2-10 mcg/kg/min

Epinephrine:
- **ROUTE:** IV. IO. IM. ETT.
- **DOSE:** **Cardiac Arrest:** Initial 1.0 mg every 3-5 minutes (1 : 10,000)
- **DOSE:** **Allergy / Acute Asthma:** 0.3 mg of 1 : 1,000 SQ or IM injection.
- **DOSE:** **Anaphylaxis / Severe Asthma:** 0.1 to 0.3 mg IV (1:10,000 IV/IO)
- **PEDS:** **Cardiac Arrest:** 0.01 mg/kg every 3-5 minutes (1 : 10,000)
- **PEDS:** **Allergy / Acute Asthma:** 0.01 mg / kg of 1 : 1,000 (SQ or IM)
- **PEDS:** **Anaphylaxis / Severe Asthma:** 0.01 mg/kg of 1:10,000 (IV / IO)
- **PEDS:** **Symptomatic Bradycardia:** 0.01 mg/kg 1:10,000 every 3-5 min.

Fentanyl: (Sublimaze)
- **ROUTE:** IV. IM. IN.
- **DOSE:** 1.0 to 2.0 mcg / kg. Maximum of 200 mcg.
- **PEDS:** 1.0 to 2.0 mcg / kg. Maximum of 200 mcg.

Glucagon:
- **ROUTE:** IV. IO. IM. SQ. IN.
- **DOSE:** **Hypoglycemia:** 1.0 mg. IM or IN.
- **DOSE:** **Esophageal Food Obstruction:** 1.0 mg. IV
- **DOSE:** **Beta Blocker Overdose:** 3.0 or 0.3 mg / kg IVP over 30 sec.
- **PEDS:** 0.1 mg / kg up to 1.0 mg.

Inapsine: (Droperidol)
- **ROUTE:** IV. IM.
- **DOSE:** 2.5 to 5.0 mg.

Lasix: (Furosemide)
- **ROUTE:** IV.
- **DOSE:** 20.0 to 80.0 mg. Slow IV.

Lidocaine:
- **ROUTE:** IV. IO. ETT.
- **DOSE:** 1.5 mg / kg. Repeat 15 min. intervals. Max.of 3.0 mg / kg.
- **DOSE:** **ETT**: 2 times the IV dose.
- **DOSE:** **EZ IO Adult: Slowly administer 40mg over 120 seconds**
- **PEDS:** 1.0 mg / kg.
- **PEDS:** **EZ IO Pediatric:** 0.5mg/kg not to exceed 40 mg (slow IO).

Magnesium Sulfate:
- **ROUTE:** IV. IO.
  Torsades with a pulse: 1.0 to 2.0 grams. (Diluted in 50 to 100 ml saline given over 5-10 minutes)
- **DOSE:** **Cardiac Arrest:** 1.0 to 2.0 grams. (Diluted)
- **DOSE:** **Ecclampsia Seizures:** 4.0 grams over 5 to 10 minutes.
- **DOSE:** **Respiratory:** 1.0 to 2.0 grams slow IVP. (Diluted)

Morphine Sulfate
- **ROUTE:** IV. IO.
  2.0 to 10.0 mg slow IVP. Titrate to effect. Max. dose of 10 mg.
- **DOSE:** 2.0 to 5.0 mg every 5 to 10 minutes.
- **PEDS:** 0.1 to 0.2 mg / kg slow IVP.

Narcan: (Naloxone)
- **ROUTE:** IV. IO. IM. ETT. SQ. IN. SL.
- **DOSE:** 0.4 mg to 2.0 mg. Repeat once after 5 minutes.
- **PEDS:** 0.4 mg to 2.0 mg. Repeat once after 5 minutes.

Nitroglycerin: (NTG)
- **ROUTE:** SL or Transdermal Paste
- **DOSE:** **Chest Pain / Suspected AMI:** 0.4 mg tablet SL.
- **DOSE:** **CHF or Autonomic Hyper-reflexia:** 1 inch paste transdermal.

Racemic Epinephrine: (Vaponephrine – Asthmanephrine
- **ROUTE:** Nebulizer with Oxygen set to 6 to 8 LPM.
- **DOSE:** 0.01 cc / kg mixed with 3 cc respiratory saline in nebulizer.
- **DOSE:** Oxygen flow at 6 to 8 LPM.
- **DOSE:** **Maximum Doses:** 0.50 cc for adults. 0.25 cc for children.

Sodium Bicarbonate:
- **ROUTE:** IV
- **DOSE:** 1 mEq / kg after 10 minutes of adequate ventilations. Then: 0.5 mEq / kg every 10 minutes. (1 amp/IV bag Excited Delirium)

Solumedrol: (Methylprednisolone)
- **ROUTE:** IV
- **DOSE:** **Adult:** 125 mg.
- **PEDS:** **Pediatric:** 2 mg / kg. Max 125 mg.

Terbutaline: (Brethine)
- **ROUTE:** SQ. IM.
- **DOSE:** 1st Dose: 0.25 mg SQ injection.
- **DOSE:** 2nd Dose: Administered after 15 to 30 minutes w/o improve.

Tetracaine Hydrochloride:
- **ROUTE:** Opthalmalic.
- **DOSE:** 1 to 2 drops in eye as needed.

Versed: (Midazolam)
- **ROUTE:** IV. IO. IM. ETT. IN. Rectal.
- **DOSE:** 1 to 2.5 mg IV or IO given over at least 2 minutes.
- **DOSE:** 5 mg given IM or IN. (IN = ½ in each nare).
- **PEDS:** 0.05 mg / kg slow IVP given over at least 2 minutes.
- **PEDS:** 0.1 mg / kg IM injection, IN or rectal administration. (MAD device ½ in each nare). Max 2.5 mg.

Zofran:
- **ROUTE:** IV. IM. ODT.
- **DOSE:** 4 mg IV or IM.
- **DOSE:** 4 mg ODT.
- **PEDS:** 0.1 mg / kg single dose for pediatrics. Max dose of 4 mg.

Section 600

Patient Assisted Medications

City of Yuma Ambulance Service EMS Protocols
Section 601: Epinephrine Auto Injector

Pharmacology / Actions:

- Catecholamine with both alpha and beta effects.
  - Positive inotropic, chronotropic, and dromotropic effects.
  - Increases peripheral vascular resistance.
  - Increases arterial blood pressure.
  - Increases myocardial oxygen consumption.
  - Potent bronchodilator.

Special Information Needed:

- Patient assessment.
- Assure type of medications is correct.
- Treatment prior to arrival.

Indications:

- Patients found to be suffering from signs and symptoms of an allergic reaction.

Contra - Indications:

- Avoid using epinephrine (non cardiac arrest patients) in the following situations:
  - Hypertension.
  - Hyperthyroidism.
  - Ischemic heart disease.
  - Cerebrovascular insufficiency.
  - Patients in labor.
  - Hypovolemic shock.

Precautions:

- Other medications can use the auto injection system. Read the labels carefully.

Procedure:

- Administer oxygen.
- Direct order required for additional doses.
- Correct medication. Correct patient. Correct route. Medication not cloudy / discolored / or expired.
- Document dosage, route, and time administered.
- Reassess the patient for possible side effects:
  - Increased heart rate.
  - Pallor.
  - Chest pain.
  - Headache.
  - Nausea.
  - Vomiting.
  - Anxiousness.
  - Excitability.
  - Dizziness.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Epinephrine Auto Injector	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 602: Metered Dose Inhaler

Pharmacology / Actions:

- Beta - Adrenergic agent used to relieve bronchospasm.

Special Information Needed:

- **Generic Names:**
  - Albuterol.
  - Isoetharine.
  - Metaproteranol.
- **Trade Names:**
  - Proventil.
  - Ventolin.
  - Bronkosol.
  - Bronkometer.
  - Alupent.
  - Metaprel.

Indications:

- For relief of bronchospasm in the following situations:
  - Shortness of breath.
  - Increase or decrease in respiratory rate.
  - Skin color changes.
  - Noisy and / or labored respirations.
  - Retractions.

Contra - Indications:

- Patients where the inhaler is not prescribed for them
- Patients who have already had maximum prescribed dose.
- Patients who are unable to use the inhaler.

Procedure:

- Administer oxygen.
- Obtain direct order from Base Physician for approval and dosage.
- Assure the following: Correct medication. Correct patient. Correct route. Expiration date.
- Assure the patient is alert enough to use the inhaler.
- Assist the patient with the inhaler. Maximum of two (2) doses.
- Allow patient to breathe a few times between doses.
- Document dosage, route, and time administered.
- Reassess the patient for possible side effects:
  - Increased heart rate.
  - Tremors.
  - Nervousness.
- Patient may deteriorate. Use ventilatory assists if necessary to maintain airway and respirations.
- Send inhaler and all medications with the patient for transport.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Metered Dose Inhaler	___	**DO / P**	**DO / P**	**DO / P**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 603: Narcan (Naloxone) Auto Injector

Pharmacology / Actions:

- Narcotic antagonist.

Indications:

The administration of **Narcan (Naloxone) auto injector** should be considered in the following situations:

- A known narcotic overdose.
  - Reverse the narcotic effects.
  - Primarily respiratory depression.
- An altered mental status of unknown etiology.

Contra - Indications:

- None listed.

Precautions:

- Patients may become violent as Narcan reverses narcotic effects.
- Narcotic effects may outlast Narcan. Repeat dosages may be necessary.
- Extreme caution in those patients with history of chronic narcotic use.
- Other medications can use the auto injection system. Read the labels carefully.

Procedure:

- Administer oxygen.
- Correct medication. Correct patient. Correct route. Medication not cloudy / discolored / or expired.
- Document dosage, route, and time administered.
- Reassess the patient

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Narcan: (Naloxone)	___	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 604: Nitroglycerin

Pharmacology / Actions:

- Smooth muscle relaxant.
- Dilates coronary blood vessels.
- Decreases peripheral resistance.

Special Information Needed:

- **Generic Names:**
  - Nitroglycerin.
- **Trade Names:**
  - Nitrostat ™

- Assure type of medication is correct.
- Treatment prior to arrival.
- Patient assessment including:
  - Heart rate.
  - Respiratory rate.
  - Blood pressure. (Including diastolic pressure)
  - Level of consciousness.

Indications:

- Patients that are suffering from the signs and symptoms of chest pain.
- Physician prescribed Nitroglycerin. (Spray or tablet)

Contra - Indications:

- Patients that are found to be suffering from hypotension: Blood pressure below 100 systolic.
- Patients that are found to be suffering from a head injury.
- Patients that are found to be taking erectile dysfunction medications.
- Patients taking the medication Adempas.
- Infants and children.

Precautions:

- Taking medications with the patient, including home medications and those you assisted with administering.

Procedure:

- Administer oxygen.
- Obtain direct order from Base Physician for approval and dosage.
- Assure the following: Correct medication. Correct patient. Correct route. Expiration date.
- Assure the patient is alert enough to administer the medication.
- Dose = 1 tablet or 1 spray. 0.4 mg SL.
- Monitor blood pressure after administration.
- Document dosage, route, and time administered.
- Reassess the patient for possible side effects:
  - Hypotension.
  - Headache.
  - Pulse rate changes.
  - Pain relief.
- Reassess patient vital signs and status.

Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Administration of Patient Prescribed Nitroglycerin	___	**DO / P**	**DO / P**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 605: Oral Glucose

Pharmacology / Actions:

- Increases blood glucose levels.

Special Information Needed:

- **Generic Names:**
  - Oral glucose.
- **Trade Names:**
  - Glutose.
  - Glucose.
  - Insta - Glucose.

- Assure patient is conscious, can swallow, and can maintain an airway.
- Patient assessment.
- Patient vital signs.

Indications:

- Patients that are found to be suffering from a known hypoglycemic event and are conscious enough to swallow.
- Patients that are found to be suffering from an altered mental status with known history of diabetes and are conscious enough to swallow contents.

Contra - Indications:

- Patients that are found to be unresponsive.
- Patients that are unable to swallow.

Precautions:

- Do not squeeze the entire tube into the patient's mouth all at once.
- Take medications with the patient, including home medications.

Procedure:

- Administer glucose between the cheek and gum (buccal) in small doses, using a tongue depressor.
- One (1) dose = 15 grams.
- Document time, amount given, and patient response.

Administration:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Oral Glucose	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Section 700

Procedures Section

City of Yuma Ambulance Service EMS Protocols
Section 701: Airway: Combitube®

Indications:

- The Combitube® provides an alternative method for administering sufficient ventilations when endotracheal intubation with conventional ETT tube may not be successful.

Contra - Indications:

- Patients must be 16 years of age and over 4 feet tall.
- Responsive patients with an intact gag reflex.
- Known esophageal disease.
- Patients who have ingested caustic substances.

Precautions / Notes:

- Intended for use by specifically trained personnel.

Technique / Procedure:

- Begin artificial respiration taking usual precautions to open airway.
- Check Combitube for correct size based on height of patient.
- Prepare Combitube for insertion.
- Place the head in the "sniffing" position.
- Hold Combitube in the dominant hand in same direction as the natural curvature of pharynx.
- Hold the mouth open and apply chin lift.
- Insert the tip into the mouth and advance gently until the printed ring is aligned with the teeth or alveolar ridges.
- **Do Not Force The Device!!**
- Inflate Line #1 (Blue balloon) with 100 ml of air using the 140 ml syringe.
- Inflate Line #2 (White balloon) with 15 ml of air using the 20 ml syringe.
- Begin ventilation through blue connect tube.
- If auscultation of breath sounds are positive. Continue ventilation.
- Second clear connect tube can be used for suction of gastric fluids.
- If auscultation of breath sounds reveals ventilation sound in the epigastric area, move the BVM to the clear connector and re-evaluate breath sounds. If auscultation of breath sounds are positive. Continue ventilation.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Combitube airway insertion.	___	PPA	PPA	SO	SO	SO
• Gastric tube insertion into Combitube.	___	___	___	___	___	SO

City of Yuma Ambulance Service EMS Protocols
Section 702: Airway: Cricothyrotomy

Indications:

- To secure an airway when all other methods have failed.

Contra - Indications:

- Hemorrhage or insertion into subcutaneous tissue.
- Injury to larynx & vocal cords.
- Tracheal stenosis or infection.
- Age less than 8

Precautions / Notes:

Warnings:

- Patients in need of cricothyrotomy may have significant spinal injury. In patients who have sustained significant trauma, the cervical spine should be motion restricted throughout the procedure, if possible.
- Extreme caution in ages 8 – 12.

Technique / Procedure:

- Assemble your equipment.
  - As assembled in the Emergency Cricothyrotomy Kit.
- Identify your landmarks.
  - Incision made through the cricothyroid membrane.
- Swab the area with alcohol, betadine solution, or another antiseptic solution.
- Make your incisions:
  - Vertical through the skin & fascia.
  - Horizontal incision through the cricothyroid membrane.
  - Maintain opening with hemostat or scalpel handle.
  - Insert tube approximately 3 inches into the trachea.
  - Inflate balloon & ventilate with oxygen.
  - Auscultate breath sounds.
  - Secure the tube.
- Attach capnography.
- Apply C – Collar if necessary.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Cricothyrotomy:	___	___	___	___	___	SO

City of Yuma Ambulance Service EMS Protocols
Section 703: Airway: Hi - Lo Evac® Endotracheal Tube

Indications:

- The Hi - Lo Evac® endotracheal tube provides an alternative method for endotracheal intubation for those patients that will remain intubated longer than 48 hours.

Contra - Indications:

- Not to be used for Nasal Endotracheal intubation.

Precautions / Notes:

- Oxygenation of a patient prior to intubation is essential.
- Oral endotracheal intubation of patients with suspected cervical spine injury requires spinal motion restriction.
- Take care to limit attempts for intubation to 15 seconds. Ventilate between attempts.
- Have suction equipment ready.
- A suction lumen cap is provided for occasions when you are not suctioning. Use the cap to prevent contaminants from entering the lumen.
- While using the Hi - Lo Evac ET tube, continue to perform other needed suctioning, such as tracheal / bronchial, oral cavity, and so forth.
- Note that subglottic suctioning may create a sound similar to that of a cuff leak. This suctioning sound does not indicate the presence of a cuff leak.
- Monitor cuff pressure regularly. An adequately inflated cuff reduces possibility of secretions leaking into the bronchi.

Technique / Procedure:

- Intubate the patient in the normal fashion and inflate the cuff.
- Connect the suction lumen to a suction unit.
  - Continuous low suction at 20 mm / Hg.
  - Intermittent suction at 100 to 150 mm / Hg.
- Check for blockages:
  - Visually check the suction lumen for secretions every 2 to 4 hours. If no secretions are observed, this may indicate that there are no secretions or the evacuation port is blocked.
- Clearing a blockage:
  - If you suspect a blockage, remove it by using a syringe to administer 3 to 5 cc of air into the suction lumen.
  - DO NOT put saline or other liquids in the suction lumen.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Oral endotracheal intubation: Hi - Lo Evac® Tube	___	___	___	___	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 704: Airway: Laryngeal Mask Airway (LMA)

Indications:

- The Laryngeal Mask Airway (LMA) is to be used as an alternative airway device on all failed intubations for pediatric and infant patients.

Contra - Indications:

- Patients that are conscious and not sedated.
- Epiglottitis.
- Severe oropharyngeal trauma.
- Known esophageal disease.
- Any patient that has ingested caustic substances.

Precautions / Notes:

- Device uses an elliptical cuff that when inflated provides an airtight seal in the hypo pharynx.
- Is more effective than BVM ventilation in that it will prevent gastric distention and allow positive pressure ventilation.
- Does not physically separate the trachea from the esophagus and therefore does not completely protect the airway from aspiration.
- Use with caution in patients that have had prior administration of activated charcoal.
- Medication administration is not recommended through the LMA.

LMA Sizing Guidelines

Patient Type	Weight	LMA Size	Max. Cuff Air Volume
Neonate/Infant	Up to 10 kg	1	Up to 4 ml
Infant / Child	10 to 25 kg	2	Up to 10 ml
Child/Small Adult	25 to 50 kg	3	Up to 14 ml

Troubleshooting If Unable To Ventilate:

- Gently move the LMA in and out or side to side to see if ventilation improves.
- Remove and partially inflate the cuff. Then reinsert to prevent the cuff from folding back on itself.
- If tongue is large. Try jaw thrust or use the laryngoscope to move out of the way.
- Try larger or smaller LMA.

Technique / Procedure:

- Select appropriate size and inspect 15 mm connector, inflation valve, cuff, and flexibility of the tube.
- Pre - oxygenate with BVM / Cricoid pressure if insufficient respiration.
- Deflate cuff and lubricate posterior surface.
- If not cervically immobilized then flex the neck and place in the "sniffing" position.
- If immobilized, proceed without moving the neck.
- Insert the LMA by holding it like a pen at the junction of the tube and the ellipse. Press firmly against the hard palate, advancing superiorly to the tongue down into the hypo pharynx.
- The LMA is in proper position when resistance is felt.
- Inflate the cuff with the correct amount of air according to the packaging.
- Confirm adequate position by End Tidal CO^2 detector, capnography, equal breath sounds, & adequate chest rise & fall.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Laryngeal Mask Airway (LMA) insertion:	____	**PPA**	**PPA**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 705: Airway: Nasal Endotracheal Intubation

Indications:

- Nasal endotracheal intubation provides an alternative method for administering sufficient ventilation when oral endotracheal intubation may not be successful or available.
- Nasal endotracheal intubation is able to maintain the airway in patients that are breathing, but with decreasing level of consciousness.

Contra - Indications:

- Known or suspected myocardial infarction or CVA.
- Liver failure due to coagulation problems and epistaxis.

Precautions / Notes:

- Oxygenation of a patient prior to intubation is essential.
- Protect cervical spine in the presence of trauma. Maintain spinal motion restriction.
- Use with caution in patients with facial trauma. Have suction available.
- Take care to limit attempts for intubation to 15 seconds. Ventilate between attempts.
- The "BAAM" device is useful to assist with correct placement.

Technique / Procedure:

- Oxygenate patient.
- Administer **Neo - Synephrine** into each nare. (Per protocol)
- Administer **Lidocaine Jelly** onto the endotracheal tube. (Per protocol)
- Listen or watch for patient breathing. May use BAMM device. Advance endotracheal tube on inspiration.
- Inflate cuff and secure the tube.
- Listen for epigastric and bilateral breath sounds.
- Attach the colormetric ET CO^2 detector or capnography device if available.
- Attach appropriate bag device and continue to ventilate with oxygen.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Nasal endotracheal intubation.	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 706: Airway: Nasal Pharyngeal Airway

Indications:

- Nasal pharyngeal airway placement provides an alternative basic life support method of managing a patient's airway when oral pharyngeal placement is not possible or available.

Contra - Indications:

- Trauma to the nasopharynx.

Precautions / Notes:

- Insertion of the nasal pharyngeal airway can potentially stimulate a gag reflex.
- Have suction readily available.

Technique / Procedure:

- Select the appropriate size nasal pharyngeal airway.
- Measure the nasal pharyngeal airway. (Corner of the nose to the tip of the ear lobe)
- Lubricate the nasal pharyngeal airway.
- Insert the nasal pharyngeal airway with the bevel facing toward the septum.
- Provide supplemental oxygen and / or assisted ventilations via bag - valve - mask after insertion.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Nasal Pharyngeal airway insertion:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 707: Airway: Oral Endotracheal Intubation

Indications:

- To be used for patients that are in need of definitive control of their airway.
- Use of the Hi - Lo Evac endotracheal tube is recommended if it is available for patients who have the potential of having the tube in place greater than 48 hours.
- If the Hi - Lo Evac endotracheal tube is used, follow the specific protocol for that device.

Contra - Indications:

- None listed.

Precautions / Notes:

- Oxygenation of a patient prior to intubation is essential.
- Oral endotracheal intubation of patients with suspected cervical spine injuries require spinal motion restriction.
- Take care to limit attempts for intubation to 15 seconds. Ventilate between attempts.
- Have suction equipment ready.
- Oral Endotracheal intubation should be limited to two attempts per patient. If oral endotracheal intubation is unsuccessful after two attempts then an alternative airway management procedure should be attempted such as the King Tube or Oral Pharyngeal Airway.

Technique / Procedure:

- Oxygenate patient.
- Prepare equipment and proper size endotracheal tube.
- Insert the endotracheal tube.
- Inflate cuff and secure the tube.
- Listen for epigastric and bilateral breath sounds.
- Attach the colormetric ET CO^2 detector or capnography device if available.
- Attach appropriate bag device and continue to ventilate with oxygen.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Oral endotracheal intubation.	___	___	___	___	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 708: Airway: Oral Pharyngeal Airway

Indications:

- Oral pharyngeal airway placement provides a basic life support method of managing a patient's airway when it is first recognized that the patient is in need of airway management.
- Can serve as a bite block after a patient has been successfully intubated, so as to prevent the patient from biting the endotracheal tube.

Contra - Indications:

- Patient's with an intact gag reflex.

Precautions / Notes:

- If a patient begins to regain consciousness while the oral pharyngeal airway is in place, it can stimulate a gag reflex.
- Have suction readily available.

Technique / Procedure:

- Select the appropriate size oral pharyngeal airway.
- Measure the oral pharyngeal airway. (Corner of the mouth to the tip of the ear lobe)
- Insert the oral pharyngeal airway without pushing the tongue posteriorly.
- Provide supplemental oxygen and / or assisted ventilations via bag - valve - mask after insertion.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Oral Pharyngeal airway insertion:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 709: Airway: Supraglottic Airway Device

Indications:

- A supraglottic airway provides an alternative method for administering sufficient ventilation when endotracheal intubation with conventional ETT tube may not be successful or available.
- Should be the first airway management device considered to replace an Oropharyngeal Airway in the initial treatment of a medical cardiac arrest patient unless an ALS provider is on scene with Oral Endotracheal intubation supplies and that Oral Endotracheal intubation can be performed without interrupting chest compressions.

Contra - Indications:

- Responsive patients with an intact gag reflex.
- Known esophageal disease.
- Patients who have ingested caustic substances.

Precautions / Notes:

- Intended for use by specifically trained personnel.
- Use proper sizing techniques as indicated by the manufacturer.

Technique / Procedure:

- Begin artificial respiration taking usual precautions to open the airway.
- Check the supraglottic airway device for correct size based on height of the patient.
- Prepare the supraglottic airway device for insertion, and place the patient's head in the "sniffing" position.
- Hold the supraglottic airway device in your dominant hand. Hold the patient's mouth open and apply chin lift.
- Rotate 45° to 90° so the blue line is touching the corner of the mouth advance beyond the base of the tongue.
- **Do Not Force The Device!!**
- As the tube passes under the tongue, rotate tube back to midline so the blue line faces the chin.
- Advance until the proximal opening of gastric access lumen is aligned with the teeth or gum.
- Inflate the cuff with the appropriate amount of volume to seal the airway. Attach BVM and ventilate.
- When ventilating, withdraw the supraglottic airway until there is minimal airway pressure & large tidal volume present.
- Confirm by auscultation and chest movement.
- Secure device without covering gastric access device.

Gastric Access Device:

- Lubricate the tube and insert into the lumen.
- Follow similar technique for gastric tube insertion.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Supraglottic airway device insertion.	___	**PPA**	**PPA**	**SO**	**SO**	**SO**
• Gastric tube insertion into supraglottic airway device.	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 710: Automated External Defibrillator

Indications:

- To be used as an alternative method for Basic Life Support providers to assist in the diagnosis of a patient in cardio - pulmonary arrest with an EKG rhythm that requires defibrillation when ALS providers are not available or not yet on the scene.

Contra - Indications:

- Conscious patients.
- Unconscious patients that still have a pulse.
- Unconscious patients that are spontaneously breathing.

Precautions / Notes:

- Multi - function pads should be applied to clean, dry skin.

Technique / Procedure:

- Verify that the patient is unconscious / unresponsive and is without a pulse and spontaneous respirations.
- Initiate CPR while getting the device set up.
- Turn on the automatic external defibrillator.
- Attach the multi - function pads to the patient in the proper placement.
- Direct rescuers to stop CPR and ensure that all individuals are clear from the patient.
- Initiate an analysis of the rhythm.
- If the machine advises that a defibrillation is necessary, deliver the defibrillation.
- Immediately resume CPR for 2 minutes.
- If the machine advises that a defibrillation is not necessary, resume CPR for 2 minutes.
- Direct rescuers to stop CPR and ensure that all individuals are clear from the patient.
- Initiate another analysis of the rhythm.
- Repeat this pattern until the patient regains pulses and / or ALS providers arrive on the scene.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Automated External Defibrillator:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 711: Auto Pulse

Indications:

- The Auto Pulse will be used for all patients 18 years of age and older in non - traumatic cardiac arrest, where manual chest compressions would otherwise be used.

Contra - Indications:

- Traumatic cardiac arrest.
- Patients whose weight is greater than 300 pounds or 136 kg.
- Under the age of 18.

Precautions / Notes:

- Always minimize any interruptions to compressions when using the Auto Pulse.
- Deployment of the Auto Pulse should not postpone initiation of manual compressions.
- Do not place or position the patient on the Auto Pulse in either a face down orientation or on the patient's side.
- Check that the patient is correctly aligned on the Auto Pulse platform and that the Life Band Load Distributing Band is correctly positioned at the patient's armpit. Otherwise, injury may result. Check alignment prior to turning on the device, periodically during use, after moving the patient to a different surface, and frequently during transport.
- Press the STOP / CANCEL button prior to re-aligning the patient.
- Do not place any straps or restraints across (or otherwise constrain) the Life Band during active operation.
- Do not use the Auto Pulse platform alone to carry a patient. Instead secure the Auto Pulse platform to the top of a backboard or stretcher used to carry or transport the patient.
- If a System Error occurs during active operation, immediately revert back to manual compressions.
- Do not touch the patient while the Auto Pulse Platform is analyzing the patient's size.
- Check the vents during operation to ensure that they are not obstructed by sheets or patient clothes.
- Do not place hands under the Life Band while the Auto Pulse is analyzing the patient's size or during active operation.
- Use of the Auto Pulse for a prolonged period of time may result in minor skin irritation to the patient. With large patients, check the skin at the sides under the Life Band.
- Do not use a Life Band if it has any apparent cuts or tears.
- Ensure the battery is securely latched (snaps into place) before moving Auto Pulse or initiating chest compressions.
- When inserting the battery into the Auto Pulse platform or the charger, do not slam it into position but rather slide it carefully so the connectors are not damaged. Ensure that the battery locks in place.
- Do not remove a battery from the Battery Charger during a Test Cycle.
- In case of a mechanical malfunction of the Auto Pulse, the EMS responder will resort back to manual chest compressions for patient care.

Complications:

- Use care when moving patients with large abdomen (shifting of excess flesh may cause the Life Band to move / break).
- If disruption or malfunction of Life Band occurs: **Revert Back To Manual CPR.**

Technique / Procedure:

- Place the patient in a seated upright position.
- Cut clothing down the back and remove from the front side of the patient.
- Place the Auto Pulse behind the patient's back while still in a seated upright position.
- Lay the Auto Pulse and patient down to the ground.
- Place defibrillation pads on the patient's chest.
- Turn the Auto Pulse on: (Switch at the tip middle of board above the patient's head)
- Connect Chest / Life Band across the chest of the patient.
- Lift the Chest / Life Band straight up to ensure it is free of twists.
- Push the "Green" button once to start the sizing cycle.
- Push the "Green" button a second time to start the compressions cycle.
- Check for a femoral pulse with compressions every 2 minutes.
- Place a towel under the patient's head to help stabilize in place.
- Ventilate patient during compression pause.
- Replace battery at 30 minutes or when the "Low Battery" warning is heard.
- Upon return of spontaneous circulation or to check for pulse press "Orange" button to pause compressions.

Documentation:

- Document the use of the Auto Pulse on a patient care report and the steps performed.
  - Time the Auto Pulse was turned on.
  - Time the Auto Pulse was turned off.
  - Initial rhythm at the time of onset.
  - Whether the arrest was witnessed or not.
  - Whether bystander CPR was performed.
  - Total compressions, active time, and pause time from the Auto Pulse.
  - Problems with device operation.
  - Patient complications related to use of the device.
  - Deficiencies in provider competency when using the device.
  - Document femoral pulses every two minutes.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Auto Pulse application and use:	SO	SO	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 712: Beck Airway Airflow Monitor

Indications:

- The Beck Airway Airflow Monitor (BAAM) should be used to assist in the placement of nasal endotracheal intubation.
- The Beck Airway Airflow Monitor (BAAM) can be used for confirmation of nasal endotracheal tube placement in the patient who is breathing spontaneously.

Contra - Indications:

- None listed.

Precautions / Notes:

- The BAAM can only be used in the patient who has spontaneous respirations with a tidal volume strong enough to create airflow through the device.
- The BAAM will only confirm placement in the bronchial tree. It will not determine if the tube tip is placed in the carina or in a bronchial mainstem.
- An unobstructed endotracheal tube with its tip located in the pharynx can produce the whistle sound. It is important to know the length of the endotracheal tube within the patient.
- The BAAM is designed for single use only and should be disposed of following its use to prevent cross contamination in patients.
- The BAAM will whistle if the endotracheal tube is in the right mainstem. Auscultation must still be done to confirm placement at the carina.

Technique / Procedure:

- Connect the BAAM to 15mm endotracheal tube connector.
- When in the posterior pharynx, the patient's breathing will cause a whistling sound with inspiration and expiration.
- The tube is then advanced into the larynx and trachea. Intensity of pitch and whistling will increase.
- Intubation of the esophagus will result in loss of the whistling sound. Withdraw the tube, redirect and reinsert.
- Once tube placement has been confirmed, remove the BAAM and attach the ambu - bag for ventilation.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Use of the BAAM for nasal endotracheal intubation.	___	___	___	___	___	SO

City of Yuma Ambulance Service EMS Protocols
Section 713: Blood Glucose Monitoring

Indications:

- Known or suspected hypoglycemia event.
- Altered mental status of unknown origin.

Contra - Indications:

- None listed.

Precautions / Notes:

- Blood glucose monitoring equipment must be maintained and calibrated per manufacturer guidelines.

Technique / Procedure:

- Insert test strip to turn on the blood glucose meter.
- Verify the test strip calibration code on the bottle matches the number that appears on the screen.
- Select a puncture site on the finger tip.
- Clean puncture site with alcohol prep using sterile technique. Make sure site is clean.
- Any sugar containing substances will give a false reading.
- Using a lancet, puncture skin to obtain a blood sample.
- Hold the blood drop to the side edge of the test strip until a broken line is circling the display screen.
- Normal blood glucose levels are 60 mg / dL to 100 mg / dL.
- Readings of either "HI" or "LO" vary depending on the manufacturer of the meter. Providers should be familiar with what these readings indicate and be able to pass this information along.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Blood Glucose Monitoring:	**PPA**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 714: Carbon Monoxide Monitor

Indications:

- Known carbon monoxide exposures.
- Suspected carbon monoxide exposure and are refusing transports.
- To be used in rehab setting for structure fires when called by Fire Departments.
- To be used to assist the Emergency Department when requested.

Contra - Indications:

- None listed.

Precautions / Notes:

- Be careful of normal oxygen saturation levels in carbon monoxide exposures as this can give false sense of security.

Technique / Procedure:

- Use the LP 15 cardiac monitor with SpCO capability.
- Press the power button to turn the monitor on.
- Place the finger probe on the index finger of the patient.
- Initial reading will be the patient's oxygen saturation level.
- For carbon monoxide reading, depress the SpCO button on the monitor.
- Low levels of SpCO are normal. Typically less than 5%.
- If SpCO is above 10%, then reconfirm on a different finger.
- If SpCO remains above 10%, consider further evaluation and treatment as per local protocol.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Carbon Monoxide Monitoring:	**PPA**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 715: Cardiac Monitor - 4 Lead EKG

Indications:

- Chest or mid - epigastric discomfort / pain.
- Irregular pulse.
- Dyspnea with a history of cardiac disease.
- Weakness / dizziness / diaphoresis.
- Near syncopal episode or actual syncopal episode.

Contra - Indications

- None listed.

Precautions / Notes:

- Verify correct lead placement.

Lead Placement:

Lead Color	Position to be placed	3 - Lead	4 - Lead	5 - Lead
Black Lead	Left Arm			
White Lead	Right Arm			
Red Lead	Left Leg			
Green Lead	Right Leg			
Brown Lead	4th Intercostal Space Right of Sternum			

Technique / Procedure:

- Application of electrodes.
- Record ECG rhythm strip.
- Interpret the EKG rhythm: **(Intermediates & Paramedics Only)**

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Cardiac Monitor: Application & acquisition of 4 lead.	___	SO	SO	SO	SO	SO
• Cardiac Monitor: Interpretation of 4 lead EKG.	___	___	___	___	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 716: Cardiac Monitor - 12 Lead EKG

Indications:

- Chest or mid - epigastric discomfort / pain.
- Irregular pulse / dysrhythmia / or some type of block on the 4 lead EKG monitor.
- Complaining of dyspnea with a history of cardiac disease.
- Weakness / dizziness / diaphoresis between the ages of 35 to 80
- Near syncopal episode or actual syncopal episode.
- To be done on patients post cardiac arrest during transport if time allows.

Contra - Indications:

- None listed.

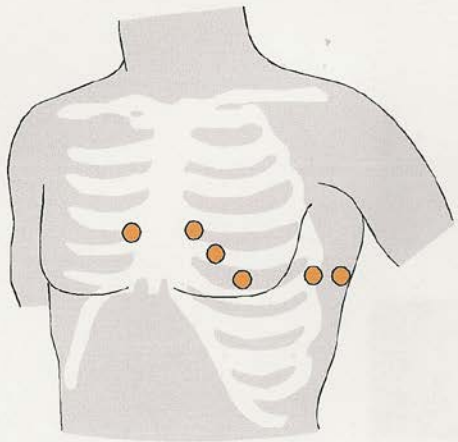
Precautions / Notes:

- Do not delay treatment or transport for 12 lead EKG acquisition.
- Patients experiencing an inferior wall myocardial infarction may also be having a right ventricular wall myocardial infarction. Therefore patients with an inferior wall myocardial infarction should also have a V^4R lead view run in addition to a 12 lead EKG to rule out right ventricular involvement.

Lead Placement:

V1	4th intercostal space @ R sternum edge
V2	4th intercostal space @ L sternum edge
V3	Between V2 & V4
V4	5th intercostals space, midclavicular line
V5	Level with V4, L anterior axillary line
V6	Level with V5, L mid axillary line

I *Lateral*	aVR	V1 *Septal*	V4 *Anterior*
II *Inferior*	AVL *Lateral*	V2 Septal	V5 *Lateral*
III *Inferior*	AVF *Inferior*	V3 *Anterior*	V6 *Lateral*



Diagnostics:

- Look for ST Segment changes.
- ST Segment elevation of more than one (1) mm in two (2) or more contiguous leads **WITHOUT THE PRESENCE OF A LEFT BUNDLE BRANCH BLOCK** is indicative of an acute myocardial infarction in that area of the heart. ** Use chart above**

Technique / Procedure:

- Remove patient clothing and dry off and shave area if necessary.
- Application of the electrodes.
- Acquisition of the 12 lead EKG.
- Interpretation of the 12 lead EKG. (**Intermediates & Paramedics only)**
- Acquisition of an additional 12 lead EKG if any changes in patient condition or cardiac rhythm changes.
- Notify receiving facility early if signs of an acute myocardial infarction are present. **(Paramedic only)**
- Provide a copy of the 12 lead EKG to the Emergency Department physician.
- Attach a copy of the 12 lead EKG to the trip report / patient chart.
- For the V^4R lead simply place an electrode on the right side of the chest in the same exact location as that of the V^4 lead on the left side of the chest (5th intercostal space, mid-clavicular line). Then run another 12 lead and if there is right ventricular involvement, then ST Segment elevation will be present on the V^4 lead.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Cardiac Monitor: Application & acquisition of 12 lead.	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Cardiac Monitor: Interpretation of 12 lead.	___	___	___	___	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 717: Cardiac Monitor - Cardioversion

Indications:

- An EKG rhythm that reveals Supra Ventricular Tachycardia and are considered unstable.
- An EKG rhythm Ventricular Tachycardia with a pulse and are considered unstable.
- An EKG rhythm that reveals wide beat tachycardia of unknown origin and are considered unstable.
- Patients that have a previously stable SVT, V - Tach, or wide complex tachycardia of unknown origin with worsening signs & symptoms.

Contra - Indications:

- None listed.

Precautions / Notes:

- Unstable would be defined as the following:
  - Chest pain / palpitations.
  - Shortness of breath.
  - Hypotension.
  - Dizziness / diaphoresis.
  - Altered mental status.
- Consider sedation.
- Multi -function pads should be applied to clean, dry skin.
- Remove any debris, ointments, and skin preps prior applying pads.
- Remove excess chest hair to maximize gel to skin contact.
- Avoid any contact between nipple and gel treatment area of pad.
- Avoid pad placement near internal pacemaker or internal defibrillator.
- Apply one edge of the pad securely to the patient and then roll the rest of the pad from that edge to the other. Be careful not to trap any pockets of air between the gel and the skin.
- Manufacturer recommendations should be followed for pad placement location.

Technique / Procedure:

- Interpretation of the EKG rhythm as one of those described above.
- Application of the multi - function pads.
- Depress the "SYNC" button the cardiac monitor.
- Set the energy level to the desired setting. (According to ACLS & PALS guidelines)
- Charge the monitor.
- Assure that everyone is clear from contact with the patient's body.
- Depress the "DEFIB" button on the monitor and hold until the energy has been discharged.
- Re - interpretation of the EKG rhythm on the monitor after cardioversion.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Synchronized cardioversion. (Per ACLS & PALS)	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 718: Cardiac Monitor - Defibrillation

Indications:

- An EKG rhythm that reveals ventricular fibrillation.
- An EKG rhythm that reveals ventricular tachycardia without pulses.
- Double sequential defibrillation may be considered in refractory ventricular fibrillation following at least 5 unsuccessful shocks, Epinephrine administration and second dose of antiarrhythmic. (See technique / procedure Double Sequential Defibrillation below)

Contra - Indications:

- None listed.

Precautions / Notes:

- Multi - function pads should be applied to clean, dry skin.
- Remove any debris, ointments, and skin preps prior applying pads.
- Remove excess chest hair to maximize gel to skin contact.
- Avoid any contact between nipple and gel treatment area of pad.
- Avoid pad placement near internal pacemaker or internal defibrillator.
- Apply one edge of the pad securely to the patient and then roll the rest of the pad from that edge to the other. Be careful not to trap any pockets of air between the gel and the skin.
- Manufacturer recommendations should be followed for pad placement location.

Defibrillation Technique / Procedure:

- Interpretation of the EKG rhythm as one of those described above.
- Application of the multi - function pads.
- Set the energy level to the desired setting. (According to ACLS & PALS guidelines)
- Charge the monitor.
- Assure that everyone is clear from contact with the patient's body.
- Depress the "DEFIB" button on the monitor.
- Begin chest compressions immediately after the defibrillation.

Double Sequential Defibrillation Technique / Procedure:

- Interpretation of the EKG rhythm as refractory ventricular fibrillation following at least 5 unsuccessful shocks, Epinephrine administration and second dose of antiarrhythmic.
- Providers shall utilize the original monitor/defibrillator and a second monitor/defibrillator or AED.
- Application of a second set of multi - function pads connected to the second device in the right upper chest and left lateral chest location not overlapping the pads previously in place.
- Set the energy level to the maximum energy dose on both devices.
- Charge both devices.
- Assure that everyone is clear from contact with the patient's body.
- Depress the "DEFIB or SHOCK" button on both devices sequentially (rapid succession).
- Begin chest compressions immediately after the double sequential defibrillation.
- Double sequential defibrillation may be done a maximum of 3 times at 2 minute intervals.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Defibrillation. (Per ACLS & PALS)	____	____	____	____	**SO**	**SO**
• Double Sequential Defibrillation	____	____	____	____	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 719: Cardiac Monitor - Transcutaneous Cardiac Pacing

Indications:

- An EKG rhythm that reveals a bradycardia & are considered hemodynamically unstable & symptomatic.
  - Refractory to the administration of **Atropine** in the adult patient.
  - Refractory to the administration of **Epinephrine** in pediatric patients.
- An EKG rhythm that reveals bradycardia with symptomatic ventricular escape beats.

Contra - Indications:

- Severe hypothermia.
- Prolonged brady - asystolic cardiac arrest.

Precautions / Notes:

- Unstable would be defined as the following:
  - Chest pain / Shortness of breath
  - Dizziness / diaphoresis.
  - Hypotension / Altered mental status.
- Consider sedation.
- Capture may be difficult.
- Avoid using carotid pulse to confirm mechanical capture. Electrical stimulation causes muscular jerking that may mimic a carotid pulse.
- Assure there is a pulse with capture. May have to use the Doppler to confirm pulse.
- Electrodes and multi -function pads should be applied to clean, dry skin.
- Remove any debris, ointments, and skin preps prior applying pads.
- Remove excess chest hair to maximize gel to skin contact.
- Avoid any contact between nipple and gel treatment area of pad.
- Avoid pad placement near internal pacemaker or internal defibrillator.
- Apply one edge of the pad securely to the patient and then roll the rest of the pad from that edge to the other. Be careful not to trap any pockets of air between the gel and the skin.
- Manufacturer recommendations should be followed for pad placement location.

Technique / Procedure:

- Interpretation of the EKG rhythm as one of those described above.
- Application of the multi - function pads as well as the standard monitoring electrodes.
- Turn on the pacemaker with mA a "0" and then select the desired rate for the pacemaker.
  - 10 to 20 bpm higher than the patient's rate or approximately 70 to 80 bpm.
- Increase the pacemaker mA slowly until capture is achieved.
  - Widened QRS complex with a broad T wave after each pacemaker spike.
- Increase the pacemaker mA by 5 to 10 mA to ensure capture for safety margin.
- After electrical capture confirmation of mechanical capture must be obtained by palpation of distal pulses or Doppler.
- Monitor patients underlying rhythm every 1 to 2 minutes using the 4 : 1 button on the Zoll monitor.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Transcutaneous Cardiac Pacing:	____	____	____	____	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 720: Chest Decompression

Indications:

- Tension pneumothorax caused as a result of:
  - Trauma, cardiac arrest, or spontaneous pneumothorax.
- An occlusion of an open chest wound with dressing.
  - Remove the dressing to correct the problem.
- Blunt trauma arrest.
- The following signs & symptoms:
  - Absent lung sounds on one or both sides of the chest.
  - Hypotension.
  - Distended neck veins.
  - Increased resistance to ventilations.
  - Persistent cyanosis and progressive respiratory distress.
  - Subcutaneous emphysema.
  - Tracheal shift.

Contra - Indications:

- None listed.

Precautions / Notes:

- Accurate diagnosis is difficult.
- Bleeding from intercostal artery or vein, or great vessel.
- Liver, bowel, or spleen perforation with mid - axillary approach.

Technique / Procedure:

- Prep the chest area. Expose and swab with antiseptic solution, alcohol, or betadine solution.
- Insert 10 gauge angiocath at the mid - clavicular line at the 2nd intercostal space for adult patients.
- Insert 16 to 14 gauge angiocath at the mid - clavicular line at the 2nd intercostal space for pediatric patients.
- Insert over the top of the rib to avoid nerve and blood vessel involvement.
- Remove syringe. Aspiration may be necessary.
- Apply Asherman Seal if necessary.
- The alternative location would be mid - axillary line at the 4th or 5th intercostal space.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Chest decompression as indicated.	___	___	___	___	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 721: Continuous Positive Airway Pressure

Indications:

- Severe respiratory distress with failing respiratory efforts that include two of the following:
  - Accessory muscle use.
  - Respiration rate greater than 25 breaths / minute.
  - Hypoxia verified by:
    - Pulse oximetry reading less than 90%.
    - Capnography reading greater than 45 mm / Hg.
    - Abnormal skin color changes. (Example: Cyanosis)
- CPAP is appropriate to use for DNR patients.
- Adult patients.

Contra - Indications:

- Unconscious patients
- Unable to fit CPAP mask.
- Unable to maintain an open airway.
- Cardiac or respiratory arrest.
- Respiratory rate less than 8 breaths / minute or periods of apnea.
- Pneumothorax.
- Severe facial injuries.
- Tracheotomy.

Precautions / Notes:

- Compromised thoracic organs.
- Acute myocardial infarction. (Compression of the great vessels and preload)
- Pregnancy.
- Asthma.

Technique / Procedure:

- ECG monitoring.
- Capnography.
- Explain the procedure to the patient.
- Assemble the circuit. Select a mask that comfortably seals the bridge of the nose & fully covers the nose and mouth.
- Apply the mask and secure the straps.
- Apply 10 cm H_2O of pressure.
- Check for air leaks.
- Monitor and document the patient's response to treatment.
- Continue to coach the patient to keep the mask in place.
- Notify the Emergency Department early to prepare for arrival of the CPAP patient.

Note: If the patient's condition deteriorates, remove the device and prepare for immediate intubation.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Continuous Positive Airway Pressure:	____	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 722: End Tidal CO2 - Operational Waveform Capnography

Indications:

- Waveform capnography is a diagnostic tool and a Class I AHA recommendation that is required to be used as the primary means of tube placement confirmation and continual monitoring for ALL intubations: oral, nasal and cricothyrotomy. If a normal waveform is present after ventilating the patient for 3-6 breaths, research shows the tube is in the trachea 100% of the time.

- Waveform capnography via cannula is additionally **required** on any patient receiving a combination of narcotics and benzodiazepines, If there are extenuating circumstances where a waveform capnography assessment was not possible, thorough documentation is needed in the report.

- Waveform capnography has several additional beneficial uses and considerations (see educational protocol for more in depth explanations):
    - Initial detection of ROSC, which causes a dramatic rise in $ETCO_2$ even before a pulse can be palpated or a blood pressure can be auscultated.
    - Provides real time feedback on CPR quality. The goal in cardiac arrest is an $ETCO_2$ > 20 mmHg.
    - Confirmation and monitoring the proper placement of supra-glottic airway: King Tube, LMA, etc.
    - For closed head injury patients, ventilate at a rate to keep the patient's $ETCO_2$ between 30-35 mmHg.
    - Airway assessment via capnography cannula for any unconscious or altered mentation patient. "The shape of the waveform is the shape of the airway." A normal waveform indicates a patent airway.
    - Monitoring intubated or non-intubated patients; $ETCO_2$ can help to determine if intervention is needed due to elevated $ETCO_2$ and/or hypoventilation.
    - Assist in differentiating between CHF and COPD.
    - Trending CPAP patients via a capnography cannula.
    - Titrating Narcan to tidal volume and respiratory rate, particularly in patients on narcotics for chronic pain.
    - Initial detection of malignant hyperthermia, which is a rare reaction to RSI drugs, causing a 3-4 fold increase in $ETCO_2$ even before tachycardia and body temperature increases are measureable.
    - Perfusion assessment in any patient; particularly beneficial in patients suffering from shock.
    - In hyperglycemic patients, $ETCO_2$ levels can be used to differentiate metabolic acidosis (DKA) from normal bicarbonate levels.

Contraindications:

- None.

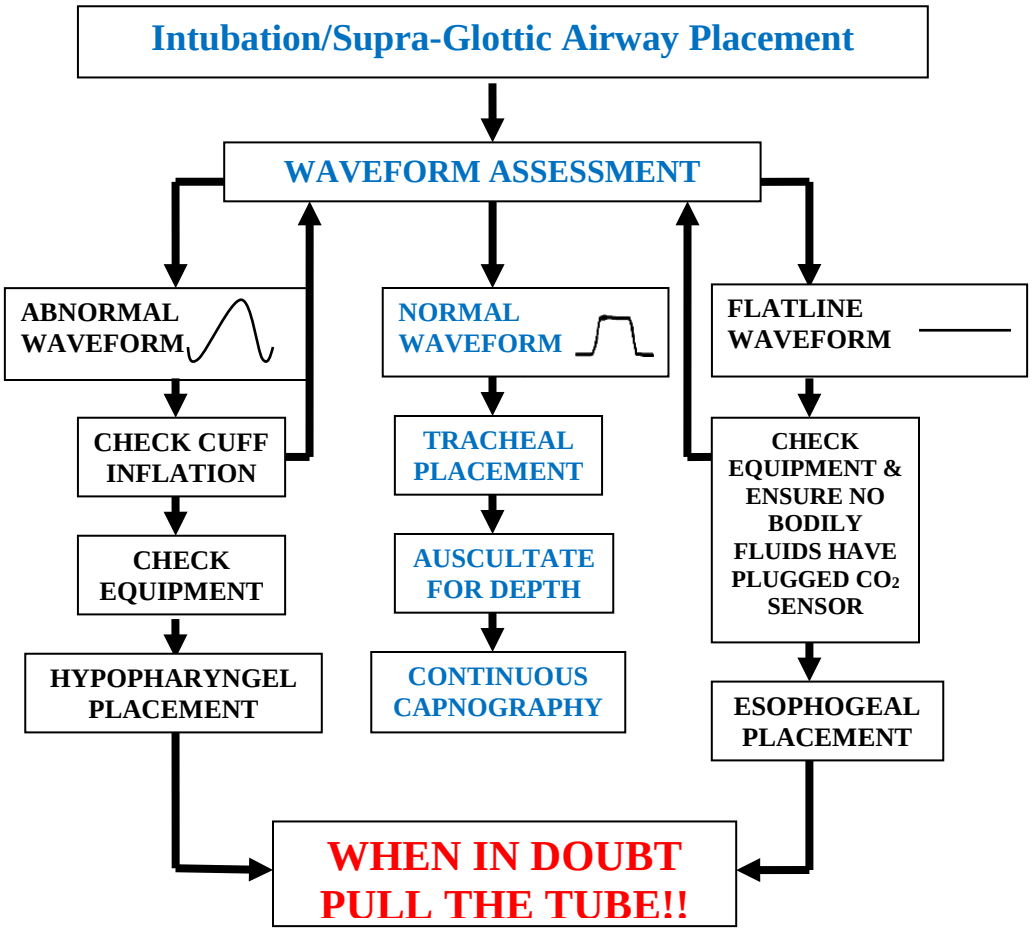
Technique / Procedure

- Equipment Setup: Attach the orange end of the device into the left upper outside of the monitor and wait several seconds for the monitor to calibrate.
- Intubated Application: Intubate your patient, inflate your tube cuff and then ventilate the patient 3-6 times while watching for a normal waveform to appear. After observing a sustained normal waveform, auscultate for proper tube depth. Then, continually monitor the patient's waveform capnography to ensure the tube remains patent.
- Supraglottic Airways: For King Tube and LMA placement, adjust the supraglottic airway depth until you see a normal waveform.

- Non-Intubated Application: Place the cannula on the patient and have them breathe normally without talking. Talking is the number one cause of artifact and can make it difficult to perform a waveform capnography assessment.

Documentation:

- Press the "print" button to document waveform verification any time the following occur:
  - Initial tube placement and confirmation
  - After repositioning the tube if dislodging occurs
  - Any time the patient is significantly moved, including pass-off at the hospital
- Remember the "print" button.
- If the capnography device quits working due to clogging from bodily fluids, replace it instead of trying to clean it or flush it. If the problem persists use your best judgment to verify tube placement and thoroughly document.



Scope of Practice:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Use of intubated and non-intubated waveform capnography & colorimetric capnography	___	SO	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 723: End Tidal CO_2 - Colormetric Device

Indications:

- End Tidal CO_2 - colormetric device is to be used to assist with verification of endotracheal tube placement.
- End Tidal CO_2 - devices are to be used for all intubations.

Contra - Indications:

- None listed.

Precautions / Notes:

- Do not remove end caps until ready to use.
- Use pediatric version on patients less than 30 pounds.
- Interpretation should be done after 6 breaths and on full expiration.
- Do not use for more than 2 hours.
- Do not use with humidified oxygen.
- Use does not replace the need to auscultate breath sounds on patients.
- Can not differentiate intubation of right main stem bronchus.
- Emesis and medications can undermine the reliability of the detector.

Technique / Procedure:

- Initial color of indicator should match purple color marked "check". Do not use otherwise.
- After intubation, check breath sounds.
- Remove caps from the detector.
- Attach to the endotracheal tube and ambu - bag.
- Ventilate patient with 6 ventilations.
- Bright yellow indicates a positive CO_2 exchange.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Use of ET CO_2 colormetric device to confirm ETT.	___	PPA	PPA	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 724: Hemorrhage Control

Indications:

- To be used to stop external bleeding by application of direct and continuous pressure to wound site.
- To be used to protect patient from contamination to lacerations, abrasions, burns.
- Patient's with epistaxis.

Contra - Indications:

- None.

Precautions / Notes:

- Although external skin wounds may be dramatic, they are rarely a high management priority in the trauma victim.
- Do not use circumferential dressings around neck. Continued swelling may block airway.
- The use of a tourniquet is indicated only in life threatening arterial hemorrhage control of an extremity.
- Life threatening arterial hemorrhage in a groin or axilla may require hemostatic dressing.

Complications:

- Loss of distal circulation from bandage applied too tightly around extremity.
- Airway obstruction due to tight neck bandages.
- Restriction of breathing from circumferential chest wound splinting.
- Continued bleeding no longer visible under dressings. (Particularly common with scalp wounds)
- Inadequate hemostasis. Some wounds require continuous direct manual pressure to stop the bleeding.

Technique / Procedure:

- Use body substance isolation & control hemorrhage with direct pressure using a sterile dressing.
- Assess patient fully and treat all injuries by priority once assessment is complete.
- Remove gross dirt and contamination from wound, clothing (if easily removed), dirt, gasoline, acids, or alkalis.
- Use copious amounts of irrigating saline or tap water for chemical contamination.
- Evaluate wound for depth, presence of fracture in wound, foreign body, or evidence of injury to deep structures. Note distal motor, sensory, and circulatory function prior to applying dressings.
- Apply sterile dressing to wound surface. Touch outer side of dressing only.
- Wrap dressing with clean gauze or cloth bandages applied just tightly enough to hold dressing securely (if no splint)
- Assess wound for evidence of continued bleeding & check distal pulses, color, capillary refill & sensation after bandage.
- Continue to apply direct hand pressure over dressing, or use air splint if bleeding not controlled with bandage alone.
- For deep or gaping extremities wounds in which bleeding cannot be controlled with direct pressure, apply tourniquet.
- For deep or gaping wounds or sites not applicable to tourniquets in which bleeding cannot be controlled with direct pressure, pack the wound with hemostatic sterile gauze, then re-apply a sterile dressing with pressure.
- Administer 2 sprays of Phenylephrine in affected nare for an epistaxis after having patient blow nose to expel clots.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Direct pressure.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Pressure point:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Tourniquet:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Hemostatic agents: (Topical)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Phenylephrine: Neo Synephrine: (Epistaxis)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 725: Left Ventricular Assist Device - LVAD

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.

Specific Findings:

Patient Assessment:

- **Identify if there is a problem, alarm or malfunction of the LVAD.**
- **Call the number located on the device for instructions and troubleshooting.**
- **Directions or orders from the device specialist may considered medical control orders.**

With the above specific findings, the following should occur:

- **If LVAD alarms:**
  - **Coordinate with Specialist**
  - **Check all connections**
  - **Consider battery swap out**
- **If no alarms: treat per applicable protocol(s)**
- **Emergency transport to University Medical Center in Aurora if possible.**
- **Consider Helicopter utilization.**
- **For cardiac arrest, consider closest emergency room.**

Special Precautions / Contraindications:

- **No CPR until contact with LVAD specialist**
- **Absolutely NO Mechanical CPR**

Assessment:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Assess and maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Place patient in position of comfort.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
• Check breath sounds regularly.	SO	SO	SO	SO	SO	SO

Procedures:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 4 lead EKG interpretation** (Reference Protocol: Section 700)	___	___	___	___	SO	SO
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Consider fluid bolus for preload (250-500 ml IV/IO)** (Reference Protocol: Section 700)	___	___	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG acquisition.** (Reference Protocol: Section 700)	___	SO	SO	SO	SO	SO
• **Cardiac monitor: 12 lead EKG interpretation.** (Reference Protocol: Section 700)	___	___	___	___	SO	SO

Medications:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• **Administer: Oxygen** (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 726: Medication Administration

Indications:

- Medical or traumatic conditions that warrant medication administration to improve or stabilize their condition.

Contra - Indications:

- None listed.

Precautions / Notes:

- Be certain that the route you choose to use is appropriate for the medication. See specific medication protocols.
- Be certain the medication you want to administer is the one you use.
- Check expiration dates, dosages, and routes before administration.
- Use sterile technique for drawing up medications and filling syringes.
- Rapid administration of medications can cause untoward effects. Avoid them by administering the medications according to protocol.
- Always check for infiltration around the I.V. / I.O. site. Especially when administering Dextrose 50% or Dopamine.

Technique / Procedure: Endotracheal Administration

- Studies indicate administration of medication via the ETT tube is not as effective and it has been proven difficult to measure the bio - availability of the drug to the target tissue after administration.
- Medication administration through the ETT tube should only be done as a last resort.
- Ventilate patient 4 to 5 times just prior to administering medications.
- Administer 2 times the recommended I.V. dose.
- Maximum doses for ETT routes are 2 times the maximum I.V. dosages.
- Dilute medication with 10 cc normal saline and administer 1/2 the solution.
- Ventilate 4 to 5 more times.
- Administer the remaining solution.
- Ventilate rapidly 4 to 5 more times before resuming recommended ventilatory rate.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer medication via ETT route.	___	___	___	___	**SO**	**SO**

Technique / Procedure: Intraosseous Administration

- Establish intraosseous line per protocol.
- Prepare the medication.
- Cleanse the injection port with alcohol and inject the medication.
- Record medication given, concentration of dose, amount given, and time.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer medication via I.O. route	____	____	____	**SO**	**SO**	**SO**

Technique / Procedure: Intravenous Administration

- Use appropriate needle for solution.
- Cleanse injection port with alcohol.
- Insert needle into the injection port.
- Pinch I.V. tubing between port and I.V. bag. Inject medication.
- Release tubing and administer 20 cc fluid bolus.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer medication via I.V. route.	____	____	**SO**	**SO**	**SO**	**SO**

Technique / Procedure: Subcutaneous Injection

- Use a 25 gauge, 5/8" length for most injections.
- Select site for injection. Usually the tricep area.
- Cleanse the site with alcohol.
- Eject air from syringe.
- Pinch skin and insert needle at 45° angle.
- Aspirate. If there is no blood return, inject medication.
- Remove needle and put slight pressure over the site with sterile dressing.
- Record medication given, concentration of dose, amount given, and time.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer medication via SQ injection.	____	____	____	**SO**	**SO**	**SO**

Technique / Procedure: Intramuscular Injection

- Use 3/4" to 1", 21 to 25 gauge needle.
- Select site. Usually the deltoid or gluteal muscles.
- Cleanse site with alcohol.
- Eject air from syringe.
- Insert needle at a 90° angle.
- Aspirate. If there is no blood return, inject medications.
- Remove needle and put slight pressure over site with sterile dressing.
- Record medication given, concentration of dose, amount given, and time.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer medication via IM injection.	___	___	___	SO	SO	SO

Technique / Procedure: Nebulized Administration

- Check medication to be administered.
- Place in the nebulizer.
- Attach oxygen tubing and flow rate at 6 to 8 liters per minute.
- Instruct patient to breathe deeply and hold their breath to allow medication to be absorbed.
- Record medication given, concentration of dose, amount given, and time.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer medication via nebulizer	___	SO	SO	SO	SO	SO

Technique / Procedure: Intra - Nasal Administration

- Draw desired medication into syringe with luer lock tip.
- Attach the MAD nasal atomizer to the syringe.
- Place atomizer in the patient's nostril.
- Quickly compress syringe to administer half of the volume.
- Remove and repeat in other nostril. Administer remaining medication and reassess the patient.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer medication via Intranasal route.	___	___	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 727: Nasogastric Insertion

Indications:

- A distended abdomen in severe abdominal pain.
- Unconscious patients with a protected airway but are vomiting.
- Cardiac arrest patients with a protected airway and have abdominal distention.

Contra - Indications:

- An obstructed nasopharynx.
- Facial trauma or head trauma.

Precautions / Notes:

- Epistaxis.
- Pharyngeal or tracheal placement.
- Aspiration without a protected airway.
- Procedure may be difficult if an endotracheal tube with an inflated cuff is in place.
- Check the contents of material in the tube.
- The nasogastric tube may go into the trachea. Confirming tube placement is critical.

Technique / Procedure:

- Have suction available.
- Measure insertion length from the patient's nose to the ear lobe to the xiphoid process.
- Administer **Viscous Lidocaine 2%** or water based lubricant per protocol in the nostril and on the tube.
- Attach "Toomey" syringe and evaluate placement by aspirating for stomach contents.
- If no contents are aspirated, inject air into the tube. Listen over the epigastrum with a stethoscope.
- Attach tube to suction unit and tape tube securely into position.
- Proceed with aspiration or irrigation.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Nasogastric (NG Tube) insertion.	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 728: Pulse Oximetry Monitoring

Indications:

- Any medical complaint or traumatic injury.
- The pulse oximeter may be used in a variety of situations that require monitoring of oxygen status.
  - The pulse oximeter displays a digital percentage readout of a calculated estimate of the patient's hemoglobin that is saturated with oxygen and heart rate.
  - The pulse oximeter can provide an early warning of decreasing arterial oxyhemoglobin saturation prior to the patient exhibiting clinical signs of hypoxia.
  - The pulse oximeter can be used as a guide for determining therapeutic oxygen requirements.
  - The pulse oximeter can be used to monitor the effectiveness of oxygenation and ventilation therapy.

Contra - Indications:

- None listed.

Precautions / Notes:

- Pulse oximetry equipment must be maintained per the manufacturer and FDA guidelines.
- **Pulse oximetry is not a substitute for conducting a thorough assessment of your patient**.
- Never withhold oxygen from a patient in distress while waiting for a reading or if the reading indicates above normal.
- Anemia will cause the pulse oximeter to display a false high saturation when the patient is actually hypoxic.
- Results may be affected by any vascular impairment such as:
  - Elevation of the extremity in relation to the heart.
  - Compression of the finger by the probe or excessive taping.
  - Vasoconstrictors such as cold, fear, hypothermia, and medications.
  - AV fistula decreasing distal flow.
  - Poor peripheral perfusion.
  - Carbon monoxide poisoning.
  - Hypovolemia.
- Potential causes for interference with pulse oximeter readings:
  - Artificial nails.
  - Dark pigmentation.
  - Electrical.
  - Movement.
  - Radiated (bright) light.
  - Edema.
  - Pigments.

Note: Oxygen saturation values are guidelines only. EMS personnel must consider the patient's overall condition!!

Technique / Procedure:

- Press the power button to turn the pulse oximeter on.
- Place the finger probe on the patient's finger, toe, nose, or ear lobe.
- Initial reading will be the patient's oxygen saturation level.

Interpret the pulse oximeter reading:

- In 3 to 6 seconds the pulse rate and oxygen saturation readings are displayed.
- Readings are averaged over 5 to 15 seconds.
- Normal oxygen saturation is considered to range between 97% to 99%.
- Normal levels of oxygen saturation are greater than 93% at our altitude.
- If oxygen saturation is below 92% consider further oxygen therapy and treatment.
- Readings of 90% or less may indicate that the patient needs ventilator assistance.
- Any rapid change in oxygen saturation will take this long to register and be displayed.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Pulse Oximetry Monitoring	PPA	SO	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 729: Splinting - Extremity

Indications:

- An extremity fracture site requiring immobilization for transport.
- An extremity sprain sites requiring immobilization for transport.
- Dislocations requiring immobilization for transport.

Contra - Indications:

- None listed.

Precautions / Notes:

- While grotesque looking, extremity fractures are rarely life threatening. Do not overlook life threatening injuries.
- Multiple extremity fractures are indicative of significant mechanism of injury & possibly other life threatening injuries.
- Be sure to address significant bleeding as per the Hemorrhage Control protocol.
- Generally splint the injury as found with an appropriate method.
- Severe deformities with signs of compromised circulation are allowed one re - alignment in the field.
- Assure PMSC distal to the injury prior to and after the splinting.
- Consider pain management: Refer to Section 500 for medications addressing pain.

Technique / Procedure: Extremity Splinting

- Expose the fracture site.
- Check for distal pulses, movement, sensation, and circulation.
- Dress and bandage any wounds prior to splinting.
- May need to re - align severely angulated fractures if no distal pulses are present. (One re - alignment in the field)
- Joint injuries should be immobilized in the position found.
- Immobilize the joint above and below the fracture site.
- Pelvic injuries can be stabilized using a sheet tightly wrapped around the patient's pelvis or a commercially available pelvic splint.
- An inverted K.E.D. device may also be used to stabilize the pelvis.
- The type of splint will be dependant on the type and location of the fracture.
- Secure the splint with Kerlix and tape. Secure to immobilize the extremity but not impair circulation.
- After the splint is applied, the patient should be re - evaluated for pulses, movement, sensation, and circulation.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Extremity splinting.	___	SO	SO	SO	SO	SO
• Pelvic splint.	___	SO	SO	SO	SO	SO

Technique / Procedure: Traction Splints

- Expose the fracture site.
- Check for distal pulses, movement, sensation, and circulation.
- Dress and bandage any wounds prior to splinting.
- Place the ankle hitch on the injured leg and apply gentle traction.
- Position the splint under the leg supporting fracture site. Ischial pad should be placed against the ischial tuberosity.
- Attach the ankle hitch to the splint and carefully increase the amount of traction. Titrate to the patient's comfort.
- Secure the leg straps. Avoid placing the straps over the fracture site or the knee.
- An inverted K.E.D. device may also be used to stabilize the pelvis.
- After the splint is applied, the patient should be re - evaluated for pulses, movement, sensation, and circulation.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Traction splinting.	___	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 730: Splinting Spinal Motion Restriction

Indications:

- Spinal Motion Restriction should be considered on any patient afflicted with the following:
  - Involved in a traumatic mechanism of injury.
  - Head or spinal trauma.
  - Loss of consciousness and / or altered mental status and associated with trauma.

Contra - Indications:

- None listed.

Precautions / Notes:

- It will be the on scene Paramedic's discretion to complete the Spinal Injury Clearance protocol.
- Long spine board is considered an extrication device rather than an immobilization device.
- If patient is ambulatory, place c-collar first, then the patient may walk to and place themselves on cot.
- Most penetrating trauma patients will not require spinal motion restriction.

Technique / Procedure: Spinal Motion Restriction - Long Spine Board

- Apply manual stabilization to the head and neck as soon as possible.
- Expose and palpate the spinal column for pain and / or deformity.
- Measure and place a cervical collar.
- Consider use of C-Collar and verbal instructions to remain as still as possible.
- Extricate the patient onto a long spine board, scoop stretcher or vacuum mattress based on the discretion of the provider only if needed for further spinal motion restriction.
- If using a long spine board for spinal motion restriction, roll the patient as a unit.
- If using a scoop stretcher for spinal motion restriction, adjust to proper height for patient.
- Secure the patient to the board with a minimum of four (4) straps.
- Document the neurological findings before and after spinal motion restriction.
- If a pregnant patient needs spine motion restriction, the long spine board or scoop should be tilted to the left side.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Spinal Motion Restriction: Long Spine Board or Scoop.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Initial Patient Assessment

- GSC 15
- No Spine Tenderness or Anatomic Deformity
- No Neurologic Complaints or Findings (Numbness or Motor Weakness)
- No Distracting Injuries
- No Intoxication
- Reliable Patient
- No Language Barrier
- **No Limitation of Neck Movement**

Pass

Fail

Restrict the Spinal Motion of the Patient

High Risk Criteria

- Long Fall (Adult >20 Feet Child > 10 Feet or 2-3 x's Child's Height
- Ejection from Automobile
- Death in Same Passenger Compartment
- Vehicle Intrusion > 12 inches at Patient Site or > 18 inches any site
- Motorcycle Crash > 20mph
- Auto vs. Pedestrian/Bicyclist (Thrown, Run Over, or with Significant Impact)
- Axial Loading/Diving Injuries
- Sudden Acceleration/Deceleration
- Violent Impact
- Motor Vehicle Crash Speed > 55mph

No

Yes

Consider Spinal Clearance Protocol

Restrict the Spinal Motion of the Patient

Other Considerations

- Penetrating Trauma to the Head, Neck or Torso w/out evidence of spinal injury does not need a collar or backboard.
- Patients with Focal Neurologic Complaints or Deficits Secondary to Penetrating Trauma may have a C-Collar placed at the paramedic's discretion.
- Patients with global deficits (secondary to penetrating trauma), c-collar and backboard are not indicated.

City of Yuma Ambulance Service EMS Protocols
Section 731: Suctioning - Endotracheal

Indications:

- Endotracheal suctioning should be used to remove excess foreign material that can't be removed by a suction device.

Contra - Indications:

- None listed.

Precautions / Notes:

- Complications may be caused both by inadequate and overly vigorous suctioning. Technique and choice of equipment are very important. Choose equipment with enough power to suction large amounts rapidly to allow for ventilation.
- Proper airway clearance can make the difference between a patient who survives and one who dies. Airway obstruction is one of the most common treatable causes of pre - hospital death.

Complications:

- Cerebral anoxia may occur as a result of excessive suctioning time without adequate oxygenation between attempts.
- Persistent obstruction due to inadequate tubing for removal of debris.
- Lung injury from aspiration of stomach contents due to inadequate suctioning.
- Asphyxia due to recurrent obstruction if airway is not monitored after initial suctioning.
- Vomiting and aspiration from stimulation of gag reflex.
- Induction of cardio pulmonary arrest from vagal stimulation.

Technique / Procedure

- Advance the catheter tip down the endotracheal tube as far as possible or until resistance is met.
- Apply suction and withdraw catheter slowly not to exceed 10 to 15 seconds.
  Note: Suctioning should only be done with a sterile catheter.
- Rinse catheter tip in sterile water or saline if re - using.
- Continued ventilations between suctioning attempts.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Adult Suctioning: Endotracheal Route.	___	___	___	___	**SO**	**SO**
• Neonatal Suctioning: Endotracheal Route	___	___	___	___	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 732: Suctioning - Pharyngeal

Indications:

- Pharyngeal suctioning should be used to remove excess foreign material that can be removed by a suction device.

Contra - Indications:

- None listed.

Precautions / Notes:

- Complications may be caused both by inadequate and overly vigorous suctioning. Technique and choice of equipment are very important. Choose equipment with enough power to suction large amounts rapidly to allow for ventilation.
- Proper airway clearance can make the difference between a patient who survives and one who dies. Airway obstruction is one of the most common treatable causes of pre - hospital death.

Complications:

- Cerebral anoxia may occur as a result of excessive suctioning time without adequate oxygenation between attempts.
- Persistent obstruction due to inadequate tubing for removal of debris.
- Lung injury from aspiration of stomach contents due to inadequate suctioning.
- Asphyxia due to recurrent obstruction if airway is not monitored after initial suctioning.
- Conversion of partial to complete obstruction by attempts at airway clearance.
- Trauma to the posterior pharynx from forced use of equipment.
- Vomiting and aspiration from stimulation of gag reflex.
- Induction cardio pulmonary arrest from vagal stimulation.

Technique / Procedure:

- Turn patient on side if possible, to facilitate clearance.
- Open airway and inspect for visible foreign material.
- Remove large or obvious foreign matter with gloved hands. Use tongue blade or oropharyngeal airway (do not pry) to keep airway open. Sweep finger across posterior pharynx and clear material out of mouth.

Adult Suctioning of the Oropharynx:

- Attach a tonsil tip. (Use open end for large amounts of debris)
- Insert tip into the oropharynx under direct visualization, with sweeping motion.
- Continue to oxygenate between 10 to 15 seconds.

Suctioning of the Newborn:

- Use neonatal suctioning device. Most common is a bulb syringe.
- As soon as infant's head has delivered, insert the suction tip into the mouth and back to the oropharynx.
- Apply suction while slowly withdrawing catheter from the mouth.
- Insert the catheter tip into each nostril and back to the posterior pharynx.
- Apply suction while slowly withdrawing catheter from each nostril.
- As soon as infant has delivered repeat the process.
- If meconium staining is present be prepared to suction infant via endotracheal route.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Adult Suctioning: Pharyngeal.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Neonatal Suctioning: Pharyngeal.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 733: Taser Probe Removal

Indications:

- A Taser probe(s) imbedded in skin.

Contra - Indications:

- Out of control patients.
- A probe imbedded in eye, face, neck, spinal column, breast, groin or vascular structure.
- Patients must be transported to the hospital for probe removal in these cases.

Specific Information Needed:

- Date of last tetanus. (If patient has not had 1 in the last 5 years they should be advised to acquire one within 72 hours)
- Get a good history of Taser event including prior to and events following.
- If patient is over 35 or has a cardiac history, a 12 lead EKG is indicated.
- Recent use of mind altering stimulant. (Examples: Phencyclidine (PCP). Methamphetamines)

Precautions / Notes:

- When a Taser is used in the presence of pepper spray propellant, there is a burn hazard. Electrical arcing from imperfect (but effective) probe contact can ignite the propellant. The resulting combustion may not be visible, but can lead to complaints of heat and burning. If a patient complains of heat or burning, evaluate for possible minor burns.
- There have been recent reports of deaths involving the use of a Taser on combative patients. After review, these deaths appear to be a result of improper use or prone restraint, agitated delirium, drugs and hyperthermia as major co - morbid factors. It is imperative that these patients receive a thorough assessment for these risk factors, and are not restrained in an improper position. If the patient shows signs of the above, remains combative, or has an altered LOC, then further treatment and transport is called for.

City of Yuma Ambulance Service EMS Protocols
Section 733: Taser Probe Removal

Technique / Procedure:

- Ensure that the Taser device is no longer applying an electrical charge prior to contacting the patient, probes, or wires.
- Use a pair of shears to cut the wire at the base of the probe.
- Place one hand on the patient in the area where the probe is embedded and stabilize the skin surrounding the puncture site. Place the other hand / pliers firmly around the probe.
- In one fluid motion, pull the probe straight out from the puncture site, avoiding any twisting or bending movements as much as possible.
- Repeat the process on the second probe.
- Cleanse each probe wound and the surrounding skin with saline soaked gauze or alcohol pad.
- Apply a sterile dressing to the site and advise the patient to leave in place for 24 hours.
- Advise the patient to watch for signs of possible infection. (Examples: Fever. Increased pain. Redness. Swelling)
- Inspect probe for breakage, abnormal findings, or a broken probe require transport of the patient.
- Removed probes should be handled like any contaminated sharps and should be placed in a sharps shuttle or other appropriate container provided by the officer. The probes will likely be logged as evidence.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Taser Probe Removal:	____	**DO / P**	**DO / P**	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 734: Existing Central Lines Access

Indications:

- Route for fluid replacement.
- Route for medication administration.
- Unable to obtain peripheral I.V. access.
- Patients that are likely to have a prolonged hospital stay.

Contra - Indications:

- None listed.

Precautions / Notes:

- If the patient is on Heparin, the blood discard amount doubles.
- Do not attempt to access a Dialysis Catheter (a.k.a. "Quinton Catheter") unless patient is in cardiac arrest and no other access is possible.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Identify type of Central and consult with online Medical Control for access.	___	___	___	___	___	DO

Note: See following pages for the common problems associated with Central Lines I.V. access and Troubleshooting Tips.

Common Problem:

- **Clinical Finding:**
  - Able to infuse, but unable to aspirate.
- **Possible Problem:**
  - Withdrawal occlusion.
- **Possible Causes:**
  - Fibrin sheath at the catheter. Tip migrated into smaller vessel.

Common Problem:

- **Clinical Finding:**
  - Unable to infuse or aspirate.
- **Possible Problem:**
  - Catheter occlusion.
- **Possible Causes:**
  - Intraluminal clot formation.
  - Intraluminal drug precipitate.
  - Pinch off sign.

Common Problem:

- **Clinical Finding:**
  - Arm swelling on same side as the catheter.
  - Neck pain or swelling.
  - Jugular venous distention.
  - Nonspecific chest pain or cough.
  - Shortness of breath.
  - Cyanosis of face and upper extremities.
  - May or may not be able to infuse or aspirate.
- **Possible Problem:**
  - Occlusion of vessel in which the catheter was placed.
- **Possible Causes:**
  - Subclavian vein thrombosis.
  - Mediastinal tumor growth.

Common Problem:

- **Clinical Finding:**
  - Fluid leaking from catheter.
  - Catheter hub is leaking.
  - Popping sound heard while flushing.

- **Possible Problem:**
  - Possible damaged catheter.

- **Possible Causes:**
  - External or internal hole is in catheter.
  - Severed line.
  - Cracked hub.

Common Problem:

- **Clinical Finding:**
  - Stinging or burning pain with infusion.
  - Swelling along the catheter site.
  - Redness and warmth.
  - May or may not be able to infuse or aspirate.
  - Popping sound heard while flushing.

- **Possible Problem:**
  - Drug extravasation.

- **Possible Causes:**
  - Catheter misplaced out of the vessel due to forceful coughing or vomiting.
  - Damaged catheter.
  - Thrombin or fibrin sheath.

Common Problem:

- **Clinical Finding:**
  - Findings depend on catheter location. (Pre - cordial pain or shoulder pain)
  - Swishing sound heard with injection.
  - Arrhythmias. (Catheter in atrium)

- **Possible Problem:**
  - Air embolism.

- **Possible Causes:**
  - Inadvertent opening of the catheter system.
  - Accidental disconnection of tubing.
  - Catheter severed or damaged.
  - Air introduced during placement.

Troubleshooting Tip For Central Lines:

- **Procedure:**
  - Connect syringe (not vacutainer) to the hub of the catheter rather than through the injection cap.

- **Tip:**
  - Use a 10cc syringe or larger to flush central lines. (Use of smaller syringes may result in catheter fracture due to increased PSI)

Troubleshooting Tip For Central Lines:

- **Procedure:**
  - Flushing Groshong catheters.

- **Tip:**
  - Pull back slowly to allow pressure inside the catheter to change.

Troubleshooting Tip For Central Lines:

- **Procedure:**
  - Having the patient change positions.

- **Tip:**
  - Lie down and sit up.
  - Turn side to side.
  - Lean forward.
  - Raise and lower arms.
  - Shrug shoulders.
  - Trendelenburg position.

Troubleshooting Tip For Central Lines:

- **Procedure:**
  - Increase thoracic pressure.

- **Tip:**
  - Have patient cough.
  - Have patient breathe deeply.
  - Have patient perform a valsalva maneuver.

Troubleshooting Tip For Central Lines:

- **Procedure:**
  - If catheter dislodges without the clamp tightened or if the line is severed.

- **Tip:**
  - Clamp line and place patient in the Trendelenburg position.
  - Obtain vital signs.
  - Notify the physician.

Troubleshooting Tip For Central Lines:

- **Procedure:**
  - If unable to infuse through the implanted port.

- **Tip:**
  - De - access and re - access with needle bevel up.

City of Yuma Ambulance Service EMS Protocols
Section 735: Vascular Access: Intraosseous Insertion - EZ IO

Indications:

- The EZ - IO Needle:
  - Pediatric Needle - Red: To be used in pediatric patients that are 3 to 39 kg.
  - EZ – IO Needle – Blue: To be used in patients that are over 40 kg.
  - Large EZ – IO Needle – Yellow: To be used in obese patients where use of the Blue EZ – IO needle is not sufficient.

- Patients that are found to be in need of Intravenous fluids or medications and a peripheral I.V. cannot be established in 2 attempts or 90 seconds and in patients who exhibit one or more of the following:
  - An altered mental status. (Glascow Coma Scale of 8 or less)
  - Respiratory compromise: (SaO2 80% after appropriate oxygen therapy. Res. rate < 10 or > 40 / minute)
  - Hemodynamic instability: (Systolic BP of < 90 mm / Hg)

- The EZ - IO may be considered prior to a peripheral I.V. attempt in the following situations:
  - Cardiac arrest: (Medical or traumatic)
  - Profound hypovolemia with alteration of mental status.

Contra - Indications:

- Fracture of the tibia or femur. (Consider alternate tibia)
- Previous orthopedic procedures. (I.O. within 24 hours, knee replacement) (Consider alternate tibia)
- Pre - existing medical condition. (Tumor near site or peripheral vascular disease)
- Infection at insertion site. (Consider alternate site)
- Inability to locate landmarks. (Significant edema)
- Excessive tissue at the insertion site.

Complications:

- The EZ - IO is not intended for prophylactic use.

Flow rates:

- Due to the anatomy of the IO space you will note flow rates to be slower than those achieved with I.V. catheters.
  - Ensure the administration of a 10 cc rapid bolus (flush) with a syringe.
  - Use a pressure bag or infusion pump for continuous infusions.
  - Use of blood pump tubing is preferred when a pressure bag or infusion pump are not available.

Pain:

- Insertion of the EZ - IO in conscious patients causes mild to moderate discomfort.
- Is usually no more painful than a large bore I.V.
- Prior to an I.O. bolus or flush on an alert patient, slowly administer Lidocaine through the EZ - IO hub.

Needle Fracture Humeral Site:

- Once placed in the humeral head, the humerus must be secured to the body otherwise risk of needle fracture exists.

Technique / Procedure:

- If the patient is conscious, advise them of the emergent need for this procedure and obtain informed consent.

Insertion:

- Locate insertion site:
  - Primary site:
    - Proximal Tibia: One finger width medial of the tibial tuberosity.
  - Secondary sites:
    - Medial Malleolus: (Ankle) One finger width proximal to the medial malleolus. Along the flat aspect of the medial distal tibia.
    - Proximal Humerus: While adducting the arm, place the patient's hand over the umbilicus. Locate the surgical neck of the humerus. The insertion site is approximately 1cm above the surgical neck for most adults. Secure the arm in that position to the body of the patient.
- Cleanse insertion site using aseptic technique.
- Stabilize the leg and insert the EZ - IO needle set.
- Remove the EZ - IO driver from the needle set while stabilizing the catheter hub.
- Remove the stylet from the needle set and secure the stylet.
- Confirm placement.
- Connect a primed EZ - Connect.
- Conscious adult patients should now receive 2ml/2% Lidocaine I.O.
- Flush or bolus the EZ - IO catheter rapidly with 10 cc of normal saline using a 10 cc syringe.
- Place a pressure bag or infusion pump on the solution being infused where applicable.
- Use of blood pump tubing is preferred when a pressure bag or infusion pump are not available.
- Begin infusion.
- Dress the site and secure tubing and apply wristband.
- Monitor the EZ - IO site and patient condition.

Removal:

- Grasp the hub directly or attach a sterile syringe.
- Support the patient's leg while rotating the catheter (clockwise - if you are using a syringe) and gently pull the catheter.
- Maintaining a 90-degree angle while rotating the catheter will ensure proper removal without complications.
- If hub - catheter separation occurs, use an appropriate hemostat to grasp and gently remove the catheter in the same manner as suggested above. (Rotating while gently pulling)
- Place the catheter in an appropriate sharps container.
- Dress the insertion site with an appropriate dressing.

Procedure:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Intraosseous Insertion: EZ - IO	___	___	** **PPA**	**SO**	**SO**	**SO**

** After approved training and approval from the medical director to practice this skill, an EMT Basic with I.V. authorization and an Advanced EMT may, under the supervision and authorization of a medical director, initiate Intraosseous and give medications which exceed those listed in Appendices B and D of these rules for an EMT Basic with I.V. authorization and an Advanced EMT under the direct visual supervision of an EMT Intermediate or Paramedic when the following conditions have been established.

- The patient must be in cardiac arrest or in extremis.
- Drugs administered must be limited to those authorized by the BME or EMT Intermediate or Paramedic as stated in Appendices B & D in accordance with the provisions of these rules.

City of Yuma Ambulance Service EMS Protocols
Section 736: Vascular Access: Intraosseous - Jam Shidi

Indications:

- Age: Children less than 6 years of age.
- Illness: Shock. Cardiac arrest. Wide spread burns. Massive trauma.
- Level of consciousness. Patient must be unconscious.
- Monitor for complications.
- Back up mechanism for those agencies that use the EZ - IO set but is not functioning properly.

Contra - Indications:

- Tibial and femoral fractures on the same leg.

Complications:

- Intraosseous insertion may result in leakage of infused fluid into the surrounding tissue, creating an infiltrate, which may lead to compartment syndrome.

Technique / Procedure:

- **First Choice:** Tibia. One finger (1 to 3 cm) below the tibial tuberosity on the antero - medial surface.
- **Second Choice:** Femur. Two fingers (3 to 5 cm) above the patella. Anterior midline or medial.
- Only one leg utilized in the field prior to ER arrival. Unless base physician clears further attempts on the other leg.
- All solutions or medications normally delivered intravenously may be administered via intraosseous.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Intraosseous Insertion: Jam - Shidi	___	___	___	**SO**	**SO**	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 737: Vascular Access: I.V. Buff Cap

Indications:

- Prophylactic venous access.
- Route for medication administration.

Contra - Indications:

- None listed.

Precautions / Notes:

- Consider the patient and condition and whether an I.V. or buff cap is necessary.
- The attendant is responsible for reporting any buff cap established in the field.

Technique / Procedure:

- Make sure BSI precautions are in place.
- Make every attempt to explain procedure to patient.
- Avoid initiating the I.V. in an area of a joint, unless necessary.

General Information:

- Gather all equipment and supplies.
- Prefill saline lock with normal saline.
- Apply tourniquet and cleanse site area.
- Proceed with similar technique for establishing a peripheral I.V.
- Attach the saline lock.
- Flush the saline lock with 2 to 10 cc of normal saline.
- Documentation of reason for IV initiation must be included in patient care report.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Buff Cap I.V. insertion.	____	____	SO	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 738: Vascular Access: I.V. External Jugular

Indications:

- Need for intra-venous access after unsuccessful peripheral I.V. attempts.

Contra - Indications:

- None listed.

Precautions / Notes:

- Should be used with caution in a conscious patient who does not require an I.V.
- A painful procedure that has some serious complications.

Complications:

- Local complications include:
  - Hematoma formation.
  - Infection.
  - Thrombosis.
  - Phlebitis.
  - Skin necrosis.
  - Puncture of the internal jugular vein or carotid artery.
- Systemic complications include:
  - Sepsis or pulmonary embolus.
  - Catheter fragment embolus or fiber embolus from the solution in the I.V.

Technique / Procedure:

- Position the patient supine with head turned to the opposite side from the procedure.
- Align cannula in the direction of the vein with the point aimed toward ipsilateral shoulder.
- Attach a syringe to the angiocath. Make puncture midway between the angle of the jaw and mid - clavicular line, tourniqueting the vein lightly with one finger above the clavicle.
  - Draw back on the syringe to confirm placement.
  - Do not allow air to be drawn into the catheter.
  - Keep one finger over the opening at all times.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• External jugular I.V. insertion:	___	___	___	SO	SO	SO

City of Yuma Ambulance Service EMS Protocols
Section 739: Vascular Access: I.V. Peripheral

Indications:

- Route for fluid or medication administration or for the anticipation of fluid administration or medication administration.

Contra - Indications:

- None listed.

Precautions / Notes:

- Consider alternative sites when establishing venous access if a fracture or skin damage is suspected.
- Initiate venous access only on appropriate patients.
- Have equipment assembled prior to inserting the angiocath.
- Monitor the patient for adverse reactions such as:
  - Infiltration with tissue necrosis.
  - Pyrogenic reactions.
  - Embolus.
  - Discontinue if necessary.

General Information:

- Make sure BSI precautions are in place.
- Make every attempt to explain the procedure to the patient.
- Flow rate is "TKO" unless ordered or stated otherwise.
- Avoid initiating the I.V. in an area of a joint, unless necessary.
- Two (2) attempts at I.V. access while on scene. All other attempts should be made enroute to the hospital.

Technique / Procedure:

- Gather all equipment and supplies.
- Apply tourniquet and cleanse site area.
- Insert needle into the skin, noting blood return.
- Advance the catheter.
- Draw blood samples with a vacutainer and secure the I.V. with tape and set at the "TKO" rate as described above.

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Peripheral I.V. insertion:			**SO**	**SO**	**SO**	**SO**

Section 800

Policies Section

City of Yuma Ambulance Service EMS Protocols
Section 801: Cancellation Policy

Purpose:

- To establish a policy in order to ensure that Emergency Medical Services are used efficiently and wisely throughout the County.

Policy Statement:

- This policy is to be used when there are no identifiable patients upon arrival on the scene.
- A patient is defined as any person that:
  - Requests medical assistance.
  - Demonstrates behavior indicating any type of injury or illness.
  - Law enforcement calls for a patient evaluation.
- When there are no patients on scene, additional responding units may be cancelled.
- If patients are identified on scene, but are refusing treatment or transport to the hospital, then the Medical Refusals Policy will apply.
- Under no circumstances will the air medical transport be cancelled by a responding Paramedic unit until an on scene evaluation of the patient by the Paramedic is done and the need for the air medical transport is not indicated.

City of Yuma Ambulance Service EMS Protocols
Section 802: Cardiac Alert Policy

Purpose:

- To establish a policy and guidelines for activating a "Cardiac Alert" in the pre - hospital setting.
- The goal of a "Cardiac Alert" program is to decrease the amount of time elapsed from arrival at the Emergency Department to interventional measures being done in the ER or Cardiac Catheter lab. Remember: "Time is Tissue".
- The "Cardiac Alert" is performed through a standardized approach to the care of cardiac patients.
  - Accurately identify acute infarct patterns (STEMI) with a 12 lead EKG that is done in the field.
  - Decrease on scene times.
  - Early hospital notification and concise radio report.
  - Prepare the patient to the fullest extent possible for a seamless hand off of patient care.
    - Treatment and medication as appropriate.
    - 12 lead EKG performed in the field.
    - Bilateral I.V.'s established and bloods drawn in the field.

Policy Statement:

Indications:

- Patients that are greater than 35 years of age but less than 80 years of age.
- Patients presenting with active chest pain / discomfort consistent with an acute coronary syndrome.
- Patients presenting with symptoms consistent with an acute coronary syndrome.
- Noted 1mm or more of ST segment elevation in two (2) or more anatomically contiguous leads on the 12 lead EKG.
- Preferably noted corresponding reciprocal depression in opposite or nearby leads on the 12 lead EKG.

Contra - Indications:

- Presence of a left bundle branch block.
- Presence of a pacemaker rhythm.

Special Notes:

- Alert the appropriate Emergency Department of a "Cardiac Alert" with an estimated time of arrival.
- En - route radio report to address:
- Treatment per the Cardiac Alert protocol.
- Attach & leave the original 12 lead EKG with the attending physician along with the checklist of the form shown below.
- Leave blood tubes with the primary care nurse.
- Complete and submit a 12 lead EKG tracking / audit form with paperwork to be turned in.
- Question patient about allergy to contrast dye or if taking Coumadin & relay that information to the hospital on arrival.
- If patient has a valid "DNR", complete the Cardiac Alert checklist but notify the ER of the "DNR" and they will determine if the "Cardiac Alert" will be activated.
- If an Inferior Wall Myocardial Infarction is suspected, a V^4R lead will be run to rule our right ventricular involvement.

City of Yuma Ambulance Service EMS Protocols
Section 802: Cardiac Alert Policy

City of Yuma Ambulance Service
302 E. 2nd Ave
Yuma, CO. 80759
Supervisor: 970-630-0848

P.C.R. # _____

Cardiac Alert Checklist

Patient Name: _____ **DOB** _____

Baseline Vitals BP: _____ **Pulse:** _____ **Respirations:** _____ **O2 Sat:** _____

Dispatch Time: _____ **Contact:** _____ **Activation:** _____ **ER Arrival:** _____

1. Patient with active chest pain or discomfort that is consistent with an acute coronary syndrome (Less then 12 hours) ..... ☐

OR

2. Other classis symptoms that are consistent with an acute coronary syndrome. (Dyspnea. Syncope. Dizziness. Diaphoresis. N & V) ..... ☐

3. Patient age is between 35 to 80 ..... ☐

4. No left bundle branch block..... ☐

5. Not a paced rhythm..... ☐

6. A pre-hospital 12 lead EKG has been done (Attach to the back of this form)..... ☐

7. 1mm ST segment elevation is present in at least two (2) anatomically contiguous leads..... ☐

8. Patient is not currently on Coumadin..... ☐

9. Patient does not have an allergy to contrast dye..... ☐

All of the above criteria must be checked in order to activate a "Cardiac Alert" from the field!!

***** Cardiac Monitor Transmitted to Cardiac Catheterization Lab of Destination by Paramedic #_____*****

City of Yuma Ambulance Service EMS Protocols
Section 803: Helicopter Utilization Policy

Purpose:

- To establish a procedure for the use of air medical transport services when the patient's condition warrants and ground transportation is likely to exceed 30 minutes to the most appropriate facility.
- Reminder: Early contact with the incoming ALS crew or with Base Physician is recommended.

Policy Statement:

Medical Considerations:

- **Adult:**
  - Chest pain in patients 40 years of age or older with previous cardiac history or associated symptoms.
  - High index of suspicion of cardiac related problems.
  - Unresponsive to verbal / painful stimuli.
  - Systolic blood pressure less than 90 mm / Hg or greater than 200 mm / Hg.
  - Respiratory rate less than 60 or greater than 35 respirations per minute.
  - Heart rate less than 60 bpm or greater than 120 bpm and not normal for patient activity.
  - Overdose with medications: Call for ALS or Base Physician immediately.
  - Near drowning.
  - Seizures: More than two (2) within 30 minutes.

- **Pediatric:**
  - Near drowning.
  - Systolic blood pressure less than 70 mm / Hg.
  - Respiratory rate greater than 60 respirations per minute.
  - Heart rate less than 80 bpm or greater than 180 bpm, correlating with other signs or symptoms.
  - Unresponsive to verbal or painful stimuli.
  - Overdose with medications: Call for ALS or Base Physician immediately.
  - Seizures: More than two (2) within 30 minutes.

Trauma Considerations:

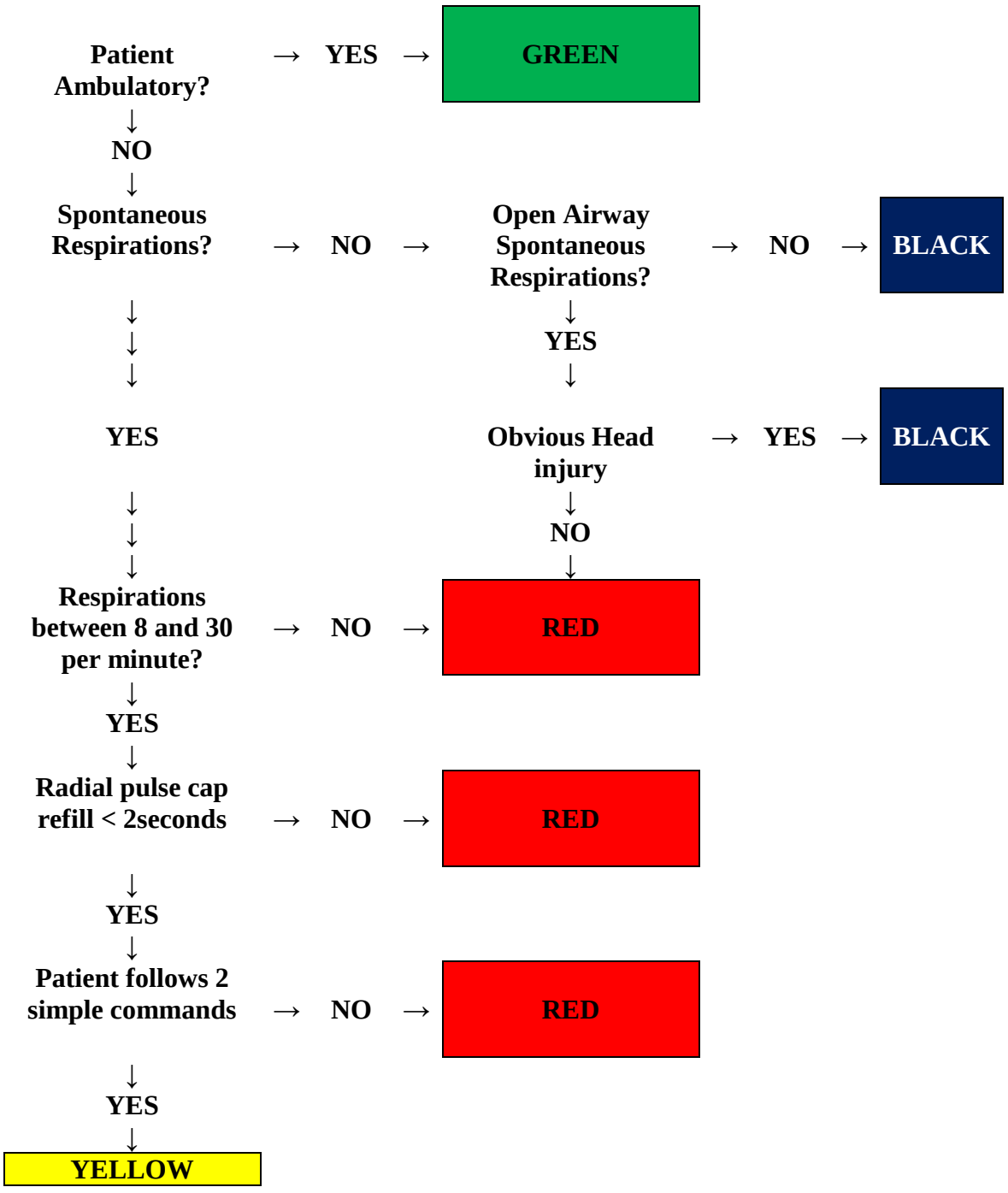
- **Adult and Pediatric:**
  - Any serious traumatic injury meeting the above mentioned medical considerations.
  - Penetrating trauma to the head, chest, abdomen, pelvis, or artery.
  - Suspected spinal cord injuries as manifested by any neurological complaint or deficit.
  - Two or more long bone fractures or suspected pelvic fractures.
  - Partial or total amputation of extremity excluding digits.
  - Crush injuries to head, chest, or abdomen.
  - Major burns, including electrical, 15% of total body surface or more, or burns involving the face, hands, feet, perineum, or suspected respiratory involvement.

Operational Considerations:

- Vehicle rollover with unrestrained passengers.
- Vehicle striking pedestrians greater than 10 mph.
- Falls greater than 20 feet.
- Intrusion greater than 18 inches into the passenger compartment.
- Ejections from the vehicle.
- Multiple victims.
- Death of another occupant in the same vehicle.
- Prolonged extrication (more than 20 minutes).
- Difficult access, such as wilderness or impeded access or egress.

Mass Casualty Triage Protocol:

Mass casualty incidents exist anytime the number of patients exceeds the normal capacity of the EMS system. MCI conditions exist whenever an imbalance exists between resources and patient needs. During these times decisions must be made about care priorities and based on limitations of field intervention and resuscitation. We will use the S.T.A.R.T method (Simple Triage and Rapid Treatment).



City of Yuma Ambulance Service EMS Protocols
Section 805: Medical Refusals Policy

Purpose:

- To establish a policy and procedure by which the medical providers of the City of Yuma Ambulance Service will follow when they arrive on the scene of a call with a patient(s) that have any type of injury / illness but are refusing treatment or transport by ambulance to the hospital.

Policy Statement:

General Information:

- A patient is defined as any person that:
  - Requests medical assistance.
  - Demonstrates behavior indicating any type of injury / illness.
  - Law enforcement calls for a patient evaluation.

- A person who has decision making capacity may refuse assessment, treatment, and / or transport. This applies to persons 18 years of age or older, emancipated or married minors, a parent or legal guardian on scene who will sign for the patient, or law enforcement or other responsible party who will sign for a minor.

- Every reasonable attempt will be made to advise the patient to contact their personal physician or health care provider within 24 hours, regardless of the severity of the injury or illness.

- All patients should sign a refusal form. If the patient is not willing to sign a refusal form, the responding medical crews will complete the appropriate documentation. This is to include assessment findings and all pertinent information describing the patient's refusal.

Documentation:

- Patient refusals will be reviewed for clinical accuracy by the highest level of provider on that scene prior to submitting the patient care report.
- All assessment findings, treatment interventions, and patient instructions / precautions that were given need to be documented within the patient care report.
- The patient's name, date of birth, physical exam, baseline set of vital signs, and narrative must be documented on the patient care report.

Treatment / Transport Decisions:

- Inform the patient of findings:
  - Possible injuries.
  - Need for evaluation by physician.
  - Risks of delaying evaluation, delay of treatment and non-physician assessment.

- Patients that are refusing treatment and / or transport:
  - Assess patient to the extent possible. If unable to assess, document the reason why on the patient care report.
  - All refusals will be authorized and signed by the crew member with the highest level of certification unless the refusal fits the criteria listed in this protocol for a BLS provider completing the refusal.

Special Notes:

- Patients who have sustained trauma and are refusing treatment / transport but with a history of ETOH beverage consumption:
  - Base physician contact must be made approving refusal of treatment or transport regardless of mechanism involved or patient mentation.
  - Include all vital signs, documentation, and information as outlined in Section II and III.

- BLS agencies that wish to complete refusals as part of their response must have specific training regarding this policy as set forth by the medical director. This policy refers the patient as defined above.

- Refusals may be issued without ALS intervention for the following patients:
  - Superficial lacerations or abrasions.
  - Minor orthopedic injuries with minimal discomfort, without deformity or neurovascular compromise.
  - First and second degree burns less than 5% body surface area and without respiratory or inhalation injury.
  - Blisters.
  - Earache.
  - Rash without dyspnea or chest tightness.
  - Eye irritation, foreign body sensation without vision changes.
  - Sunburn.
  - Minor epistaxis.
  - Diabetic patients who are alert & oriented after correction of hypoglycemia with oral glucose or IV Dextrose administration who meet the following criteria:
    - Not currently taking oral diabetic medication
    - Have a competent adult to monitor them when EMS clear scene
    - Can eat /drink

- All other patients will be evaluated by an authorized ALS agency as explained above.

- All refusals will have a patient care report form and refusal form completed. These forms should be kept on file with the agency involved.

City of Yuma Ambulance Service EMS Protocols
Section 806: Physician Involved On Scene Policy

Purpose:

- To establish a policy and procedure that the medical providers of the City of Yuma Ambulance Service will follow whenever there is the presence of a physician on the scene of a call. This applies in both the medical office setting as well as on scene of a call and the physician is a bystander and identifies himself / herself as such.
- This Does NOT apply to the EMS Medical Director or his/her designated EMS Physician(s).

Policy Statement:

The physician on scene at a medical office, or in the patient's home:

- Determine if the physician is in fact the patient's personal physician.
- Determine if the physician is willing to assume responsibility for patient care and accompany the patient to the E.R.
- In the event of a conflict, ask that the physician administer care of medications.
- Documentation of events should be reflected on the report.
- If the physician does not accompany the patient, follow protocols as with any other patient being transported.

The physician on scene as a bystander:

- Request identification.
- Determine if the physician is willing to assume responsibility for patient care and accompany the patient to the E.R.
- In the event of a conflict, contact the base physician.
- Documentation of the events should be reflected on the medical report.

City of Yuma Ambulance Service EMS Protocols
Section 807: Poison Control Orders

Purpose:

- To establish a policy and procedure by which the medical providers of the City of Yuma Ambulance Service will provide emergency care in consultation with Poison Control without the delay of calling base physician.

Policy Statement:

- The Poison Control Center is staffed with experts in their field. They utilize the latest research and data to formulate a treatment plan for patient with poisoning emergencies.
- Medication or treatment orders given to you over the phone by poison control can be carried out without contacting your base physician.
- Emergency medical providers may still contact the base physician if they need additional orders or consultation.

Communication:

- Emergency medical providers should include all information obtained from Poison Control when transferring patient care to the transporting agency or emergency room staff.

Documentation:

- All patient contacts will be documented appropriately.
- Medication or treatment orders given by Poison Control shall be documented on patient care reports as direct orders from Poison Control.

City of Yuma Ambulance Service EMS Protocols
Section 808: Radio Report Format Policy

Purpose:

- To establish a policy and procedure and format by which the medical providers of Weld County will follow when contacting the incoming ALS agency or when contacting the Emergency Department when transporting a patient.

Policy Statement:

The following information should be included in a radio report:

- Response: (emergent or routine)
- Age of the patient.
- Gender of the patient.
- Mechanism of injury or the nature of the illness.
- Chief complaint.
- Level of consciousness.
- Blood pressure.
- Heart rate.
- Respiratory rate.
- Pulse oximetry reading.
- Any procedures performed. (Example: Spinal immobilization. I.V. access. Oxygen administration. Intubation)
- Trauma or medical team activation.
- Estimated time of arrival.

****Note:** **If your patient is being transported by an air medical transport service, every effort should be made to contact the emergency room physician with your report.**

City of Yuma Ambulance Service EMS Protocols
Section 809: Restraints Policy

Purpose:

- To establish a policy and procedure by which the City of Yuma Ambulance Service medical providers will follow in the event that a patient needs to be restrained in order to prevent the injury of pre - hospital care providers whenever they are called to patients who are presenting with ideations of harming themselves or others.

Policy Statement:

- Assure that adequate personnel are on scene and that the appropriate hold is in place and treatment has been authorized by law enforcement or on line medical control.

- Document the type of restraints, the time they were applied as well as the reason for the restraints.

- Hand cuffs and other hard restraints are to be applied by law enforcement officers only. For this reason, it is a good practice to have a law enforcement officer accompany the patient. However, not every situation dictates the need for a law enforcement officer in the back of the ambulance and Paramedic discretion will be allowed in those situations. For those situations, the law enforcement officer may follow behind the ambulance while transporting the patient to the hospital. The key concept is that law enforcement should be readily available for restraint removal when acute changes in medical condition warrant removal of the restraints.

- If a patient is under arrest, law enforcement should accompany the patient while transporting to the hospital.

- If a patient is to be restrained, it is a good practice to have two (2) EMS providers in the back of the ambulance for transport safety. However, not every situation dictates the need for two (2) EMS providers in the back of the ambulance during transport of these patients, and Paramedic discretion will be allowed in these situations.

- Patients will be transported in the supine position with one arm restrained above their head and the other arm restrained down by their side. Be sure to check the patient's CTC distal to the restraints every 10 minutes.

- The transport of a patient prone with his / her wrists and ankles tied together behind his / her back is dangerous and should only be done under extreme circumstances, with on line medical control contact, and only when a law enforcement officer accompanies the patient in the back of the ambulance while transporting to the hospital.

City of Yuma Ambulance Service EMS Protocols
Section 810: Resuscitation Guidelines Policy

Purpose:

- To establish a policy and procedure and format by which the medical providers of the City of Yuma Ambulance Service will follow when responding on a call and the patient is found to be in cardio pulmonary arrest.

Policy Statement:

****Note: All patients found to be in cardio pulmonary arrest will have the appropriate resuscitation measures initiated.**

- **Medical Arrest:** Reference Section 306 - Cardiac Arrest / Medical

- **Trauma Arrest:** Reference Section 409 - Trauma: Blunt / Penetrating.

Exceptions to Initiating Resuscitation:

- **Obvious Death:**
  - Rigor mortis.
  - Dependent lividity.
  - Decomposition.

- **Obvious Fatal Trauma:**
  - Decapitation.
  - Incineration.
  - Massive blunt or crush injuries incompatible with life.

- **Trauma Arrest in Triage Situations:**
  - Involving other critical patients and a shortage of rescue personnel.

- **Presence of a Valid:**
  - Do Not Resuscitate order.
  - Colorado Advanced Directives order.

Valid "Do Not Resuscitate" orders or valid "Colorado Advanced Directives"

- To be valid, orders for Colorado Medical Directives will include either:
  - A CPR Directive form or:
  - A necklace or bracelet worn by the patient.

- CPR is to be withheld or stopped if the CPR directive is verified.

- Authorized agents on behalf of the patient shall be verified as well.

- DNR orders may vary according to location and circumstance.

- If there is any doubt as to the authenticity of the Order or Directive, contact Base Physician and continue with resuscitation efforts.

- Resuscitation measures to be withheld or withdrawn.
  - Cardio pulmonary resuscitation. (CPR)
  - Endotracheal intubation.
  - Combitube placement.
  - Cricothyrotomy.
  - Defibrillation.
  - Cardiac resuscitation medications.
  - Emergency transport.

Field Pronouncements:

- If resuscitation efforts have been initiated, then field pronouncements must be made by the Paramedic or EMT-I in consult with the Base Physician and documented with the authorizing physician's name and the time of death.

- Situations may include the following:
  - Patients who fail to respond to 10 minutes of ACLS with persistent asystole.
  - Patients who remain in persistent PEA despite 20 minutes of high quality CPR, appropriate airway management, and a capnography reading that remains less than 10 mm/Hg.
  - Prolonged down time prior to resuscitation.
  - This does not include the hypothermia or near drowning patient.

- For those patients that meet the criteria for “Exceptions to Initiating Resuscitation” the field pronouncement can be made by the person with the highest medical certification on scene. The field pronouncement does not need to be made in consult with the Base Physician. Documentation should include the time of death and the Medical Director’s name for the person making the field pronouncement.
-

Documentation:

- Patient information:
  - Name.
  - Address.
  - Date of birth.
- Patient status:
  - Condition found.
  - Medical history.
- Type of Directive or DNR:
- Directive number:
  - Found on document, bracelet, or necklace.
- Attending / Personal Physician:
- Any circumstances that called for variance of protocol:
- EKG strips (4 lead)

Procedures to provide comfort care / alleviate pain:

- Maintain an open airway.
- Administer oxygen.
- Control bleeding.
- Provide pain medication per protocol.

City of Yuma Ambulance Service EMS Protocols
Section 811 - Scope Of Practice

SO	**=**	**Standing Order.**
DO	**=**	**Direct Physician Order.**
DO/P	**=**	**Direct Physician order or immediate supervision by an approved Paramedic.**
PPA	**=**	**Prior Physician Approval.**
******	**=**	**Extremis Conditions Apply.**

Patient Assessment:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Monitor vital signs	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Childbirth emergencies	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Airway Management:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Manual airway management.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Oral pharyngeal airway placement.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Nasal pharyngeal airway placement.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Pulse oximetry monitoring.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Oral endotracheal intubation.	____	____	____	____	**SO**	**SO**
• Nasal endotracheal intubation.	____	____	____	____	____	**SO**
• King LTD - S tube placement.	____	**PPA**	**PPA**	**SO**	**SO**	**SO**
• Combitube placement.	____	**PPA**	**PPA**	**SO**	**SO**	**SO**
• Laryngeal mask airway (LMA) placement.	____	**PPA**	**PPA**	**SO**	**SO**	**SO**
• Nasal gastric tube (NG Tube) placement.	____	____	____	____	____	**SO**
• Cricothyrotomy: (Surgical)	____	____	____	____	____	**SO**
• Suctioning: Pharyngeal	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Suctioning: Endotracheal	____	____	____	____	**SO**	**SO**
• Chest decompression.	____	____	____	____	**SO**	**SO**
• Carbon monoxide monitoring.	____	**SO**	**SO**	**SO**	**SO**	**SO**
• Continuous positive airway pressure: (CPAP)	____	**SO**	**SO**	**SO**	**SO**	**SO**
• End tidal CO_2 monitoring: Capnography	____	**PPA**	**PPA**	**SO**	**SO**	**SO**
• End tidal CO_2 monitoring: Colormetric Device	____	**PPA**	**PPA**	**SO**	**SO**	**SO**

Oxygen Administration:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Nasal cannula.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Non-rebreather mask.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Bag valve mask.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Cardiopulmonary Resuscitation:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Manual chest compressions: (CPR)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Mechanical compression device:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Trauma Management:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Soft tissue injury management:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Splinting: Extremity / Bandaging / Dressing:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Splinting: Extremity / Traction:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Splinting: Spinal Motion Restriction:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• External pelvic compression:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Hemorrhage control: Direct pressure:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Hemorrhage control: Pressure points:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Hemorrhage control: Tourniquet:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Hemorrhage control: Hemostatic agents:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

I.V. Therapy	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Buff cap I.V. insertion:	____	____	**SO**	**SO**	**SO**	**SO**
• Peripheral I.V. insertion:	____	____	**SO**	**SO**	**SO**	**SO**
• Monitoring of an I.V. line:	____	____	**SO**	**SO**	**SO**	**SO**
• External jugular I.V. insertion:	____	____	____	**SO**	**SO**	**SO**
• Intra-osseous insertion:	____	____	____	**SO**	**SO**	**SO**
• Blood glucose monitoring:	**PPA**	**SO**	**SO**	**SO**	**SO**	**SO**

Cardiac Monitor:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Automatic external defibrillator:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Cardiac monitor: 4 lead EKG application & acquisition:	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Cardiac monitor: 4 lead EKG interpretation	___	___	___	___	**SO**	**SO**
• Cardiac monitor: 12 lead EKG application & acquisition	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Cardiac monitor: 12 lead EKG interpretation	___	___	___	___	**SO**	**SO**
• Cardiac monitor: Defibrillation	___	___	___	___	**SO**	**SO**
• Cardiac monitor: Cardioversion	___	___	___	___	___	**SO**
• Cardiac monitor: Transcutaneous cardiac pacing:	___	___	___	___	**SO**	**SO**

Patient Assisted Medications:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Epinephrine auto injector:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Metered dose inhaler:	___	**DO**	**DO**	**DO**	**SO**	**SO**
• Narcan Auto Injector	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Nitroglycerin:	___	**DO**	**DO**	**SO**	**SO**	**SO**
• Oral glucose	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Medications:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Acetylsalicylic Acid: (ASA)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Adenosine: (Adenocard)	___	___	___	___	**DO / P**	**SO**
• Albuterol: (Proventil)	___	**DO / P**	**DO / P**	**DO / P**	**DO / P**	**SO**
• Amiodarone: (Cordarone) Cardiac arrest:	___	___	**	**	**DO / P**	**SO**
• Amiodarone: (Cordarone) All other indications:	___	___	___	___	**DO / P**	**SO**
• Ativan: (Lorazepam) Seizures:	___	___	___	___	**DO / P**	**SO**
• Ativan: (Lorazepam) Musculoskeletal spasms:	___	___	___	___	**DO / P**	**SO**
• Ativan: (Lorazepam) Chemical restraint:	___	___	___	___	**DO / P**	**SO**
• Atropine: Bradycardia:	___	___	___	___	**DO / P**	**SO**
• Atropine: Organophosphate Poison / Nerve Agent	___	___	___	___	**DO / P**	**SO**
• Atrovent: (Ipratoprium Bromide)	___	___	___	**DO / P**	**DO / P**	**SO**

Medications Continued:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Benadryl: (Diphenhydramine) Allergies / Anaphylaxis:	___	___	___	**DO / P**	**DO / P**	**SO**
• Benadryl: (Diphenhydramine) Dystonic reactions:	___	___	___	**DO / P**	**DO / P**	**SO**
• Cardizem: (Diltiazem)	___	___	___	___	___	**SO**
• Cyano Kit:	___	___	___	___	**SO**	**SO**
• Dextrose 50%: (Adult patient)	___	___	**SO**	**SO**	**SO**	**SO**
• Dextrose 25%: (Pediatric patient)	___	___	**SO**	**SO**	**SO**	**SO**
• Dopamine: (Intropin)	___	___	___	___	___	**SO**
• DuoDote Auto Injector:	**PPA**	**PPA**	**PPA**	**SO**	**SO**	**SO**
• Epinephrine Auto Injector:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Epinephrine: (1 : 10,000) Cardiac arrest	___	___	**	**	**DO / P**	**SO**
• Epinephrine: (1 : 10,000) Severe anaphylaxis	___	___	___	___	**DO / P**	**SO**
• Epinephrine: (1 : 1,000) Allergies	___	___	___	**DO / P**	**DO / P**	**SO**
• Fentanyl: (Sublimaze)	___	___	___	___	**DO / P**	**SO**
• Glucagon: Hypoglycemia	___	___	___	**SO**	**SO**	**SO**
• Glucagon: Beta blocker overdose:	___	___	___	**DO / P**	**DO / P**	**SO**
• Glucagon: Esophageal food obstruction	___	___	___	___	**DO / P**	**SO**
• Glucose: Oral	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Inapsine: (Droperidol)	___	___	___	___	**DO**	**SO**
• Lasix: (Furosemide)	___	___	___	___	**DO**	**DO**
• Lidocaine: Cardiac arrest	___	___	**	**	**DO / P**	**SO**
• Lidocaine: Ventricular Tachycardia	___	___	___	___	**DO / P**	**SO**
• Lidocaine: Wide complex tachycardia / unk. origin.	___	___	___	___	**DO / P**	**SO**
• Lidocaine: Significant ectopy / After conversion:	___	___	___	___	**DO / P**	**SO**
• Lidocaine: Intra-osseous bolus for anesthetic:	___	___	___	**SO**	**SO**	**SO**
• Lidocaine: (Jelly) Preparation for nasal intubation:	___	___	___	___	___	**SO**
• Magnesium Sulfate: Cardiac arrest:	___	___	**	**	**	**SO**
• Magnesium Sulfate: Seizures secondary to ecclampsia:	___	___	___	___	**DO / P**	**SO**
• Magnesium Sulfate: Bronchial spasm:	___	___	___	___	___	**SO**

Medications Continued:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Morphine Sulfate:	___	___	___	___	___	**SO**
• Narcan: (Naloxone)	___	___	**SO**	**SO**	**SO**	**SO**
• Nitroglycerin: Chest pain	___	___	___	**SO**	**SO**	**SO**
• Nitroglycerin: Pulmonary edema.	___	___	___	**SO**	**SO**	**SO**
• Nitroglycerin: HTN - Autonomic Hyper Reflexia:	___	___	___	**SO**	**SO**	**SO**
• Oxygen:	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Phenylephrine (Neo Synephrine)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• Racemic Epinephrine	___	___	___	___	**DO / P**	**SO**
• Sodium Bicarbonate: Cardiac arrest:	___	___	**	**	**DO / P**	**SO**
• Sodium Bicarbonate: Tricyclic Anti-depressant O.D:	___	___	___	___	___	**SO**
• Sodium Bicarbonate: Crush Injury	___	___	___	___	**DO / P**	**SO**
• Solumedrol: (Methylprednisolone)	___	___	___	___	**DO / P**	**SO**
• Terbutaline: (Brethine) Asthma / Bronchitis / COPD	___	___	___	___	___	**SO**
• Tetracaine Hydrochloride:	___	___	___	___	**SO**	**SO**
• Thiamine: (Vitamin B_1)	___	___	___	___	___	**SO**
• Versed: (Midazolam) Chemical restraint:	___	___	___	___	**DO / P**	**SO**
• Versed: (Midazolam) Seizures	___	___	___	___	**DO / P**	**SO**
• Versed: (Midazolam) Musculoskeletal spasms	___	___	___	___	**DO / P**	**SO**
• Zofran: (Ondansteron) IV Administration	___	___	___	**SO**	**SO**	**SO**
• Zofran: (Ondansteron) ODT Tablets	___	**DO / P**	**DO / P**	**SO**	**SO**	**SO**

Monitoring I.V. Drip Medications:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Amiodarone: (Cordarone)	___	___	___	___	**SO**	**SO**
• Dopamine:	___	___	___	___	___	**SO**
• Lidocaine:	___	___	___	___	**SO**	**SO**
• Magnesium Sulfate:	___	___	___	___	___	**SO**
• Morphine Sulfate:	___	___	___	___	___	**SO**
• Nitroglycerin:	___	___	___	___	___	**SO**

City of Yuma Ambulance Service EMS Protocols
Section 812 - Special Event Report

Special Event / Standby Patient Contact Record

Date:	C.R. Number:	Agency:
Location:	Type of Event:	

Personnel: (Include Certification Level)

Patient Name	Address: City, State, Zip	Age / Sex	Chief Complaint	Disposition / Outcome (Patient Signature if refusal)	Treatment Administered By:
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Page _____ of _____

Signed: _____

City of Yuma Ambulance Service EMS Protocols
Section 813: Special Events Policy

Purpose:

- To establish a policy and procedure by which the medical providers of The City of Yuma Ambulance Service will follow whenever they provide emergency care and standby coverage of athletic, social, and community events.

Policy Statement:

- Personnel staffing the event are representing the agency they are affiliated with. These personnel should be dressed in their prospective agency uniform with an I.D. badge / name tag in place unless the event requires special attire.
- ****Note: This policy does not allow individuals to travel to other counties, cities, or events and practice medicine.**

Documentation:

- All patient contacts will be documented appropriately.
- Patient contacts require a complete medical encounter report including:
  - All patients that require ALS intervention.
  - All patients that will be transported by ALS transport to the emergency department.
  - All patients that sign a refusal or refuse care.
  - Every patient or party contacted must be advised to follow up with their physician, regardless of acuity, within 24 hours of the incident.
- Complete documentation should be compiled as follows:
  - Original forms retained by the agency.
- Patient Care Report must include the following:
  - Date and case number.
  - Name of the event.
  - Name and certification level of the caregiver.
  - Name of patient or person contacted.
  - Brief description of complaint.
  - Brief description of treatment.
  - Responsible party signature.
- The following conditions do not require ALS or physician contact.
  - Superficial lacerations or abrasions.
  - Minor orthopedic injuries with minimal discomfort without deformity or neurovascular compromise.
  - First and second degree burns totaling less than 5% body surface area without respiratory burns.
  - Blisters, sunburn, ear aches, or rash without dyspnea or chest tightness.
  - Minor epistaxis.

Section 900

Appendix

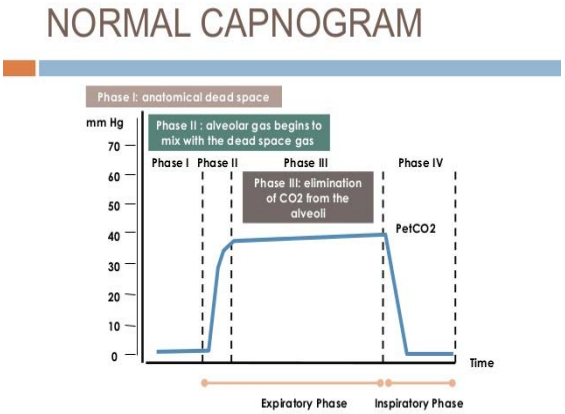
City of Yuma Ambulance Service EMS Protocols
Section 901: Waveform Capnography Education

Science

- **Waveform capnography is an infrared technology** that measures the pressure of carbon dioxide (CO_2) in an exhaled breath and is reported in millimeters of Mercury (mmHg). Normal $ETCO_2$ values are 35-45 mmHg regardless of age.

- **While capnography is measured at the airway, CO_2 is a byproduct of metabolism**. CO_2 is produced when the acidic byproducts of metabolism are buffered by bicarbonate. This chemical reaction creates carbon dioxide and water. CO_2 then diffuses into the blood stream and is called arterial partial pressure ($PaCO_2$). $PaCO_2$ is delivered to the lungs via perfusion and is exhaled out of the system. The pressure of CO_2 is measured by capnography at the end of the exhalation phase as End Tidal Carbon Dioxide ($ETCO_2$). Consequently, waveform capnography is more than just a "ventilation vital sign"; it also indirectly measures metabolism and perfusion.

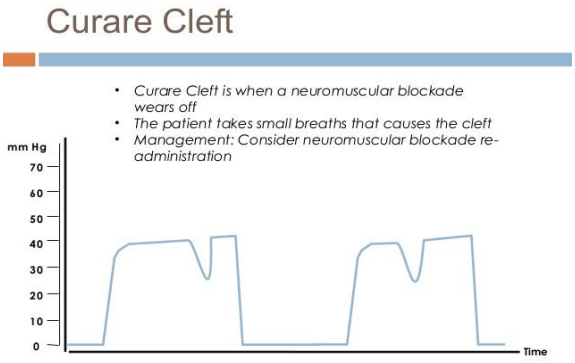
- **Capnography technologies:**
  - Colorimetric: Litmus paper that changes color when an acid is detected. Colorimetric capnography is not a diagnostic tool due to the lack of waveform and unpredictability of litmus paper's performance when it is saturated with CO_2 from a source outside the trachea.
  - Waveform capnography (capnogram) with a corresponding capnometer (numerical readout): The capnometer provides a numerical value for the patient's respiratory rate and $ETCO_2$ and the capnogram provides a waveform. Assuming there is no artifact in the waveform, capnometer readings and capnograms are considered diagnostic.



- **Causes of Hypocapnia ($ETCO_2$ < 35 mmHg):**
  - Hyperventilation: CO_2 is being ventilated out of the system **faster** than it is being delivered to the lungs.
  - Pulmonary Embolism (PE): CO_2 delivery to the lungs is compromised due to an embolus in the pulmonary circulation.
  - Metabolic Acidosis: CO_2 production is decreased due to depleted bicarbonate levels. Research has shown that diabetic patients presenting with hyperglycemia are not in DKA with an $ETCO_2$ > 30 mmHg. Once a patient's $ETCO_2$ drops below 30 mmHg, corresponding blood gas analysis typically shows metabolic acidosis/DKA. This threshold can only be used **before** the onset of Kussmaul's respirations.
  - All forms of Shock: Decreased perfusion results in less CO_2 delivery to the lungs. Research has shown that patient's with an $ETCO_2$ > 20 mmHg have adequate perfusion. However, they could still be in compensated shock with an $ETCO_2$ > 20 mmHg. Once a patient's $ETCO_2$ drops below 20 mmHg, they are considered to be in decompensated shock.
  - Low Tidal Volume: In healthy patients with normal tidal volume, pressures of $ETCO_2$ and CO_2 in the blood ($PaCO_2$) are virtually the same (within 1%-3% of each other's value). In patients with low tidal volume, such as those nearing respiratory arrest, less ventilation occurs across the alveolar membrane. As a result, $ETCO_2$ will be low even if $PaCO_2$ is high because the ability for CO_2 to diffuse out of the blood will be reduced.
  - Prolonged Down Times: during cardiac arrest if a patient is down for an extended period of time, metabolic pathways become necrotic leading to decreased CO_2 production.

- **Causes of Hypercapnia ($ETCO_2$ > 45 mmHg):**
  - Hypoventilation and/or Airway Patency Issue: CO_2 is being ventilated out of the system **slower** than it is being delivered to the lungs. **Airway and breathing issues are the first rule outs when observing hypercapnia.**
  - Malignant Hyperthermia: A rare side effect to RSI drugs. The exact cause is still unknown, but research has linked a genetic abnormality in skeletal muscle to an increased risk of a patient having a reaction. Traditional observations start with unexplained tachycardia followed by a high body temperature. However, the patient's $ETCO_2$ will increase 3-4 times prior to tachycardia and body temp changes. Excited delirium patients can also be hypercapnic despite adequate ventilation and having a patent airway.
  - Metabolic Alkalosis: More than likely this rare phenomenon will occur in a cardiac arrest situation by pushing too much bicarbonate. Use $ETCO_2$ levels as a guide as to when and how much bicarbonate to push in a cardiac arrest. Try to keep the patient's $ETCO_2$ > 20 mmHg during cardiac arrest. If $ETCO_2$ decreases below 20 mmHg, first make sure the patient is not being hyperventilated. Second, make sure high quality CPR is being performed. If $ETCO_2$ is still low, consider titrating bicarbonate to increase $ETCO_2$ levels.

- **Waveform Capnography in Intubation:**
  - Tube Placement Confirmation: Using waveform capnography to confirm tube placement is based solely on observing the waveform shape and has nothing to do with the patient's $ETCO_2$ levels. If a normal waveform is observed after 3-6 breaths, research shows that the tube is in the trachea 100% of the time.
  - Auscultation Reliability: Research shows that auscultation has about a 10% inaccuracy rate in determining proper tube placement. However, auscultation is still needed to evaluate proper tube depth. Therefore, first confirm tube placement with waveform capnography. This will eliminate any ambiguity and allow you to proceed confidently in using auscultation to determine proper tube depth.
  - Curare Cleft Capnogram: This is caused when the muscles of the diaphragm contract, but the muscles of the rib cage do not. This is typically seen in EMS in an RSI situation where the paralytic is starting to wear off. It can also be seen during CPR. However, the typical capnogram of CPR is a hyperventilation waveform (short and skinny).

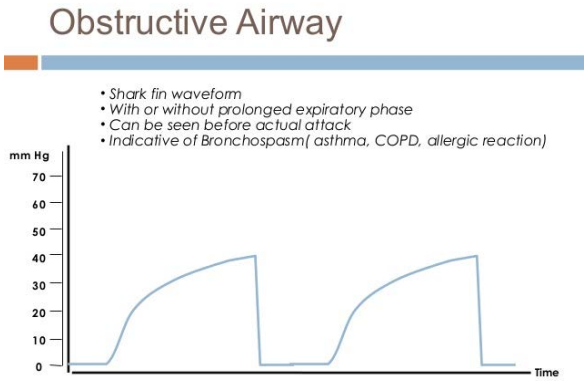


  - CO_2 in the Stomach: Carbonated beverages, antacids and even vinegar in the stomach can cause a sustained false positive when using colorimetric capnography. However, research on waveform capnography shows that capnograms for CO_2 in the stomach are significantly different from waveforms of tracheal ventilation. Furthermore, any initial waveforms caused by CO_2 in the stomach are usually questionable in shape, and always dissipate to flat line within 3-6 breaths.

- **Waveform Capnography and Apnea**:
  - $ETCO_2$ is in real time. Consequently, when breathing stops it will be scene immediately via a solid flat line on the capnogram (note that a dotted flat line on the capnogram is simply the machine calibrating).
  - However, depending on reserve blood oxygenation, SPO_2 could remain elevated for several minutes after

- **Closed Head Injury Patients:**
  - Ventilate at a rate to keep the patient's $ETCO_2$ between 30-35 mmHg to achieve the greatest balance between bleeding control and cerebral perfusion. This approach is called "Permissive Hypocapnia" and research has shown that it gives patients the best chances of survival.
  - Remember that just because a patient is intubated does not mean you need to ventilate them. If they are ventilating on their own and achieving this range, additional ventilations by a provider could be detrimental as it could drop $ETCO_2$ below 30 mmHg:
    - $ETCO_2$ < 30 mmHg indicates cerebral perfusion is dangerously low
    - $ETCO_2$ > 50 mmHg indicates cerebral bleeding is uncontrolled

- **The Shark Fin Capnogram and CHF vs. COPD**



  - Bronchial constriction causes a shark fin shaped waveform due to a delayed exhalation phase. The steeper the slope the more severe the bronchospasm.
  - Asthma causes a shark fin asthma waveform and high $ETCO_2$ in more severe cases. COPD patients may or may not have a "textbook" shark fin waveform, depending on the severity of bronchospasm. However, COPD exacerbations always cause high $ETCO_2$ levels assuming tidal volume is adequate.
  - CHF does not cause a waveform shape change because CO_2 diffuses through fluid at the same rate it does through air. CHF patients will have low to normal $ETCO_2$ levels. Cardiac asthma does not cause a shark fin because cardiac asthma wheezing is caused by increased interstitial hydrostatic pressure around the distal bronchioles and alveoli. Once the air leaves the smallest of these airways, it is "free and clear" to diffuse without delay. Therefore, because cardiac asthma is not diffuse throughout the larger bronchi airway, as seen in regular asthma, no shark fin occurs.
  - In patients with a history of COPD and CHF who are in mild to moderate distress, use $ETCO_2$ levels to help differentiate which pathology is the primary issue. If the $ETCO_2$ is in the normal range, consider CHF. If the $ETCO_2$ is high, consider COPD. However, all patients in severe respiratory distress with adequate tidal volume have high $ETCO_2$. In these patients the waveform can help distinguish CHF vs. COPD. If it is a more normal waveform, consider CHF. If it is more of a shark fin waveform, consider COPD.
  - It is important to note that the capnography of CHF and the capnography of shock, including septic shock, are identical: normal waveform and normal to low $ETCO_2$ levels. Therefore, capnography cannot help differentiate CHF from a respiratory infection when deciding if a patient is a candidate for Lasix.

- **Trending:**
  - Capnography is a quantitative, diagnostic tool that gives real time feedback on a patient's prognosis.
  - Patients are improving when $ETCO_2$ levels move towards a normal value and they still have adequate tidal volume. Patients are worsening when $ETCO_2$ levels move further away from the norm and/or their tidal volume begins to fall.
  - In respiratory cases where a shark fin is present, improvement is shown when the steepness of the slope decreases. When the slope steepens, the obstructive pathology is getting worse. Using capnography for trending is particularly beneficial in CPAP where communication and auscultating breath sounds are difficult.

Section 1000

Special Protocols

Scene Size Up:

- Recognize hazards to self, rescuers, patient(s), and others at the scene.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.

Specific Findings:

Patient Assessment:

- ABC (airway, breathing, circulation)
- Vitals, pulse oximetry, **temperature**
- **Note tachycardia, hypercarbia, muscle rigidity**
- Consider Ice packs at groin and axilla bilaterally with fever
- For Temperature of 104 and at least one other symptom
  - Access Patient supplied Dantrolene
  - Dantrolene 2.5 mg/kg IV
  - May Repeat to a total of 10 mg/kg until: a decrease in ETCO2, decreased muscle rigidity, and/or lowered heart rate.
- Rapid Transport to Closest ED
- Contact Base Station Medical Control and Advise "Malignant Hyperthermia"
- IF Cardiac Arrest - Follow ACLS Protocols
- Assume Hyperkalemia is present

Signs and Symptoms:

- **Early signs:** These are not specific signs**:**
  - Headache
  - Fever > 101F
  - Muscle tiredness and/or dark coloration to face/eyes
- **Late signs:**
  - Tachycardia
  - Tachypnea
  - Hypercarbia
  - Generalized muscle rigidity
  - Core temperature > 103F
  - Diaphoresis
  - Mottled skin
  - Dark colored urine
  - **It is URGENT to actively cool a person with LATE SIGNS of MH and give Dantrolene as soon as possible when rigidity and temperature greater than 104F are present.**

Special Precautions:

- **This is a single patient protocol**

Assessment:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• Assess and maintain a patent airway.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Be prepared to assist ventilations if necessary.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Place patient in position of comfort.	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor vital signs. **Temperature, Note tachycardia, hypercarbia, muscle rigidity**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• Monitor End Tidal Capnography	___	**SO**	**SO**	**SO**	**SO**	**SO**

Procedures:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• **Cardiac monitor: 4 lead EKG acquisition.** (Reference Protocol: Section 700)	___	**SO**	**SO**	**SO**	**SO**	**SO**
• **Cardiac monitor: 4 lead EKG interpretation** (Reference Protocol: Section 700)	___	___	___	___	**SO**	**SO**
• **Establish vascular access.** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider fluid bolus (20 cc/kg)** (Reference Protocol: Section 700)	___	___	**SO**	**SO**	**SO**	**SO**
• **Consider Ice packs at groin and axilla bilaterally**	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**

Medications:	**FR**	**EMT B**	**EMT IV**	**AEMT**	**EMT I**	**EMT P**
• **Administer: Oxygen** (Reference Protocol: Section 500)	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
• **Patient Supplied Dantolene (Reference Protocol: Section 500)**	___	___	**SO**	**SO**	**SO**	**SO**

Notes:
DANTRIUM®/REVONTO® – Each 20 mg vial should be reconstituted by adding 60 ml of sterile water for injection, USP (without a bacteriostatic agent) and the vial shaken until the solution is clear.

RYANODEX®– Each 250 mg vial should be reconstituted with 5 ml of sterile water for injection, USP (without a bacteriostatic agent) and shaken to ensure an orange-colored uniform, opaque suspension.