

Weld County



EMS Protocols

(Version - August 2023)

The Weld County Protocols are regularly updated and reviewed. We continually review literature and are guided by a number of best-practice models. The content is managed by the Weld County Medical Director and numerous contributors from Weld County EMS agencies. A number of resources are used in developing our protocol. We would like to give specific credit and gratitude to:

Banner Health Paramedic Services, Greeley, CO
Denver Metro EMS Medical Directors
National Association of EMS Physicians
Colorado Emergency Medicine Practice Advisory Council
Northeast Colorado RETAC
North Colorado MedEvac

The Weld County Protocols are also based on the work, research, revisions of the following persons:

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These protocol's jurisdictional authority pertains to the following members of the Weld County EMS System:

Banner Health / AMR Paramedics
Fort Lupton Fire Protection District
Ault-Pierce Fire Department
Eaton Fire Department

Briggsdale Fire Protection District
Pawnee Fire Protection District
Galeton Fire Protection District
Nunn Fire Protection District

Questions regarding this document should be directed to the Medical Director in writing. Protocols are updated on an on going basis. Updated protocols will be distributed to all affected stakeholders. Updates will be preferably distributed electronically. They are also available on the Paramedic Protocol Provider ("PPP") mobile app and at:

<https://www.ncretac.org/cms/emsprotocolslinks>

Each agency is responsible for disseminating updated protocols to their stakeholders and EMS staff.

These protocols may be copied or utilized by agencies beyond the jurisdictional authority listed herein. We ask that the Weld County Protocol Committee be credited and notified in writing to the medical director.

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• Table of Contents	Revised: 3/2023
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• 102 Definitions	Revised: 12/2013

Protocol	Revision Date
<u>Section 200: Assessment</u>	Revised: 07 /2021
• 201 Patient Assessment	Revised: 12 /2014
• 202 Airway Management Algorithm	New: 07/2021

Protocol	Revision Date
<u>Section 300: Medical</u>	Revised: 08/2020
• 301 Medical Shock	New: 07/2020
• 302 Abdominal Pain/Medical	Revised: 12/2022
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• 337 Unstable Tachycardia	New: 07/2021

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• 503a Fentanyl (Sublimaze)	Revised 07/2020
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Section 100



Abbreviations
Definitions

Weld County 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

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Section 101 - Abbreviations

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.
CO ₂	=	Carbon dioxide.
CO	=	Carbon monoxide.
COPD	=	Chronic obstructive pulmonary disease.
CODE	=	Cardiac arrest.
CPR	=	Cardio-pulmonary arrest.
Csection	=	Cesarean section.
CSF	=	Cerebro-spinal fluid.
CVA	=	Cerebro-vascular accident.

Letter "D"

D5LR	=	5% Dextrose in Lactated Ringers Solution.
D5W	=	5% Dextrose in water.
D10	=	10% 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.

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Section 101 - Abbreviations

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 outstretched hand.
FX	=	Fracture

Letter "G"

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

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Section 101 - Abbreviations

Letter "H"

HA	=	Headache.
HBP	=	High blood pressure.
HEENT	=	Head. Eyes. Ears. Nose. Throat.
HHC	=	Homehealth 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	=	IVpiggy back.

Letter "J"

JVD	=	Jugular venous distention.
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Letter "K"

K+	=	Potassium
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Section 101 - Abbreviations

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	=	Longspine 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.

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Section 101 - Abbreviations

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.

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Section 101 - Abbreviations

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	=	Prescription.

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Section 101 - Abbreviations

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.

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Section 101 - Abbreviations

Letter "V"

V.A.	=	Veterans Administration.
vag.	=	Vaginal.
VFib	=	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.
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Weld County EMS Protocols

Section 102 - Definitions

EMR = Emergency Medical 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 card (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 card (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 card (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.

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Section 102 - Definitions

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.

Weld County EMS Protocols

Section 102 - Definitions

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.

**** = **ExtremisCondition Apply****

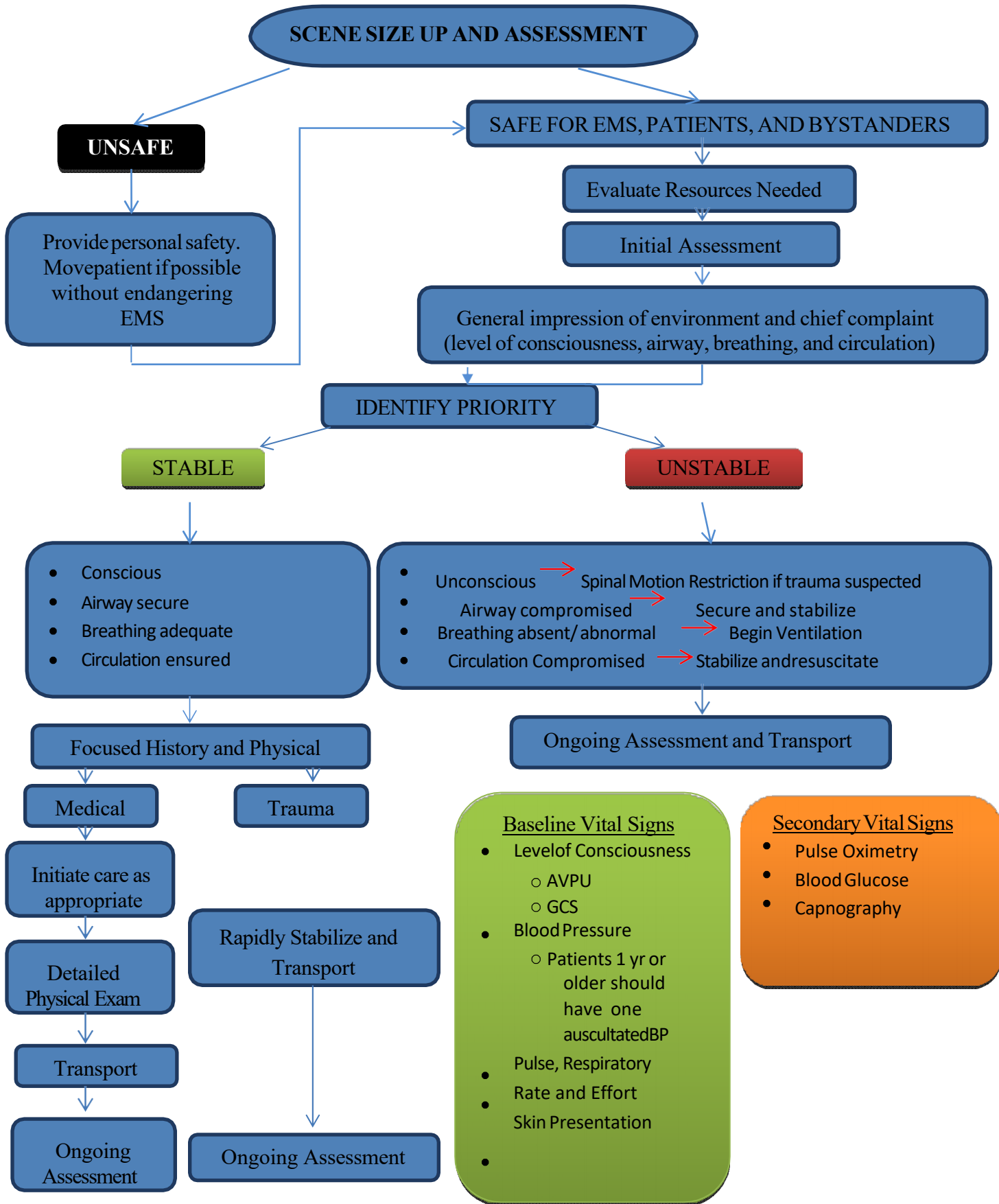
** An EMT - Basic with I.V. authorization may, under the supervision and authorization of a medical director, administer & monitor medications and classes of medications which exceed those listed in appendices B & D (Rule 500: 3-CCR-713-6) of these rules for an EMT - Basic with I.V. authorization under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

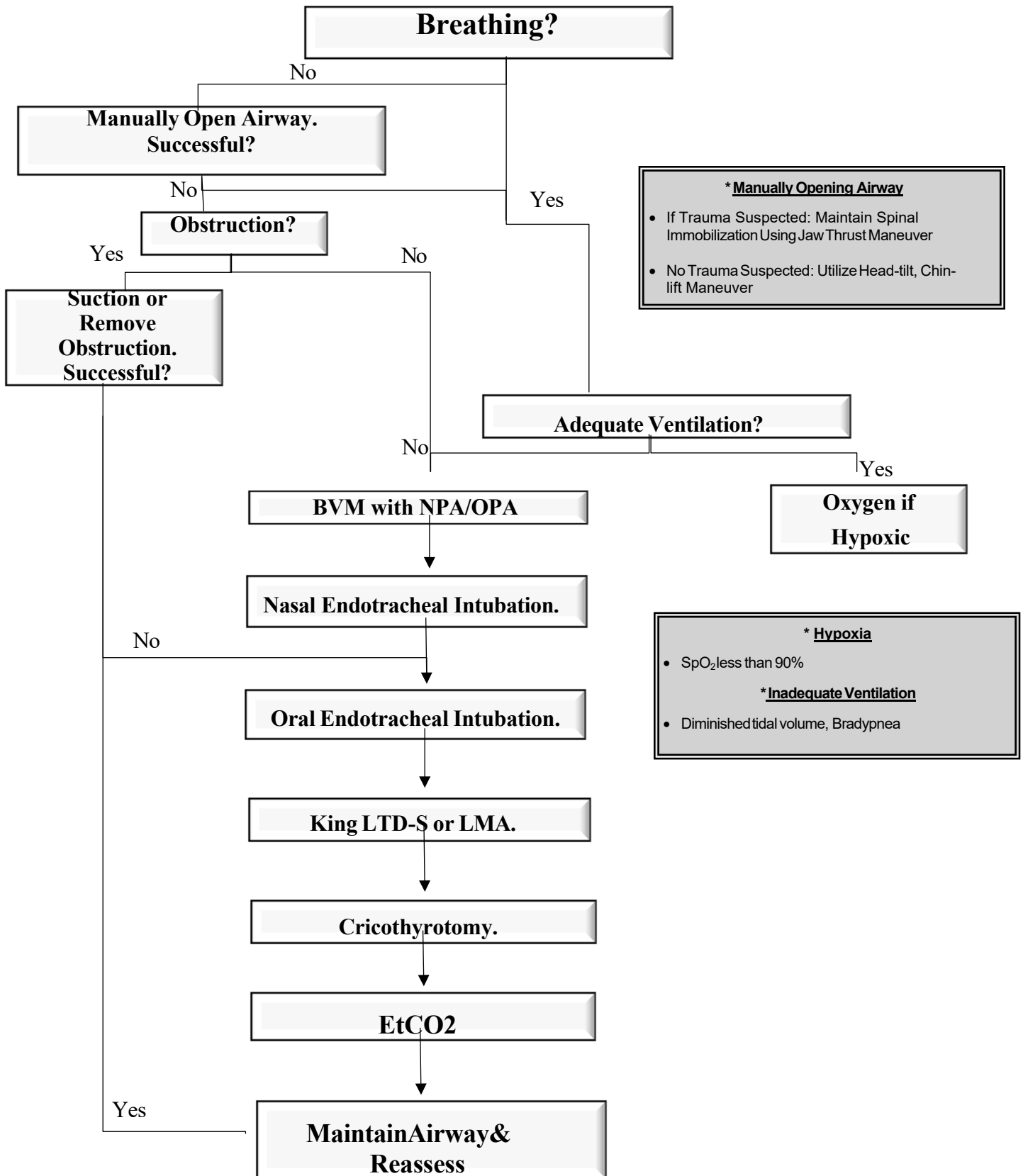
Section 200



**Patient Assessment
Airway Management**



Weld County EMS Protocols
Section 202 – Airway Management Algorithm



Weld County EMS Protocols

Section 202 – Airway Management Algorithm

Assessment:	EMTB	EMT IV	AEMT	EMT I	EMT P	
• Assess and maintain a patent airway	SO	SO	SO	SO	SO	
	SO	SO	SO	SO	SO	
	SO	SO	SO	SO	SO	
	SO	SO	SO	SO	SO	
	EMTB	EMT IV	AEMT	EMT I	EMT P	
• End Tidal CO₂ monitoring, (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	
• Nasopharyngeal Airways. (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	
• Oropharyngeal Airway. (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	
• Suctioning- Pharyngeal. (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	
• Nasal Endotracheal Intubation. (Reference Protocol: Section 700)					SO	
• Oral Endotracheal Intubation. (Reference Protocol: Section 700)				SO	SO	
• Supraglottic Airway Device. (Reference Protocol: Section 700)	PPA	PPA	SO	SO	SO	
• Cricothyrotomy. (Reference Protocol: Section 700)					SO	
	EMR	EMTB	EMT IV	AEMT	EMT	P
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	O	

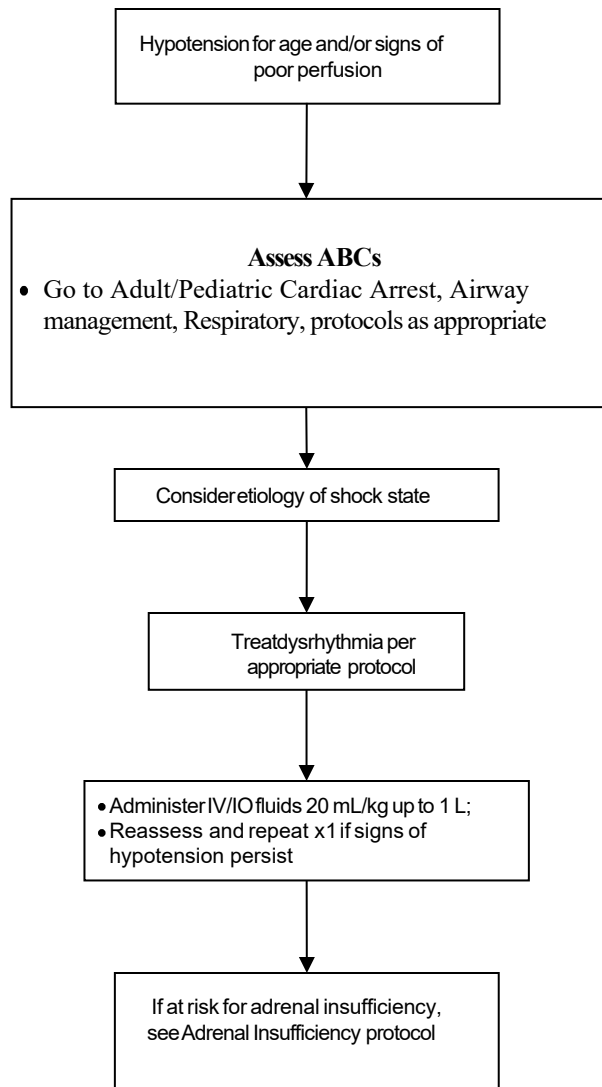
Section 300



**Medical
Protocols**

Weld County EMS Protocols

Section 301 - Medical Shock Protocol



Hypotension for Age	
Age	Blood Pressure
<1 year	<70 mmHg
1-10 years	<70 + (2x age in years)
>10 years	<90 mmHg

Tachycardia for Age	
Age	Heart Rate
<1 year	>160 bpm
1-2 years	>150 bpm
2-5 years	>140 bpm
5-12 years	>120 bpm
>12 years	>100 bpm

- Etiologies of Shock**
- Dysrhythmia, myocardial ischemia
 - Sepsis
 - Hemorrhage, consider early administration of blood products
 - Anaphylaxis
 - Overdose
 - Cyanide or Carbon Monoxide poisoning
 - Other: PE, MI, tension pneumothorax

Pediatric Fluid Administration

- For children <40 kg or not longer than length based tape, hand pull/push fluid with a 60 mL syringe utilizing a 3 way stop cock.
- The treatment of compensated shock requires aggressive fluid replacement of 20 mL/kg up to 3 boluses.
- Goal of therapy is normalization of vital signs within the first hour.
- Hypotension is a late sign in pediatric shock patients.

Pediatric Shock

<p>Signs of Compensated Shock</p> <ul style="list-style-type: none"> • Normal mental status • Normal systolic blood pressure • Tachycardia • Prolonged (>2 seconds) capillary refill • Tachypnea • Cool and pale distal extremities • Weak peripheral pulse 	<p>Signs of Decompensated Shock</p> <ul style="list-style-type: none"> • Decrease mental status • Weak central pulses • Poor color • Hypotension for age
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Weld County EMS Protocols

Section 301 - Medical Shock Protocol

	EMR	EMT-B	EMT-B IV	A-EMT	EMT-I	Paramedic
Procedures Ventilations with BVM	SO	SO	SO	SO	SO	SO
CPR	SO	SO	SO	SO	SO	SO
AED	SO	SO	SO	SO	SO	SO
Automated Compression Device	SO	SO	SO	SO	SO	SO
4-lead EKG	–	SO	SO	SO	SO	SO
12-lead EKG	–	–	–	–	SO	SO
King Tube Placement	–	SO	SO	SO	SO	SO
Oral Endotracheal Intubation	–	–	–	–	SO	SO
Capnography	–	SO	SO	SO	SO	SO
IV Access	–	–	SO	SO	SO	SO
IO Access	–	–	PPA	SO	SO	SO
Nasal Gastric Tube Placement	–	–	–	–	–	SO
Epinephrine	–	–	**	**	DO/P	SO
Amiodarone	–	–	**	**	DO/P	SO
Sodium Bicarb	–	–	**	**	DO/P	SO
Magnesium Sulfate	–	–	**	**	**	SO
Glucagon	–	–	–	SO	SO	SO
Narcan	–	–	SO	SO	SO	SO
Dextrose	–	–	SO	SO	SO	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.

Weld County EMS Protocols

Section 302: Abdominal Pain / Medical

General Care:

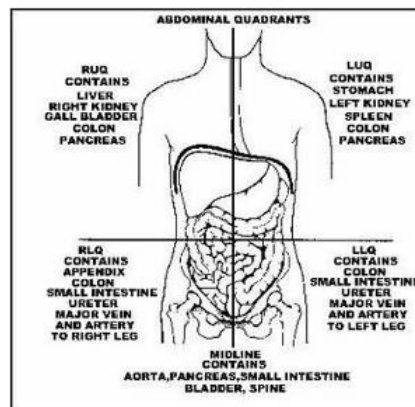
- Assess ABCs
- Titrate O2 to 94% or work of breathing
- Assess for hemodynamic instability and signs of shock
- Position patient for comfort
- Cardiac monitoring and 12-lead as indicated
- IV/IO Access as appropriate
- For nausea and vomiting, consider antiemetics
- For moderate to severe pain (6/10) or grimacing/guarding/
moaning → Pain Management Protocol
- Consider ACS, diabetic emergencies, pregnancy/emergency childbirth

Specific Findings:

- **Pain:** Location. Quality. Radiation. Onset. Changes with position. Referred pain. Point tenderness.
- **Associated Symptoms:** Hematemesis. Hematochezia/melena. Constipation/no flatus. Syncope. Last menstrual period.
- **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.
- Aortic dissection: Ripping, tearing, sharp pain radiating to back. Severely Hypertensive or hypotensive. Peritonitis.



Weld County EMS Protocols

Section 302: Abdominal Pain / Medical

Assessment:	EMR	EMTB	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:	EMR	EMTB	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:	EMR	EMTB	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 blood pressure \geq 90 mm/Hg)	_____	_____	SO	SO	SO	SO
• Consider administration of: Zofran (IV, or ODT) Reference Protocol: Section 500	_____	SO	SO	SO	SO	SO
• Consider administration of: Pain Medication (Reference Protocol: Section 500)	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 303: Adrenal Insufficiency (Addisonian Crisis)

Patients At-Risk

- Identified by family members or medical alert tag
- Chronic steroid users (Rheumatic disease, COPD, etc)
- Congenital Adrenal Hyperplasia
- Addison's disease

Signs, Symptoms and History -- Acute Adrenal Crisis

- Pallor, weakness, lethargy, stupor
- Vomiting, diarrhea, abdominal pain
- Hypotension and shock
- Acute congestive heart failure
- Recent physiologic stressor (illness, trauma, dehydration, myocardial ischemia, etc.)

General Care

- Check Blood Glucose, treat if < 60mg/dl
- IV, O2, Monitor
- If hypotension for age, and/or signs of poor perfusion, see Medical Shock protocol and begin fluid resuscitation.
- Give corticosteroids
- Recheck blood glucose for hypoglycemia
- Contact base if patient isn't responding to treatment
- Check 12-Lead EKG, look for signs of hyperkalemia

Special Precautions:

- Chronic corticosteroid use is a common cause for adrenal crisis. Assess the use of steroids in patients with shock.
- Administration of steroids are life-saving and necessary for reversing shock or preventing cardiovascular collapse.
- Chapter 2 approves the administration of specialized prescription medications to address and acute crisis by all levels with a direct verbal order, as long as the route is within their scope of practice. This applies to giving hydrocortisone for adrenal crisis, for example, if the patient or family has this medication on scene. Contact base for DO.
- These patients will present with signs of decompensated, hypovolemic shock. (ALOC, pallor, diaphoresis, tachycardia & hypotension).
- 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.

Weld County EMS Protocols

Section 303: Adrenal Insufficiency (Addisonian Crisis)

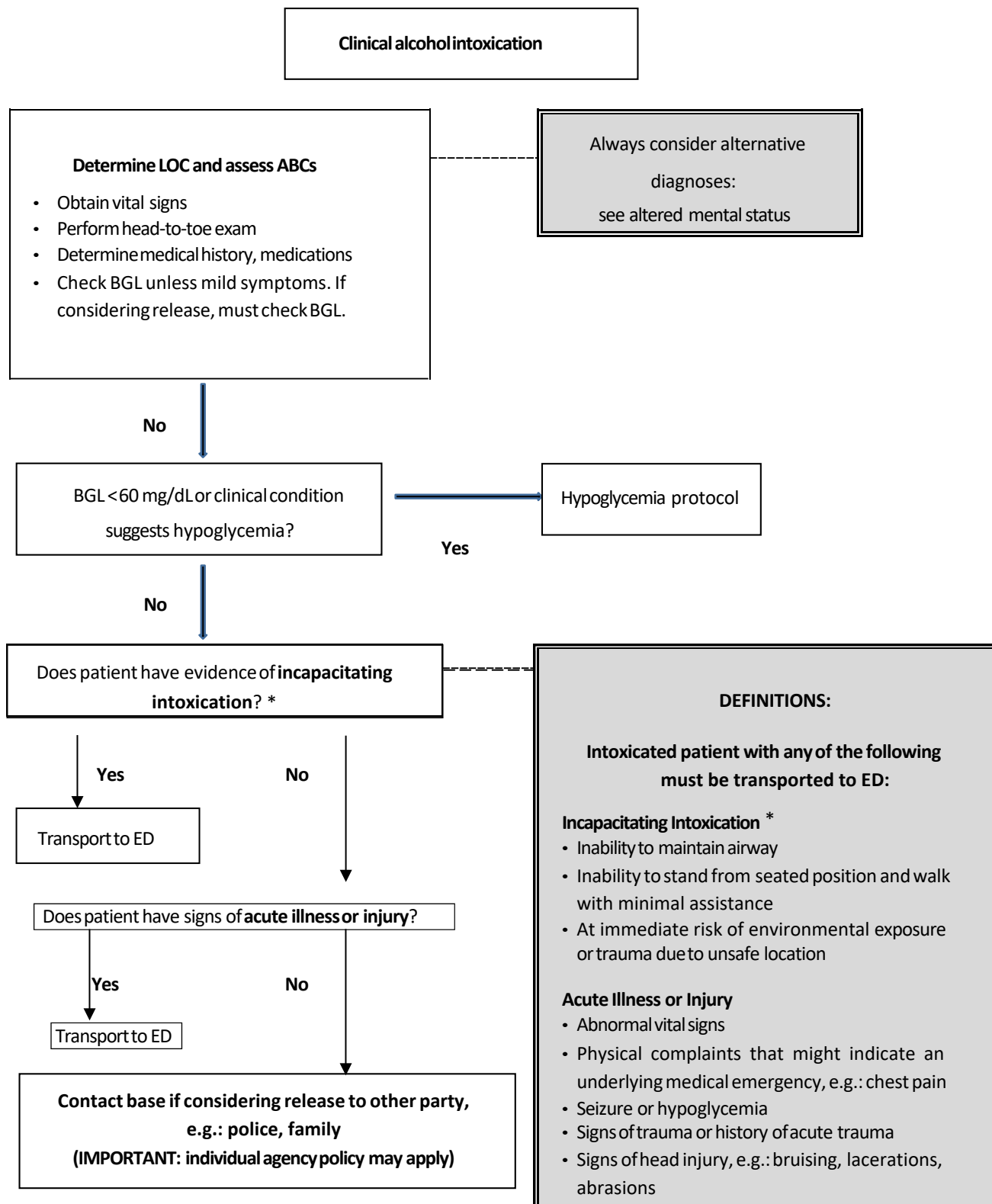
Assessment:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Assess & maintain a patent airway.	SO	SO	SO	SO	SO	SO
• Be prepared to assist ventilations if necessary.	SO	SO	SO	SO	SO	SO
• Establish communication with patient.	SO	SO	SO	SO	SO	SO
• Establish a rapport with the patient.	SO	SO	SO	SO	SO	SO
• Monitor vital signs.	SO	SO	SO	SO	SO	SO
Procedures:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• 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:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• Consider administration of: Dextrose (If BGL 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

Weld County EMS Protocols

Section 304: Alcohol Intoxication

Specific Findings:

Patient Assessment:



Weld County EMS Protocols

Section 305: Allergic Reactions, Anaphylaxis, Angioedema

General Care:

- Assess ABCs, give O2
- Attempt to identify likely trigger
- Consider airway protocol and envenomation protocol.

General or Systemic Reaction (*Multisystem involvement: Skin, mucus membranes, GI symptoms*)

- **Hypotension, signs of poor perfusion, bronchospasm, stridor, altered mentation?**
 - Immediate IM Epinephrine, then:
 - Start IV fluids per medical shock protocol
 - Give diphenhydramine and methylprednisolone
 - Albuterol if wheezing

Airway Involvement (*Tongue, uvula swelling, stridor or wheezing*)

- Immediate IM Epinephrine and follow Airway Protocol
- Start IV
- Give diphenhydramine and methylprednisolone
- Albuterol or levalbuterol if wheezing

No Airway Involvement (*No airway or multisystem involvement*)

- Consider diphenhydramine for significant discomfort.

Special Precautions

- Monitor ABCs, SpO2, cardiac rhythm
- Reassess for signs of decompensation
- If persistent signs of severe shock and hypotension not responding to IM epinephrine and fluid boluses
 - Contact Base
 - Consider IV epinephrine drip per protocol

Definitions:

- **Allergies:** Local systemic reactions to include hives, urticaria, angioedema and itching of the skin.
- **Anaphylaxis:** Overabundant release of histamines & other mediators causing in addition on to the skin reactions:
 - Shock, GI upset/pain/vomiting, throat and tongue swelling, and mucus development within the bronchioles causing severe respiratory distress.

Assessment:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
● 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

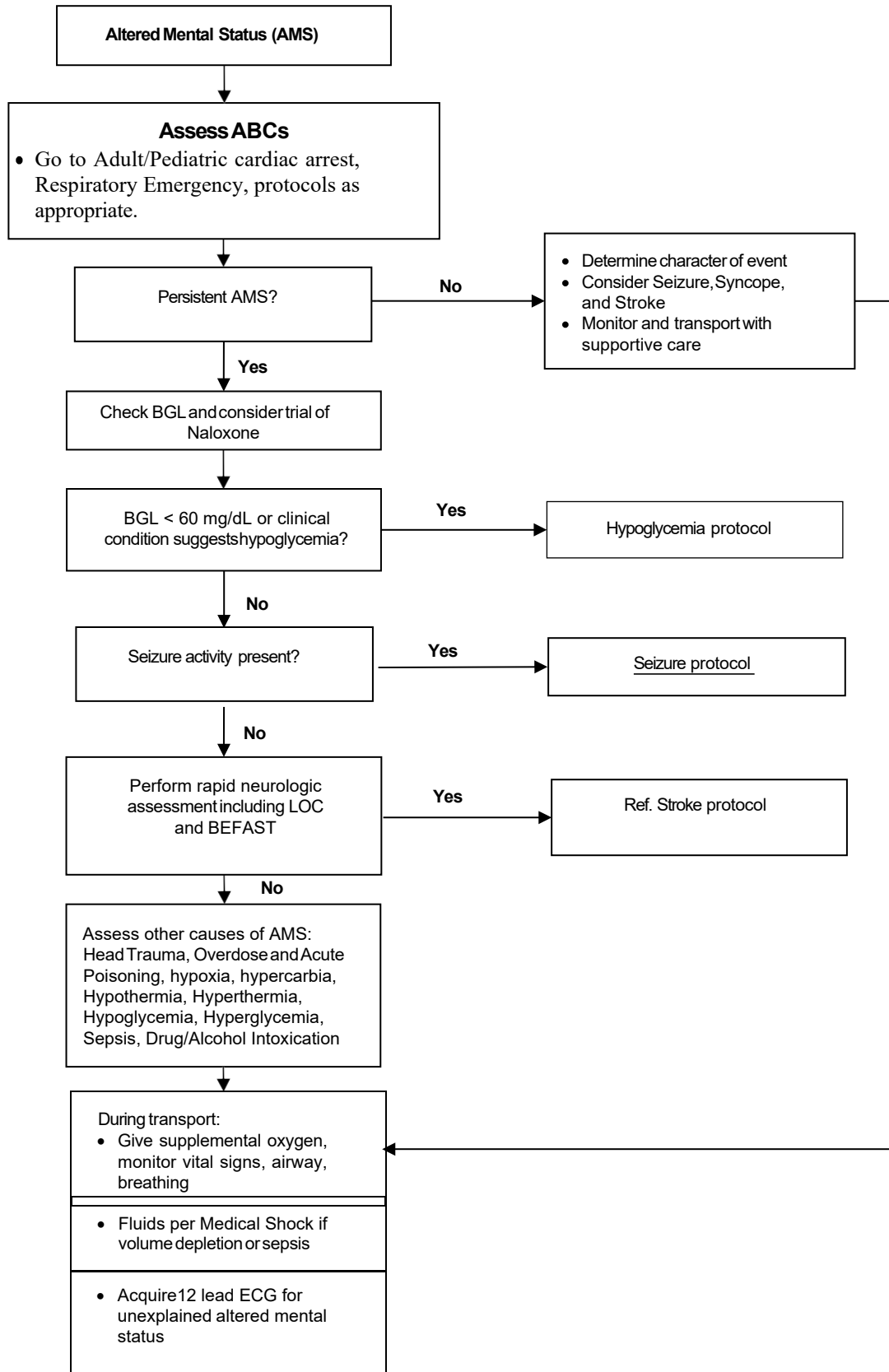
Procedures:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
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Weld County EMS Protocols

Section 305: Allergic Reactions, Anaphylaxis, Angioedema

<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG interpretation. (Reference Protocol: Section 700) 					SO	SO
<ul style="list-style-type: none"> • Establish vascular access. (Reference Protocol: Section 700) 		SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider intubation early if severe anaphylaxis. (Use the Hi - Lo Evac endotracheal tube if available) 					SO	SO
Medications: (Allergic Reactions)	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
<ul style="list-style-type: none"> • Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Epi Auto Injector (Reference Protocol: Section 500 & 600) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • IM Epinephrine 1 : 1 ,000 (Reference Protocol: Section 500) 		SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Epinephrine Infusion (Reference Protocol: Section 500) 		—	—	—	—	SO
<ul style="list-style-type: none"> • Albuterol (Levalbuterol) (Reference Protocol: Section 500) 		SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Solumedrol (Reference Protocol: Section 500) 					DO/P	SO
<ul style="list-style-type: none"> • Atrovent: (Ipratoprium Bromide) 				DO/P	DO/P	SO

Weld County EMS Protocols
Section 306: Altered Mental Status



Weld County EMS Protocols

Section 307: Automated Compression Device

Indications:

- Adult cardiac arrest.
- Transferring or transporting the patient.
- Trouble shooting low EtCO₂.

Contraindications:

- Application will delay CPR > 10 seconds.
- Absence of prior attempt with manual-compression CPR.
- Inappropriate Patient size.
- Trauma Arrest.

Special Considerations/Notes:

- Follow Pit Crew Procedure:
 - Do not attempt to place device unless 4 providers present.

Procedure:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Manual Compression Device	SO	SO	SO	SO	SO	SO

TOP (CEPHALAD) APPROACH

Provider positioning:

- One provider right shoulder
- One provider left shoulder
- Each provider lift the patient
- An additional provider place the back support against the patient's back
- Return to manual CPR immediately from the right shoulder
- Apply chest support straps
- Allow machine to size patient
- Start device
- Place in Heads-Up position

Weld County EMS Protocols

Section 308: Autonomic Hyper-reflexia

Specific Findings:

- **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:	EMR	EMTB	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:	EMR	EMTB	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

Weld County EMS Protocols

Section 308: Autonomic Hyper-reflexia

Medications:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Pt. Assist Nitroglycerin (Reference Protocol: Section 600) 	_____	DO/P	DO/P	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Nitroglycerin (Reference Protocol: Section 500) 	_____	_____	_____	SO	SO	SO

Weld County EMS Protocols

Section 309: Behavioral Emergencies

Specific Findings:

History of Current Event:

- Thoughts of suicide. Bizarre or abrupt behavior changes.
- Significant past medical history.
- Is patient a threat to self or others?
- Hallucinations. Delusional. Profound psychosis. Animalistic behavior. Disrobing or naked patient.
- Is there a medical problem? Medic alert tag.
- Drug or alcohol abuse. (Specifically stimulants like cocaine or meth when considering excited delirium)
- Signs of trauma.

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 NCMC, 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 traumatic cause. Increased intracranial pressure.
- Mandatory reporting via social services or law enforcement 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.
- For Excited Delirium focus on early recognition, early chemical sedation, and management of hyperthermia & metabolic acidosis.

Assessment:

	EMR	EMTB	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.	SO	SO	SO	SO	SO	SO

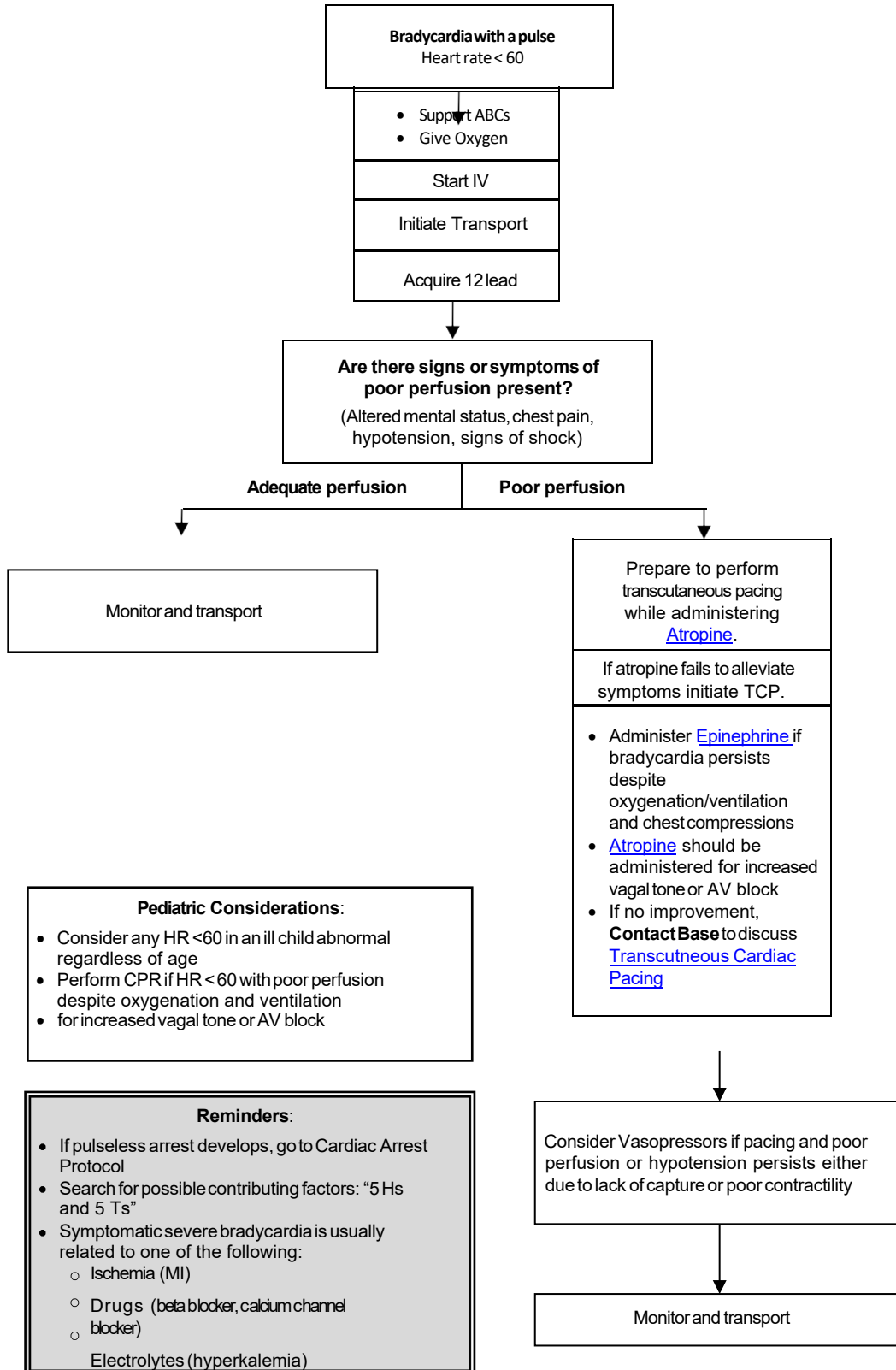
Weld County EMS Protocols

Section 309: Behavioral Emergencies

Procedures:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> ● Consider verbal & physical restraints. (Reference Protocol: Section 800) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Obtain blood glucose level. (Reference Protocol: Section 700) 	PPA	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Cardiac monitor: 4 lead EKG interpretation. (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> ● End Tidal CO² Monitoring / Capnography (Reference Protocol: Section 700) 	_____	PPA	PPA	SO	SO	SO
<ul style="list-style-type: none"> ● Establish vascular access. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
Medications:	FR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> ● Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Consider administration of: Dextrose (If BGL is <60 mg / dL with associated symptoms) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Consider administration of: Narcan (Reference Protocol: Section 500) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Consider administration of: Versed (Excited Delirium Syndrome) 	_____	_____	_____	_____	DO / P	SO
<ul style="list-style-type: none"> ● Consider administration of: Ativan (Known ETOH or drug OD with severe agitation) 	_____	_____	_____	_____	DO / P	SO

WeldCountyEMS Protocols

Section 310: Bradycardia



Pediatric Considerations:

- Consider any HR <60 in an ill child abnormal regardless of age
- Perform CPR if HR <60 with poor perfusion despite oxygenation and ventilation for increased vagal tone or AV block

Reminders:

- If pulseless arrest develops, go to Cardiac Arrest Protocol
- Search for possible contributing factors: "5 Hs and 5 Ts"
- Symptomatic severe bradycardia is usually related to one of the following:
 - Ischemia (MI)
 - Drugs (beta blocker, calcium channel blocker)
 - Electrolytes (hyperkalemia)

WeldCountyEMS Protocols

Section 310: Bradycardia

Procedures:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG interpretation (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> • Establish vascular access. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> • Establish 2nd vascular access if unstable. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 12 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 12 lead EKG interpretation. (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> • Cardiac Monitor: Transcutaneous Pacing (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> • Pediatrics: CPR (Reference Protocol: Section 300) 	SO	SO	SO	SO	SO	SO

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

Medications:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Fluid Bolus (Reference Protocol: Section 500) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Atropine (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> • Consider administration of: Epinephrine (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> • Consider administration of: Epinephrine 	_____	_____	_____	_____	_____	SO
Infusion (Reference Protocol: Section 500)						

WeldCountyEMS Protocols

Section 310: Bradycardia

- **Consider administration of: Versed** _____ DO/P SO
(Reference Protocol: Section 500)
- **Consider administration of: Ativan** _____ DO/P SO
(Reference Protocol: Section 500)

Weld County EMS Protocols

Section 311: Adult Medical Cardiac Arrest - ALS

Initial Resuscitation (First 4 minutes of arrest):

Adult cardiac arrest patient is defined as > 8 years of age AND >55lbs.

- Begin 2 minute cycles of Pit Crew CPR (Rate 100-120, 2+ inches, allow for full recoil).
- Apply Cardiac Monitor/AED: Anterior-Posterior pad placement.
- Place NPA/OPA, ET_{CO2} cannula and NRB for Passive Oxygenation.
- IV/IO access.
- **VF/Pulseless VT:** Passive Oxygenation for four minutes then defibrillate.
- **PEA/Asystole/Suspected Respiratory Arrest:** Provide synchronized ventilations immediately.

Cardiac Rhythm Management:

VF/Pulseless VT	Asystole/PEA
<ul style="list-style-type: none">● After 4 minutes of passive oxygenation move to synchronized ventilations and establish baseline EtCO₂.● Defibrillate, consider delay until EtCO₂ ≥ 20.● Epinephrine: 1:10,000- 1 mg, max of 3 doses within first 15 minutes.● Amiodarone: 300mg after 1st defibrillation, 150mg subsequent dose.	<ul style="list-style-type: none">● Continue synchronized ventilations and establish a baseline EtCO₂.● Epinephrine: 1:10,000- 1 mg, max of 3 doses within first 15 minutes.● If the patient goes into VF/VT, move to VF/Pulseless VT algorithm.

Advanced Management (After 4 minutes into arrest):

- Advanced airway management: EtCO₂ is required. Do not interrupt compressions for intubation. Do not hyperventilate and use PEEP valve if available. Single intubation attempt then move to supraglottic device.
- Highest EtCO₂ is the goal, 25mmHg is the minimum target.
- Transport in the "Heads-up" position, 30° ITD should be used if available.

H's & T's:

- Hyperkalemia: Sodium Bicarbonate- 50mEq IV/IO.
- Torsades de Pointes: Magnesium Sulfate- 2g IV/IO.
- Tension Pneumothorax: Needle Decompression IV/IO.
- Tricyclic Antidepressant Overdose: Sodium Bicarbonate- 50mEq IV/IO.
- Beta Blocker Overdose: Glucagon 3mg IV/IO.
- Narcotic Overdose: Narcan 2mg IV/IO.
- Hypoglycemia: D10% 25g IV/IO.

Weld County EMS Protocols

Section 311: Adult Medical Cardiac Arrest - ALS

Special Considerations:

- Never hyperventilate a patient in cardiac arrest.
- Do not interrupt compressions for advanced airway.
- Resuscitate the patient in the location found unless the scene is unmanageable.
- Attempt to achieve baseline EtCO₂ of > 25mmHg, see below text for troubleshooting.
- All patients will receive manual CPR. Automated CPR is for moving the patient or EtCO₂ troubleshooting.
- Consider a patient in refractory v-fib may benefit from a faster transport decision to cardiac cath-lab if conditions permit. Consider contacting medical control during refractory v-fib for potential cath-lab activation.
- Pregnant patients ≥ 20 weeks:
 - May benefit from faster transport decision for emergency c-section (if conditions allow).
 - Consider performing left-uterine displacement (if resources allow).
- If no ROSC occurs after 30 minutes, follow Termination of Resuscitation Protocol.

Quality Assurance:

- CPR:
 - Rate 100-120
 - Depth 2.5 inches
 - Pauses ≤ 10 seconds
- Airway:
 - EtCO₂ waveform must be utilized
 - Single intubation attempt
 - No advanced airway management before 4 minutes

EtCO₂ Troubleshooting:

1. If the patient's EtCO₂ begins to trend down or drops below 25mmHg ensure the following:
 - a. The patient is not being hyperventilated by rate or excessive tidal volume.
 - b. Ensure high quality compressions:
 - i. Is the rescuer compressing deep enough: 2.5 inches for adults?
 - ii. Is the rescuer allowing for full chest recoil?
 - iii. Put a new rescuer on the chest even if it has not been 2 minutes or they deny fatigue. The best practice is to switch rescuers out every cycle.
2. If the EtCO₂ is still low, consider putting the patient on the auto-pulse to try and improve EtCO₂.
 - a. If the EtCO₂ decreases after putting the patient on the auto-pulse, go back to manual compressions. While manual compressions are first line, some patients may achieve a higher EtCO₂ on the auto-pulse.
3. After ensuring that ventilations are appropriate, and compressions are optimal, if the patient still suffers from low EtCO₂ consider Bicarb or Epinephrine.

Weld County EMS Protocols
Section 311: Adult Medical Cardiac Arrest - ALS

	EMR	EMT-B	EMT-B/IV	A-EMT	EMT-I	Paramedic
Procedures Ventilations with BVM	SO	SO	SO	SO	SO	SO
CPR	SO	SO	SO	SO	SO	SO
AED	SO	SO	SO	SO	SO	SO
Automated Compression Device	SO	SO	SO	SO	SO	SO
4-lead EKG	–	SO	SO	SO	SO	SO
12-lead EKG	–	–	–	–	SO	SO
King Tube Placement	–	SO	SO	SO	SO	SO
Oral Endotracheal Intubation	–	–	–	–	SO	SO
Capnography	–	SO	SO	SO	SO	SO
IV Access	–	–	SO	SO	SO	SO
IO Access	–	–	PPA	SO	SO	SO
Nasal Gastric Tube Placement	–	–	–	–	–	SO
Epinephrine	–	–	**	**	DO/P	SO
Amiodarone	–	–	**	**	DO/P	SO
Sodium Bicarb	–	–	**	**	DO/P	SO
Magnesium Sulfate	–	–	**	**	**	SO
Glucagon	–	–	–	SO	SO	SO
Narcan	–	–	SO	SO	SO	SO
Dextrose	–	–	SO	SO	SO	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.

Weld County EMS Protocols

Section 312: Adult Medical Cardiac Arrest - BLS

Cardiac Arrest Management:

Adult cardiac arrest patient is defined as > 8 years of age AND >55lbs.

- Begin 2-minute cycles of Pit Crew CPR (Rate 100-120, 2.5 inches, allow for full recoil)
- Apply AED: Anterior/Posterior position. Apply Puck if available.
- Place NPA/OPA, NRB 15 lpm, suction airway as needed.
- Shock as advised by your A.E.D. and continue Pit Crew CPR until ALS arrives. Do not interrupt compressions for any reason.
- Move to synchronized ventilations as soon as possible.

Advanced Management:

- Place King Airway, if agency is approved and only if you have waveform and numeric EtCO₂ capabilities.
- Initiate IV/IO access within scope, do not interrupt compressions for either procedure.

Quality Assurance Guidelines:

- High quality CPR should have minimal interruption. Recoil (release) should be maximized. The target for compression fraction is > 96%. Agencies trained in use of the Puck must utilize it immediately upon arrival.
- Leader shall be assumed by Paramedic or highest trained provider on scene.
- Perfect “oil pump” compressions must be performed. Compression goal is 100-120 compressions per minute for adults. Manual CPR is preferred unless transporting/transferring or prolonged resuscitation with limited personnel. Compression stops should always be < 10 seconds.
- Do NOT hyperventilate the patient. Ventilation must be synchronized on the up stroke of every 10th compression (both BLS and ALS airways).

Special Considerations:

- Consider switching compressors every 60 seconds to 2 minutes to avoid compressor fatigue. Seamless transitions between compressors must be striven for.
- Upon arrival, patient can be moved quickly to an area more appropriate if necessary.

	EMR	EMT-B	EMT-B/IV	A-EMT	EMT-I	Paramedic
Procedures Ventilations with BVM	SO	SO	SO	SO	SO	SO
CPR	SO	SO	SO	SO	SO	SO
AED	SO	SO	SO	SO	SO	SO
Automated Compression Device	SO	SO	SO	SO	SO	SO
King Tube Placement	–	SO	SO	SO	SO	SO
IV Access	–	–	SO	SO	SO	SO
IO Access	–	–	PPA	SO	SO	SO
Narcan	–	–	SO	SO	SO	SO
Dextrose	–	–	SO	SO	SO	SO

Weld County EMS Protocols

Section 313: Pediatric / Infant Medical Cardiac Arrest

Initial Resuscitation:

Pediatric/ Infant cardiac arrest patient is defined as < 8 years of age AND <55lbs.

- Begin 2-minute cycles of Pit Crew CPR (Rate 100-120, 1/3 of the chest depth, allow for full recoil).
- Place NPA/OPA, begin BVM ventilation.
- Apply Cardiac Monitor/AED: Anterior-Posterior pad placement.
- IV/IO access.

Cardiac Rhythm Management:

VF/Pulseless VT	Asystole/PEA
<ul style="list-style-type: none"> • Chest Compressions & BVM Ventilations • 1st defibrillation with 2-4 joules/kg • Epinephrine: 1:10,000- 0.01 mg/kg • 2nd and subsequent defibrillation with 4-10 joules/kg • Amiodarone: 5mg after 2nd defibrillation • Repeat until rhythm change or return of spontaneous circulation 	<ul style="list-style-type: none"> • Chest Compressions & BVM Ventilations • Epinephrine: 1:10,000- 0.01mg/kg every 3-5 minutes • Search for causes using H's & T's • If the patient goes into VF/VT, move to VF/Pulseless VT algorithm.

Advanced Management (After 4 minutes into arrest):

- Advanced airway management: EtCO₂ is required. Do not interrupt compressions for intubation. Do not hyperventilate. Use PEEP valve if available. Single intubation attempt then move to supraglottic device.
- Highest EtCO₂ is the goal, 25mmHg is the minimum target.

Special Considerations:

- Never hyperventilate a patient in cardiac arrest.
- Do not interrupt compressions for advanced airway.
- Resuscitate the patient in the location found unless the scene is unmanageable.
- Attempt to achieve baseline EtCO₂ of > 25mmHg, see below text for troubleshooting.
- If no ROSC occurs after 30 minutes, follow Termination of Resuscitation Protocol.

Quality Assurance:

- CPR:
 - Rate 100-120 (30:2 for 1 rescuer; 15:2 for 2 rescuer; continuous compressions with ventilations once every 6 seconds for intubated patients)
 - Depth 1/3 of the chest depth (max depth of 1.5 inches for infant, 2 inches for pediatric)
 - Pauses < 10 seconds
- Airway:
 - EtCO₂ waveform must be utilized with intubated or supraglottic airways
 - Single intubation attempt
 - No advanced airway management before 4 minutes

Weld County EMS Protocols

Section 313: Pediatric / Infant Medical Cardiac Arrest

EtCO₂ Troubleshooting:

1. If the patient's EtCO₂ begins to trend down or drops below 25mmHg ensure the following:
 - a. The patient is not being hyperventilated by rate or excessive tidal volume.
 - b. Ensure high quality compressions:
 - i. Is the rescuer compressing deep enough: 1.5 inches for infant. 2 inches for pediatric?
 - ii. Is the rescuer allowing for full chest recoil?
 - iii. Put a new rescuer on the chest even if it has not been 2 minutes or they deny fatigue.
The best practice is to switch rescuers out every cycle.

Procedures	EMR	EMT-B	EMT-BIV	A-EMT	EMT-I	Paramedic
Ventilations with BVM	SO	SO	SO	SO	SO	SO
CPR	SO	SO	SO	SO	SO	SO
AED	SO	SO	SO	SO	SO	SO
4-lead EKG		SO	SO	SO	SO	SO
12-lead EKG					SO	SO
King Tube Placement		SO	SO	SO	SO	SO
Oral Endotracheal Intubation					SO	SO
Capnography		SO	SO	SO	SO	SO
IV Access			SO	SO	SO	SO
IO Access			PPA	SO	SO	SO
Epinephrine			**	**	DO/P	SO
Amiodarone			**	**	DO/P	SO
Sodium Bicarb			**	**	DO/P	SO
Magnesium Sulfate			**	**	**	SO
Glucagon				SO	SO	SO
Narcan			SO	SO	SO	SO
Dextrose			SO	SO	SO	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.

Weld County EMS Protocols

Section 314: Chest Pain - Medical

General Care

Consider life threatening causes of chest pain in ALL patients

- ABCs, Oxygen titration, vital signs, cardiac rhythm, IV

Obtain 12-lead EKG– Consider Right Sided EKG for Right ventricular infarct or inferior STEMI

- Consider posterior EKG for ST depression V1-V3

Administer Aspirin if evidence of cardiac chest pain

Consider repeat 12-lead EKG if first is non diagnostic or patient's condition changes

STEMI

- **Notify receiving facility, place defib pads on patient**
- Emergency transport to the appropriate closest facility.
- Helicopter utilization for ground transports that may exceed 15 minutes.
 - Administer SL Nitro if no contraindications
 - Contraindications to Nitro:
 - Suspected right ventricular STEMI plus STEMI in V4R
 - Hypotension SBP <100
 - Recent use of erectile dysfunction drugs (Viagra, Cialis, etc)
 - For hypotension following Nitroglycerin, give 250cc NS bolus, repeat as needed. Discontinue NTG.
 - Consider opiates for pain control if pain not resolved with NTG, if not contraindicated

Chest Pain Etiology in Pediatric Patients

- Costochondritis
- Pneumothorax
- Pneumonia, Bronchitis, Asthma
- Ischemia if Kawasaki disease (coronary aneurysm) – Rare
- Myocarditis, pericarditis
- Arrhythmia

Special Precautions:

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

Weld County EMS Protocols

Section 314: Chest Pain - Medical

Assessment:	EMR	EMTB	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:	EMR	EMTB	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

Weld County EMS Protocols
Section 314: Chest Pain - Medical

Medications:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Aspirin (Reference Protocol: Section 500) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Pt. Assisted Nitroglycerin (Reference Protocol: Section 500) 	_____	DO/P	DO/P	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Nitroglycerin (SL) (Reference Protocol: Section 500) 	_____	_____	_____	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Morphine (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> • Consider administration of: Fentanyl (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 315: Childbirth - Emergencies

Specific Findings:

- 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:	EMR	EMTB	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:	EMR	EMTB	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:	EMR	EMTB	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.						

Weld County EMS Protocols

Section 315: Childbirth - Emergencies

Emergency: Premature Labor

Signs & Symptoms:

- Contractions prior to 36 weeks gestation.

Treatment:

- Lay on left side unless delivery is imminent.

Emergency: Pre - Eclampsia

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**. (Per protocol)

Emergency: Eclampsia

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**. (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.

Weld County EMS Protocols

Section 315: Childbirth - Emergencies

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.

Weld County EMS Protocols

Section 315: Childbirth - Emergencies

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.

Weld County EMS Protocols

Section 316: Childbirth - Uncomplicated

Specific Findings:

- **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:	EMR	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

Weld County EMS Protocols

Section 316: Childbirth - Uncomplicated

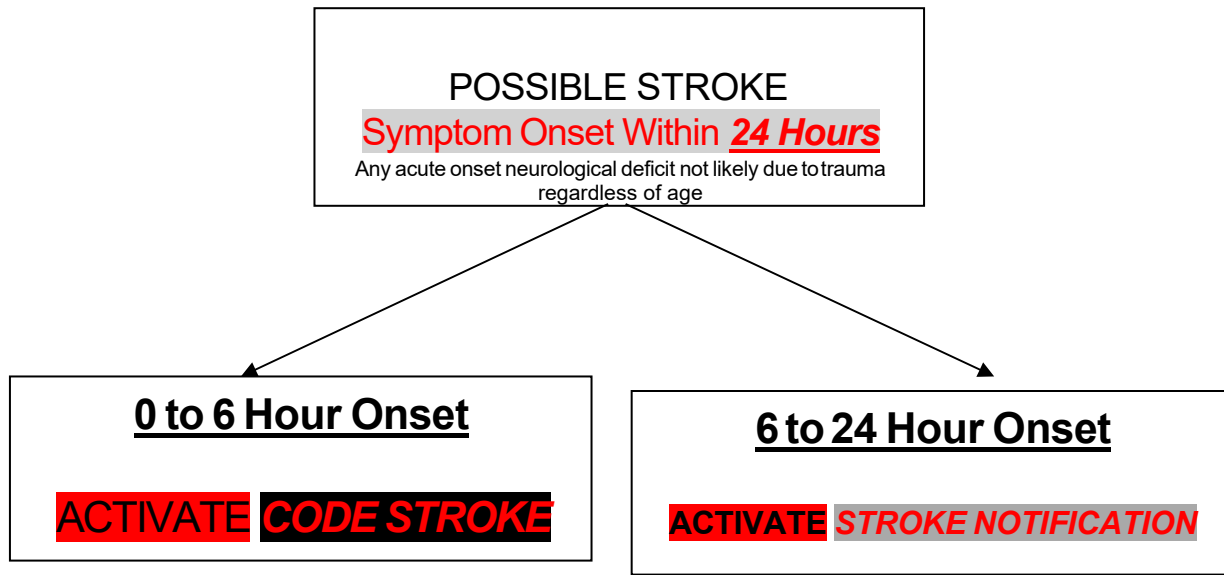
Procedures:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Cardiac monitor: 4 lead EKG interpretation (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> Establish vascular access. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
Medications:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
Imminent Delivery:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> Support the head as it emerges. Gentle pressure to prevent an explosive delivery 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Suction the mouth and then the nose with a bulb syringe. Do not use mechanical suction. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> When the infant is delivered, clamp the cord in 2 places 8 to 10 inches from the infant. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Cut the cord in between the clamps 	SO	SO	SO	SO	SO	SO
Post Delivery:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> If the infant does not begin breathing spontaneously, begin resuscitation immediately. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Placenta normally delivers within 30 minutes. Do not delay transport or force delivery. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> APGAR score at 1 and 5 minutes after delivery. 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> If excessive maternal bleeding occurs, massage the uterus and treat for shock. 	_____	SO	SO	SO	SO	SO

Weld County EMS Protocols
Section 316: Childbirth - Uncomplicated

APGARScore:

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

Weld County EMS Protocols
Section 317: CVA – Cerebrovascular Accident



Specific Findings:

- Use the Pre -hospital Stroke Screen for all suspected stroke patients.
- Establish onset of symptoms.
- Early notification of the Emergency Department to be done by ALS transport crew for a Code "Stroke" or "Notification."

Special Precautions:

- Dextrose 10% 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.

Procedures:	EMR	EMTB	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

Weld County EMS Protocols

Section 317: CVA – Cerebrovascular Accident

Medications:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Consider administration of: Dextrose (If BGL is <60 mg/dL with associated symptoms) 	_____	_____	SO	SO	SO	SO

Weld County EMS Protocols

Section 317: CVA – Cerebrovascular Accident

Stroke Alert Checklist

Patient Name: _____ Date of Birth: _____

Information/ History From: _____ Phone: _____

Bring contact person to the hospital with patient if possible Time Stroke alert activated: _____

Dizziness plus at least one of the following:

- Diplopia(doublevision/visionchanges)
- Dysarthria (difficulty speaking)
- Dysphagia (difficulty swallowing)
- Dystaxia (difficulty controlling voluntary movements)



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 24 Hours

Time: _____ Date: _____

Activate "**Stroke Alert**" from the field if ≥ 1 of the above neurological criteria AND time **less than 6 hours** must be checked!!

Activate "**Stroke Notification**" from the field if ≥ 1 of the above neurological criteria AND time **6-24 hours** must be checked!!

Patient Information for ED Physician		Yes	No
1.	Blood Glucose is between 50 mg / dL and 400 mg / dL: _____ mg / dL	<input type="checkbox"/>	<input type="checkbox"/>
2.	Hypertension: (Systolic is > 185. Diastolic is > 110): _____ / _____	<input type="checkbox"/>	<input type="checkbox"/>
3.	Seizure at onset of stroke:	<input type="checkbox"/>	<input type="checkbox"/>
4.	Anticoagulant medication(s) _____	<input type="checkbox"/>	<input type="checkbox"/>
	Antiplatelet medication(s) _____	<input type="checkbox"/>	<input type="checkbox"/>
5.	Neurosurgery (Head / Spine), head trauma, A.M.I. within last 3 months.	<input type="checkbox"/>	<input type="checkbox"/>
6.	Major Surgery or GI Bleed within the last 3 weeks.	<input type="checkbox"/>	<input type="checkbox"/>

Weld County EMS Protocols

Section 318: Cyanide

Assessment

- Colorless, “bitter almond smell.”
- Enters the body by inhalation, ingestion or absorption.
- Suspect in smoke exposure, industrial accidents, natural disaster, suicide, attempted murder, chemical warfare (whenever there are multiple causalities of unclear etiology).
- Soot around mouth, nose, back of mouth
- Early Symptoms
 - Anxiety
 - Vertigo
 - Weakness
 - Headache
 - Tachypnea
 - Nausea
 - Dyspnea
 - Vomiting
 - Tachycardia
- Late Symptoms:
 - Altered mental status
 - Seizure
 - Respiratory depressions
 - Dysrhythmia
- Indications for Cyanokit:
 - Altered mentation, including rapid collapse, generalized weakness, vertigo, confusion or disorientation.
 - Seizure
 - Respiratory depression or Cardiac arrest
 - Cardiac dysrhythmia (other than sinus tachycardia).
 - Signs of shock
- The rapidity of onset is related to the severity of exposure (inhalation or ingestion) and may be dramatic with immediate effects that include early hypertension with subsequent hypotension, sudden cardiovascular collapse or seizure/coma, and rapid death

Treatment

- Remove from environment
- If burns, see Burn Protocol
- ABCs
- Vitals signs, pulse ox, EtCO₂
- Cardiac monitor for arrhythmias
- Check blood glucose
- 100% FiO₂ and transport.
- Cyanokit (Indications above)

Weld County EMS Protocols

Section 318: Cyanide

Considerations

- In the event of multiple casualties, be sure to wear appropriate PPE during rescue evacuation from the toxic environment
- If the patient ingests cyanide, it will react with the acids in the stomach generating hydrogen cyanide gas. Be sure to maximize air circulation in closed spaces (ambulance) as the patient’s gastric contents may contain hydrogen cyanide gases when released with vomiting or belching
- Do not use nitrites in conjunction with suspected carbon monoxide poisoning as it worsens the hemoglobin oxygen carrying capacity even more than carbon monoxide (CO)
- Pulse oximetry accurately reflects serum levels of oxygen but does not accurately reflect tissue oxygen levels therefore should not be relied upon in possible cyanide and/or carbon monoxide toxicity
- After Cyanokit has been administered, pulse oximetry levels are no longer accurate

Assessment:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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.	SO	SO	SO	SO	SO	SO
• Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700)	_____	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 318: Cyanide

• 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
• Endotracheal intubation.	_____	_____	_____	_____	SO	SO

Medications:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• Consider administration of: Fluid Bolus See below:	_____	_____	SO	SO	SO	SO
• Cyanokit	_____	_____	_____	_____	SO	SO

Weld County EMS Protocols

Section 319: Diabetic Emergencies

General Care:

Check blood glucose in any patient with signs or symptoms of hypo or hyperglycemia

Hypoglycemia

Altered Mentation
Focal neuro deficits
Decreased motor tone
Seizure
Weakness
Diaphoresis
Pallor

DKA/HHS Altered

Mentation, lethargy, focal deficits
Abdominal Pain
Hyperventilation
Skin turgor, dry membranes
Tachycardia
DKA progresses rapidly (<24hrs)
HHS progresses over days

Hypoglycemia:

- BGL < 60, give dextrose per protocol
- If patient can safely tolerate oral glucose, administer oral glucose (intact gag reflex, follows commands)
- If you *can't* establish an IV or IO, give IM Glucagon
- If symptoms are not resolving, re-check BGL and treat as indicated. Consider other causes of altered mentation
- Monitor and transport, or facilitate refusal per protocol

Hyperglycemia:

- Is rarely a pre-hospital emergency
- Treat the patient, not the blood sugar number
 - Treat shock if it's present
 - Consider NS bolus for patients with hyperglycemia and no evidence of fluid overload
- Pediatric DKA patients should not receive more than 10-20ml/kg of IV fluids

Refusals after hypoglycemic episode

- Always transport if:
 - Unexplained hypoglycemia
 - Patients taking oral diabetic medications
 - Patients unable to eat
 - Patients who do not have a competent adult to monitor

Special Precautions:

- Patients can become combative and violent. Be prepared
- If glucometer not available & patient has symptoms of hypoglycemia, treat as stated above
- Hypoglycemia can very closely mimic a cerebral vascular accident
- Diet drinks do not contain sugar and will not have the desired effect

Weld County EMS Protocols

Section 319: Diabetic Emergencies

Assessment:	EMR	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:	EMR	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:	EMR	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 (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

Weld County EMS Protocols

Section 320: Dive Emergencies

Specific Findings Needed

- Total dive time
- Time at depth
- Rate of ascent
- If possible, ascertain if the patient has flown within the last 24 hours
- Any emergency buoyant ascent, uncontrolled ascent from a depth of greater than 5 feet will be considered a possible diver related injury. The diver MUST be evaluated for injury.

General Care

- If complicated by Drowning, see [Drowning Protocol](#)
- High flow oxygen
- Start IV, Check BGL
- Monitor ABCs, cardiac rhythm, mental status, waveform capnography.

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) is 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.

Weld County EMS Protocols

Section 320: Dive Emergencies

Destination Policy:

Any diver with signs and symptoms consistent with need for re compression 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 re compression therapy.

PresbyterianSt.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:

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.

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.

Assessment & Treatment:	EMR	EMT B	EMTIV	AEMT	EMTI	EMTP
• Med Dive Paramedic Medical Authority						PPA
• High Flow Oxygen regardless of oxygen saturation	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 321: Drowning

Specific Findings Needed:

- Length of submersion.
- Water temperature.
- Fresh water, salt water or contaminated water.
- Diving accident or suspected trauma (specifically, C-Spine injuries).
- Resuscitative measures PTA.
- Respiratory impairment due to submersion or immersion in liquid.

Unresponsive without Pulse

- If the patient is suspected to be severely hypothermic (See [Hypothermia Protocol](#)):
- **If no signs of life:**
 - Suction airway
 - Prompt airway management and supplemental breathing
 - Consider advanced airway (especially if pulmonary edema)
 - Consider nasogastric decompression for the unconscious and intubated.
 - [Cardiac Arrest](#) treatment
 - **If hypothermic, single defibrillation attempt until body temperature > 86°F**
 - **Consider single dose epinephrine until body temperature > 86°F (pro-arrhythmogenic at cold temperatures)**
 - **If Trauma is suspected, don't use AutoPulse. Manual compressions only.**
- Start IV fluids
- Insulate patient

Altered Mentation or Unresponsive with Pulse

- Remove wet clothing, insulate the patient
- Suction as needed
- Consider all cause of altered mental status
- Start IV, check BGL, give oxygen
- Monitor ABC, VS, cardiac rhythm, mental status, waveform capnography, Transport
- Consider advanced airway (especially if pulmonary edema)
 - Consider nasogastric decompression for the unconscious and intubated

Awake and Alert

- Remove wet clothing, insulate the patient
- Transport if any abnormal findings
- Monitor ABC, VS, Mentation
- Respiratory Distress (Watch for pulmonary edema): Consider CPAP

Weld County EMS Protocols

Section 321: Drowning

Special Considerations

- Definitions:
 - Drowning: The process of experiencing respiratory impairment from submersion or immersion in liquid.
 - Non-Fatal Drowning: Patients rescued from drowning
 - Fatal Drowning: Any death resultant from drowning
 - Submersion: Patients airway is under water
 - Immersion: Patients body is in water but the airway remains out of the water.
- Drowning/submersion commonly associated with hypothermia.
- Exam and MOI should include consideration of c-spine injury. Manage c-spine if evaluation suggests injury.
- Even profound bradycardias may be sufficient in setting of severe hypothermia and decreased O2 demand
- Good outcomes after even prolonged hypothermic arrest are possible, therefore patients with suspected hypothermia should generally be transported to the hospital.
- Pulse and respirations may be very slow and difficult to detect if patient is severely hypothermic. If no definite pulse, and no signs of life, begin CPR
 - Submersion >90 minutes. Consider withholding or termination.
 - Obvious signs of death. Consider withholding or termination
- Patients may develop sub acute respiratory difficulty after submersion and therefore all victims of non-fatal submersion should be transported for observation.
- Active efforts to expel water from the airway (by abdominal thrusts or other means) should be avoided as they delay resuscitative efforts and increase the potential for vomiting and aspiration
- Have suspicion for C-spine injury, especially if diving, water skiing, surfing or watercraft accidents. Routine c-spine immobilization in cardiac arrest patients or patients without suspicious mechanism is not mandatory.

Assessment:	EMR	EMTB	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
• Be prepared to suction airway.	SO	SO	SO	SO	SO	SO
• Glasgow Coma Scale every five minutes.	SO	SO	SO	SO	SO	SO
Procedures:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Spinal motion restriction with head elevated 6 – 10in.	SO	SO	SO	SO	SO	SO
• Control any hemorrhage: (Reference Protocol: Section 700)	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 321: Drowning

<ul style="list-style-type: none"> • Capnography (Reference Protocol: Section 700) 	_____	PPA	PPA	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG interpretation. (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> • Establish vascular access. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> • Establish 2nd vascular access. If necessary. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> • Be Prepared for Endotracheal intubation. (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
Medications:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Zofran (Reference Protocol: Section 500) 	_____	DO/P	DO/P	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Versed (Sedation for combative patients) 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> • Consider administration of: Ativan (Sedation for combative patients) 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> • Consider administration of: Pain Management (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 322: Heads-Up CPR

Indications:

- Any pulseless patient on an automated compression device (ACD) that is being moved and/or transported to the hospital

Contra - Indications:

- None

Technique / Procedure:

- Manual CPR will be performed for most cardiac resuscitation efforts. However, if extenuating circumstances dictate that the patient needs to be transported while performing CPR, an ACD should be utilized if available.
- Place the patient on the ACD and set it to “continuous” mode.
- Do not interrupt compressions for any longer than 10 seconds when transferring the patient to an ACD. Count to 10 out loud so everyone knows how much time has passed. If 10 seconds passes and you still need more time, stop and resume manual CPR until the patient’s ETCO2 returns to its prior level. Then, try again to transfer the patient to the ACD within 10 seconds. Repeat until successful. Do not accept interrupting compressions for longer than 10 seconds.
- Once the patient is properly on the ACD and on the cot, elevate the head slightly to 20-30 degrees.
- Perform heads-up compressions with synchronized ventilations.

Special Notes:

- Heads-Up CPR has been shown to decrease ICP during resuscitation and improve neurological outcome in patients
- Future devices may allow rescuers to perform manual CPR at 20-30 degrees. However, for now the only practical way to perform heads-up CPR is via ACD on the cot with the head slightly elevated. Since this does not favor manual CPR, which is our default, we are currently only performing heads-up CPR during transport.

Procedure:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Passive Ventilation	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 323: Hyperkalemia

Specific Findings

- **History of Current Event**
 - Nausea or vomiting
 - General weakness or lethargy
 - Bradycardia
 - Hypotension
 - Altered level of consciousness
 - Cardiac arrest
- **Past Medical History**
 - End-stage renal failure patients receiving dialysis
 - Use of potassium supplements
 - Use of potassium-sparing diuretics (ex: spironolactone)
 - Use of ACE inhibitors (ex: lisinopril, enalapril)
 - Use of digitalis
- **Causes**
 - Failure to receive scheduled dialysis
 - Overdose of potassium supplements, potassium-sparing diuretics, ACE inhibitors, or digitalis
 - Diabetic ketoacidosis
 - Crush injuries
- **EKG Changes** (see page 3)
 - Sinus bradycardia or slow atrial fibrillation
 - Observed progression towards conduction blocks (2nd degree type II or 3rd degree AV blocks, bundle branch blocks, fascicular blocks)
 - Diffuse peaked T waves (see Figure 1)
 - Note: Peaked T waves in a select few contiguous leads are indicative of cardiac ischemia, not hyperkalemia
 - Wide, flat, or absent P waves
 - QRS > 120 msec with/without bizarre morphology (see Figure 2)
 - QTc > 550 msec
 - Sinewave - considered a pre-terminal rhythm (see Figure 3)
 - Asystole, VF, or PEA arrest

Special Precautions

- Suspected hyperkalemia should only be treated in arrest or peri-arrest situations
 - In conscious patients, treatment must be based on **both** indicative EKG changes and a suspected origin of the hyperkalemia (ex: renal failure or potassium OD)
 - In patients in cardiac arrest, calcium may be administered based on the suspicion of hyperkalemia
- Note: in hyperkalemic patients, transcutaneous cardiac pacing, atropine, and vasopressors may be ineffective at correcting bradycardia until the hyperkalemia is corrected

Weld County EMS Protocols

Section 323: Hyperkalemia

Assessment	EMR	EMTB	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
• Be prepared for cardiac arrest	SO	SO	SO	SO	SO	SO

Procedures	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Cardiac monitor: 12 lead interpretation (Reference Protocol: Section 700)	_____	_____	_____	_____	SO	SO
• Establish IV access: establish second IV access if use of calcium is anticipated (Reference Protocol: Section 700)	_____	_____	SO	SO	SO	SO
• Cardiac monitor: transcutaneous pacing (Reference Protocol: Section 700)	_____	_____	_____	_____	SO	SO

Medications	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• Consider administration of: Albuterol (Reference Protocol: Section 500)	_____	_____	_____	_____	_____	SO
• Consider administration of: Calcium chloride (Reference Protocol: Section 500)	_____	_____	_____	_____	_____	SO
• Consider administration of: Sodium Bicarb (Reference Protocol: Section 500)	_____	_____	_____	_____	_____	SO

WeldCountyEMS Protocols Section 323: Hyperkalemia

ECG Changes

Figure 1: Diffuse peaked T waves (serum level 7.1 mEq/L)

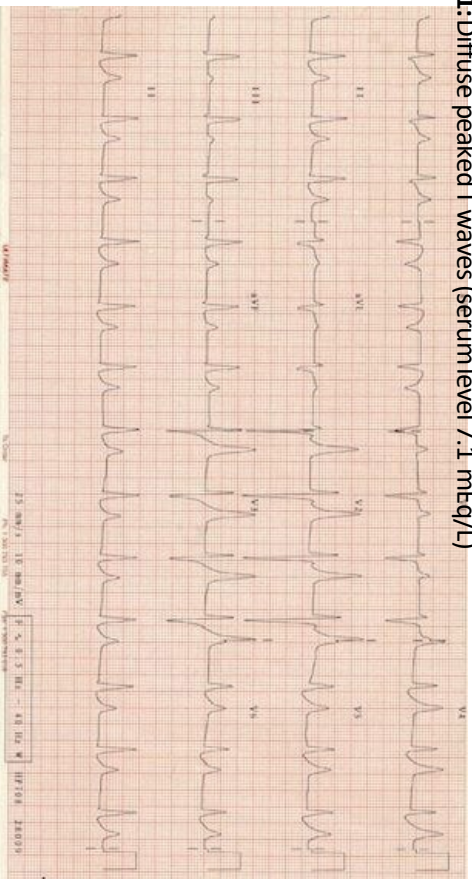


Figure 2: Peaked T waves, absent P waves, wide and bizarre QRS (serum level 8.5 mEq/L)

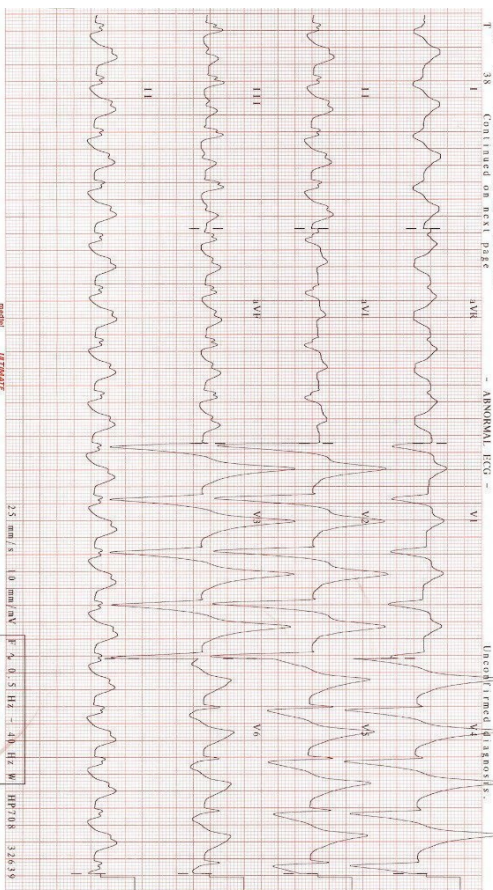
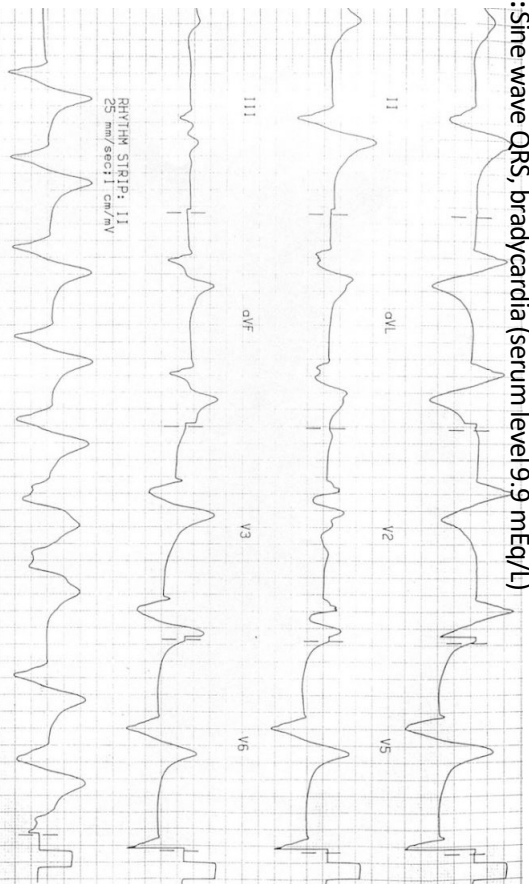


Figure 3: Sine wave QRS, bradycardia (serum level 9.9 mEq/L)



Weld County EMS Protocols

Section 324: Hyperthermia

Hyperthermia:

Pathophysiology:

- Primarily environmental
- Consider non-environmental causes (see special considerations)

Signs & Symptoms:

Condition	HEAT CRAMPS	HEAT EXHAUSTION	HEATSTROKE (>104F)
Temperature	Normal or slightly elevated	Elevated	Very high
Skin	Warm, moist	Cool, Diaphoretic	Hot, dry, no sweating
Symptoms	Weakness, muscle cramps	Weakness, anxiety, headache, syncope	Altered mentation, seizure, coma
Vital Signs	Normal	Tachycardia, tachypnea	Hypotension

Treatment

- Manage ventilation and airway, oxygen, IV Fluids (cool if possible)
- Remove excess clothing. Loosen restrictive garments. Move to cooler location.
- Check blood glucose if altered or diabetic.
- For heat stroke consider rapid external cooling measures (ice packs, ice bath, any other measure available)
- Try to avoid shivering: Midazolam or Ativan if needed.
- Treat seizures and arrhythmias per protocols
- Monitor and transport

Special Considerations

- Non environmental causes:
 - Neuroleptic malignant syndrome: Patients taking antipsychotics
 - Sympathomimetic overdose: Cocaine, Methamphetamine
 - Excited Delirium Syndrome
 - Anticholinergic toxidrome: (“Mad as a hatter, red as a beet”). Common with psychiatric medications, OTC cold medications, Benadryl.
 - Infection: Sepsis
 - Thyrotoxicosis: goiter

Weld County EMS Protocols

Section 324: Hyperthermia

Hyperthermia:

Pathophysiology:

- Primarily environmental
- Consider non-environmental causes (see special considerations)

Signs & Symptoms:

Condition	HEAT CRAMPS	HEAT EXHAUSTION	HEATSTROKE (>104F)
Temperature	Normal or slightly elevated	Elevated	Very high
Skin	Warm, moist	Cool, Diaphoretic	Hot, dry, no sweating
Symptoms	Weakness, muscle cramps	Weakness, anxiety, headache, syncope	Altered mentation, seizure, coma
Vital Signs	Normal	Tachycardia, tachypnea	Hypotension

Treatment

- Manage ventilation and airway, oxygen, IV Fluids (cool if possible)
- Remove excess clothing. Loosen restrictive garments. Move to cooler location.
- Check blood glucose if altered or diabetic.
- For heat stroke consider rapid external cooling measures (ice packs, ice bath, any other measure available)
- Try to avoid shivering: Midazolam or Ativan if needed.
- Treat seizures and arrhythmias per protocols
- Monitor and transport

Special Considerations

- Non environmental causes:
 - Neuroleptic malignant syndrome: Patients taking antipsychotics
 - Sympathomimetic overdose: Cocaine, Methamphetamine
 - Excited Delirium Syndrome
 - Anticholinergic toxidrome: (“Mad as a hatter, red as a beet”). Common with psychiatric medications, OTC cold medications, Benadryl.
 - Infection: Sepsis
 - Thyrotoxicosis: goiter

Weld County EMS Protocols

Section 325: Hypothermia

Specific Information/Findings:

- Always consider whether hypothermia is the primary problem based on the clinical scenario.
- Consider non-environmental causes.
- Confusion. Aphasia. Unresponsive. Shivering may or may not be present.

No Pulses/Severely Hypothermic (> 87°F):

- Feel carotid or femoral pulses for at least one minute.
- Watch chest for breathing and/or use waveform capnography for 30 seconds.
- If the patient shows signs of life, even without a pulse, **DO NOT** start CPR.
 - Even profound bradycardias may be sufficient in the setting of severe hypothermia.
- **If no signs of life:**
- Start Cardiac Arrest protocol with following changes:
 - **Single defibrillation attempt if until body temperature > 86°F**
 - **Consider Single dose epinephrine until body temperature > 86°F (pro-arrhythmogenic at cold temperatures)**
- Prioritize advanced airway especially if pulmonary edema is suspected
- Handle gently, start warm IVF, insulate patient
- Immediate transport

Localized Cold Injury / Frostbite:

- Remove patient from environment.
- Remove wet clothing, dry and insulate patient.
- Transport is usually indicated, even if initial assessment is normal.
- Do not allow injured part to refreeze. Repeated thaw-freeze cycles are harmful.
- Do not rub or break blisters.
- Monitor for signs of systemic hypothermia.

Awake with Altered L.O.C or Unresponsive with Pulses:

- High flow O₂, ABCs
- Remove patient from environment, Remove wet clothing, dry and insulate patient.
- Consider all causes of altered mentation, protocol 305
- Handle patient gently; hypothermic patients are susceptible to cardiac dysrhythmias.
- Suction as needed.
- IV, Check BGL. Warm IV Fluids.
- Transport, monitor vital signs and cardiac rhythm.
- Consider advanced airway if pulmonary edema is suspected

Weld County EMS Protocols

Section 325: Hypothermia

Special Precautions:

- If drowning victim, see Drowning protocol.
- Use care while inserting airway adjuncts.
- Even profound bradycardias may be sufficient in the setting of severe hypothermia.
- Good outcomes even after prolonged hypothermic arrest are possible.
- Patients with hypothermia should usually be transported to the hospital.
- BLS: pulse and respirations may be very slow and difficult to detect if the patient is severely hypothermic. If not definite pulse and no signs of life, begin CPR
- If not breathing, start rescue breathing
- Consider initial defibrillation and administration of first-line medications per protocol.
- Further defibrillation or medication administration may be in effective until patient is rewarmed.

Assessment:	EMR	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:	EMR	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
• Waveform Capnography	_____	_____	SO	SO	SO	SO
• Establish vascular access. (Reference Protocol: Section 700)						
• Establish 2nd vascular access. If necessary. (Reference Protocol: Section 700)	_____	_____	SO	SO	SO	SO

Weld County EMS Protocols

Section 325: Hypothermia

Medications:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Consider administration of: Fluid Bolus (Treat Hypotension for Age) 	_____	_____	SO	SO	SO	SO

Weld County EMS Protocols

Section 326: 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:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Adjuncts for pain control (positioning, splinting, ice packs)	SO	SO	SO	SO	SO	SO
• Medications for pain control (see individual protocols)	-	-	-	-	DO/P	SO

Weld County EMS Protocols

Section 327: Passive Oxygenation

Indications:

- Adult patients in cardiac arrest with an initial shockable rhythm.
- Witnessed cardiac arrest patients and/or patients found gasping have an increase chance of survival with neurological discharge when using passive oxygenation.

Contra - Indications:

- All pediatric cardiac arrest patients or adult cardiac arrest patients that present initially with a non-shockable rhythm.

Technique / Procedure:

- Confirm no pulse and initiate MANUAL compressions at a rate of 100-120 cpm. Allow for full chest recoil.
- DONOT VENTILATE until after an initial rhythm is determined
- Apply pads with anterior/posterior placement
- Once an initial shockable rhythm is identified defibrillate the patient.
- Insert an OPA, apply NRBM at 15 Lpm allow passive oxygenation without rescuer ventilations for 4 minutes.
- Apply an ETCO2 cannula for monitoring, but allow the NRBM to deliver the high flow oxygen. Do not flow more than 5 Lpm through an ETCO2 cannula or the ETCO2 number could be arbitrarily low due to wash out. Flows over 5 Lpm via capnography cannula can also cause artifact in the waveform.
- Establish IV/IO Access and administer Epinephrine ASAP
- Follow ACLS Guidelines for flow.
- If a patient begins in PEA/Asystole and then switches to a shockable rhythm do NOT perform passive oxygenation. Passive oxygenation is only for the first 4 minutes of an INITIAL shockable rhythm.

Special Notes:

- Passive oxygenation will maximize blood flow during compressions by minimizing positive pressure in the chest that resists venous return to the heart. Lower venous return results in lower cardiac output during compressions. Decreased pressures in the chest also lower ICP. Research has shown a significant increase in ROSC and neurological discharge in patients undergoing passive oxygenation for 4 minutes vs. traditional ventilations.
- It is important to get a baseline ETCO2 on all cardiac arrest patients and achieve the highest ETCO2 possible for each individual patient as ETCO2 is a potent perfusion indicator. However, note that due to the low tidal volumes that will be present during passive oxygenation, rescuers should not focus on ETCO2 monitoring during passive oxygenation as it will be arbitrarily low. A true baseline ETCO2 can only be established in the presence of high quality uninterrupted compressions AND normal tidal volume states.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Passive Ventilation	SO	SO	SO	SO	SO	SO

Pit Crew CPR (2 Responders)

COMPRESSION NOTES:

- ⇒ Rate: 100-120
- ⇒ Depth 2-2.5inches
- ⇒ Full Recoil
- ⇒ Switch every 1-2 minutes.
- ⇒ DO NOT STOP compressions except to place AED, pause < 10 seconds.
- ⇒ "Hover Hands" during pauses

DEFIBRILLATION:

2 minutes of CPR THEN analyze

AIRWAY:

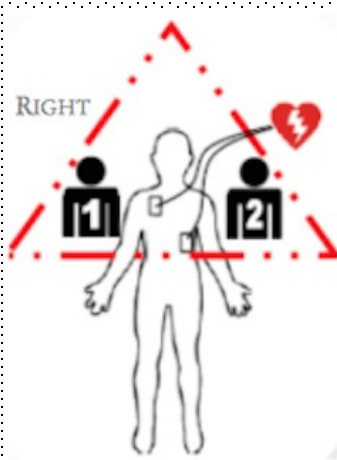
- Defer 4 minutes
UNLESS suspected/known choking
Do not stop CPR to intubate/place SGA
- Flatline ET/CO₂ WAVEFORM
⇒ Remove Device

Monitor:

Compression-measuring Device for all CPR (Zoll Puck)

Position 1

- Assess LOC (3 Seconds)
- Being UNINTERRUPTED CPR
- Do not interrupt CPR for airway



Position 2

- Turn on monitor
- Attach "Puck" accelerometer
- Attach monitor, AED
- Keep monitor within arms reach
- Prepare to relieve Position 1
- Hover hands prior to taking over compressions.
- If time, place NPA + OPA
- If time, place EtCO₂ cannula
- If time, Place NRB @ 15LPM

NO OBSTACLE ZONE

Move patient to suitable location.

After 2 minutes of continuous CPR

- ⇒ Position 2 takes compressions.
- ⇒ Position 1, complete position 2 tasks, if not already done.

BLS: ANALYZE

or

ALS: Check filtered ECG

Consider delaying defibrillation until EtCO₂ > 20mmHg

"SHOCK ADVISED" - Or VF/Pulseless VT

- ⇒ Position 1 – RESUME CPR
- ⇒ Position 2 – Charge Defibrillator.
 - Clear Patient
- Deliver Shock, immediately resume compressions

Pit Crew CPR (3 Responders)

COMPRESSION NOTES:

- ⇒ Rate: 100-120
- ⇒ Depth 2-2.5 inches
- ⇒ Full Recoil
- ⇒ Switch every 1-2 minutes.
- ⇒ DO NOT STOP compressions except to place AED, pause < 10 seconds.
- ⇒ "Hover Hands" during pauses

DEFIBRILLATION:

2 minutes of CPR THEN analyze

Transfer positions so EMT-IV and Paramedics are 3 and 4.

AIRWAY:

Defer 4 minutes
UNLESS suspected/known choking
Do not stop CPR to intubate/place SGA

Flatline ET/CO₂ WAVEFORM
⇒ Remove Device

Position 3

- OPA + NPA AND
- Synchronized Ventilations after initial resuscitation
- One-handed bag, don't hyperventilate
- Intubate or King When Appropriate
 - *Do not interrupt compressions
 - *Confirm EtCO₂ each breath
 - *Basic airway if no advanced available

Position 1

- Assess LOC (3 Seconds)
- Being UNINTERRUPTED CPR
- Do not interrupt CPR for airway



Monitor:

Compression-measuring Device for all CPR (Zxoll Puck)

Position 2

- Turn on monitor
- Attach "Puck" accelerometer
- Attach monitor, AED
- Keep monitor within arms reach
- Prepare to relieve Position 1
- Hover hands prior to taking over compressions.
- If time, place NPA + OPA
- If time, place EtCO₂ cannula
- If time, Place NRB @ 15LPM

NO OBSTACLE ZONE

Move patient to suitable location.

After 2 minutes of continuous CPR

- ⇒ Position 2 takes compressions.
- ⇒ Position 1, complete position 2 tasks, if not already done.
- ⇒ Position 1 and 2: continue compressions, alternate as needed, trade positions at beginning of "off-cycle," follow guidance from team leader.

BLS: ANALYZE

-or-

ALS: Check filtered ECG, if necessary rhythm check < 5 seconds if EtCO₂ ≥ 20mmHg
Consider delaying defibrillation until EtCO₂ > 20mmHg

"SHOCK ADVISED" - Or VF/Pulseless VT

- ⇒ Position 1 - RESUME CPR
- ⇒ Position 2 - Charge Defibrillator.
- Clear Patient, Deliver Shock, immediately resume compressions

Pit Crew CPR (4-Responders)

COMPRESSION NOTES:

- ⇒ Rate: 100-120
- ⇒ Depth 2-2.5 inches
- ⇒ Full Recoil
- ⇒ Switch every 1-2 minutes.
- ⇒ DO NOT STOP compressions except to place AED, pause < 10 seconds.
- ⇒ "Hover Hands" during pauses

DEFIBRILLATION:

Transfer positions so Paramedic or highest trained is position 3.

AIRWAY:

- Defer 4 minutes
UNLESS suspected/known choking
Do not stop CPR to intubate/place SGA
- Flatline ET/CO₂ WAVEFORM
⇒ Remove Device

Position 4 (LEADER)

- BVM "two thumbs up", 2 person
- Equipment/airway/monitor
- IV/IO access: Epinephrine
- Other ACLS meds, as appropriate
- Coordinates shock pause/defibrillate.
- Monitor EtCO₂, recoil, ECG.
- Instruct "bagger" and "compressors" to optimize resuscitation

Position 3

- BVM, 2 person
- One-handed bag, don't hyperventilate.
- When Appropriate, intubate or SGA.
*DO NOT interrupt compressions
*Confirm ET/CO₂ each breath

Monitor:

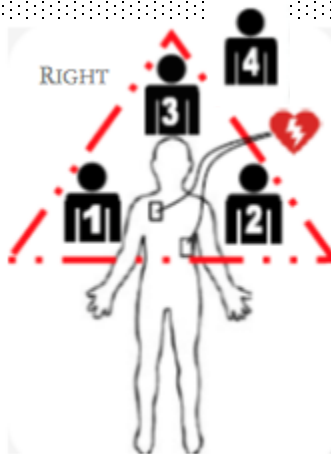
Compression-measuring Device for all CPR (Zoll Puck)

Position 1

- Assess LOC (3 Seconds)
- Being UNINTERRUPTED CPR
- Do not interrupt CPR for airway

Position 2

- Turn on monitor
- Attach "Puck" accelerometer
- Attach monitor, AED
- Keep monitor within arms reach
- Prepare to relieve Position 1
- Hover hands prior to taking over compressions.
- If time, place NPA + OPA
- If time, place EtCO₂ cannula
- If time, Place NRB @ 15LPM



NO OBSTACLE ZONE

Move patient to suitable location.

After 2 minutes of continuous CPR

- ⇒ Position 2 takes compressions.
- ⇒ Position 1, complete position 2 tasks, if not already done.
- ⇒ Position 1 and 2: continue compressions, alternate as needed, trade positions at beginning of "off-cycle," follow guidance from team leader.

BLS: ANALYZE

-or-

ALS: Check filtered ECG, if necessary rhythm check < 5 seconds if EtCO₂ ≥ 20mmHg
Consider delaying defibrillation until EtCO₂ > 20mmHg

"SHOCK ADVISED" - Or VF/Pulseless VT

- ⇒ Position 1 – RESUME CPR
- ⇒ Position 2 – Charge Defibrillator.
- Clear Patient, Deliver Shock, immediately resume compressions

Pit Crew CPR (5 Responders)

COMPRESSION NOTES:

- ⇒ Rate: 100-120
- ⇒ Depth 2-2.5 inches
- ⇒ Full Recoil
- ⇒ Switch every 1-2 minutes.
- ⇒ DO NOT STOP compressions except to place AED, pause < 10 seconds.
- ⇒ "Hover Hands" during pauses

DEFIBRILLATION:

- 2 minutes of CPR THEN analyze
- Transfer positions so Paramedic or highest trained is position 4.

AIRWAY:

- Defer 4 minutes
- UNLESS suspected/known choking**
- Do not stop CPR to intubate/place SGA
- Flatline ET/CO₂ WAVEFORM

Position 3

- OPA + NPA AND
- Synchronized Ventilations after initial resuscitation
- One-handed bag, don't hyperventilate
- Intubate or King When Appropriate
 - *Do not interrupt compressions
 - *Confirm EtCO₂ each breath
 - *Basic airway if no advanced available

Position 4 (LEADER)

- BVM "two thumbs up", 2 person
- Equipment/airway/monitor
- Coordinates shock pause/defibrillate.
- Monitor EtCO₂, recoil, ECG.
- Instruct "bagger" and "compressors" to optimize resuscitation

Monitor:

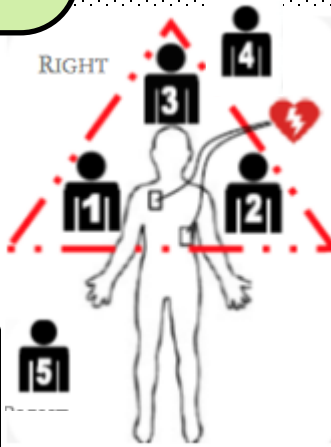
Compression-measuring Device for all CPR (Zoll Puck)

Position 1

- Assess LOC (3 Seconds)
- Being UNINTERRUPTED CPR
- Do not interrupt CPR for airway

Position 5 (Logistics)

- Assist all Positions
- Assist Equipment/airway/monitor
- IV/IO access: Epinephrine
- *Other ACLS meds, as appropriate*
- Assist all positions
- Gather PMH and HPI
 - Down Time
 - Cause of the arrest
- Assists with timekeeping
- Assess evac route if needed



NO OBSTACLE ZONE
Move patient to suitable location

Position 2

- Turn on monitor
- Attach "Puck" accelerometer
- Attach monitor, AED
- Keep monitor within arms reach
- Prepare to relieve Position 1
- Hover hands prior to taking over compressions.
- If time, place NPA + OPA
- If time, place EtCO₂ cannula
- If time, Place NRB @ 15LPM

After 2 minutes of continuous CPR

- ⇒ Position 2 takes compressions.
- ⇒ Position 1, complete position 2 tasks, if not already done.
- ⇒ Position 1 and 2: continue compressions, alternate as needed, trade positions at beginning of "off-cycle," follow guidance from team leader.

BLS: ANALYZE

-or-

ALS: Check filtered ECG, if necessary rhythm check < 5 seconds if EtCO₂ ≥ 20mmHg
 Consider delaying defibrillation until EtCO₂ > 20mmHg

"SHOCK ADVISED" - Or VF/Pulseless VT

- ⇒ Position 1 – RESUME CPR
- ⇒ Position 2 – Charge Defibrillator.
- Clear Patient, Deliver Shock, immediately resume compressions

Weld County EMS Protocols

Section 329: Poisonings & Overdoses

Specific Findings:

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:	EMR	EMTB	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

Weld County EMS Protocols

Section 329: Poisonings & Overdoses

- | | | | | | | |
|----------------------------------|----|----|----|----|----|----|
| • Monitor vital signs. | SO | SO | SO | SO | SO | SO |
| • Check breath sounds regularly. | SO | SO | SO | SO | SO | SO |

Procedures:	EMR	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:	EMR	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 (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

Weld County EMS Protocols

Section 330: Respiratory Emergencies

Specific Findings:

- **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 and Levalbuterol may precipitate pulmonary edema in congestive heart failure patients.
- Asthma patients with absent breath sounds are at risk of respiratory arrest.
- Consider the use of an N-95 mask for both patient and rescuer.

Assessment:	EMR	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:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• End Tidal CO² 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

Weld County EMS Protocols

Section 330: Respiratory Emergencies

• 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:	EMR	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 \geq 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/levalbuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)
- Consider administration of: **Epinephrine 1 : 1,000** (Per protocol)
- Consider administration of: **Epinephrine 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)

Weld County EMS Protocols

Section 330: Respiratory Emergencies

Pediatric Asthma:

Signs & Symptoms

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

Medications:

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

Weld County EMS Protocols

Section 330: Respiratory Emergencies

Pediatric Croup:

Signs & Symptoms

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

Medications:

- Consider administration of: **Nebulized Albuterol/levalbuterol** (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/levalbuterol** (Per protocol)
- Consider administration of: **Nebulized Atrovent** (Per protocol)

Weld County EMS Protocols

Section 330: Respiratory Emergencies

Pediatric Pneumonia:

Signs & Symptoms

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

Medications:

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

Weld County EMS Protocols

Section 331: Seizures

Specific Findings:

History of Current Event:

- Definition of Status Epilepticus
 - Seizure \geq 5 minutes, and or
 - >3 seizures in 24 hours, and or
 - Recurrent seizures prior to recovery from postictal state
- Witnessed seizure activity. Grand mal. Focal. Status.
- Incontinence. Urine or feces. Tongue laceration. Deviated gaze. Lip smacking. Extremity rigidity.
- 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.
- 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:	EMR	EMTB	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

Weld County EMS Protocols

Section 331: Seizures

Procedures:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> ● Obtain blood glucose level. (Reference Protocol: Section 700) 	PPA	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Carbon monoxide monitoring. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Cardiac monitor: 4 lead EKG interpretation. (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> ● Establish vascular access. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Consider Intubation: Oral Endotracheal (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> ● Consider Intubation: Nasal Endotracheal (Reference Protocol: Section 700) 	_____	_____	_____	_____	_____	SO

Medications:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> ● Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Consider administration of: Dextrose (If BGL is < 60 mg/dL with associated symptoms) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Consider administration of: Ativan Status Only (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> ● Consider administration of: Versed Status Only (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO

Procedures: (Pediatric)	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> ● Suspected febrile seizures, remove clothes. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Be careful not to cause shiver or hypothermia. 	SO	SO	SO	SO	SO	SO

Medications: (Pediatric)	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> ● Consider administration of: Dextrose 10% (If BGL is < 60 mg/dL with associated symptoms) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> ● Consider administration of: Ativan (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 332: Sepsis Alert - Adult

Specific Findings:

- **Must suspect or have documented infection:**
 - Suspected or documented infection
- **Must have any two or more of the following and be > 18 y/o:**
 - Temperature less than 96.8 F or greater than 100.4 F
 - Respiratory rate greater than 20
 - Heart Rate greater than 90
 - WBC count < 4000 or > 12,000 based on recent sending facility labs
- **Must have one or more of the following:**
 - Hypoxemia-SpO2 less than 90%
 - Altered Mental Status
 - Signs of Hypo-perfusion manifested by one or more of the following; a systolic BP less than 90 mmHg, MAP less than 65 mmHg
 - Lactate levels > 4 mmol/L based on recent sending facility labs
 - ETCO2 under 25mmHg

Medications:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Oxygen	SO	SO	SO	SO	SO	SO
• Fluid Bolus (Normal Saline)	_____	_____	SO	SO	SO	SO
• Dextrose	_____	_____	SO	SO	SO	SO

Adult Considerations:

- In patients with > 2 SIRS criteria, an EtCO₂ measurement of < 25 mmHg is strongly correlated with lactate levels > 4 mM/L and increased mortality.
- Stress hyperglycemia is common in patients that are septic. High BGL readings should increase your suspicion for sepsis and should be promptly passed on to the hospital.

Weld County EMS Protocols

Section 332: Sepsis Alert - Adult

Pediatric Considerations:

**While patients must be 18 years or older to qualify for a sepsis alert, the following are pediatric vital signs that should increase your suspicion for sepsis in the pediatric population in addition to SIRS criteria.*

- Neonate (less than 1 month)
 - Tachycardia if HR > 180 beats per minute
 - Bradycardia if HR < 100 beats per minute
- Infant (1 month to 1 year)
 - Tachycardia if HR > 180 beats per minute
 - Bradycardia if HR < 90 beats per minute
- Child (2-5 years of age)
 - Tachycardia if HR > 140 beats per minute
- Child (6-12 years of age)
 - Tachycardia if HR > 130 beats per minute
- Adolescent (13-18 years of age)
 - Tachycardia if HR > 110 beats per minute

**Sepsis Alert check sheet is to be filled out and handed off to ER staff.*



Banner Paramedics/AMR Weld

1801 16th St
Greeley, CO. 80631
Supervisor Cell: (970) 302-2833

C.R. #: _____

Sepsis Alert Check Sheet

Must suspect or have documented infection:

1. _____ Suspected or documented infection

Must have any two or more of the following and be > 18 y/o:

1. _____ Temperature less than 96.8 F or greater than 100.4 F
2. _____ Respiratory rate greater than 20
3. _____ Heart Rate greater than 90
4. _____ WBC count < 4000 or > 12,000 based on recent sending facility labs

Must have one or more of the following:

1. _____ Hypoxemia-SpO2 less than 90%
2. _____ Altered Mental Status
3. _____ Signs of Hypo-perfusion manifested by one or more of the following;
Systolic BP less than 90 mmHg, MAP less than 65 mmHg
4. _____ Lactate levels > 4 mmol/L based on recent sending facility labs
5. _____ ETCO2 under 25mmHg

Patient name: _____

Sending Facility: _____

Sending Facility Phone Number: _____

POA Name and Phone Number: _____

Weld County EMS Protocols

Section 333: Snake Bites

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 envenomation may result in hypotension, coma, and bleeding/coagulopathy.
- Bite wound. Location. Configuration (1, 2, or 3 fang marks. Entire jaw imprint. None)
- Snake identification. Look for elliptical pupils. Thermal pit. Rattle.
 - Photograph snake, if possible and safe. Include images of head and tail and markings.
- 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.

Signs and Symptoms:

- Pain and swelling
- Numbness, tingling to bitten part
- Bruising, ecchymosis
- Metallic or peculiar taste in mouth
- Hypotension
- Altered mental status
- Wide spread bleeding (D.I.C.)
- Shock

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.
- Do not use ice or refrigerants.
- Do not use tourniquets or constricting bands.
- Mark margins of erythema or edema areas, include time.
- Be prepared to manage airway.
- Pain management for severe pain.
- Minimize venom absorption by keeping bite area still and patient quiet.
- Transport promptly for definitive observation and treatment.
- For all suspected envenomation, establish venous access and administer oxygen.
- Monitor vitals signs, cardiac rhythm, and swelling.
- Treat for shock (shock protocol).
- Allergic/anaphylactic reactions to venomous snake bites are exceedingly rare. If anaphylaxis is suspected, epinephrine is first line and can be used in conjunction with Benadryl if needed.

Weld County EMS Protocols

Section 333: Snake Bites

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.

Weld County EMS Protocols

Section 334: Synchronized Ventilation in Cardiac Arrest

Indications:

- All patient's in cardiac arrest regardless of age and regardless of whether they have a BLS or ALS airway.
- Synchronized ventilation allows ventilations to be performed without interrupting compressions. This allows for a goal of compression fraction to 96%. This dramatically improves cardiac output and can lead to improved neurological survival rates in arrest.

Contra - Indications:

- None.

Technique / Procedure:

- For adult and pediatric patients, perform manual compressions at a rate of 100-120 cpm. Allow full chest recoil. Ventilate on the upstroke of every 10th compression.

Special Notes:

- Synchronized ventilation increases cardiac output during compressions because rescuers don't have to stop compressions to ventilate. Also, since you are ventilating to the compression rate, synchronized ventilation makes inadvertent hyperventilation nearly impossible.
- Traditional ventilation techniques of 30:2 or 15:2 should no longer be performed.

Procedure:

	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Passive Ventilation	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 335: Syncope

Specific Findings:

- **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:	EMR	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:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Obtain blood glucose level. (Reference Protocol: Section 700)	—	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 335: Syncope

- | | | | | | | |
|--|-------|-------|-------|-------|----|----|
| • 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:	EMR	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 (If BGL is <60 mg / dL with associated symptoms)	_____	_____	SO	SO	SO	SO
• Consider administration of: Fluid Bolus (To maintain ablood pressure ≥90 mm / Hg)	_____	_____	SO	SO	SO	SO
• Consider administration of: Narcan (Reference Protocol: Section 500)	_____	_____	SO	SO	SO	SO

Weld County EMS Protocols

Section 336: Termination of Resuscitation/Field Pronouncement Non-Traumatic Arrest

Purpose

- Provide direction for termination of resuscitative efforts and field pronouncement of patients in medical cardiac arrest. EMS should transport any patient perceived to be viable after appropriate on-scene resuscitation per protocol, or if scene dynamics or public perception necessitates transport.

Indications

- Unsuccessful resuscitative efforts following intubation, supraglottic airway or crico high quality CPR and ACLS drugs.

Contraindications

- ROSC at any point in care
- Abrupt increase EtCO₂ ± palpable pulses
- Hypothermic patients
- Drowning (per protocol)
- Lightning strike / electrocution
- Pregnant patient with estimated gestational age ≥20 weeks
- Family request for continued efforts or resuscitation in public
- Persistent VF/VT

Considerations

- Follow trend of capnography values throughout resuscitation.
- If Asystole/PEA: Consider differential diagnosis (toxic ingestion, metabolic process [H's & T's] and possible benefits of ED evaluation, especially in patients with NO typical risk factors (Age, HTN, smoking, diabetes, hyperlipidemia, obesity)
- Mandatory consult with Base Physician and document authorizing physician's name and time of death.
- Notify appropriate authorities. Remain with the deceased until relieved by M.E., Law enforcement or Fire Department unless unsafe to do so.

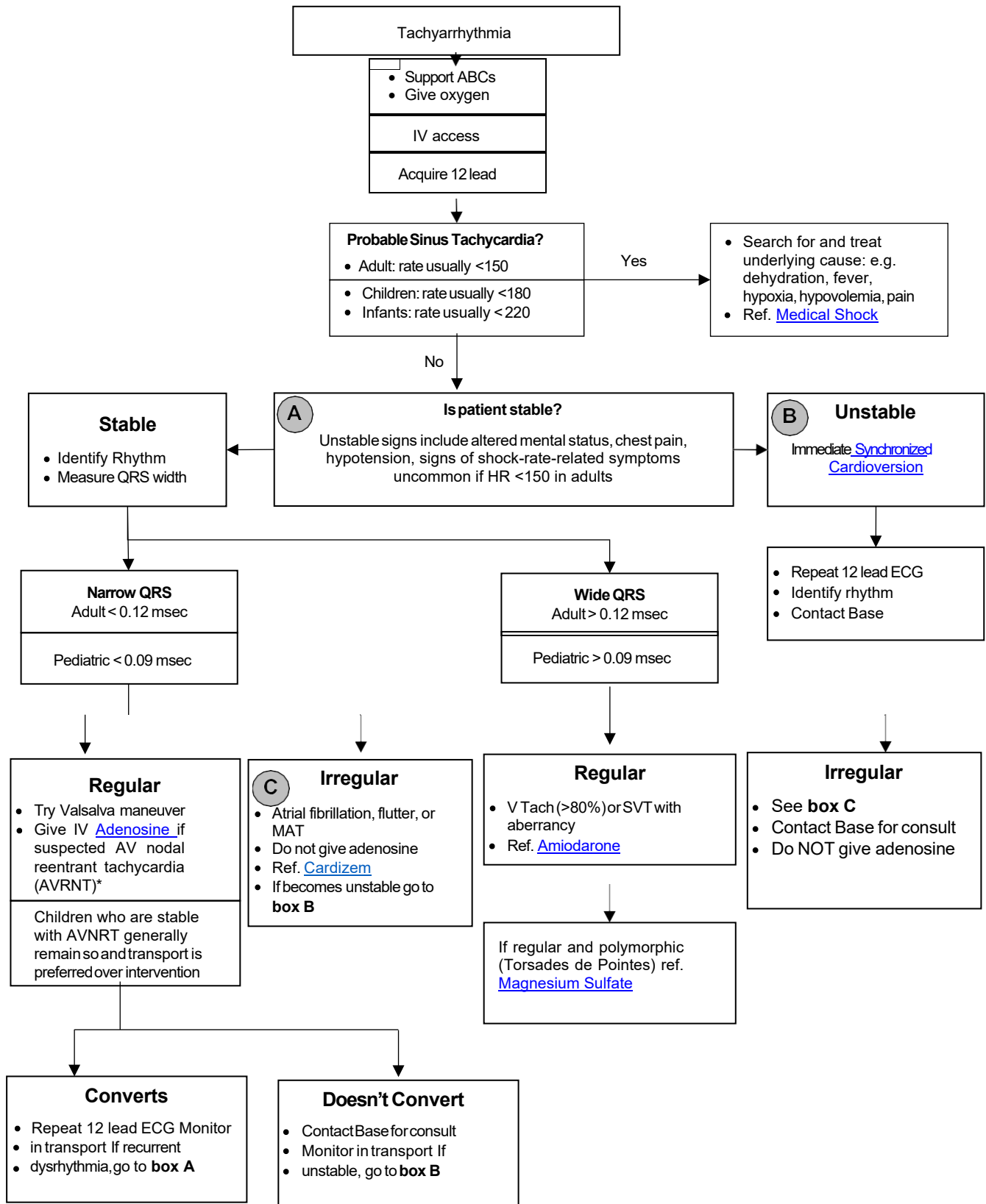
*Document findings (each responding agency)

- Position/location found
- Any movement of the patient/surroundings
- Access limitations
- Assessment

Procedure:	FR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Field Pronouncement – After Resuscitation has begun						SO

Weld County EMS Protocols

Section 337: Unstable Tachycardia



Weld County EMS Protocols

Section 337: Unstable Tachycardia

Procedures:	EMR	EMTB	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 potentially unstable. (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 Vagal Maneuvers	SO	SO	SO	SO	SO	SO
• Cardiac Monitor: Synchronized Cardioversion (Reference Protocol: Section 700)	_____	_____	_____	_____	_____	SO

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

Medications:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• Consider administration of: Fluid Bolus (Reference Protocol: Section 500)	_____	_____	SO	SO	SO	SO
• Consider administration of: Adenosine (Reference Protocol: Section 500)	_____	_____	_____	_____	DO/P	SO
• Consider administration of: Cardizem (Reference Protocol: Section 500)	_____	_____	_____	_____	_____	SO
• Consider administration of: Verapamil (Reference Protocol: Section 500)	_____	_____	_____	_____	_____	SO
• Consider administration of: Amiodarone (Reference Protocol: Section 500)	_____	_____	_____	_____	DO/P	SO
• Consider administration of: Lidocaine (Reference Protocol: Section 500)	_____	_____	_____	_____	DO/P	SO
• Consider administration of: Magnesium Sulfate (Reference Protocol: Section 500)	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 337: Unstable Tachycardia

- **Consider administration of: Ativan**
(Reference Protocol: Section 500) _____ DO/P SO
- **Consider administration of: Versed**
(Reference Protocol: Section 500) _____ DO/P SO

Section 400



Trauma Protocols

Weld County EMS Protocols

Section 401: General Trauma Protocol

- Rapid transport for penetrating trauma to Head, Neck, Chest, Abdomen, Pelvis. [Three Minute Protocol](#).

Control Hemorrhage

- Apply direct pressure
- Pack wounds with [Hemostatic Agents](#)
- or roller gauze as available
- [Tourniquet](#) if indicated

General Impression

- General impression
- ABCs, LOC
- Rapid Trauma Assessment
- Prepare for immediate transport
- SAMPLE history

General Care

- BGL
- Keep patient warm
- Apply pelvic stabilization if pelvic injury suspected
- Give O₂
- Assist ventilations and manage airway as indicated
- [Spinal Precautions](#) if indicated
- IV access

Assess Disability and Limitation

- Brief neuro assessment
- Extremity splinting if indicated
- Rapid transport to appropriate Trauma Center
- If unstable see [Traumatic Shock](#)

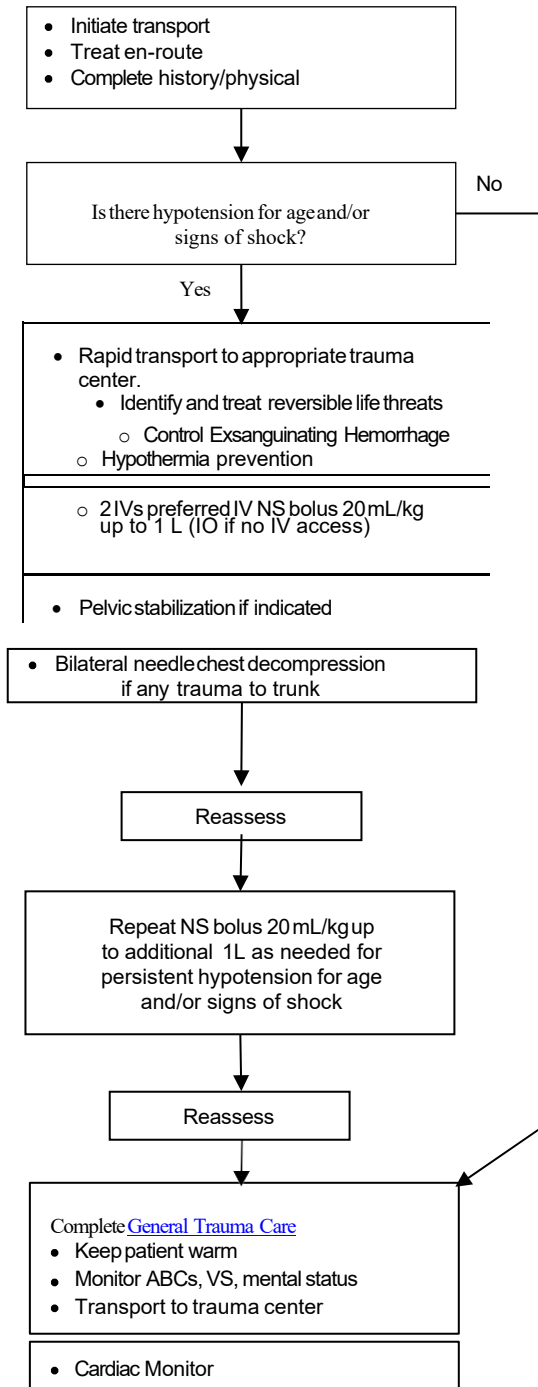
Weld County EMS Protocols

Section 401: General Trauma Protocol

<u>Assessment:</u>	<u>EMR</u>	<u>EMTB</u>	<u>EMTIV</u>	<u>AEMT</u>	<u>EMTI</u>	<u>EMTP</u>
• 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
<u>Procedures:</u>	<u>EMR</u>	<u>EMTB</u>	<u>EMTIV</u>	<u>AEMT</u>	<u>EMTI</u>	<u>EMTP</u>
• 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
<u>Medications:</u>	<u>EMR</u>	<u>EMTB</u>	<u>EMTIV</u>	<u>AEMT</u>	<u>EMTI</u>	<u>EMTP</u>
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• Consider administration of: Fluid Bolus (To maintain a blood pressure \geq 90 mm/Hg)	_____	_____	SO	SO	SO	SO
• Consider administration of: Pain Medication (Reference Protocol: Section 500)	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 402: Traumatic Shock



Hypotension for Age	
Age	Blood Pressure
<1 year	<70mmHg
1-10 years	<70 + (2 x age in years)
>10 years	MAP < 65mmHg

Tachycardia for Age	
Age	Heart Rate
<1 year	>160bpm
1-2 years	>150bpm
2-5 years	>140bpm
5-12 years	>120bpm
>12 years	>100bpm

Pediatric Fluid Administration

- Hypotension is a late sign in pediatric shock patients

Pediatric Shock

<p>Signs of Compensated Shock</p> <ul style="list-style-type: none"> Normal mental status Normal systolic blood pressure Tachycardia Prolonged (>2 seconds) capillary refill Tachypnea Cool and pale distal extremities Weak peripheral pulse 	<p>Signs of Decompensated Shock</p> <ul style="list-style-type: none"> Decrease mental status Weak central pulses Poor color Hypotension for age
--	---

Weld County EMS Protocols

Section 402: Traumatic Shock

Assessment:	EMR	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:	EMR	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
• Establish 2nd vascular access. If necessary. (Reference Protocol: Section 700)	_____	_____	SO	SO	SO	SO
• Needle Decompression. (If tension pneumothorax)	_____	_____	_____	_____	SO	SO
• Direct pressure:	SO	SO	SO	SO	SO	SO
• Bandaging:	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 402: Traumatic Shock

• Tourniquet:	SO	SO	SO	SO	SO	SO
• Relocation of Tourniquet (Hasty vs Deliberate)	DO/P	DO/P	DO/P	DO/P	DO/P	DO/P
• Hemostatic agents: (Topical)	SO	SO	SO	SO	SO	SO
• Pelvic Stabilization	_____	SO	SO	SO	SO	SO

Medications:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• Consider administration of: Fluid Bolus (To maintain a blood pressure \geq 90 mm/Hg)	_____	_____	SO	SO	SO	SO
• Fluid Bolus (To maintain a blood pressure \geq 90 mm/Hg)	_____	_____	SO	SO	SO	SO

Weld County EMS Protocols

Section 403: Abdominal Trauma

General Care:

- If penetrating trauma or severely unstable: [Three Minute Protocol](#) (“Load and Go”). Treat en route.
- See [General Trauma Care Protocol](#)

Assessment and Treatment:

- **Penetrating Trauma?**
 - Cover wounds, Cover viscera with saline moistened dressing, do not repack viscera. Rapid Transport.
 - Impaled object: Stabilize and transport. Do not attempt to remove the impaled object.
- **Hemorrhage:** Dress open wounds to prevent further contamination.
- **IV access**
 - Consider 2nd IV if MOI significant
- **Hypotension for age?**
 - Resuscitate per [Traumatic Shock Protocol](#)
- **Consider pain management**
- **Monitor ABC, VS, Mentation, SpO2, waveform capnography**
- **SAMPLE**
- **Early notification of the ED or appropriate facility**

Hypotension for Age	
Age	Blood Pressure
<1 year	<70 mmHg
1-10 years	<70 + (2 x age in years)

Tachycardia for Age	
Age	Heart Rate
<1 year	>160 bpm
1-2 years	>150 bpm
2-5 years	>140 bpm
5-12 years	>120 bpm

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	EMR	EMTB	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

Weld County EMS Protocols

Section 403: Abdominal Trauma

Procedures	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Consider spinal motion restriction. (Reference Protocol: Section 700) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Control hemorrhage. Dress open wounds to prevent further contamination. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Evisceration should be: Covered with sterile, saline soaked occlusive dressing. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Impaled objects should be: Stabilized for transport. 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Cardiac monitor: 4 lead EKG interpretation. (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> • Establish vascular access. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> • Establish 2nd vascular access. If necessary. 	_____	_____	SO	SO	SO	SO

(Reference Protocol: Section 700)

Medications	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Fluid Bolus (To maintain a blood pressure ≥ 90 mm/Hg) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> • Consider administration of: Pain Medication (Reference Protocol: Section 500) 	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 404: Amputations

General Care:

- See [General Trauma Care Protocol](#)

Complete Amputation or Life Threatening Bleeding:

- Apply [tourniquet](#) immediately –If not viable or effective, [Wound Packing](#)
- Large bore IV (x 2 if possible)
- If hypotensive for age, [TRAUMATIC SHOCK](#) protocol
- Note neurovascular exam before and after hemostasis
- Tourniquet can also be considered for:
 - Serious or life-threatening extremity hemorrhage where conditions (patient location, tactical or hazmat environment, etc.) prevent the use of standard hemorrhage control techniques.
 - Life threatening condition(s) that require immediate attention and significant extremity hemorrhage where the use of a tourniquet is more expedient than standard hemorrhage control.
- Wrap amputated part in moist sterile dressing, place in sealed bag, place bag on ice or in ice water. Do not freeze.
- Cover stump with moist sterile dressing covered by dry dressing

Partial Amputation:

- Control with direct pressure to area or vessel
- Apply tourniquet if bleeding not controlled with direct pressure ([Wound Packing](#) if not Viable or Effective)
- Cover with moist sterile dressing
- Splint in anatomic position
- Cover partially amputated part with moist sterile dressing and splint in anatomic position.

All Patients:

- Consider pain control
- Monitor and transport to appropriate trauma center
- Treat other injuries
- Once bleeding is controlled, irrigate contaminated wounds with saline as appropriate (does not apply to a “packed” wound):
 - Avoid if bleeding is difficult to control

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.
- Restriction of breathing from circumferential chest wound splinting can occur.
- Wounds that are not controlled with direct pressure and bandaging may require wound packing.
- Life threatening arterial hemorrhage in a groin or axilla may require hemostatic dressing.

Weld County EMS Protocols

Section 404: Amputations

Assessment:	EMR	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:	EMR	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
• Relocation of Tourniquet	DO	SO	SO	SO	SO	SO

(Hasty vs Deliberate)

Medications:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer: Oxygen (Reference Protocol: Section 500)	SO	SO	SO	SO	SO	SO
• Consider administration of: Pain Medication (Reference Protocol: Section 500)	---	---	---	---	DO/P	SO

Weld County EMS Protocols

Section 405: Anti-Coagulation Alert

Indications:

- Mechanism of injury indicative of isolated head trauma and patient taking Blood Thinners.

Qualifying Blood Thinners:

- Warfarin (Coumadin)
- Eliquis (Apixaban)
- Xarelto (Rivaroxaban)
- Plavix (Clopidogrel)
- Pradaxa (Dabigatran)
- Heparin
- Arixtra (Fondaparinux Sodium)
- Lovenox (Enoxaparin)
- Argatroban
- Savayasa (Edoxaban)

General Care:

- Penetrating Head Trauma, rapid transport. Full Trauma. [Three Minute Protocol](#).
- Treatment see: [Head Injury Protocol](#)
- [General Trauma Protocol](#)

GCS ≤ 8 Or Motor Score ≤ 5?

- Activate Full Trauma
- [Head Injury Protocol](#)

Treatment

- Correct hypoxia (Keep O2 Saturation 90%-98%).
- Treat hypotension with crystalloid (Adult MAP >75mmHg)
- Assume cervical spine injury in all patients with head injury.
- Elevate head of bed 30° (6-10 inches), or reverse Trendelenburg if full spinal precautions are needed
- Complete rapid trauma assessment
- Treat other injuries
- ABCs, VS, mental status, waveform capnography
- Monitor cardiac rhythm

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.

Weld County EMS Protocols

Section 405: Anti-Coagulation Alert

Assessment	EMR	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
• Glasgow Coma Scale every five minutes.	SO	SO	SO	SO	SO	SO

Procedures	EMR	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	EMR	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 (Reference Protocol: Section 500)	_____	DO/P	DO/P	SO	SO	SO

Weld County EMS Protocols

Section 405: Anti-Coagulation Alert

- **Consider administration of: Versed**
(Sedation for combative patients) _____ DO/P SO
- **Consider administration of: Ativan**
(Sedation for combative patients) _____ DO/P SO



Banner Paramedics/AMR Weld

1801 16th St
Greeley, CO. 80631
Supervisor Cell: (970) 302-2833

C.R. #: _____

Anti-coagulation Alert Check Sheet

Both of the following must be met:

1. ____ Mechanism of injury indicative of potential for bleeding in patient's head.
2. ____ Patient taking Blood Thinners.

One of the following blood thinners:

1. ____ Warfarin (Coumadin)
2. ____ Eliquis (Apixaban)
3. ____ Xarelto (Rivaroxaban)
4. ____ Plavix (Clopidogrel)
5. ____ Pradaxa (Dabigatran)
6. ____ Heparin
7. ____ Arixtra (Fondaparinux Sodium)
8. ____ Lovenox (Enoxaparin)
9. ____ Argatroban
10. ____ Savayasa (Edoxaban)
11. ____ Other _____

Patient name: _____

Sending Facility: _____

Sending Facility Phone Number: _____

POA Name and Phone Number: _____

Weld County EMS Protocols

Section 406: Burns

General Care:

- Stop burning process, remove clothing if not adhered to skin
- Flood with water only if flames or smoldering are present
- Burns 10% of TBSA (2nd & 3rd) or inhalation injury activate a limited trauma.
- Keep patient warm
- See [General Trauma Protocol](#)

Respiratory distress, hoarse voice or stridor?

- Oxygen NRB 15LMP (Consider low flow nasal canula if mild symptoms)
- Manage airway and assist ventilations as needed
- Consider CO if enclosed space
- Consider CN poisoning if unconscious or pulseless

Assessment and Treatment

- **Critical Burn: $\geq 20\%$ TBSA 2nd and 3rd degree burns [Rule of 9's]**
 - Start 2 large bore IV, Fluids per resuscitation guidelines.
- **Non-Critical Burn**
 - IVNS or LR TKO (If no signs of hypovolemia or shock)
- **Concerning Findings:**
 - Severe facial burns
 - Respiratory injury
 - Electrical or deep chemical burns
 - Underlying past medical history (specifically cardiac disease or DM)
 - Age < 10 or > 50
- Remove rings, jewelry, constricting items
- Dress burns with dry sterile dressings
- Assess and treat additional trauma that may be present. Consider mechanism of injury.
- Consider pain control

Fluid Resuscitation Infusion NS or LR:

14 & older	500ml/hr
5 – 13 years	250ml/hr
<5 years	125ml/hr D5W

Special Precautions:

- Assess and treat additional trauma that may be present. Consider mechanism of injury.
 - Blast injuries: Pneumothorax, fractures, spinal injuries.
- Edema will occur quickly in burned tissue. This can be lethal in airway burns.

Types of Burns

- **Thermal:** Remove from environment, put out fire on body
- **Chemical:** Brush off or dilute chemical (consider HAZMAT)
- **Electrical:** Make sure victim is de-energized and consider internal injuries (and hyperkalemia if cardiac arrest)

Weld County EMS Protocols

Section 406: Burns

Assessment:	EMR	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:	EMR	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.	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
• Endotracheal intubation.	_____	_____	_____	_____	SO	SO
Medications:	EMR	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 above Fluid Resuscitation Infusion NS or LR)	_____	_____	SO	SO	SO	SO
• Consider administration of: Pain Medication (Reference Protocol: Section 500)	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 407: Chest Trauma

General Trauma Care:

- If penetrating trauma or severely unstable: [Three Minute Protocol](#) (“Load and Go”). Treat en route.
- See [General Trauma Care Protocol](#)

Assessment and Treatment:

- **Can’t oxygenate or Can’t ventilate:**
 - Advanced Airway (if basic maneuvers are inadequate)
 - Consider tension pneumothorax and needle decompression
- **Penetrating Trauma?**
 - Rapid transport, stabilize in route
 - Open sucking chest wounds: 3 sided occlusive dressing or Asherman Seal.
 - Impaled objects obstructing the airway or compromising chest compressions (CPR) may be removed. All others should be stabilized for transport as found.
- Stabilize flail and /or impaled segments with a pillow or blankets by positioning patient
- **IV access large bore**
 - Consider 2nd IV
- **Hypotension for age?**
 - Resuscitate per [Traumatic Shock Protocol](#)
- **Consider tension pneumothorax:**
 - MUST HAVE: Hypotension/signs of shock
 - § With any of the following:
 - Absent breath sounds
 - Subcutaneous emphysema and /or crepitus
 - Obvious chest trauma
 - Tracheal shift
 - Jugular venous distention
 - Hemoptysis
 - Narrow Pulse pressure. Increased resistance to ventilations
 - Persistent cyanosis and progressive respiratory distress
 - Low oxygen saturation
 - [Needle decompression](#) is NOT indicated for pneumothorax without tension physiology
 - Consider bilateral decompression in traumatic pulseless arrest if patient is being resuscitated and any trauma to the trunk.
- **Consider pain management**
- **Monitor ABC, VS, Mentation, SpO2, waveform capnography**
 - Medical history.
 - Illnesses.
 - Drug or alcohol use.
- **Early notification of the ED or appropriate facility**

Hypotension for Age	
Age	Blood Pressure
<1 year	<70 mmHg
1-10 years	<70 + (2 x age in years)

Tachycardia for Age	
Age	Heart Rate
<1 year	>160 bpm
1-2 years	>150 bpm
2-5 years	>140 bpm
5-12 years	>120 bpm

Weld County EMS Protocols

Section 407: Chest Trauma

Special Precautions:

- 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:
- Stabilize flail and / or impaled segments with a pillow or blankets by positioning patient.

Scope: Assessment	EMR	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
Scope: Procedures	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Consider spinal motion restriction. (Reference Protocol: Section 700)	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

Weld County EMS Protocols

Section 408: Crush Injury

General Care:

- Rapid extrication and evacuation
- See [General Trauma Care Protocol](#)
- If penetrating trauma or severely unstable: [Three Minute Protocol](#) (“Load and Go”). Treat en route.

Specific Findings:

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

Assessment and Treatment

- Coordinate time of release with rescue personnel prior to extrication
- Intravenous access should be established with normal saline initial bolus of 20ml/kg (prior to extrication if possible)
- Consider sodium bicarbonate 1 mEq/kg (maximum dose of 50 mEq) IV bolus over 5 minutes
- Attach cardiac monitor. Obtain/interpret 12-lead EKG, if available. Carefully monitor for dysrhythmias or signs of hyperkalemia before and immediately after release of pressure and during transport.
- Consider the following post extrication
 - Continued resuscitation with normal saline (500-1000 cc/hr for adults, 20 mL/kg/hr for children)
 - If EKG suggestive of hyperkalemia administer IV fluids and:
 - [Calcium](#) IV/IO
 - [Albuterol](#) nebulizer
 - [Sodium Bicarbonate N/IO](#)
- If hypotensive for age, see [Traumatic Shock Protocol](#)

Special Precautions

- Causes of mortality:
 - Immediate
 - Severe Head Injury
 - Traumatic asphyxia
 - Torso injury with damage to intrathoracic or intra-abdominal organs
 - Early
 - Hyperkalemia
 - Hypovolemia/Shock
 - Late
 - Renal Failure
 - Coagulopathy/hemorrhage
- Patients may present with very few vital signs and symptoms. Therefore, maintain a high index of suspicion for any patient with a compressive MOI.
- A fatal complication of crush syndrome is hyperkalemia.
- Avoid Lactated Ringers (it contains potassium).

Weld County EMS Protocols

Section 408: Crush Injury

Assessment:	EMR	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:	EMR	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:	EMR	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
• Consider administration of: Calcium (Reference Protocol: Section 500)	_____	_____	_____	_____	DO / P	SO

Weld County EMS Protocols

Section 409: Head Injuries

General Care:

- If penetrating trauma or severely unstable: [Three Minute Protocol](#) (“Load and Go”). Treat en route.
- Primary Focus: Avoid Hypotension, Avoid Hypoxia
- See [General Trauma Protocol](#)

GCS ≤8 or Motor Score ≤5 ?

Peds: AVPU (P) or (U)?

- Open airway, assist ventilations
- Consider advanced airway if can’t ventilate, can’t oxygenate. Support ventilations, (goal EtCO2 35-45 or SaO2 >90%)
- Full trauma activation

Treatment

- Correct hypoxia (Keep O2 Saturation 90-98% or EtCO2 35-45).
- Treat hypotension with crystalloid in 20mL/kg boluses.
- Assume cervical spine injury in all patients with head injury: Ensure no neck “kinks.” Fit collar appropriately.
- Elevate head of bed 30° (6-10 inches), or reverse Trendelenburg if full spinal precautions are needed
- Complete rapid trauma assessment
- ABCs, VS, mental status, waveform capnography
- Complete neuro exam
- Treat other injuries
- Do not pack ears if draining fluid
- Monitor cardiac rhythm

Head Injury Hypotension for Age	
Age	Blood Pressure
1-12 Month	<70 mmHg
1-10 years	<70 + (2x age in years)

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.
- Nasal intubation is relatively contraindicated with mild face trauma. Avoid if mid-face is grossly unstable.

Assessment:	EMR	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
• Glasgow Coma/AVPU Scale every five minutes.	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 409: Head Injuries

Procedures:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> Spinal motion restriction w/ head elevated 6 - 10 inches. (Reference Protocol: Section 700) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Control any hemorrhage: (Reference Protocol: Section 700) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Be prepared to intubate: Oral Endotracheal (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> Be prepared to intubate: Nasal Endotracheal (Reference Protocol: Section 700) 	_____	_____	_____	_____		SO
<ul style="list-style-type: none"> Capnography (Reference Protocol: Section 700) 	_____	PPA	PPA	SO	SO	SO
<ul style="list-style-type: none"> Cardiac monitor: 4 lead EKG acquisition. (Reference Protocol: Section 700) 	_____	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Cardiac monitor: 4 lead EKG interpretation. (Reference Protocol: Section 700) 	_____	_____	_____	_____	SO	SO
<ul style="list-style-type: none"> Establish vascular access. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
<ul style="list-style-type: none"> Establish 2nd vascular access if necessary. (Reference Protocol: Section 700) 	_____	_____	SO	SO	SO	SO
Medications:						
	EMR	EMT B	EMTIV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> Administer: Oxygen (Reference Protocol: Section 500) 	SO	SO	SO	SO	SO	SO
<ul style="list-style-type: none"> Consider administration of: Zofran (IV, or ODT) (Reference Protocol: Section 500) 	_____	DO/P	DO/P	SO	SO	SO
<ul style="list-style-type: none"> Consider administration of: Versed (Sedation for combative patients) 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> Consider administration of: Ativan (Sedation for combative patients) 	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 410: Spinal Injury Assessment and Treatment Adult and Pediatrics

General Care:

- Full spinal precautions if any neurologic symptoms consistent with spinal injury
- Document neuro exam before and after immobilization
- See [General Trauma Protocol](#)

Treatment

- Rapid transport to trauma center
- Large bore IV, consider 2nd line.
- Treat shock [Traumatic shock protocol](#)
- Complete assessment
- Treat other injuries
- Monitor neuro changes
- Monitor ABCs, VS, mental status, wave form capnography
- Consider pain management

Special Considerations:

- No spinal motion restriction will be removed unless the call results in a refusal
- Central Cord Syndrome: Incomplete spinal cord injury and causes painful burning or sensory changed in shoulders and upper extremities bilaterally and spares the lower extremities. It may be subtle.
- Penetrating neck trauma is unlikely associated with unstable spinal injury. Use clearance guidelines.
- In addition, any blunt trauma injury resulting in a trauma activation (limited or full) 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.
- When indicated, SMR should apply to the entire spine (backboard, scoop, vacuum mattress or just ambulance cot).
- Pay particular attention to manual SMR during transfer of the patient. Full SMR as described above should be used during transfers.
- **Pediatrics:**
 - Because of the variation in the head size to body ratio in young children, additional padding under the shoulders is often necessary to avoid excessive cervical spine flexion with SMR.
 - Age alone should not be a factor in choosing SMR. Young children pose communication barriers, but this alone should not mandate SMR. Use the listed criteria to the best of your ability.

Weld County EMS Protocols

Section 410: Spinal Injury Assessment and Treatment Adult and Pediatrics

Spinal Injury Clearance ADULT:

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 (numbness, paresthesia or motor weakness)	YES
NO	Distracting circumstances or injury (long bone fracture, degloving, crush injuries, large burns, emotional distress, communication barrier, etc) or any similar injury that impairs the patient's ability to contribute to a reliable examination.	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 Or High risk MVC, high impact driving injury or substantial torso injury.	YES
NO	Anatomic deformity of the spine	YES

Weld County EMS Protocols

Section 410: Spinal Injury Assessment and Treatment Adult and Pediatrics

Spinal Injury Clearance PEDIATRICS:

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	GlasgowComaScale<15 Or Apnea, agitation, hypopnea, somnolence	YES
NO	Drug or Alcohol Impairment	YES
NO	Any presence of mid-line spinal pain or tenderness subjectively or on exam, with or without range of motion testing.	YES
NO	Any presence of neurological deficits (numbness, paresthesia or motor weakness)	YES
NO	Distracting circumstances or injury (long bone fracture, degloving, crush injuries, large burns, emotional distress, communication barrier, etc) or any similar injury that impairs the patient's ability to contribute to a reliable examination.	YES
NO	Torticollis	YES
NO	Provider Concern for injury Or High risk MVC, high impact driving injury or substantial torso injury.	YES
NO	Anatomic deformity of the spine	YES

Weld County EMS Protocols

Section 411: Termination of Resuscitation/Field Pronouncement of Traumatic Arrest

Purpose

- Provide direction for termination of resuscitative efforts and field pronouncement of patients in traumatic cardiac arrest in consultation with Base Physician. EMS should transport any patient perceived to be viable after appropriate resuscitation efforts, or if scene dynamics or public perception necessitates transport.

Indications

- Unsuccessful resuscitative efforts if trauma, after 10 minutes of resuscitative efforts, including intubation or supraglottic airway (cricothyrotomy if indicated), fluid resuscitation per protocol, pelvic binder if indicated, chest needle decompression if indicated.
- Follow Three-Minute Protocol if applicable

Contraindications

- ROSC at any point in care
- Hypothermic patients
- Drowning (per protocol)
- Lightning strike / electrocution
- Pregnant patient with estimated gestational age ≥ 20 weeks
- Family request for continued efforts
- Persistent VF/VT

*Mandatory consult with Base Physician and document authorizing physician's name and time of death.

*Remain with the deceased or leave the deceased with another first responder, unless unsafe to do so.

*Document objective findings (each responding agency)

-position/location found

*Any relocation of the patient

*Access limitations

*Assessment

Procedure:

	FR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Field Pronouncement – After Resuscitation has begun	—	—	—	—	—	SO

Weld County EMS Protocols

Section 412: Three Minute Protocol

Indication:

- **Penetrating Trauma:** Head. Neck. Chest. Abdomen. Pelvis.
- **Trauma with hemodynamic instability** (treat in route).
- **With the above specific findings the following should occur:**
 - Early notification of the emergency department.
 - Emergency transport to the appropriate facility (“load and go”) 3-minute scene time.
 - Helicopter utilization with ground transport times that exceed 15 minutes.
- **Reference protocol related to injury in-route**

Assessment:	EMR	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:	EMR	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:	EMR	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 ablood pressure ≥90 mm/ Hg)	_____	_____	SO	SO	SO	SO

Section 413: Trauma Activation Criteria - Limited

<p align="center">LIMITED Trauma Activation Criteria Persons who sustain injury within 24 hours:</p>	
<p align="center">ANY MECHANISM OF INJURY</p>	
<p align="center">Adult (15+ yrs)</p>	<p align="center">Child (0-14 yrs) in Blue</p>
<ul style="list-style-type: none"> • Falls (Adult): > 20 ft; 	<ul style="list-style-type: none"> • (Child): > 15 ft or 3x height
<ul style="list-style-type: none"> • High Risk auto crash, with: <ul style="list-style-type: none"> - Intrusion of vehicle ≥ 12” in occupant compartment > 18” any other site - Ejection (partial or complete) from automobile - Death in same passenger compartment - Moderate/high speed crash with unrestrained or improperly restrained child 	
<ul style="list-style-type: none"> • Auto vs pedestrian or cyclist: <ul style="list-style-type: none"> - Thrown - Run over - Significant impact 	
<ul style="list-style-type: none"> • Motorcycle Crash >20 mph 	
<ul style="list-style-type: none"> • High Energy Dissipation, such as: <ul style="list-style-type: none"> ○ Ejection from motorcycle, ATV, Animal, etc. ○ Striking fixed object with momentum ○ Blast or explosion 	
<ul style="list-style-type: none"> • High Energy Electrical Injury 	
<p align="center">OTHER CONSIDERATIONS</p>	
<ul style="list-style-type: none"> • Older adult: Risk of death increases after age 55 years • Anticoagulation or bleeding disorders • End-stage renal disease requiring dialysis • Pregnancy > 20 weeks • Suspicion of hypothermia • Intra-abdominal injury: abdominal tenderness, distension, or seatbelt sign on the torso – ALL AGES • Burns: <ul style="list-style-type: none"> ○ > 10% TBSA (2° or 3°) ○ And/ or burns to the hands, face, feet, groin ○ and/ or Inhalation Injury • EMS Provider Judgment <ul style="list-style-type: none"> ○ Consider triage to Higher Level Pediatric Trauma Center • Low impact mechanism for older adults with suspicion of injury • Suspected Non-Accidental Trauma (any age) 	
<p>01/2021 Banner Health</p>	

FULL Trauma Activation Criteria

Persons who sustain injury with any of the following:

ANY PHYSIOLOGIC CRITERIA									
	Adult (15+ yrs) Child 0-14 yrs in Blue								
AIRWAY	Intubated or Assisted Ventilation								
BREATHING	Resp Rate < 10 or > 29/min Signs of resp insufficiency Hypoxia Accessory muscle use Grunting Abdominal breathing								
CIRCULATION	Confirmed Systolic BP < 90 at any time Confirmed Systolic BP < 110 at any time - age 65 + Signs/Symptoms of abnormal perfusion, such as: Decreased capillary refill (> 2 sec) Low systolic BP for age <table style="margin-left: 40px;"> <tr> <td>Age</td> <td>SBP (MM/hG)</td> </tr> <tr> <td>: < 1 yr</td> <td>: < 60</td> </tr> <tr> <td>: 1-10 yrs</td> <td>: < 70 + (2 x age) :</td> </tr> <tr> <td>: >=11yrs</td> <td>: <90</td> </tr> </table>	Age	SBP (MM/hG)	: < 1 yr	: < 60	: 1-10 yrs	: < 70 + (2 x age) :	: >=11yrs	: <90
Age	SBP (MM/hG)								
: < 1 yr	: < 60								
: 1-10 yrs	: < 70 + (2 x age) :								
: >=11yrs	: <90								
DEFICIT	Total GCS score ≤ 8 or GCS MOTOR Score ≤ 5 AVPU-Response to Pain or Unresponsive (peds) Deterioration of Previously Stable Patient Transfers Requiring Blood Transfusion ED Physician Discretion								
ANY ANATOMIC CRITERIA (Known or Suspected)									
Penetrating injuries to the Head, Neck, Torso, or extremities above the elbow or knee Flail Chest (Chest wall instability or deformity) Two or more Proximal Long Bone Fractures Unstable Pelvic Fracture Paralysis or Neurological Deficit Amputation above the wrist or ankle Crushed, Degloved, Mangled or Pulseless Extremity Open or Depressed Skull Fracture									

Section 500a



Medications - PAIN MANAGEMENT

(August 2020)

Weld County EMS Protocols

Section 501a: Pain Management

Pain Management Goals:

- Reaching a pain-free state is unrealistic.
- If used, medications should be administered incrementally to a point where pain is tolerable.

Assessment of Pain

- Determine a patient's pain, consider using a pain scale
- Also use clinical judgment, don't rely only on a pain scale as this can lead to inadequate pain control or over sedation.
 - Adults: use numeric rating scale (0-10)
 - Pediatrics:
 - Use Pediatric Observational Scale.
 - 0-3=mild; 4-6=moderate; 7-10=severe

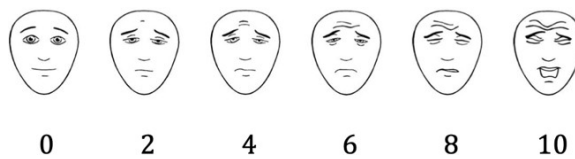
Age < 4 years- FLACC: Faces, Legs, Cry, Consolability Behavioral Scale

Categories	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distractible	Difficult to console or comfort

Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and ten.

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Ages 4-12 years – Faces Pain Scale



International Association for the Study of Pain® (IASP)

General Pain Management Approach

- Position of comfort
- Splint/support painful areas
- Apply ice and/or compression if warranted
- Some conditions can be harmed by opiates or aggressive pain control. It might be better to have the patient evaluated by a physician prior to administration of opiates (opioid dependency, chronic pain including back and abdominal pain, headaches).

Weld County EMS Protocols

Section 501a: Pain Management

Mild Pain

- Consider acetaminophen or Ibuprofen

Moderate Pain

- Consider acetaminophen or Ibuprofen
- Consider titrating IV or IM opiates until pain is tolerable or dosing maximized
- Consider ½ dosing in elderly or frail patient
- Consider anti emetics if patient develops nausea or vomiting

Severe Pain

- Consider titrating IV or IM opiates until pain is tolerable or dosing maximized
- Consider ½ dosing in elderly or frail patient
- Consider anti emetics if patient develops nausea or vomiting
- Consider administration of benzodiazepines for *severe* pain management and/or muscle relaxation only after maximum opiate therapy is attempted and failed. The goal of pain control is to make patients comfortable, not to completely alleviate pain.

Weld County EMS Protocols

Section 503a: Fentanyl (Sublimaze)

Pharmacology / Actions:

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

Indications:

- Moderate to severe pain
- Can be used as an alternative to Morphine for patients with suspected ischemic chest pain.
- Preferred opiate for those patients unable to tolerate Morphine due to compromised hemodynamics.

Contra - Indications:

- Respiratory depression or insufficiency.

Precautions:

- Fentanyl may cause respiratory depression. Have resuscitation equipment available. Have Narcan readily available.
- May cause Euphoria, dizziness, Nausea/Vomiting.
- Rapid push/high doses may cause jaw and or chest 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.
- Administer opiates slowly.
- Do not expect complete relief of pain.
- Medication administered should be titrated to pain relief.

Co-Administration of Benzodiazepines and Opiates:

Opiates are dangerous when combined with other CNS depressants like alcohol and benzodiazepines, and can cause fatal CNS and respiratory depression. The co-administration of opioid and BZD carries an FDA blackbox warning for this reason. The combination of benzodiazepines and opiates, for *severe* pain management and/or muscle relaxation is permitted only after maximum opiate therapy is attempted and failed. The goal of pain control is to make patients comfortable, not to completely alleviate pain.

The following required safeguards must be met prior to co-administration:

- GCS 15 (patient responds appropriately to all verbal and physical contact)
- Patient independently maintains an open airway and normal breathing pattern
- Patient maintains normal hemodynamics
- The following interventions are mandatory: IV/IO access, continuous monitoring (Pulse Oximetry, waveform capnography, ECG monitoring), Q 15 minute blood pressure monitoring) supplemental O2.

a

Weld County EMS Protocols Section 503a: Fentanyl (Sublimaze)

Medication Dose: Adult

- General dose: 1.0 to 2.0 mcg / kg IV/IO/IN/IM.
- Maximum dose: 200 mcg.
- Subsequent doses: Direct physician order after maximum dose of 200 mcg has been reached.

Medication Dose: Pediatric

- General dose: 1.0 to 2.0 mcg / kg IV/IO/IN/IM.
- Maximum dose: 2.0 mcg / kg.
- Subsequent doses: Direct physician order after maximum dose of 2.0 mcg / kg has been reached.

Administration:

	EMR	EMTB	EMT IV	AEMT	EMT I	EMTP
• Administration of Fentanyl: (Sublimaze)	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 505a: Morphine

Pharmacology / Actions:

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

Indications:

- Moderate to severe pain.
- Chest pain that is secondary to suspected myocardial ischemia.

Contra - Indications:

- Respiratory depression or insufficiency.
- Hypotension or shock.
- Trauma with concern for internal or unstable hemorrhage (e.g. Full trauma activations, multi-system trauma, etc).

Precautions:

- Morphine may cause respiratory depression. Have resuscitation equipment available. Have Narcan readily available.
- May cause Euphoria, dizziness, Nausea/Vomiting.
- Use with caution in right ventricular infarction.
- Respiratory depression may outlast pain control effects. Monitor your patient.
- Administer opiates slowly.
- Do not expect complete relief of pain.
- Medication administered should be titrated to pain relief.

Co-Administration of Benzodiazepines and Opiates:

Opiates are dangerous when combined with other CNS depressants like alcohol and benzodiazepines, and can cause fatal CNS and respiratory depression. The co-administration of opioid and BZD carries an FDA blackbox warning for this reason. The combination of benzodiazepines and opiates, for *severe* pain management and/or muscle relaxation is permitted only after maximum opiate therapy is attempted and failed. The goal of pain control is to make patients comfortable, not to completely alleviate pain.

The following required safeguards must be met prior to co-administration:

- GCS15 (patient responds appropriately to all verbal and physical contact)
- Patient independently maintains an open airway and normal breathing pattern
- Patient maintains normal hemodynamics
- The following interventions are mandatory: IV/IO access, continuous monitoring (Pulse Oximetry, waveform capnography, ECG monitoring), Q 15 minute blood pressure monitoring) supplemental O2.

Weld County EMS Protocols

Section 505a: Morphine

Medication Dose: Adult

- Dose: 2.0 mg to 4mg IV/IO q5-10 minutes. Titrate to effect.
- Maximum dose: 10 mg IV/IO
- Subsequent doses: Direct physician order after maximum dose of 10.0 mg has been reached.

Medication Dose: Pediatric

- General dose: 0.1 mg / kg to 0.2 mg / kg IV/IO.
- Subsequent doses: Direct physician order after maximum dose of 0.2mg/kg has been reached.

Administration:

	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Administration of Morphine:	_____	_____	_____	_____	DO/P	SO

Section 500



Medications

(July 2021)

Weld County EMS Protocols

Section 501: Acetylsalicylic Acid (ASA)

Pharmacology / Actions:

- Inhibits formation of thromboxane A², a platelet aggregating and vaso constricting prostaglandin.
- Analgesic and antipyretic.
- Maintains vessel patency after thrombolytic therapy.

Indications:

- Suspected acute myocardial infarction.

Contra - Indications

- Active peptic ulcer disease or recent GI bleeding
- Suspected Aortic Dissection
- Recent intracranial hemorrhage

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.

Medication Dose:

- 324 mg PO. (4 chewable tablets that are 81mg each)

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 324 mg PO.	_____	SO	SO	SO	SO	SO

Weld County 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 a approximately 10 seconds.
- Transient effects can include heart block, asystole, arrhythmias, flushing, dyspnea, chest pain and anxiety.

Indications:

- EKG rhythm that reveals a supra - ventricular tachycardia. (SVT)

Contra - Indications:

- Wide complex tachycardia
- 2nd or 3rd degree AV block
- Suspected acute myocardial infarction
- Heart Transplant

Precautions:

- Consider 6mg dose with patients over 55 years old with extensive cardiac history.
- All patients should be attached to defibrillator pads and pads plugged in.
- Continuous rhythm strip should be collected during any attempted cardioversion.
- Preferred IV placement is AC or higher.

Medication Dose: Adult

- Initial dose: 12 mg. IV/IO rapid push followed by a 20cc bolus of normal saline.
- Repeat dose: 12 mg. IV/IO rapid push followed by a 20cc bolus of normal saline.
- **Maximum dose: 24 mg**

Medication Dose: Pediatric

- Initial dose: 0.1mg / kg. rapid push followed by a 5cc bolus of normal saline.
- Repeat dose: 0.2 mg / kg. rapid push followed by a 5cc bolus of normal saline.
- **Maximum 1st dose: 6 mg**
- **Maximum 2nd dose: 12 mg**

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Adenosine (Adenocard):	_____	_____	_____	_____	DO / P	SO

Weld County EMS Protocols Section

503a: Albuterol (Proventil)

Pharmacology / Actions:

- Beta - adrenergic agent used to relieve bronchospasm.
- Drives potassium into cells (lowers serum potassium levels)

Indications:

- Acute bronchial spasm secondary to the following:
 - Acute asthma.
 - Acute allergic reactions.
 - Chronic Obstructive Pulmonary Disease (COPD).
- Acute onset of hyperkalemia with EKG changes, including cardiac arrest, known dialysis patients or potassium overdose.

Contra - Indications:

- A known history of sensitivity to beta-2 adrenergic medications; i.e.: Ventolin, Proventil
- Active tachy dysrhythmias

Precautions:

- Use with caution in patients with the following conditions:
 - Acute hypertension. Systolic blood pressure > 200 mm / Hg. Diastolic blood pressure > 120 mm / Hg.
- Adverse reactions include:
 - Palpitations
 - Tremor
 - Tachycardias and arrhythmias

Medication Dose: Adult

- Bronchospasm: 2.5 mg. Nebulized. Repeat for therapeutic effect.
- Hyperkalemia: 10 mg nebulized, up to a maximum dose of 20mg for extended transport times (specific to hyperkalemia only).

Medication Dose: Pediatrics

- 2.5mg Nebulized. Repeat for therapeutic effect.

Administration:	EMR	EMT B	EMT IV	AEMT	EMTI	EMT P
• Administration of Albuterol: (Proventil / Ventolin)	_____	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 503b: Levalbuterol

Pharmacology / Actions:

- Beta 2- adrenergic receptor agonist used used to relieve bronchospasm.
- Drives potassium into cells (lowers serum potassium levels)

Indications:

- 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 beta-2 adrenergic medications; i.e.: Ventolin, Proventil
- Active tachy dysrhythmias

Precautions:

- Use with caution in patients with the following conditions:
 - Acute hypertension. Systolic blood pressure > 200 mm / Hg. Diastolic blood pressure > 120 mm / Hg.
- Adverse reactions include:
 - Palpitations
 - Tremor
 - Tachycardias and arrhythmias

Medication Dose: Adult

- Bronchospasm: 2.5 mg* Nebulized. Repeat for therapeutic effect.
- *is provided in 1.25mg/3ml, you must use two vials to achieve the 2.5 mg dosing for bronchospasm.

Medication Dose: Pediatrics

- 1.25mg* Nebulized. Repeat for therapeutic effect.
- * is provided in 1.25mg/3ml, use only one vial for the 1.25mg dosing for bronchospasm
- **not approved for pediatrics under the age of 4 years

Administration:	EMR	EMT B	EMT IV	AEMT	EMTI	EMT P
● Administration of Levalbuterol	_____	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 504: Amiodarone (Cordarone)

Pharmacology / Actions:

- Vaughn-Williams Class I, II, Primarily III and IV
- Rapid onset
- Prolongs action potential and refractory period
- Slows sinus rate.
- Increases the PR & QT intervals.
- Decreases peripheral vascular resistance.
- Increases the refractory period of the AV node.

Indications:

- Pulseless or unstable VF/VTach after 1 shock
- Stablewide complex tachycardia not requiring immediate cardioversion

Contra - Indications:

- Sinus bradycardia
- 2nd and 3rd degree A.V. blocks
- Cardiogenic shock

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 Torsades de Pointes, Magnesium Sulfate is the medication of choice.

Medication Dose: Adult

- **Cardiac Arrest:**
 - Initial Dose: 300 mg IV/IO
 - Second dose: 150 mg IV/IO
- **Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin / Significant Ectopy**
 - Initial dose: 150 mg infusion over 10 minutes. (15 mg / min)
 - Repeat dose: 150 mg dose after 10 minutes as needed.

Weld County EMS Protocols

Section 504: Amiodarone (Cordarone)

Medication Dose: Pediatric

- **Cardiac Arrest:**
 - Initial dose: 5 mg/kg IV/IO initial bolus.
 - Subsequent doses: Direct order.
- **Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin / Significant Ectopy**
 - Initial dose: Infusion: 5 mg/kg IV/IO bolus over 10 minutes.
 - Subsequent dose: Direct Order

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

** 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.

Weld County EMS Protocols

Section 505: Ativan (Lorazepam)

Pharmacology / Actions:

- Benzodiazepines (BZD) are sedative hypnotics that increase GABA, the primary inhibitory neurotransmitter.
- Anticonvulsant
- Skeletal muscle relaxant
- Sedative
- Anxiolytic

Indications:

- Status epilepticus [Seizure \geq 5 minutes, > 3 seizures in 24 hours, recurrent seizures without recovery from post ictal state] -- Benzodiazepines are not indicated for routine, non-status seizures.
- Chemical restraint for uncontrollable/hysterical patients (Not Excited Delirium or Profound Agitation)
- Sedation prior to cardioversion or transcutaneous pacing
- Adjunct for treatment of severe pain in adults after maximum opiate therapy
- Severe anxiety
- Severe shivering in hypothermia
- Sedation after a patient has been successfully intubated

Contraindications:

- Hemodynamic instability (other than sedation for cardioversion or pacing)
- Respiratory depression or any respiratory distress (Asthma, COPD, etc)
- DKA or suspected acidotic state

Precautions:

- Respiratory depression/apnea/respiratory failure, especially in the setting of CNS depression.
- Hypotension, tachycardia.
- Sedation
- Dizziness. Ataxia
- Be prepared to manage the airway in case of respiratory depression.
- Use cautiously in the elderly and very young.
- Use caution for patients with a history of using depressants such as using alcohol.
- Long acting

Weld County EMS Protocols

Section 505: Ativan (Lorazepam)

CO-Administration of Benzodiazepines and Opiates:

BZD are dangerous when combined with other CNS depressants like alcohol and opioids, and can cause fatal CNS and respiratory depression. The co-administration of opioid and BZD carries an FDA blackbox warning for this reason. The combination of benzodiazepines and opiates, for *severe* pain management and/or muscle relaxation is permitted only after maximum opiate therapy is attempted and failed. The goal of pain control is to make patients comfortable, not to completely alleviate pain. The following required safeguards must be met prior to co-administration:

- GCS15 (patient responds appropriately to all verbal and physical contact)
- Patient independently maintains an open airway and normal breathing pattern
- Patient maintains normal hemodynamics
- The following interventions are mandatory: IV/IO access, continuous monitoring (Pulse Oximetry, waveform capnography, ECG monitoring), Q 15 minute blood pressure monitoring) supplemental O2.

Medication Dose & Route: Adult

Status Epilepticus/Chemical Restraint:

- Initial dose: 2.0mg IV/IO/IM/IN over 20-30 sec
- Subsequent doses: 1.0 to 2.0 mg IV/IO/IM/IN over 20-30 sec

Non-traumatic Musculoskeletal Spasms / Severe Anxiety / Severe Shivering:

- Initial dose: 1.0 mg IV/IO/IM/IN over 20-30 sec
- Subsequent doses: Direct order.

Medication Dose & Route: Pediatric

Status Epilepticus:

- Initial dose 0.05 to 0.1 mg/kg IM/IV/IO over 20-30 sec
- Subsequent doses: 0.05 to 0.1 mg/kg IM/IV/IO over 20-30 sec
- **Maximum dose of 2 mg in pediatric patients.**

Administration:

	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
● Administration of Ativan (Lorazepam):	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 506: Atropine

Pharmacology/Mechanism of Action:

- Parasympathetic, anticholinergic blocking agent that:
 - Increases heart rate.
 - Increases conduction through the AV node.
 - Decreases motility and tone to the gastrointestinal tract.
 - Decreases action and tone of the urinary bladder.
 - Dilate pupils, dry skin, dry eyes, dry mouth.

Indications:

- The administration of Atropine should be considered in the following situations:
 - Symptomatic Bradycardia (syncope, near syncope, hypotension, confusion)
 - **Adults: HR < 50** and the patient has signs/symptoms due to bradycardia
 - **Peds: HR < 60 and the patient has signs/symptoms due to bradycardia**
 - 2nd degree or 3rd degree A.V. block as well as pacemaker failures
 - **Note:* For patients with symptomatic bradycardia, transcutaneous pacing is the treatment of choice. Atropine should be tried while preparing to pace.
 - Organophosphate poisonings and or Nerve Agent poisonings that exhibit cholinergic reactions.
 - SLUDGE: (Salivation, Lacrimation, Urination, Defecation, GI distress, Emesis.

Contraindications:

- Stable bradycardia (without medical control)
- Bradycardia in the setting of known or suspected acute myocardial infarction
- An EKG rhythm that reveals atrial or supraventricular dysrhythmia

Precautions:

- History of glaucoma
- Anticholinergic toxidrome in overdose: *Blind as a bat, mad as a hatter, dry as a bone, red as a beet."*
- Headache, blurred vision, disorientation, and restlessness.
- Tachycardia. Palpitations. Hypertension.
- Bradycardias in the setting of an acute M.I. are often a protective mechanism to lower the hearts demand for oxygen. Atropine is contraindicated in this setting.
- 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.

Weld County EMS Protocols

Section 506: Atropine

Medication dose: Adult

- **Symptomatic Bradycardia** (While preparing to pace):
 - Initial dose: 1.0 mg IV/IO (repeat q3-5 minutes PRNMax 3mg total) while preparing to pace
- **Organophosphate Poisoning and / or Nerve Agent Poisonings:**
 - General dose: 1.0-2.0 mg IV/IO or 2mg IM x1
 - Subsequent doses: As directed by a Base Physician.

Medication dose: Pediatrics

- **Symptomatic Bradycardia** (While preparing to pace):
 - Initial dose: 0.02 mg/kg. Minimum dose 0.1mg, maximum single dose 0.5mg
 - Repeat dose as directed by Base Physician
- **Organophosphate Poisoning and / or Nerve Agent Poisonings:**
 - General dose: 0.02mg/kg IV/IO x 1 or:
 - <2 Years Old: 0.05mg/kg IM
 - 2-10 Years Old: 1mg IM
 - >10 Years Old: 2mg IM
 - Subsequent doses: As directed by a Base Physician.

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
● Bradycardia	—	—	—	—	DO	SO
● Organophosphate and / or Nerve Agent Poisonings	—	—	—	—	DO	SO

Weld County EMS Protocols

Section 507: Atrovent (Ipratoprium Bromide)

Pharmacology / Actions:

- Anticholinergic agent that relaxes bronchial smooth muscles and reduces airway secretions.

Indications:

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

****Note:** Atrovent should be used in conjunction with Albuterol/Levalbuterol for the medical

conditions listed above. **Contra - Indications:**

- Known hypersensitivity to Atrovent.
- Patients <2 years of age.

Precautions:

- Extreme tachycardia can occur with use. In those cases discontinue the nebulizer.
- Allergic reactions can be produced by Atrovent including urticaria, angioedema, and or worsening bronchial spasm.

Medication Dose: Adult and Pediatric (≥ 2 years old)

- General dose: 500 mcg mixed with 2.5 mg of Albuterol/levalbuterol q5-10 minutes PRN Wheezing or bronchospasm, Maximum Atrovent 3 doses.

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:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
● Administration of Atrovent: (Ipratoprium Bromide)	_____	_____	_____	DO/P	DO/P	SO

Weld County EMS Protocols

Section 508: Benadryl (Diphenhydramine)

Pharmacology / Actions:

- Antihistamine.
- Anti - parkinsonian effect.
- Anticholinergic.

Indications:

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

- An acute allergic reaction/Anaphylaxis.
- An acute dystonic reaction to antipsychotic medications.

****Note:** In patients with anaphylaxis (Multisystem involvement, epinephrine is first-line). Benadryl can be given alone for patients with no airway or multisystem involvement). See Allergic Reaction Protocol.

Contra - Indications:

- None

Precautions:

- May have additive depressant effect with alcohol and other central nervous system depressants.
- Use cautiously in patients with asthma, glaucoma, cardiovascular disease, and hypertension due to atropine like effect.
- Use with caution in patients taking MAO inhibitors.
- May see central nervous system stimulation in children.

Medication Dose: Adult

- General dose: 25mg to 50mg IV/IO/IM

Medication Dose: Pediatric

- General dose: 1 to 2 mg/kg IV
- Not to exceed: 25 milligrams total

Administration:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Benadryl: Allergic reactions / Anaphylaxis	_____	_____	_____	DO / P	DO / P	SO
• Administration of Benadryl: Acutedystonic reactions	_____	_____	_____	DO / P	DO / P	SO
	___	___	___	DO/P	DO/P	SO

Weld County EMS Protocols

Section 509: Calcium

Description/Pharmacology/Mechanism of Action:

- Cardioprotective agent in hyperkalemia.
- In hyperkalemia, the resting membrane potential of the heart is elevated, which decreases the heart's ability to depolarize. This can cause bradycardia and other arrhythmias. Calcium is used to stabilize the cardiac membrane by increasing the threshold potential, which decreases the likelihood of arrhythmias.

Indications:

- **In non-arrest patients:** hyperkalemia, as evidenced by **both** indicative EKG changes and a suspected source of hyperkalemia
 - EKG changes: (see page 3)
 - Sinus bradycardia or slow atrial fibrillation
 - Observed progression towards conduction blocks (2nd degree type II or 3rd degree AV blocks, bundle branch blocks, fascicular blocks)
 - Diffuse peaked T waves (see Figure 1)
 - Note: Peaked T waves in a select few contiguous leads are indicative of cardiac ischemia, not hyperkalemia
 - Wide, flat, or absent P waves
 - QRS > 120m sec complex with bizarre morphology (see Figure 2)
 - QT > 550m sec
 - Sine wave- considered a pre-terminal rhythm (see Figure 3)
 - Asystole, VF, or PEA arrest
 - Suspected sources:
 - Renal failure patients (especially those who fail to receive scheduled dialysis)
 - Overdose of potassium supplements, potassium-sparing diuretics, ACE inhibitors, or digitalis
 - Diabetic ketoacidosis
 - Crush injuries
- **In arrest patients:** suspected hyperkalemia
- **Calcium channel blocker overdose presenting with hypotension and bradycardia**
 - Ex: Amlodipine, Diltiazem, Verapamil, etc.
- **Betablocker overdose presenting with hypotension and bradycardia refractory to administration of glucagon** (Possible co-ingestion of CCB. May also have small inotropic effect in isolated β -Blocker OD).
 - Ex: Propranolol, Metoprolol, Sotalol, Atenolol, etc.

Contraindications:

- Not intended for routine use in cardiac arrest
- Cannot be administered through the same line as sodium bicarbonate
- Not to be administered through small distal veins due to risk of tissue necrosis with extravasation

Weld County EMS Protocols

Section 509: Calcium

Precautions:

- Patients using digitalis may be administered calcium chloride, but dose must be buffered in 100mL of dextrose 10% and pushed over 20 to 30 minutes.

Medication dose:

Ensure IV patency.

Hyperkalemia

- Adult:
 - CaCl: 1g (10mL of a 10% solution) IV/IO administered via drip over 3-4 minutes, or by slow IV/IO push over 3-4 minutes; may be repeated once for a total dose of 2g
- Pediatric:
 - CaCl: 20mg/kg IV/IO administered via drip over 3-4 minutes, or by slow IV/IO push over 3-4 minutes

Calcium Channel Blocker OD/Beta Blocker OD

- Adult:
 - CaCl: 1g (10mL of a 10% solution) IV/IO administered via drip over 3-4 minutes, or by slow IV/IO push over 3-4 minutes; may be repeated once for a total dose of 2g
- Pediatric:
 - CaCl: 20mg/kg IV/IO administered via drip over 3-4 minutes, or by slow IV/IO push over 3-4 minutes

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Calcium Chloride in adults (Reference Protocol: Section 500)	—	—	—	—	—	SO
• Administration of Calcium Chloride in pediatrics (Reference Protocol: Section 500)	—	—	—	—	—	DO

Weld County EMS Protocols

Section 510: 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:

- For patients with atrial fibrillation or atrial flutter with a rapid ventricular response (>120bpm) that doesn't respond to IV fluid challenge if appropriate. (Ensure tachycardia is not a mounted response to underlying illness i.e. sepsis, etc).
- For stable 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 used 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 used in pregnant females that are nursing
- Patients with suspected CHF.

Medication Dose:

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

Administration:

- Administration of Cardizem - Diltiazem

EMR EMTB EMTIV AEMT EMTI EMT P

SO

Weld County EMS Protocols

Section 511: Cyano Kit (Hydroxocobalamin)

Pharmacology / Actions:

- Hydroxocobalamin forms a strong bond with cyanide (CN), forming not-toxic cyanocobalamin, which is another form of vitamin B₁₂, 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:

- 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.

Weld County EMS Protocols

Section 511: Cyano Kit (Hydroxocobalamin)

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 MI 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:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Administration of Cyano Kit (Hydroxocobalamin)	___	___	___	___	SO	SO

Weld County EMS Protocols

Section 512: Dextrose (D10)

Description/Pharmacology/Mechanism of Action:

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

Indications:

- A known hypoglycemic 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.

Contraindications:

- 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 dextrose 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 D10 over 10 minutes. Titrate to patient's mentation and stop administration when GCS = 15.
- 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

Symptomatic Hypoglycemia: Use D10 as an infusion.

- Initial dose: 12.5g to 25g. (125-250 mL)
- Subsequent doses: Standing Order.
- Only consider a second dose for patients with a slow response.

Cardiac Arrest: Use D10 as an infusion.

- Initial dose: 12.5g to 25g. (125-250 mL)
- Subsequent doses: Standing Order.

Weld County EMS Protocols

Section 512: Dextrose (D10)

Pediatric Dose:

Symptomatic Hypoglycemia: Use D10 as an infusion.

- Initial dose: 0.5g/kg (5mL/kg) of D10 (Max 25g) IV/IO

Cardiac Arrest: Use D10 as an infusion.

- Initial dose: 2mL/kg. IV/IO
- Subsequent doses: Standing Order.

Neonatal Dose:

Symptomatic Hypoglycemia: Use D10 as an infusion.

- Initial dose: 0.2g/kg (2ml/kg) of D10 every 30 minutes until BGL >45.

Administration:	EMR	EMT B	EMT IV	AEMT	EMTI	EMT P
• Administration of D10:	_____	_____	SO	SO	SO	SO

Weld County 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 **Muscle twitching** in **SLUDGE (M)M**.
- ****Note****: Antidotes do not act on the **Miosis** symptoms.

Indications:

- 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:
 - **SLUDGE MM**
 - 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.

Weld County EMS Protocols

Section 513: DuoDote Auto Injector ®

Medication Dose:

Adult:

- 2.1mg 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:

- Administration of DuoDote®

EMR
PPA

EMTB
PPA

EMTIV
PPA

AEMT
SO

EMTI
SO

EMTP
SO

WeldCountyEMS Protocols

Section 514: Epinephrine

Pharmacology / Mechanism of Action:

- Endogenous catecholamine alpha, beta-1, beta-2 adrenergic receptor agonist. Causes dose-related increase in heart rate, myocardial contractility and oxygen demand, peripheral vasoconstriction and bronchodilation.

Indications:

- Pulseless arrest: ventricular fibrillation, ventricular tachycardia, asystole, PEA.
- Acute bronchospasm secondary to asthma.
- Severe allergic reaction or anaphylaxis.
- Bradycardia with poor perfusion
- Hypotension refractory to IV fluids (See Vasopressor Infusion Protocol)

Contraindications:

- Severe hypertension.
- Active myocardial ischemia.
- Patients in labor.
- Caution with cerebrovascular disease.
- Caution with arrhythmias.
- Caution with hyperthyroid disease.
- Caution with hemorrhagic shock.
- DO NOT add to solutions containing Sodium Bicarbonate or other alkaloids as epinephrine will be inactivated at higher pH.

Precautions:

- Use of epinephrine may precipitate angina and/or an acute myocardial infarction in patients with known or suspected CAD.

Medication Dose and Route: Adult

Cardiac Arrest: (1:10,000)

- Initial dose: 1 mg IV/IO bolus
- Subsequent doses: 1 mg IV/IO bolus
- **Maximum dose of 3 mg.**

Acute Allergy / Bronchospasm: (1:1,000)

- Initial dose: 0.3 mg IM (may repeat once)
- Subsequent doses: Direct Order

Severe Anaphylaxis/Asthma:(1:10,000) (Refractory to IM dosing and traditional therapy)

- Initial dose: 0.1 to 0.3 mg IV Slow Push

Weld County EMS Protocols

Section 514: Epinephrine

- Subsequent dose: Direct Order
- **Severe Allergic Reactions/Anaphylaxis Refractory to IM Epi, Symptomatic Bradycardia, hypotension (See Vasopressor Protocol)**

Medication Dose and Route: Pediatric

Cardiac Arrest (Patients under 8 YOA and under 55lbs): (1:10,000)

- Initial dose: 0.01 mg/kg IV/IO bolus
- Subsequent doses: 0.01 mg/kg IV/IO bolus -
- **Every 3-5 minutes.**

Symptomatic Bradycardia:(1:10,000)

- Initial dose: 0.01 mg/kg IV/IO over 10 minutes.
- Subsequent doses: Direct Order

Anaphylaxis / Severe Asthma / Bronchospasm: (1:1,000)

- Initial dose: 0.01 mg/kg IM
- Subsequent doses: Direct Order

Severe Allergic Reactions/Anaphylaxis Refractory to IM Epi (Patients 12 years and older, see Vasopressor Protocol)

- **Pediatric Stridor at Rest (Consider Racemic Epi)**
- Nebulized at 6-8 LPM
- 0.5 cc mixed with 6 cc respiratory saline

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Epinephrine: Cardiac Arrest IV	_____	_____	**	**	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 / Bradycardia IV	_____	_____	_____	_____	DO / P	SO
• Administration of Epinephrine Infusion	_____	_____	_____	_____	_____	SO

WeldCountyEMS Protocols

Section 514: Epinephrine

(See vasopressor infusion protocol)

*** 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 & D of these rules for an EMT Basic with I.V. authorization and an Advanced EMT while 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.*

Weld County 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:

- Signs and symptoms of a severe 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.

Weld County EMS Protocols

Section 515: Epinephrine Auto Injector

- Excitability.
- Dizziness.

Medication Dose: Adult

Anaphylaxis / Severe Asthma / Bronchial Spasm: (1:1,000)

- Initial dose: One auto injector IM (may repeat once) Pre-Arrival administration included
- Subsequent doses: Direct Order

Medication Dose: Pediatric

Anaphylaxis / Severe Asthma / Bronchial Spasm: (1:1,000)

- Initial dose: One auto injector IM (may repeat once) Pre-Arrival administration included
- Subsequent doses: Direct Order

Administration:

	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Epinephrine Auto Injector	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 516: Fentanyl (Sublimaze)

Pharmacology / Actions:

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

Indications:

- Moderate to severe pain
- Can be used as an alternative to Morphine for patients with suspected ischemic chest pain.
- Preferred opiate for those patients unable to tolerate Morphine due to compromised hemodynamics.

Contra - Indications:

- Respiratory depression or insufficiency.

Precautions:

- Fentanyl may cause respiratory depression. Have resuscitation equipment available. Have Narcan readily available.
- May cause Euphoria, dizziness, Nausea/Vomiting.
- Rapid push/high doses may cause jaw and or chest 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.
- Administer opiates slowly.
- Do not expect complete relief of pain.
- Medication administered should be titrated to pain relief.

Co-Administration of Benzodiazepines and Opiates:

Opiates are dangerous when combined with other CNS depressants like alcohol and benzodiazepines, and can cause fatal CNS and respiratory depression. The co-administration of opioid and BZD carries an FDA blackbox warning for this reason. The combination of benzodiazepines and opiates, for *severe* pain management and/or muscle relaxation is permitted only after maximum opiate therapy is attempted and failed. The goal of pain control is to make patients comfortable, not to completely alleviate pain. The following required safe guards must be met prior to co-administration:

- GCS15 (patient responds appropriately to all verbal and physical contact)
- Patient independently maintains an open airway and normal breathing pattern
- Patient maintains normal hemodynamics
- The following interventions are mandatory: IV/IO access, continuous monitoring (Pulse Oximetry, waveform capnography, ECG monitoring), Q 15 minute blood pressure monitoring) supplemental O2.

Weld County EMS Protocols

Section 516: Fentanyl (Sublimaze)

Medication Dose: Adult

- General dose: 1.0to 2.0 mcg / kg IV/IO/IN/IM.
- Maximum dose: 200mcg.
- Subsequent doses: Direct physician order after maximum dose of 200 mcg has been reached.

Medication Dose: Pediatric

- General dose: 1.0to 2.0 mcg / kg IV/IO/IN/IM.
- Maximum dose: 2.0 mcg / kg.
- Subsequent doses: Direct physician order after maximum dose of 2.0 mcg / kg has been reached.

Administration:

	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Administration of Fentanyl: (Sublimaze)	_____	_____	_____	_____	DO/P	SO

Weld County 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:

- Unconscious patients secondary to insulin shock
 - When Dextrose 10% is not available or an I.V. / I.O. line can't be established.
- Suspected overdose of betablockers.
- Esophageal food obstruction.

Contra - Indications:

- None listed.

Precautions:

- D10% is the treatment of choice for symptomatic hypoglycemia.
- Patients without liver glycogen stores may not respond to Glucagon administration.
- Nausea or vomiting may occur.

Medication Dose: Adult

Hypoglycemia:

- General dose: 1.0mg IM/IN

BetaBlocker Overdose:

- General dose: 3.0mg or 0.03 mg /kg to be administered over 30 seconds IV/IO

Esophageal Food Obstruction:

- General dose: 1.0mg IV/IO

Medication Dose: Pediatric

Hypoglycemia:

- General dose: 0.1 mg /kg up to 1.0 mg IM/IN

BetaBlocker Overdose:

- General dose: 0.1 mg /kg up to 1.0 mg IV/IO

Administration:

	EMR	EMTB	EMTIV	AEMT	EMT I	EMT P
• Administration of Glucagon: Hypoglycemia	___	___	___	SO	SO	SO
• Administration of Glucagon: BetaBlocker Overdose	___	___	___	DO/P	DO/P	SO
• Administration of Glucagon: Esophageal Food Obstruction	___	___	___	___	DO/P	SO

Weld County EMS Protocols

Section 518: Glucose - Oral

Pharmacology / Actions:

- Increases blood glucose levels.

Special Information Needed:

- Generic Names:**
 - Oral glucose.
- Trade Names:**
 - Glucose.
 - Glucose.
 - Insta - Glucose.
- Assure patient is conscious, can swallow, and can maintain an airway.
- Patient assessment.
- Patient vital signs.

Indications:

- 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:

- Administration of Oral Glucose

EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 519: Lidocaine

Pharmacology / Actions:

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

Indications:

- 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 mg / kg to 1.5 mg / kg IV/IO/ET.
- Subsequent doses: 0.5 mg / kg to 0.75 mg / kg every 5 to 10 minutes.
- Maximum dose: 3.0 mg / kg.

Ventricular Tachycardia / Wide Complex Tachycardia of Unknown Origin

- Initial dose: 1.0 mg / kg to 1.5 mg / kg IV/IO.
- Subsequent doses: 0.5 mg / kg to 0.75 mg / kg every 5 to 10 minutes.
- Maximum dose: 3.0 mg / kg.

Weld County EMS Protocols

Section 519: Lidocaine

After Successful Cardioversion / Defibrillation / Return of Spontaneous Circulation

- Initial dose: 1.0 mg / kg to 1.5 mg / kg IV/IO.
- I.V. infusion: 1.0 to 4.0 mg / minute.

Intra-osseous Bolus for Anesthetic Effect:

- 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 mg / kg IV/IO/ET.
- Subsequent doses: 0.5 mg / kg to 0.75 mg / kg every 5 to 10 minutes.
- Maximum dose: 3.0 mg / kg.

Intra-osseous Bolus for Anesthetic Effect:

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

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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

Weld County EMS Protocols

Section 519: Lidocaine

- Administration of Lidocaine Jelly 2%: _____ SO
Preparation for Nasal Endotracheal Intubation

** 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.

Weld County EMS Protocols

Section 520: Magnesium Sulfate

Pharmacology / Actions:

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

Indications:

- An EKG rhythm that reveals Torsades de Pointes.
- Cardiac arrest with ventricular arrhythmias present.
- Seizures secondary to eclampsia.
- 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.
 - Hyporeflexia.

Medication Dose: Adult

Torsades de Pointes with a pulse

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

Cardiac Arrest:

- General dose: 1.0 to 2.0g IV/IO Push

Seizures Secondary to Eclampsia:

- General dose: 2g IV/IO slow push over 2 minutes
Then, 4g over 20 minutes (Diluted in 100ml NS)

Bronchial Spasm:

- General dose: 1.0 to 2.0g IV/IO (Diluted in 50 to 100 ml saline given over 20 minutes)

Weld County EMS Protocols

Section 520: Magnesium Sulfate

Administration:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> Administration of Magnesium Sulfate: Cardiac Arrest / Torsades de Pointes 	_____	_____	**	**	**	SO
<ul style="list-style-type: none"> Administration of Magnesium Sulfate: Seizures Secondary to Eclampsia 	_____	_____	_____	_____	DO/P	SO
<ul style="list-style-type: none"> Administration of Magnesium Sulfate: Bronchial Spasm 	_____	_____	_____	_____	_____	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 Band 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.

Weld County EMS Protocols

Section 521: Morphine

Pharmacology / Actions:

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

Indications:

- Moderate to severe pain.
- Chest pain that is secondary to suspected myocardial ischemia.

Contra - Indications:

- Respiratory depression or insufficiency.
- Hypotension or shock.
- Trauma with concern for internal or unstable hemorrhage (e.g. Full trauma activations, multi-system trauma, etc).

Precautions:

- Morphine may cause respiratory depression. Have resuscitation equipment available. Have Narcan readily available.
- May cause Euphoria, dizziness, Nausea/Vomiting.
- Use with caution in right ventricular infarction.
- Respiratory depression may outlast pain control effects. Monitor your patient.
- Administer opiates slowly.
- Do not expect complete relief of pain.
- Medication administered should be titrated to pain relief.

Co-Administration of Benzodiazepines and Opiates:

Opiates are dangerous when combined with other CNS depressants like alcohol and benzodiazepines, and can cause fatal CNS and respiratory depression. The co-administration of opioid and BZD carries an FDA blackbox warning for this reason. The combination of benzodiazepines and opiates, for *severe* pain management and/or muscle relaxation is permitted only after maximum opiate therapy is attempted and failed. The goal of pain control is to make patients comfortable, not to completely alleviate pain.

The following required safeguards must be met prior to co-administration:

- GCS15 (patient responds appropriately to all verbal and physical contact)
- Patient independently maintains an open airway and normal breathing pattern
- Patient maintains normal hemodynamics
- The following interventions are mandatory: IV/IO access, continuous monitoring (Pulse Oximetry, waveform capnography, ECG monitoring), Q 15 minute blood pressure monitoring) supplemental O2.

Weld County EMS Protocols

Section 521: Morphine

Medication Dose: Adult

- Dose: 2.0 mg to 4mg IV/IO q5-10 minutes. Titrate to effect.
- Maximum dose: 10 mg IV/IO
- Subsequent doses: Direct physician order after maximum dose of 10.0 mg has been reached.

Medication Dose: Pediatric

- General dose: 0.1 mg / kg to 0.2 mg / kg IV/IO.
- Subsequent doses: Direct physician order after maximum dose of 0.2mg/kg has been reached.

Administration:

	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Administration of Morphine:	_____	_____	_____	_____	DO/P	SO

Weld County EMS Protocols

Section 522: Narcan (Naloxone)

Pharmacology / Actions:

- Narcotic antagonist.

Indications:

- Reversal of suspected opiate-induced respiratory and/or CNS depression
- An altered mental status of unknown etiology with impaired airway reflexes or respiratory depression

Contra - Indications:

- None listed.

Precautions:

- Not indicated unless respiratory depression or airway reflexes are impaired.
- Suspected mild to moderate opiate toxicity does not warrant reversal with Narcan. It can cause severe withdrawal symptoms. Patients may become violent as Narcan reverses narcotic effects. Use caution in patients with history of chronic opiate use.
- Titrate to keep patient's respiratory and cardiac status acceptable. (0.4mg-1mg at a time)
- Narcotic effects may outlast Narcan. Repeat dosages may be necessary.

Special Considerations:

- Patients receiving Narcan should be transported to the hospital by EMS.
- There are significant concomitant inherent risks in patients who have received naloxone, including
 - Recurrent respiratory/CNS depression given short half-life of naloxone
 - Co-existing intoxication from alcohol or other recreational or prescription drugs
 - Acetaminophen toxicity from combination opioid/acetaminophen prescriptions
 - Non-cardiogenic pulmonary edema associated with naloxone administration
 - SI/HI requiring ED evaluation (or severe withdrawal symptoms) which may limit decision making capacity
- Given the above risks, it is strongly preferred that patients who have received naloxone be transported and evaluated by a physician. However, if the patient clearly has decision-making capacity he/she does have the right to refuse transport. If adamantly refusing, patients must be warned of the multiple risks of refusing transport. This discussion should be documented.
- If the patient is refusing transport contact base. If any concerns or doubts about decision-making capacity exist, err on the side of transport. Involve law enforcement if warranted.

Weld County EMS Protocols

Section 522: Narcan (Naloxone)

Medication Dose: Adult

- General dose: 0.4mg to 1mg IV/IO/IN/IM titrate to desired effect up to 2mg. May be repeated after 5 minutes if necessary
- Cases of Severe respiratory compromise or arrest, 2mg IV/IO/IM bolus is appropriate.

Medication Dose: Pediatric

- General dose: 0.4mg to 2mg IV/IO/IN/IM titrate to desired effect up to 2mg
- Subsequent doses: 0.4mg to 2mg IV/IO/IN/IM. May be repeated after 5 minutes if necessary

Administration:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Administration of Narcan Intra-Nasal:	_____	SO	SO	SO	SO	SO
• Administration of Narcan IM, IV, IO:	_____	_____	SO	SO	SO	SO

Weld County EMS Protocols

Section 523: Nitroglycerin

Pharmacology / Actions:

- Short acting peripheral venodilator, decreases preload and afterload

Indications:

- Pain or discomfort due to suspected myocardial ischemia.
- Pulmonary edema due to congestive heart failure with severe hypertension (SBP > 160).
 - Transdermal if CPAP in place.
- Hypertension secondary to:
 - Autonomic hyperreflexia.

Contra - Indications:

- Hypotension SBP < 100.
- Head injury.
- A known or suspected cerebral hemorrhage.
- Patients taking any medications for erectile dysfunction.
- Suspected 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 V⁴R lead view run in addition to a 12 lead EKG to rule out right ventricular involvement

Weld County EMS Protocols

Section 523: Nitroglycerin

Medication Dose:

- General dose: 0.4mg Sublingual/Transdermal (1 pill =1 metered spray)
- Subsequent doses: 0.4 mg 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.

Transdermal Subsequent doses: DO

o

Administration:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administration of Nitroglycerin: Chest Pain: Cardiac Origin	_____	_____	_____	SO	SO	SO
• Administration of Nitroglycerin: Pulmonary Edema secondary to Congestive Heart Failure	_____	_____	_____	SO	SO	SO
• Administration of Nitroglycerin: Hypertension secondary to Autonomic Hyper-Reflexia	_____	_____	_____	SO	SO	SO
• Administration of Nitroglycerin: Severe Hypertension	_____	_____	_____	_____	SO	SO

Weld County EMS Protocols

Section 524: Oxygen

Pharmacology / Actions:

- Essential for tissue metabolism.

Indications:

- Suspected hypoxemia or respiratory distress of any kind.
- Any toxic inhalation event.
- Shock, any suspected hypoperfusion, major trauma or gastro-intestinal hemorrhage.
- Restlessness may be an important sign of hypoxia.
- Suspected carbon monoxide poisoning.
- Obstetrical complications, childbirth.

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.
- 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.

Medication Dose: Adult & Pediatric

- Titrate oxygen administration to maintain a pulse oximetry reading between 94% to 99%
- 0.5 to 2.5 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.

Administration:

	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Administration of Oxygen:	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 525: 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:**
 - NeoSynephrine

Indications:

- Prior to nasal endotracheal intubation to induce vasoconstriction of nasal mucosa.
- Nosebleed.

Contra - Indications:

- None.

Precautions:

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

Procedure:

- Administer 2 sprays in the nostril prior to attempting nasal endotracheal intubation.
- Administer 2 sprays in affected nare of patient with active nose bleed after having patient blow nose to expel clots.
- Document time, amount given, and patient response.

Administration:

	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Administration of Phenylephrine	-	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 526: Racemic Epinephrine

Pharmacology / Actions:

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

Indications:

- 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Racemic Epinephrine:	___	___	___	___	DO/P	SO

Weld County EMS Protocols

Section 527: Sodium Bicarbonate

Pharmacology / Actions:

- Alkalotic solution.

Indications:

- EtCO₂ troubleshooting during cardiac arrest, known or suspected Hyperkalemia prior to cardiac arrest.
- Excited Delirium with suspected Acidosis and Hyperkalemia.
- Tricyclic anti-depressant overdose.
- Crush injury with prolonged extrication. To be given directly before releasing the crushed extremity.

Contra - Indications:

- DONOT 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.
 - Hyponatremia.

Precautions:

- Addition of too much NaHCO₃ may result in alkalosis (PH higher than normal) which is difficult to reverse and can cause as many problems in resuscitation as acidosis.
- May increase cerebral acidosis especially in diabetic ketoacidosis.
- May cause excessive intravascular volume and worsen CHF.
- In persons with cardiac disease, NaHCO₃ will increase intravascular volume and further stress on the heart.

Medication Dose:

Cardiac Arrest / Tricyclic Anti - Depressant Overdose / Crush Injury:

- **Adult**
 - Initial dose: 50mEq IV/IO Slow IV/IO Push
 - Subsequent dose: DO
- **Pediatric**
 - Initial dose: 1mEq/kg IV/IO Slow IV/IO Push

Excited Delirium \geq 13 years old (with suspected or known hyperkalemia/acidosis):

- Initial dose: 50mEq IV/IO Slow IV/IO Push
- Subsequent dose: DO

Weld County EMS Protocols
Section 527: Sodium Bicarbonate

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

Weld County EMS Protocols

Section 528: Solumedrol (Methylprednisolone)

Pharmacology / Actions:

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

Indications:

- 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:

- Known hypersensitivity to the medication.

Precautions:

- Use during pregnancy only if benefits outweigh the risks.
- Once medication is re -constituted, it should be used 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 mg IV/IO

Medication Dose: Pediatric

- General dose: 2mg/kg IV/IO
- Maximum dose: 125 mg

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

Weld County EMS Protocols

Section 529: Terbutaline (Brethine)

Pharmacology / Actions:

- Beta -adrenergic receptor agonist.
- Bronchial dilator.

Indications:

- Acute severe bronchial spasm (not responding to inhaled beta-agonist therapy) 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. **Note:** Terbutaline is never a first line medication.

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 and tremors.

Palpitations.

Dizziness.

Muscle cramps.

Headache.

Nausea and vomiting is usually transient.

Medication Dose:

Asthma / Bronchitis / Emphysema

- General dose: 0.25 mg Subcutaneous
- Subsequent dose: 0.25 mg. May be administered after 15 to 30 minutes if improvement does not occur.

Administration:

- Administration of Terbutaline: (Brethine)

EMR

EMTB

EMT IV

AEMT

EMTI

EMTP

SO

Asthma / Bronchitis / Emphysema

Weld County EMS Protocols

Section 530: Tetracaine Hydrochloride

Pharmacology / Actions:

- Topical anesthetic.
- Effects begin within 20 seconds.

Indications:

- 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:

- Ophthalmic administration.

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Tetracaine Hydrochloride:	___	___	___	___	SO	SO

Weld County EMS Protocols

Section 531 – Valium (Diazepam)

Pharmacology/Mechanism of Action:

- Binds to benzodiazepine receptors on the postsynaptic GABA neuron at several sites within the central nervous system, including the limbic system, reticular formation. Enhancement of the inhibitory effect of GABA on neuronal excitability results by increased neuronal membrane permeability to chloride ions. This shift in chloride ions results in hyperpolarization (a less excitable state) and stabilization.

Indications:

- Status epilepticus (Seizure > 5 minutes, 3 seizures in 24 hours, recurrent seizure without recovery from post – ictal state) – Benzodiazepines are not indicated for routine, non-status seizures.
- Acute ETOH withdrawal

Contraindications:

- Hypersensitivity to diazepam or any component of the formulation
- Acute narrow-angle glaucoma
- Severe liver disease

Precautions:

- Concomitant use of benzodiazepines and opioids may result in profound sedation, respiratory depression, coma and death
- Neonates and young infants have decreased metabolism of diazepam and desmethyldiazepam (active metabolite), both can accumulate with repeated use and cause increased toxicity
- Use caution in older adults
- Respiratory depression/apnea/respiratory failure, especially in the setting of CNS depression. Be prepared to manage the airway in case of respiratory depression
- Hypotension

Weld County EMS Protocols

Section 531 – Valium (Diazepam)

CO-Administration of Benzodiazepines and Opiates:

The combination of benzodiazepines and opiates, for severe pain management and/or muscle relaxation is permitted only after maximum opiate therapy is attempted and failed. The goal of pain control is to make the patient comfortable, not to completely alleviate pain.

The following required safeguards must be met prior to co-administration:

- GCS 15 (patient respond appropriately to all verbal and physical contact)
- Patient independently maintains own airway and normal breathing pattern
- Patient maintains normal hemodynamics
- The follow interventions are mandatory: IV/IO access, continuous monitoring (pulse ox, waveform capnography, ECG monitoring, Q 15 minute blood pressure monitoring) supplemental O₂

Medication Dose & Route: Adult

Status Epilepticus/Acute ETOH withdrawal:

- Initial dose: 5-10 mg IV/IM
- Subsequent dose: may repeat q10-15 mins PRN
- Max total dose: 30 mg

Medication Dose & Route: Pediatric

Status Epilepticus <13 years old:

- Initial dose: 0.1-0.3 mg/kg IV/IM
- Subsequent dose: may repeat q2-5 min PRN
- Maximum dose 5mg.

Status Epilepticus >13 years old:

- Initial dose: 5-10 mg IV/IM
- Subsequent dose: may repeat q2-5 min PRN
- Maximum dose 10 mg

Administration:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
Administration:	-----	-----	-----	-----	DO/P	SO

Onset: 1-3 min

Peak: IM 0.25hr-2hr IV ~1 min

Duration: 15-30 min

Weld County EMS Protocols

Section 532: Vasopressor Continuous Infusion (Epinephrine)

Pharmacology / Actions:

- Endogenous catecholamine alpha, beta-1, beta-2 adrenergic receptor agonist. Causes dose-related increase in heart rate, myocardial contractility and oxygen demand, peripheral vasoconstriction and bronchodilation.

Indications:

- Severe Allergic Reaction/Anaphylaxis
- Hypotension with poor perfusion refractory to adequate fluid resuscitation (typically 20-30 mL/kg crystalloid)
- Bradycardia with signs of poor perfusion
- Post-resuscitation/ROSC with hypotension

Contraindications:

- **DO NOT USE EPINEPHRINE INFUSIONS IN PEDIATRIC PATIENTS LESS THAN 12 YEARS OLD**

Precautions:

- Use of epinephrine may precipitate angina and/or an acute myocardial infarction in patients with known or suspected CAD. Also anticipate anxiety, nausea/vomiting, and hypertension.
- **Consider a separate Paramedic be dedicated to monitor drip rate and ECG for dysrhythmias.**
- **Caution must be exercised with large bore IV's as not to infuse large amounts of fluid/Epi.**
- Do not add to sodium bicarbonate or other alkaloids as epinephrine will be inactivated at higher pH.

Medication Dose and Administration: Adult

- **Mix: inject 1 mg epinephrine into 1000 mL Normal Saline bag to achieve 1mcg/mL concentration (This means 1 mL of 1:1000 or 10 mL of 1:10,000 – either way 1 mg of drug). Use macro drip set.**
- **Label the bag with: Patient name, "1mg epi in 1L NS," date/time made, paramedic initials.**
- **The infusion can only be used for one hour after it is created.**
- **Adult IV/IO:** Begin IV/IO infusion open to gravity. Typical volumes are less than 100 mL of total fluid, as typical doses are expected to be < 100 mcg.
- **An infusion rate of approximately 1 gtt/second is a good starting point (6mcg/min).**
- **Titrate to desired hemodynamic effect with goal BP of > 90 mmHg systolic, improved respiratory status (bronchodilation), and improved perfusion/mentation.**
- For reference, the dosing for epinephrine infusions is **2-10 mcg/minute. This may be used to guide titration.** Preparation is the same. See chart below.

Medication Dose and Administration: Pediatric

- In patients > 12 years of age, preparation and dosing is the same.

Weld County EMS Protocols
Section 532: Vasopressor Continuous Infusion (Epinephrine)

Administration:	EMR	EMT B	EMT IV	AEM T	EMT I	EMT P
<ul style="list-style-type: none"> Administration of Epinephrine Infusion Severe Allergic Reaction/Anaphylaxis Unstable Bradycardia Fluid Refractory Hypotension Hypotension in ROSC 	_____	_____	_____	_____	_____	SO

Micrograms/Min	MacroDrip Rate
2	20 gtts/min
3	30 gtts/min
4	40 gtts/min
5	50 gtts/min
6	60 gtts/min
7	70 gtts/min
8	80 gtts/min
9	90 gtts/min
10	100 gtts/min

Weld County EMS Protocols

Section 533: Verapamil

Pharmacology / Actions:

- Non-dihydropyridine calcium channel blocker. Verapamil has a greater effect on conduction and a lesser effect on vascular smooth muscle.
- Class IV antiarrhythmic. Inhibits re-entry pathways and decreases rapid ventricular response in atrial tachyarrhythmias.
- Causes coronary and peripheral vasodilation.

Indications:

- For patients with atrial fibrillation or atrial flutter with rapid ventricular response.
- For patients with supra-ventricular tachycardias refractory to the administration of adenosine.

Contraindications:

- Severe hypotension.
- Left ventricular dysfunction or cardiogenic shock.
- Sick sinus syndrome, 2nd and 3rd degree AV nodal blocks, bradycardia.
- Demonstrated hypersensitivity to Verapamil.
- Wolf Parkinson White syndrome or short PR interval.
- Wide complex tachycardias of uncertain origin and poisoning/drug-induced tachycardia.
- Ventricular Tachycardia.

Precautions:

- Use with caution in patients with impaired hepatic or renal function.
- Patients taking oral beta-blockers or nitrates.
- Caution should be used when administering Verapamil and anesthetics.
- Caution should be used in pregnant or nursing females.
- Caution in patients with history of CHF.

Medication dose:

- Initial dose: 5mg slow IV/IO push over 2 minutes (over 3 minutes in patients over 55 years of age).
- Repeat dose: (After 15 minutes) - 5mg slow IV/IO push over 2 minutes (over 3 minutes in patients over 55 years of age).

Administration:

- Administration of Verapamil

EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
___	___	___	___	___	SO

Weld County EMS Protocols

Section 534 - Versed (Midazolam)

Pharmacology/ Actions:

- Benzodiazepines (BZD) are sedative hypnotics that increase GABA, the primary inhibitory neurotransmitter.
- Anti convulsant
- Skeletal muscle relaxant
- Sedative
- Anxiolytic

Indications:

- Status epilepticus (Seizure > 5 minutes, 3 seizures in 24 hours, recurrent seizures without recovery from post-ictal state) - Benzodiazepines are not indicated for routine, non-status seizures.
- Excited Delirium or Profound Agitation
- Sedation prior to cardioversion or transcutaneous pacing
- Adjunct for treatment of severe pain in adults after maximum opiate therapy
- Severe anxiety
- Severe shivering in hypothermia
- Sedation after a patient has been successfully intubated

Contraindications:

- Hemodynamic instability (other than sedation for cardioversion or defibrillation)
- Respiratory depression or respiratory distress (Asthma, COPD, etc)
- DKA or suspected acidotic state

Precautions:

- Respiratory depression/apnea/respiratory failure, especially in the setting of CNS depression.
- Hypotension, tachycardia.
- Sedation.
- Dizziness. Ataxia.
- Be prepared to manage the airway in case of respiratory depression.
- Use cautiously in the elderly and very young.
- Use caution for patients with a history of using depressants such as using alcohol.
- Short acting.

Weld County EMS Protocols

Section 534 - Versed (Midazolam)

CO-Administration of Benzodiazepines and Opiates:

BZD are dangerous when combined with other CNS depressants like alcohol and opioids, and can cause fatal CNS and respiratory depression. The co-administration of opioid and BZD carries an FDA blackbox warning for this reason. The combination of benzodiazepines and opiates, for *severe* pain management and/or muscle relaxation is permitted only after maximum opiate therapy is attempted and failed. The goal of pain control is to make patients comfortable, not to completely alleviate pain. The following required safeguards must be met prior to co-administration:

- GCS15 (patient responds appropriately to all verbal and physical contact)
- Patient independently maintains an open airway and normal breathing pattern
- Patient maintains normal hemodynamics
- The following interventions are mandatory: IV/IO access, continuous monitoring (Pulse Oximetry, waveform capnography, ECG monitoring), Q 15 minute blood pressure monitoring) supplemental O2.

Medication Dose and Route: Adult

- **Severely agitated or combative patient**
 - 5mg IM/IN
 - Dose may be repeated x 1 after 5 minutes. **Contact base** for more than 2 doses, unless **Excited Delirium Syndrome** is present in which case up to a total of 3 doses (5mg Q5 Minutes as needed for sedation) may be given as a standing order in order to rapidly sedate the patient.

- **Status Seizure / Chemical Restraint / Muscle Spasm / Sedation**
 - Initial Dose: 1-5 mg IV/IO/IM/IN
 - Repeat Dose: Direct Order

Medication Dose and Route: Pediatric

- **Sedation of severely agitated or combative patient**
 - **CONTACT BASE** (age < 13 years old) before any consideration of sedation of severely agitated/combative child.

- **Status Seizure / Sedation:**
 - IV/IO: Initial Dose: 0.05 mg/kg. Max single dose of 2.5 mg. May be repeated once after 5 minutes.
 - IM/IN: Initial Dose: 0.2 mg/kg.
 - Subsequent Doses: Direct Order.

Weld County EMS Protocols

Section 534 - Versed (Midazolam)

Administration:	EMR	EMT B	EMT IV	AEMT	EMTI	EMT P
• Administration of Versed						
Non-Excited Delirium Indications						SO
Excited Delirium – SO EMT-P Only	—	—	—	—	—	

Weld County EMS Protocols

Section 535: Zofran (Ondansetron)

Pharmacology/ Actions:

- Antiemetic.
- Acts as a selective 5-HT₃serotonin receptor antagonist. Present both peripherally and on vagal nerve terminals and centrally in the chemoreceptor trigger zone of the area postrema.
- Causes QT prolongation.

Indications:

- Severe nausea and vomiting for adult and pediatric patients.

Contraindications:

- Patients with a known or noted QT prolongation.
- A known allergy or hypersensitivity to Zofran.
- Patients younger 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.
- Any dose administered after initial dose must be administered 10 minutes or later than the previous dose.

Medication dose: Adult

- Initial Dose: 4 mg IV/ODT
- Repeat Dose after 10 minutes: 4 mg until max of 16mg IV/ODT

MaxDose: 16mg

Medication dose: Pediatric

- General dose: 0.1 mg/kg IV/ODT. Single dose for pediatric patients (OK to split tablet)

Maximum dose: 4 mg

Administration:	EMR	EMT B	EMT IV	AEMT	EMTI	EMT P
• Administration of Zofran IV.	—	—	SO	SO	SO	SO
• Administration of Zofran ODT.	—	SO	SO	SO	SO	SO

Section 500b



Mini Dosages Pages

Weld County Protocols EMS
Section 500b - Mini Dosages Page
Adult Medication Dosages

Medication	Route	Initial Dose	Repeat Dose
Aspirin	PO (Chewed)	324mg (Four 81mg tabs)	NA
Adenosine	IV/IO	12mg followed by 20cc saline bolus	12mg followed by 20cc saline bolus Max 24mg
Albuterol/ Levalbutal	Nebulized	Bronchospasm: 2.5mg in 3cc of saline Hyperkalemia: 10mg in 12cc saline	Bronchospasm: 2.5mg in 3cc repeat for therapeutic effect Hyperkalemia: Up to 20mg total
Amiodarone	IV/IO	Cardiac Arrest: 300mg Perfusing Dysrhythmias: 150mg infusion over 10 min (15mg/min)	Cardiac Arrest: 150mg Perfusing Dysrhythmia: 150mg after 10 minutes
Ativan	IV/IO/IM/IN	Status Epilepticus: 2mg over 20-30 sec Restraint/Spasms: 1-2mg over 20-30 sec	Status Epilepticus: 1-2mg over 20-30 sec Restraint/Spasms: DO
Atropine	IV/IO/IM	Bradycardia: 1mg Insecticide: 1-2mg or 2mg IM x1	Bradycardia: 1mg q3-5 min Max 3mg total Insecticide: DO
Atrovent	Nebulized	500mcg mixed with 2.5 mg Albuterol/Levalbuterol	q5-10 minutes PRN, max of 3 doses
Benadryl	IV/IO/IM	25-50mg	DO
Calcium Cl	IV/IO	Adult: 1g IV/IO over 3-4 minutes	1g IV/IO over 3-4 minutes
Cardizem	IV/IO	0.25mg/kg over 2 min. Max of 20mg	0.35mg/kg over 2 min. Max of 30mg (Give 15 min after initial dose)
Cyano Kit	IV/IO	5.0g over 15 minutes	DO
Dextrose	IV/IO	Hypoglycemia: 12.5-25g D10% Infusion Cardiac Arrest: 12.5-25g D10% Infusion	Hypoglycemia: 12.5-25g D10% Infusion Cardiac Arrest: 12.5-25g D10% Infusion
Epinephrine	IV/IO/IM	Cardiac Arrest: 1mg 1:10,000 IVP Allergy/Asthma: 0.3mg 1:1000 IM Severe Anaphylaxis/Asthma: 0.1-0.3mg 1:10,000 slow IVP	Cardiac Arrest: 1mg 1:10,000, max 3mg Allergy/Asthma: 0.3mg 1:1000 IM (once) Sever Anaphylaxis/Asthma IVP: DO
Fentanyl	IV/IO/IM/IN	1-2mcg/kg. Max of 200mcg	1-2mcg/kg. Max of 200mcg total
Glucagon	IV/IO/IM/IN	Hypoglycemia: 1mg. IM/IN Esophageal Food Obstruction: 1mg. IV/IO Beta Blocker Overdose: 3mg. IV/IO over 30sec	Hypoglycemia: DO Esophageal Food Obstruction: DO Beta Blocker Overdose: DO
Glucose - oral	Buccal	15g	15g
Lidocaine	IV/IO/ET	Cardiac: 1.0- 1.5mg/kg EZIO: 40mg IO over 120 seconds.	Cardiac: 0.5mg/kg to 0.75mg/kg q5-10 min. Max dose 3.0mg/kg EZIO: 20mg over 60 seconds for pain.
Magnesium Sulfate	IV/IO	Torsades w/ Pulse: 1-2g. Diluted in 100 ml saline give over 5-10 minutes. Cardiac Arrest: 1-2g Eclampsia: 2g IV/IO SIVP over 2 minutes, Respiratory: 1-2g diluted in 100 ml of saline give over 20 minutes	Torsades w/Pulse: DO Cardiac Arrest: DO Eclampsia: 4g diluted in 100ml NS over 20 minutes Respiratory: DO
Morphine	IV/IO	2.0mg to 4.0mg IV/IO q 5-10 minutes	Max of 10mg total. Titrate to effect.
Narcan	IV/IO/IM/IN	0.4-2mg.	0.4-2mg. Can be repeated after 5 minutes
Nitroglycerin	SL/Transdermal	Chest pain: 0.4mg tablet SL CHF: 1 inch paste transdermal	Chest pain: 0.4mg q5 minutes as needed CHF: DO

Weld County Protocols EMS

Section 500b - Mini Dosages Page

Adult Medication Dosages

Phenylephrine	IN	Administer 2 sprays in the nostril prior to Nasal Intubation 2 sprays in affected nares for active nose bleed.	
Racemic Epi	Nebulized	0.5 cc mixed with 3 cc of respiratory saline	DO
Sodium Bicarb	IV/IO	Cardiac Arrest: 50mEq Tricyclic Anti-Depressant Overdose: 50mEq Crust Injury: 50mEq just prior to release. Excited Delirium: 50mEq slow IVP	Cardiac Arrest: DO Tricyclic Anti-Depressant Overdose: DO Crush Injury: DO Excited Delirium: DO
Solumedrol	IV/IO	125mg	DO
Terbutaline	SQ	0.25mg	0.25mg after 15-30 minutes
Tetracaine	Ophthalmic	1-2 drops per eye.	As needed.
Valium	IV/IM	Status Epilepticus/Acute ETOH withdrawal: 5-10mg	May repeat q10-15 minutes as needed. Max total dose 30mg
Vasopressor Epi	IV	See Protocol Dosing	On/Off as needed, titrate for effect
Verapamil	IV/IO	5mg slow IVP over 2 min. (55<over 3 min)	5mg slow IVP over 2 min, 15 min after initial dose.
Versed	IV/IO/IM/IN	Excited Delirium: 5mg IM/IN Severe Agitation/Combative: 5mg IM/IN Status Seizure/Restraint/Spasms/Sedation: 1-5mg IV/IO/IM/IN	Excited Delirium: Q5 min PRN Sedation up to 3 doses. Severe Agitation/Combative: 5mg after 5 minutes Status Seizure/Restraint/Spasms/Sedation: DO
Zofran	IV/ODT	4mg	4mg Q10 min. Max of 16mg total.

Weld County Protocols EMS
Section 500b - Mini Dosages Page
Pediatric Medication Dosages

Medication	Route	Initial Dose	Repeat Dose
Aspirin	NA	NA	NA
Adenosine	IV/IO	0.1mg/kg followed by 5cc of saline Max 6mg	0.2mg/kg followed by 5cc of saline Max 12mg
Albuterol/Levalb	Nebulized	2.5mg in 6cc of saline	2.5mg in 6cc of saline repeat for effect
Amiodarone	IV/IO	Cardiac Arrest: 5mg/kg IVP Wide complex tach: 5mg/kg over 10	Cardiac Arrest: DO Wide complex tach: DO
Ativan	IV/IO/IM	Status Epilepticus: 0.05-0.1mg/kg over 20-30 sec	Status Epilepticus: 0.05-0.1mg/kg, over 20-30 sec. Max of 2mg total.
Atropine	IV/IO/IM	Symptomatic bradycardia 0.02mg/kg Organophosphate poisoning: <2 y/o 0.05mg/kg IM. 2-10 y/o 1mg IM. >10 y/o 2mg IM	DO
Atrovent	Nebulized	500mcg mixed with 2.5mg Albuterol/levalbuterol	q5-10 minutes PRN. Max Atrovent 3 doses
Benadryl	IV/IO/IM	1-2mg/kg IV	Max of 25mg
Calcium Cl	IV/IO	20mg/kg IV/IO over 3-4 minutes	DO
Cardizem	IV/IO	NA	NA
Cyano Kit	IV/IO	70 mg/kg IVP Max dose of 5.0g	DO
Dextrose	IV/IO	Hypoglycemia: 0.5g/kg (5ml/kg) D10 Infusion Cardiac Arrest: 2ml/kg D25 IV/IO push Neonatal Hypoglycemia: 0.2g/kg (2ml/kg) D10	Hypoglycemia: 0.5g/kg D10 Infusion (Max 25g) Cardiac Arrest: SO Neonatal: Q30 minutes until BGL >45
Epinephrine	IV/IO/IM	Cardiac Arrest: 0.01mg/kg 1:10,000 IVP Bradycardia: 0.01mg/kg 1:10,000 over 10 min Anaphylaxis/Asthma/Bronchospasm: 0.01mg/kg 1:1,000 IM	Cardiac Arrest: 0.01mg/kg 1:10,000 IVP (Every 3-5 min) Bradycardia: DO Anaphylaxis/Asthma/Bronchospasm: DO
Fentanyl	IV/IO/IM/IN	1-2mcg/kg. Max 2mcg/kg	After Max 2mcg/kg is reached: DO
Glucagon	IV/IO/IM/IN	Hypoglycemia: 0.1mg/kg, IM/IN up to 1.0mg Beta Blocker OD: 0.1mg/kg, IV/IO up to 1.0mg	Hypoglycemia: DO Beta Blocker OD: DO
Glucose - oral	Buccal	15g	
Lidocaine	IV/IO/ET	Cardiac: 1.0mg/kg IV/IO/ET EZIO: 0.5mg/kg Max 40mg	Cardiac: 0.5-0.75mg/kg q5-10 minutes. Max of 3mg/kg total. EZ IO: 0.25mg/kg
Magnesium Sulfate	IV/IO	N/A	N/A
Morphine	IV/IO	0.1-0.2mg/kg Max 0.2mg/kg	After Max of 0.2mg/kg: DO
Narcan	IV/IO/IM/IN	0.4-2mg	0.4-2mg. May be repeated after 5 min.
Nitroglycerin	SL/Transdermal	N/A	N/A
Phenylephrine	IN	Administer 2 sprays in the nostril prior to nasal intubation. 2 sprays in affected nare for patient with nose bleed.	
Racemic Epi	Nebulized	0.5cc mixed with 6cc saline	DO

Weld County EMS Protocols
Section 500b - Mini Dosages Page

Pediatric Medication Dosages

Sodium Bicarb	IV/IO	Cardiac Arrest, Tricyclic Anti-Depressant O.D. 1mEq/kg Crush Injury: 1mEq/kg just prior to release.	Cardiac Arrest: DO Tricyclic Anti-Depressant OD: DO Crush Injury: DO
Solumedrol	IV/IO	2mg/kg	Max dose of 125mg total
Terbutaline	SQ	N/A	N/A
Tetracaine Hydrochloride	ophthalmic	1-2 drops in the eye	1-2 drops in the eye as needed
Valium	IV/IM	<13 years old Status Epilepticus: 0.1-0.3mg/kg >13 years old Status Epilepticus: 5-10mg	<13 years old: may repeat q2-5 minutes as needed. Max total dose 5mg >13 years old: may repeat q2-5 minutes as needed. Max total dose 10mg
Vasopressor Epi	IV	See Protocol Dosing (Age > 12 Years)	On/Off as needed, titrate for effect
Verapamil	IV/IO	N/A	N/A
Versed	IV/IO/IM/IN	Seizure/Sedation: 0.05mg/kg Max single dose of 2.5mg IV/IO 0.2mg/kg IM/IN Severely Agitated/Combative < 13 y/o: DO	Seizure/Sedation: 0.05mg/kg Max single dose of 2.5mg/kg. May be repeated once after 5 minutes.
Zofran	IV/ODT	0.1mg/kg Max 4mg	Single dose

Section 600



**Patient Assisted
Medications**

Weld County 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 cardiacarrest 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.

Weld County EMS Protocols

Section 601: Epinephrine Auto Injector

- Excitability.
- Dizziness.

Administration:

	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Epinephrine Auto Injector	SO	SO	SO	SO	SO	SO

Weld County 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.

Weld County EMS Protocols

Section 602: Metered Dose Inhaler

- Patient may deteriorate. Use ventilatory assists if necessary to maintain airway and respirations.
- Send inhaler and all medications with the patient for transport.

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Metered Dose Inhaler	—	DO/ P	DO/ P	DO/ P	SO	SO

Weld County EMS Protocols

Section 603: Narcan (Naloxone) Auto Injector

Pharmacology / Actions:

- Narcotic antagonist.

Indications:

- 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Narcan: (Naloxone)	___	SO	SO	SO	SO	SO

Weld County 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:

Weld County EMS Protocols

Section 604: Nitroglycerin

- Hypotension.
- Headache.
- Pulserate changes.
- Pain relief.
- Reassess patient vital signs and status.

Administration:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administration of Patient Prescribed Nitroglycerin	_____	DO/ P	DO/ P	SO	SO	SO

Weld County EMS Protocols

Section 605: Glucose - Oral

Pharmacology / Actions:

- Increases blood glucose levels.

Special Information Needed:

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

- | | EMR | EMTB | EMT IV | AEMT | EMTI | EMTP |
|----------------------------------|-----|------|--------|------|------|------|
| • Administration of Oral Glucose | SO | SO | SO | SO | SO | SO |

Section 700



Procedures Section

Weld County EMS Protocols

Section 701: Airway: Cricothyrotomy

Indications:

- To secure an airway when all other methods have failed.
- Reserved for patients who can't be ventilated and can't be intubated.

Contra - Indications:

- Hemorrhage or insertion into subcutaneous tissue.
- Injury to larynx & vocal cords.
- Tracheal stenosis or infection.
- Ability to ventilated adequately with a basic airway
- Age less than 12

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.

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 (Tube provided in kit or 6.0-6.5ETT).
 - **Use Seldinger technique over a boujie if using endotracheal tube.**
 - Inflate balloon & ventilate with oxygen.
 - Auscultate breath sounds.
 - Secure the tube.
- Attach capnography.
- Apply C – Collar if necessary.

Procedure:

- Cricothyrotomy:

EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
_____	_____	_____	_____	_____	SO

Weld County EMS Protocols

Section 702: Airway: Pediatric Needle Cricothyrotomy

Indications:

-
- **PEDIATRIC PATIENTS ONLY < 12 YEARS OF AGE WITH ANY OF THE FOLLOWING:**
 - To secure an airway when all other methods have failed
 - Cannot intubate, cannot ventilate
 - Foreign body airway obstruction not visualized with direct laryngoscopy
 - Airway obstruction due to trauma, burns or severe anaphylaxis

Contraindications:

-
- Patient can quickly and easily be intubated using non-surgical measures
 - Unable to appropriately identify appropriate anatomy
 - Fractured or significantly damaged larynx
 - Tracheal transection
 - Hemorrhage or insertion into subcutaneous tissue
 - Tracheal stenosis or infection

Precautions / Considerations:

-
- Massive neck edema
 - Children younger than 5 years of age may require percutaneous transtracheal jet ventilation (PTV) if available
 - 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.
 - Pediatric cricothyroid membrane is significantly different than adult: smaller, more anterior, funnel shape, structures or more difficult to locate and stabilize
 - Temporary emergency airway, becomes less effective after approximately 45 minutes

Technique / Procedure:

-
- Assemble your equipment 10 – 16 gauge over the needle catheter, 3ml and 10 ml syringes, 3.0mm ET tube connector
 - Identify landmarks
 - Use non-dominant hand thumb and middle finger to grasp and stabilize the thyroid cartilage from sides
 - Palpate cricothyroid membrane
 - Swab with alcohol or betadine solution
 - Re-locate landmarks
 - Insert needle through inferior aspect of cricothyroid membrane at 45-60 degree angle. Be cautious not to penetrate through the posterior wall of the trachea.
 - If the over-the-needle catheter allows, advance catheter while aspirating until loss of resistance and a return of air bubbles are noted
 - If using an InSyte or safety IV catheter, advance catheter until you penetrate the cricothyroid membrane, advance as you retract the stylet.
 - Firmly grasp the syringe and advance the catheter at 45-60 degree angle until the hub is flush with skin
 - Maintaining control of catheter, connect 3.0mm ET tube connector to catheter (see picture reference)
 - Attach Capnography and BVM with high flow O2 and begin ventilation at age appropriate rate only until chest rise is noted

PEDIATRIC RESPIRATORY RATE	
Age	Breaths per minute
Infant (birth – 1 year)	30-60bpm
Toddler (1-3)	24-40bpm
Preschooler (3-6)	22-34bpm
School age (6-12)	18-30bpm
Adolescent (12-18)	12-16bpm
If increased ICP is suspected ventilate at higher rate to improve CO2 elimination	

Weld County EMS Protocols

Section 702: Airway: Pediatric Needle Cricothyrotomy

Technique / Procedure (Continued):

- Confirm procedure with wave form capnography, chest rise and fall and auscultated breath sounds
- Adequate time must be provided to allow patient to exhale via spontaneous chest recoil
- Exhalation and Co2 removal can be accentuated with gentle manual chest compressions
- Secure catheter using any means available – keep in mind that direct hands on control might be most appropriate means of securing the catheter during transport
- Continuous reassessment for dislodgment, subcutaneous emphysema, adequate ventilation and exhalation, SpO2 and other hemodynamic parameters
- If unable to maintain an adequate airway, resume basic airway management and transport to nearest hospital
- Notify receiving hospital as soon as possible of airway procedure
- Document time/confirmation / change in patient condition
- Apply C-Collar if necessary
- COMPLICATIONS: bleeding and / or hematoma formation, subcutaneous emphysema, barotrauma (inadequate exhalation), catheter kink or obstruction, pneumothorax, pulmonary aspiration and esophageal perforation

Procedure:

	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Pediatric Needle Cricothyrotomy	—	—	—	—	—	SO



Weld County EMS Protocols

Section 703: 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	LMASize	Max.Cuff Air Volume
Neonate/Infant	Up to 10kg	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

Trouble shooting 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.

Weld County EMS Protocols

Section 703: Airway: Laryngeal Mask Airway (LMA)

- 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 CO² detector, capnography, equal breath sounds, & adequate chest rise & fall.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Laryngeal Mask Airway (LMA) insertion:	_____	PPA	PPA	SO	SO	SO

Weld County EMS Protocols

Section 704: 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 to each nare. (Per Protocol)
- Apply Lidocaine Jelly onto NPA and insert into nare, leaving in place while preparing intubation. (Per Protocol)
- Prepare endotracheal tube with water soluble lubricant and BAM device.
- Remove NPA
- Listen or watch for patient breathing. Advance endotracheal tube on inspiration.
- Inflate cuff and secure the tube.
- Listen for epigastric and bilateral breath sounds.
- Attach the Capnography device, if the Capnography device is not available, attach the colorimetric ETCO2 detector
- Attach appropriate bag device and continue to ventilate with oxygen.
-

Procedure:

	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Nasal endotracheal intubation.	_____	_____	_____	_____	_____	SO

Weld County EMS Protocols

Section 705: 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 naso pharynx.

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 earlobe)
- 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:

	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Nasal Pharyngeal airway insertion:	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 706: Airway: Oral Endotracheal Intubation

Hi - Lo Evac Endotracheal Tube

Indications:

- To be used for patients that need definitive control of their airway.

Contra - Indications:

- Hi-Lo Evac is 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 all equipment and back-up devices nearby and ready (suction, boujie, Basic Airway Devices, BVM, Cricothyrotomy kit)
- 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. Subglottic suctioning may create a sound similar to 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.
- If still unsuccessful after two attempts another airway management technique should be considered such as the King Tube airway or Oral Pharyngeal Airway.

Technique / Procedure:

- Pre-Oxygenate patient by nasal cannula at 15LPM running during intubation.
Prepare equipment and select proper size of endotracheal tube. Insert the endotracheal tube. Inflate cuff and secure the tube. Listen for epigastric and bilateral breath sounds.
Attach the colorimetric ET CO² detector or capnography device if available. Post procedure oxygenation via NC or NRB may be utilized.
- Attach appropriate bag device and continue to ventilate with oxygen. Be certain not to hyperventilate the patient.
- Hi-Lo Evac ET tube-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:

- Oral endotracheal intubation: Hi - Lo Evac Tube

EMR

EMTB

EMT IV

AEMT

EMT I

EMT P

SO

SO

Weld County EMS Protocols

Section 707: 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 oralpharyngeal airway. (Corner of the mouth to the tip of the ear lobe)
- Insert the oralpharyngeal airway without pushing the tongue posteriorly.
- Provide supplemental oxygen and /or assisted ventilations via bag -valve - mask after insertion.

Procedure:	EMR	EMTB	EMT IV	AEMT	EMT I	EMTP
• Oral Pharyngeal airway insertion:	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 708: 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 adult patient or the weight of the pediatric 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Supraglottic airway device insertion.	_____	PPA	PPA	SO	SO	SO
• Gastric tube insertion into supraglottic airway device.	_____	_____	_____	_____	_____	SO

Weld County EMS Protocols

Section 709: 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 LifeBand 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.**

Weld County EMS Protocols

Section 709: Auto Pulse

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 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:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Auto Pulse application and use:	SO	SO	SO	SO	SO	SO

Weld County 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:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Automated External Defibrillator:	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 711: 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Use of the BAAM for nasal endotracheal intubation.	_____	_____	_____	_____	_____	SO

Weld County EMS Protocols

Section 712: 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 top edge of the test strip until confirmation window is completely fill before the meter begins to count down.
- The meter will count down from 5 to 1 and display the test result with date and time.
- 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:

	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• Blood Glucose Monitoring:	PPA	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 713: 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:

- Contact individual in possession of a Carbon Monoxide Monitor for calls that include those situations listed above.
- Press the power button to turn the carbon monoxide monitor on.
- Place the fingerprobe 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:

- Carbon Monoxide Monitoring:

EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
PPA	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 714: 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			
Black Lead	Left Arm	3 - Lead	4 - Lead	5 - Lead
White Lead	Right Arm			
Red Lead	Left Leg			
Green Lead	Right Leg			
Brown Lead	4 th Intercostal Space Right of Sternum			

Technique / Procedure:

- Application of electrodes.
- Record ECG rhythm strip.
- Interpret the EKG rhythm: **(Intermediates & Paramedics Only)**

Procedure:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Cardiac Monitor: Application & acquisition of 4 lead.	_____	SO	SO	SO	SO	SO
• Cardiac Monitor: Interpretation of 4 lead EKG.	_____	_____	_____	_____	SO	SO

Weld County EMS Protocols

Section 715: 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.

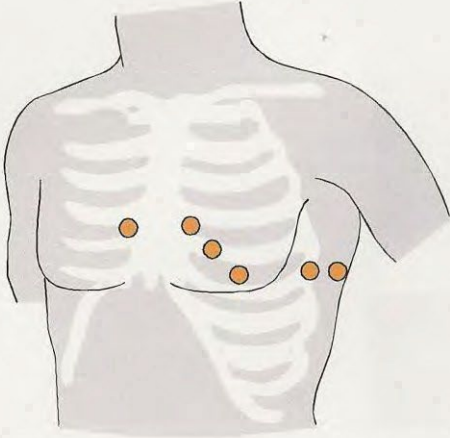
Precautions / Notes:

- 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 V⁴R 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 <i>Lateral</i>	aVR	V1 <i>Septal</i>	V4 <i>Anterior</i>
II <i>Inferior</i>	AVL <i>Lateral</i>	V2 <i>Septal</i>	V5 <i>Lateral</i>
III <i>Inferior</i>	AVF <i>Inferior</i>	V3 <i>Anterior</i>	V6 <i>Lateral</i>



The diagram shows a human torso from the front, with the ribcage and heart area highlighted. Six orange dots indicate the placement of EKG leads: V1 is at the 4th intercostal space on the right side of the sternum; V2 is at the 4th intercostal space on the left side of the sternum; V3 is located between V2 and V4; V4 is at the 5th intercostal space at the midclavicular line; V5 is at the same level as V4 but at the anterior axillary line; and V6 is at the same level as V5 but at the midaxillary line.

Weld County EMS Protocols

Section 715: Cardiac Monitor - 12 Lead EKG

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 V⁴R lead simply place an electrode on the right side of the chest in the same exact location as that of the V⁴ 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 V⁴ lead.

Procedure:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Cardiac Monitor: Application & acquisition of 12 lead.	_____	SO	SO	SO	SO	SO
• Cardiac Monitor: Interpretation of 12 lead.	_____	_____	_____	_____	SO	SO

Weld County EMS Protocols

Section 716: 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.

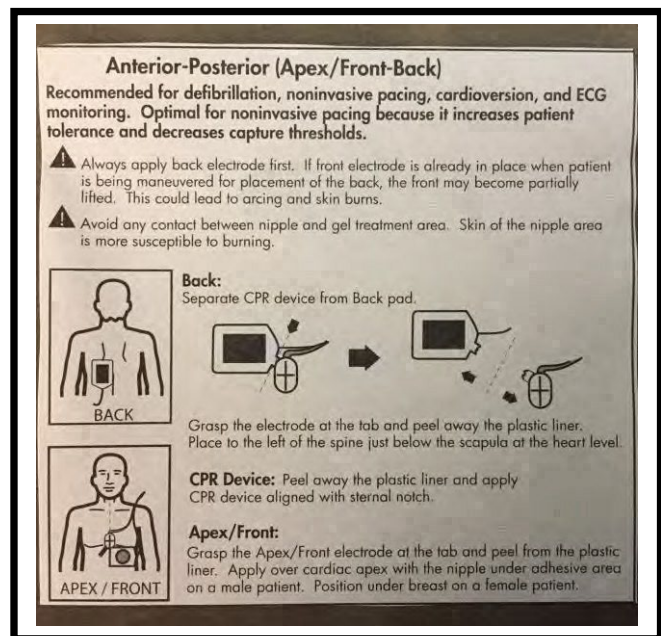
Contra - Indications:

- 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.

Zoll Medical Recommended Pad Placement



Weld County EMS Protocols

Section 716: Cardiac Monitor - Cardioversion

Technique / Procedure:

- Interpretation of the EKG rhythm as one of those described above.
- Application of the multi - function pads.
- Depress the "SYNC" button on 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Synchronized cardioversion. (Per ACLS & PALS)	_____	_____	_____	_____	_____	SO

Weld County EMS Protocols

Section 717: Cardiac Monitor - Defibrillation

Indications:

- An EKG rhythm that reveals ventricular fibrillation.
- An EKG rhythm that reveals ventricular tachycardia without pulse.

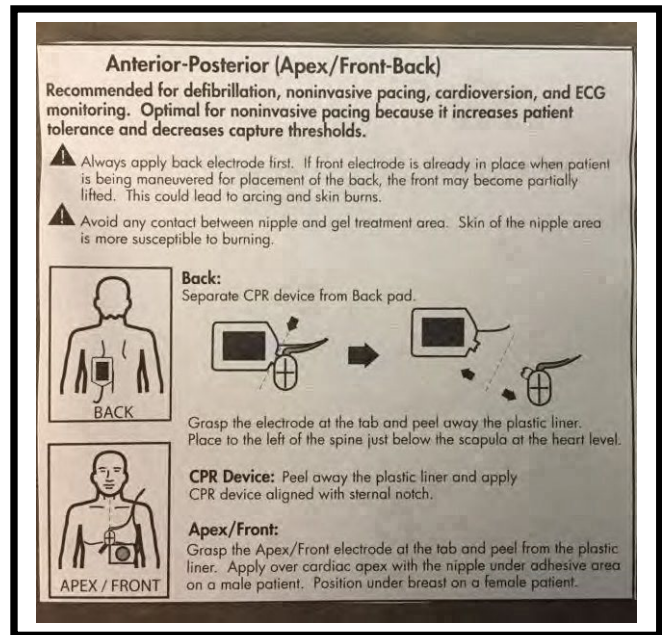
Contra - Indications:

- 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.

Zoll Medical Recommended Pad Placement



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.

Weld County EMS Protocols

Section 717: Cardiac Monitor - Defibrillation

Special Notes:

- After 6 total shocks contact medical control for guidance on further treatments on scene vs. transport vs. pronouncement.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMT I	EMTP
• Defibrillation. (Per ACLS & PALS)	_____	_____	_____	_____	SO	SO

Weld County EMS Protocols

Section 718: 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.

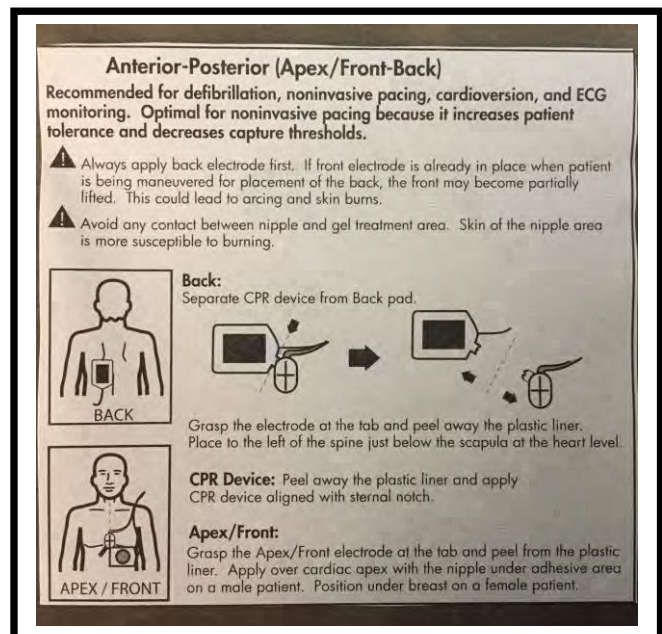
Contra - Indications:

- 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.

Zoll Medical Recommended Pad Placement



Weld County EMS Protocols

Section 718: Cardiac Monitor - Transcutaneous Cardiac Pacing

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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Transcutaneous Cardiac Pacing:	_____	_____	_____	_____	SO	SO

Weld County EMS Protocols

Section 719: Chest Decompression

Indications:

- MUST HAVE: Hypotension/signs of shock
 - With any of the following:
 - Absent breath sounds
 - Subcutaneous emphysema and /or crepitus
 - Obvious chest trauma
 - Tracheal shift
 - Jugular venous distention
 - Hemoptysis
 - Narrow Pulse pressure. Increased resistance to ventilations
 - Persistent cyanosis and progressive respiratory distress
 - Low oxygen saturation
- Needle decompression is NOT indicated for pneumothorax without tension physiology
- Consider bilateral decompression in traumatic pulseless arrest if patient is being resuscitated and any trauma to the trunk.

Contra - Indications:

- None listed.

Precautions / Notes:

- Accurate diagnosis is difficult.
- Angiocath may become occluded with soft tissue.
- Simple pneumothorax is NOT an indication for needle decompression.
- Bleeding from intercostal artery or vein, or great vessel.
- Liver, bowel, or spleen perforation with mid - axillary approach (stay at high intercostal spaces).

Technique / Procedure:

- Prep the chest area. Expose and swab with antiseptic solution, alcohol, or betadine solution.
- Preferred location is Mid-Axillary line, 4th or 5th intercostal space for adults and pediatrics.
- Alternative location would be mid-clavicular line at the 2nd intercostal space for adults and pediatrics.
- ADULTS: Insert 10 gauge angiocath - Use longest angiocath available (Insert minimum 3 inches)
- PEDIATRICS: Insert 16 to 14 gauge angiocath -- Standard angiocath length
- Insert over the top of the rib to avoid nerve and blood vessel involvement.
- Remove syringe. Aspiration may be necessary.
- Apply Chest Seal if necessary.

Procedure:

EMR EMTB EMTIV AEMT EMTI EMTP

- Chest decompression as indicated. SO SO

Weld County EMS Protocols

Section 720: 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 cmH₂O 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.

Weld County EMS Protocols

Section 720: Continuous Positive Airway Pressure

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Continuous Positive Airway Pressure:	—	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 721: End Tidal CO₂ - Colormetric Device

Indications:

- End Tidal CO₂- colormetric device is to be used to assist with verification of endotracheal tube placement.
- End Tidal CO₂- colormetric device is 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.
- Cannot 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 CO₂ exchange.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Use of ET CO ₂ colormetric device to confirm ETT.	___	PPA	PPA	SO	SO	SO

Weld County 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 ETCO₂ 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 ETCO₂ > 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 ETCO₂ 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; ETCO₂ can help to determine if intervention is needed due to elevated ETCO₂ 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 ETCO₂ even before tachycardia and body temperature increases are measurable.
 - Perfusion assessment in any patient; particularly beneficial in patients suffering from shock.
 - In hyperglycemic patients, ETCO₂ 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 outside of the monitor; push the soft key next to "CO₂" on the monitor screen 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.

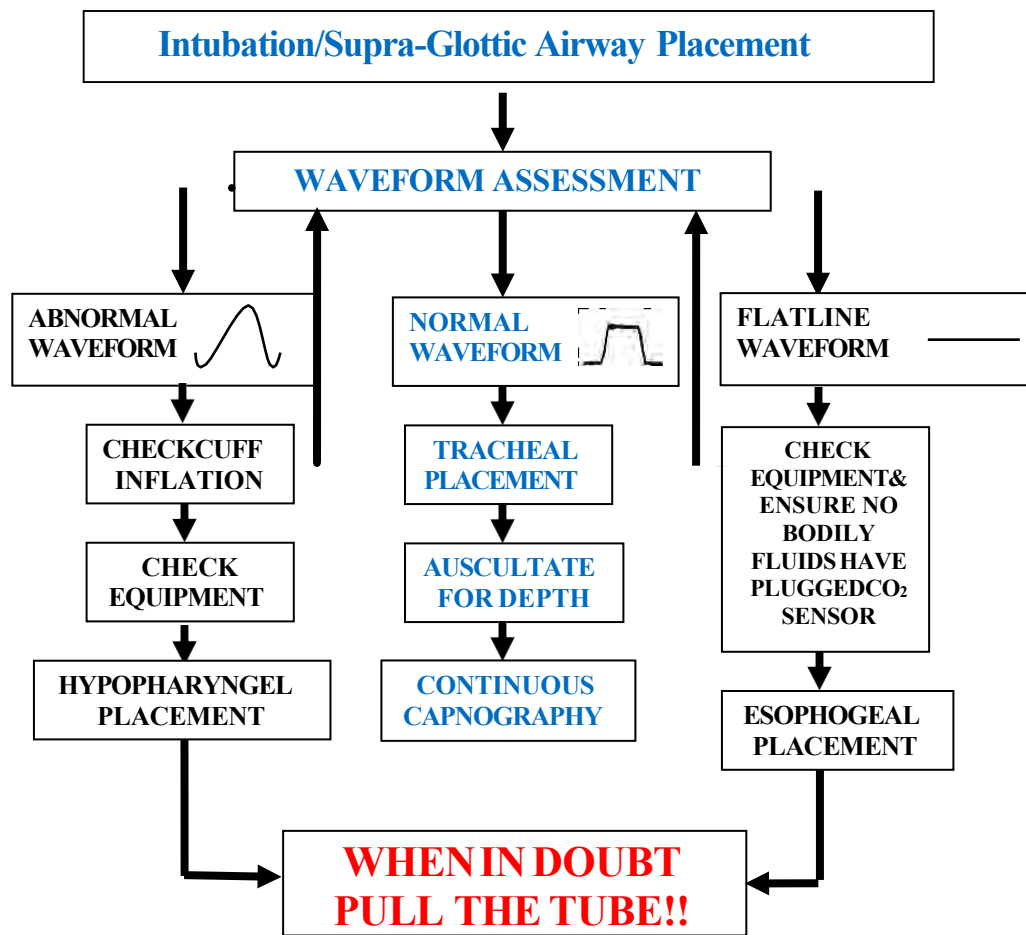
Weld County EMS Protocols

Section 722: End Tidal CO2 - Operational Waveform Capnography

- 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 “snapshot” button to document wave form 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 that the “print” button on the X series does not record into any summaries for later printing; only the “snapshot” button does.
- 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:

- Use of intubated and non-intubated waveform capnography & colorimetric capnography

	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
	---	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 723: 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:

- Aspirate and discard 10cc of blood from catheter prior to flushing or administering medications.
- 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:

	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
<ul style="list-style-type: none"> • 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.

Weld County EMS Protocols

Section 723: Existing Central Lines Access

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.

Weld County EMS Protocols

Section 723: Existing Central Lines Access

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.

Trouble shooting 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.

Weld County EMS Protocols

Section 723: Existing Central Lines Access

Troubleshooting Tip For Central Lines:

- **Procedure:**
 - Increase thoracic pressure.
- **Tip:**
 - Have patient cough.
 - Have patient breathe deeply.
 - Have patient perform a valsalva maneuver.

Trouble shooting 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.

Trouble shooting Tip For Central Lines:

- **Procedure:**
 - If unable to infuse through the implanted port.
- **Tip:**
 - De-access and re-access with needle bevel up.

Weld County EMS Protocols

Section 724: 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administer medication via I.O. route	___	___	___	SO	SO	SO

Weld County EMS Protocols

Section 724: Medication Administration

Technique / Procedure: Intravenous Administration

- Use appropriate needle for solution.
- Cleanse injection port with alcohol.
- Insert needle into the injection port, if needless tubing is being used, remove the needle and attach the syringe to the port.
- Pinch I.V.tubing between port and I.V.bag. Inject medication.
- Release tubing and administer 20 cc fluid bolus.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administer medication via I.V. route.	___	___	SO	SO	SO	SO

Technique / Procedure: Subcutaneous Injection

- Use 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administer medication via IM injection.	___	___	___	SO	SO	SO

Weld County EMS Protocols

Section 724: Medication Administration

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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Administer medication via Intranasal route.	_____	_____	SO	SO	SO	SO

Weld County EMS Protocols

Section 725: Nasogastric Insertion

Indications:

- 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%** 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 epigastrium with a stethoscope.
- Attach tube to suction unit and tape tube securely into position.
- Proceed with aspiration or irrigation.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
	_____	_____	_____	SO	SO	SO

Weld County EMS Protocols

Section 726: Pelvic Binder

Indications:

- Suspected pelvic fracture
 - Pelvic stabilization devices include the Pelvic Binder and a simple folded sheet, folded on the diagonal. These devices are all designed to wrap around the pelvis and secure in the front. This aligns the pelvic bones, brings the iliac crest into a normal alignment, and stabilizes the pelvis without encumbering the legs, the perineal area, or the upper abdomen.

Contra - Indications:

- If pain increases when device is being tightened, stop and release pressure.

Precautions / Notes:

- Placement of any of these devices under the patient must be done carefully to minimize unnecessary movement of the patient.
- Unnecessary movement may exacerbate internal bleeding.
- When accessing the pelvis, DO NOT ROCK the pelvis. Apply gentle inward pressure on the iliac crest and downward pressure on the sides of the iliac crest.
- Assessment of distal circulation, sensation, and movement both before and after application of the binder.
- If possible, use two people to apply and tighten the devices. This will help minimize any unnecessary movement of the patient.
- Assess vital signs frequently.
- If the binder is placed above the trochanter there is a risk of complication by worsening of a pelvic fracture (open book fracture)

Technique / Procedure:

- Sheet:
 - Fold the sheet on the diagonal and opposite sides to center to create a 20–24-inch width.
 - Place the folded sheet under the patient on the backboard or pram prior to moving the patient.
 - Place the sheet so that the top edge of the sheet is even with the greater trochanter.
 - Tie the sheet in a square knot, pulling both ends simultaneously to minimize movement of the patient.
- Pelvic Binder:
 - Place the pelvic binder with the black side against the patient at the level of the greater trochanter (head of the femur)
 - Place black strap through the buckle and pull completely through
 - Have one person hold the orange strap and another person pull the black strap until you hear and feel the buckle click.
 - Maintain tension and immediately press the black strap onto the surface of the binder
 - Do not be concerned if you hear a second click after the binder is secured.

Procedure:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Pelvic Binder	-	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 727: 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!!

Weld County EMS Protocols

Section 727: Pulse Oximetry Monitoring

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:

• Pulse Oximetry Monitoring	EMR PPA	EMTB SO	EMT IV SO	AEMT SO	EMT I SO	EMT P SO
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Weld County EMS Protocols

Section 728: 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.
- An inverted K.E.D. device may also be used to stabilize the pelvis.
- The type of splint will be dependent 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:	EMR	EMTB	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.

Weld County EMS Protocols

Section 728: Splinting - Extremity

- 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Traction splinting.	_____	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 729: 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:

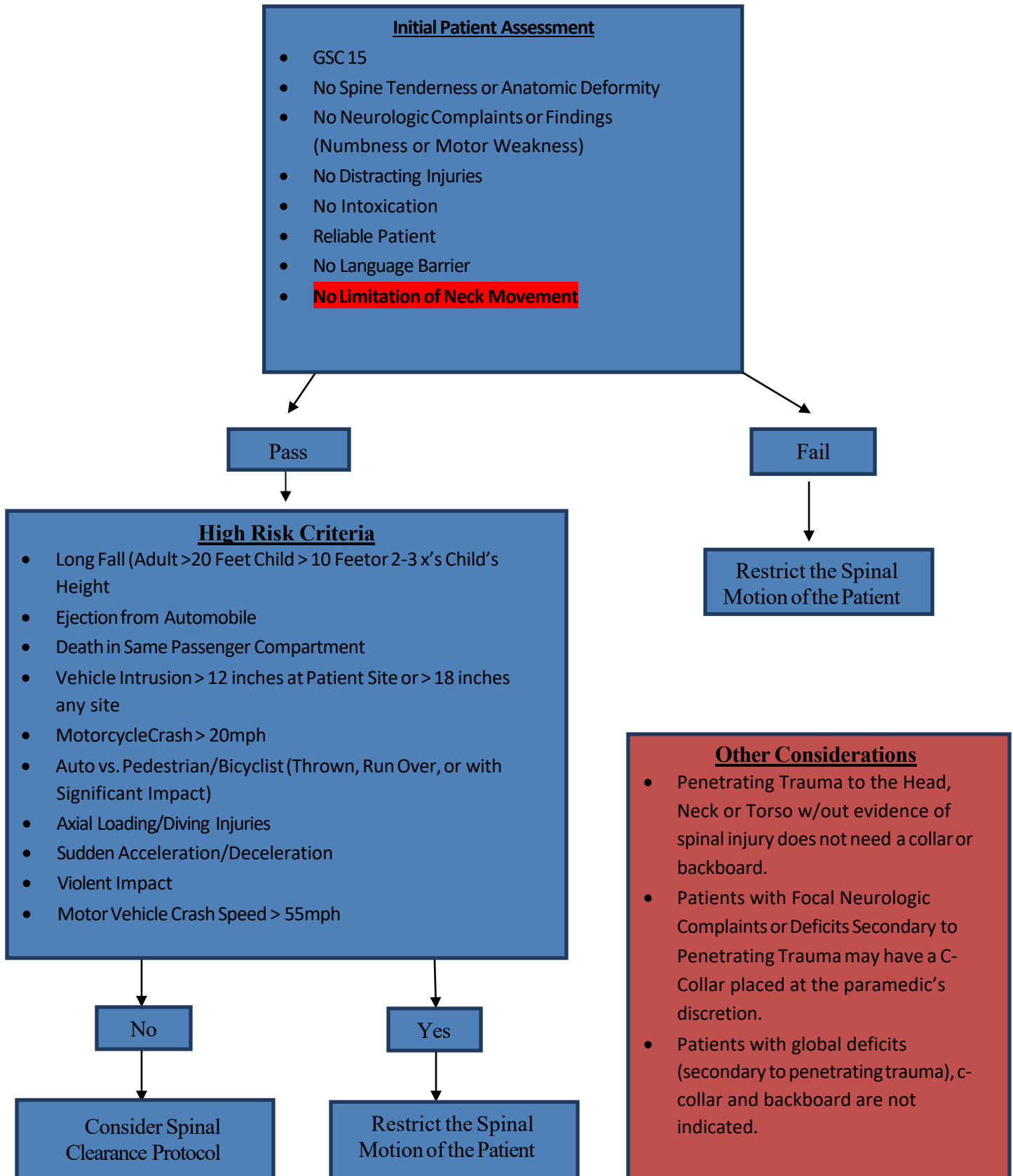
- It will be the on scene Paramedic's discretion to complete the Spinal Injury Clearance protocol.
- Long spine board is considered an extrication device rather than an immobilization device.
- If patient is ambulatory, place c-collar first, then the patient may walk to and place themselves on cot.
- 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 spinal motion restriction, the long spine board or scoop should be tilted to the left side.

Procedure:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Spinal Motion Restriction: Long Spine Board or Scoop.	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols
Section 729: Splinting Spinal Motion Restriction



Weld County EMS Protocols

Section 730: 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:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Adult Suctioning: Endotracheal Route.	_____	_____	_____	_____	SO	SO
• Neonatal Suctioning: Endotracheal Route	_____	_____	_____	_____	SO	SO

Weld County EMS Protocols

Section 731: 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.

Weld County EMS Protocols

Section 731: Suctioning - Pharyngeal

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Adult Suctioning: Pharyngeal.	SO	SO	SO	SO	SO	SO
• Neonatal Suctioning: Pharyngeal.	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 732: 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.

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.
- Cleans 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.

Weld County EMS Protocols

Section 732: Taser Probe Removal

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Taser Probe Removal:	_____	DO/P	DO/P	SO	SO	SO

Weld County EMS Protocols

Section 733: Tourniquet Placement

Indications

- Life threatening extremity hemorrhage that cannot be controlled by other means.
- Serious or life-threatening extremity hemorrhage where conditions (patient location, tactical or hazmat environment, etc.) prevent the use of standard hemorrhage control techniques.
- Life threatening condition(s) that require immediate attention and significant extremity hemorrhage where the use of a tourniquet is more expedient than standard hemorrhage control.

Contra - Indications

- Non-arterial bleeding

Precautions / Notes

- Although external skin wounds may be dramatic, they are rarely a high management priority in the trauma victim.
- If damaged vessel is close to location of tourniquet, the vessel may retract beyond tourniquet placement. Frequent reassessment of injury location and area above tourniquet is necessary.
- Once applied, a tourniquet should not be removed in the field, unless being relocated as described below.
- Open wounds should be dressed per protocol after bleeding is controlled with tourniquet.
- Ensure tourniquet is not placed over items in pockets, holsters, or other items that restrict tightening of tourniquet completely.

Complications

- A second tourniquet may be required to completely control bleeding. If needed, apply directly next to, and in contact with, first tourniquet. Do not overlap tourniquets.
- Failure to pull strap across tightly on CAT prior to using windlass can result in failure to control bleeding.
- Failure to adequately tighten the tourniquet to the loss of pulses may cause restriction of venous return without control of arterial blood flow, resulting in a compartment syndrome.
- Pain at location of tourniquet is expected in conscious patients. Treat pain per protocol if needed.

Technique / Procedure:

- Apply manual pressure to wound, or use brachial artery pressure points for upper extremities, femoral artery pressure points for lower extremities.
- Place tourniquet above injury location, pulling the trailing end of the tourniquet tightly and securing it.
- Twist windlass until all bleeding has ceased and distal pulses are no longer present in injured extremity.
- Secure windlass in clip and pull windlass security strap over clip.
- Note time of application and ensure time is communicated to receiving facility.
- Hasty application: Place tourniquet "high and tight" on wounded extremity.
 - Tourniquet should be placed as high as possible on injured extremity near groin or axilla junction, without going over the top of shoulder if applied to upper extremity.
 - Hasty application ensures complete mitigation of arterial blood flow to entire appendage if secured correctly.
 - Tourniquet can stay in place for 2-6 hours without high risk of long-term damage.

Weld County EMS Protocols

Section 733: Tourniquet Placement

- Deliberate application: Place tourniquet approx. 2"-3" above injury site.
 - Not advised for primary field care, or if time to definitive care is less than two hours.
 - Should be applied directly to skin after exposing wound.
 - If applied in deliberate fashion, ensure that bleeding is completely controlled, with special attention in assessing above and below tourniquet site.
- Relocation of Hasty to Deliberate tourniquet placement:
 - Should not be performed unless circumstance of care will require greater than two hours to definitive care.
 - **No relocation should be attempted if it cannot be reasonably accomplished based on provider judgment.**
 - Ensure hasty tourniquet has complete control of bleeding.
 - Remove clothing so tourniquet can be placed directly on skin.
 - Place deliberate tourniquet approx. 2-3" above injury site, or go one joint above injury site (for example, if injury is to lower leg/calf area, place additional tourniquet either 2-3" above the site, remembering to not place tourniquet over large muscle groups or skeletal structures with split bones, OR place tourniquet at or above the next joint proximal, (knee/elbow) or (hip/shoulder.))
 - Once site is selected, tighten deliberate tourniquet as appropriate, as if it was the sole tourniquet.
 - After tightening deliberate tourniquet, slowly remove hasty tourniquet, making sure to monitor injury site for additional bleeding. If bleeding occurs, attempt to tighten deliberate tourniquet. If bleeding is not controlled with deliberate tourniquet, retighten hasty tourniquet. No further attempts to relocate should be made.
 - If bleeding is controlled with deliberate tourniquet, leave hasty tourniquet in place but loosened. If bleeding reoccurs, the hasty tourniquet can easily be reapplied.

Procedure:	EMR	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
● Relocation of Tourniquet (Hasty vs Deliberate)	DO/P	DO/P	DO/P	DO/P	DO/P	DO/P

Weld County EMS Protocols

Section 734: 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.
- Pre fill 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:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• Buff Cap I.V. insertion.	___	___	SO	SO	SO	SO

Weld County EMS Protocols

Section 735: 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.
- If equipment allows, 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.
 - If equipment allows, 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:	EMR	EMTB	EMT IV	AEMT	EMT I	EMT P
• External jugular I.V. insertion:	_____	_____	_____	SO	SO	SO

Weld County EMS Protocols

Section 736: 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. (Glasgow 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.

Flowrates:

- 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.

Pain! Use of blood pump tubing is preferred when a pressure bag or infusion pump are not available.

- 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.

Weld County EMS Protocols

Section 736: Vascular Access: Intraosseous Insertion - EZ IO

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 patients should now receive Lidocaine I.O.
- Flush or bolus the EZ -IO catheter rapidly with 10 cc of normal saline using a 10cc 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.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Intraosseous Insertion: EZ -IO: Proximal Tibia	_____	_____	**	SO	SO	SO
• Medial Malleolus, Proximal Humerus			PPA			

** 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.

Weld County EMS Protocols

Section 737: Vascular Access: Intraosseous - Jamshidi

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:	EMR	EMTB	EMT IV	AEMT	EMTI	EMT P
• Intraosseous Insertion: Jamshidi	___	___	___	SO	SO	SO

Weld County EMS Protocols

Section 738: 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 en route 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.
- Secure the I.V. with tape and set at the "TKO" rate as described above.

Procedure:

- Peripheral I.V. insertion:

EMR

EMTB

EMT IV
SO

AEMT
SO

EMTI
SO

EMTP
SO

Weld County EMS Protocols

Section 739: Ventricular Assist Devices – LVAD/RVAD/BiVAD

Assessment:

- Determine Stable vs Unstable (Per UCH VAD Program):
 - Stable- HR < 100 or BP > 60
 - Unstable- HR > 100 or BP < 60 or Unresponsive
- Look and listen for audible or visual alarms.
- Attempt blood pressure with Doppler only. No automatic blood pressures.
- Determine mechanical issue vs physiological issue:
- Mechanical:
 - Is the DRIVELINE connected?
 - Is the POWERSOURCE connected and charged?
 - Does the CONTROLLER need replaced?
- Physiological:
 - CVA, TIA, Arrhythmias, Infections, Sepsis, Obstructions, Pump Failure. Treat conditions per protocol.
- If patient is unresponsive, or you can not get the LVAD restarted, start external compressions with the following vitals:
 - MAP < 55 OR EtCO₂ < 20 (ETT recommended to get accurate EtCO₂)
 - Follow Weld County Resuscitation protocol once compressions are initiated.

STABLE Patients:

- Address medical issues per protocol
- Transport
- Contact VAD coordinator

UNSTABLE Patients – VAD NOT RUNNING

- Chest compressions if required, follow [Cardiac Arrest Protocol](#)
- Address LVAD alarms
- Defibrillate if necessary
- Notify receiving facility and transport

UNSTABLE Patients – VAD RUNNING

- 250mL NS bolus
- Notify receiving facility and transport
- Chest compressions if apneic with no clinical evidence of perfusion, follow [Cardiac Arrest Protocol](#)

Weld County EMS Protocols

Section 739: Ventricular Assist Devices – LVAD/RVAD/BiVAD

Special Considerations:

- Contact the LVAD Coordinator as soon as possible.
 - 24/7 LVAD Coordinator Pager: 303.266.4522.
 - For pediatric patients contact the Children’s Hospital Colorado transplant coordinator pager at 303.890.3503.
 - Be prepared with name, DOB, patient condition, and ETA to facility you are transporting the patient to.

- Attempt to get patient to the UCHHealth Aurora Campus hospital if possible. If this is not possible transport to the closest most appropriate facility or patient request for continuation of care.

- It is vital to transport the patient’s back-up batteries and emergency equipment with the patient.

Assessment:	EMR	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:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Cardiac monitor: 4 lead EKG acquisition.	_____	SO	SO	SO	SO	SO
• Cardiac monitor: 4 lead EKG interpretation	_____	_____	_____	_____	SO	SO
• Capnography.	_____	SO	SO	SO	SO	SO
• Establish vascular access.	_____	_____	SO	SO	SO	SO
• Treat underlying medical issues per protocol.	SO	SO	SO	SO	SO	SO
• Cardiac monitor: 12 lead EKG acquisition.	_____	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 739: Ventricular Assist Devices – LVAD/RVAD/BiVAD

- | | | | | | | |
|--|-----|-----|-----|-----|----|----|
| • Cardiac monitor: 12 lead EKG interpretation. | ___ | ___ | ___ | ___ | SO | SO |
| • Initiate Chest Compressions.
MAP < 55 or EtCO ₂ < 20 | SO | SO | SO | SO | SO | SO |

Medications:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Administer: Oxygen	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 740: Wound Packing

Indications:

- To be used to control heavy bleeding not controlled with direct pressure, or when tourniquet application is not viable or effective.

Contra - Indications:

- No wound in the head, neck, or torso should be packed.

Precautions / Notes:

- Non-hemostatic gauze requires 5-10 minutes of direct pressure on packing site.
- Hemostatic gauze requires 3 minutes of direct pressure on packing site.
- Failure to adequately pack entirety of wound can result in poor bleeding control behind the gauze, causing uncontrolled bleeding that is not easily identified.

Complications:

- Failure to pack wound completely.

Technique / Procedure:

- Immediately apply direct pressure to the wound while gathering wound packing supplies.
- Place your gloved fingers-with or without a dressing-into the wound to apply initial pressure to the target area (with your target being the vein, artery or both) and compress the source of bleeding.
- Pack the wound with gauze or hemostatic gauze. Completely and tightly pack the wound cavity to stop hemorrhage.
- Begin packing the gauze into the wound with your finger, while simultaneously maintaining pressure on the wound. When no more gauze can be packed inside the wound, hold direct pressure on the wound for 5-10 minutes for non-hemostatic agent, 3 minutes for hemostatic agent.
- The wound should be very tightly packed, applying as much pressure as possible to the bleeding vessel.
- After packing the wound and no further bleeding is present, wound and packing material should be tightly wrapped and secured with a dressing.

Procedure:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Direct pressure.	SO	SO	SO	SO	SO	SO
• Hemostatic agents: (Topical)	SO	SO	SO	SO	SO	SO

Section 800

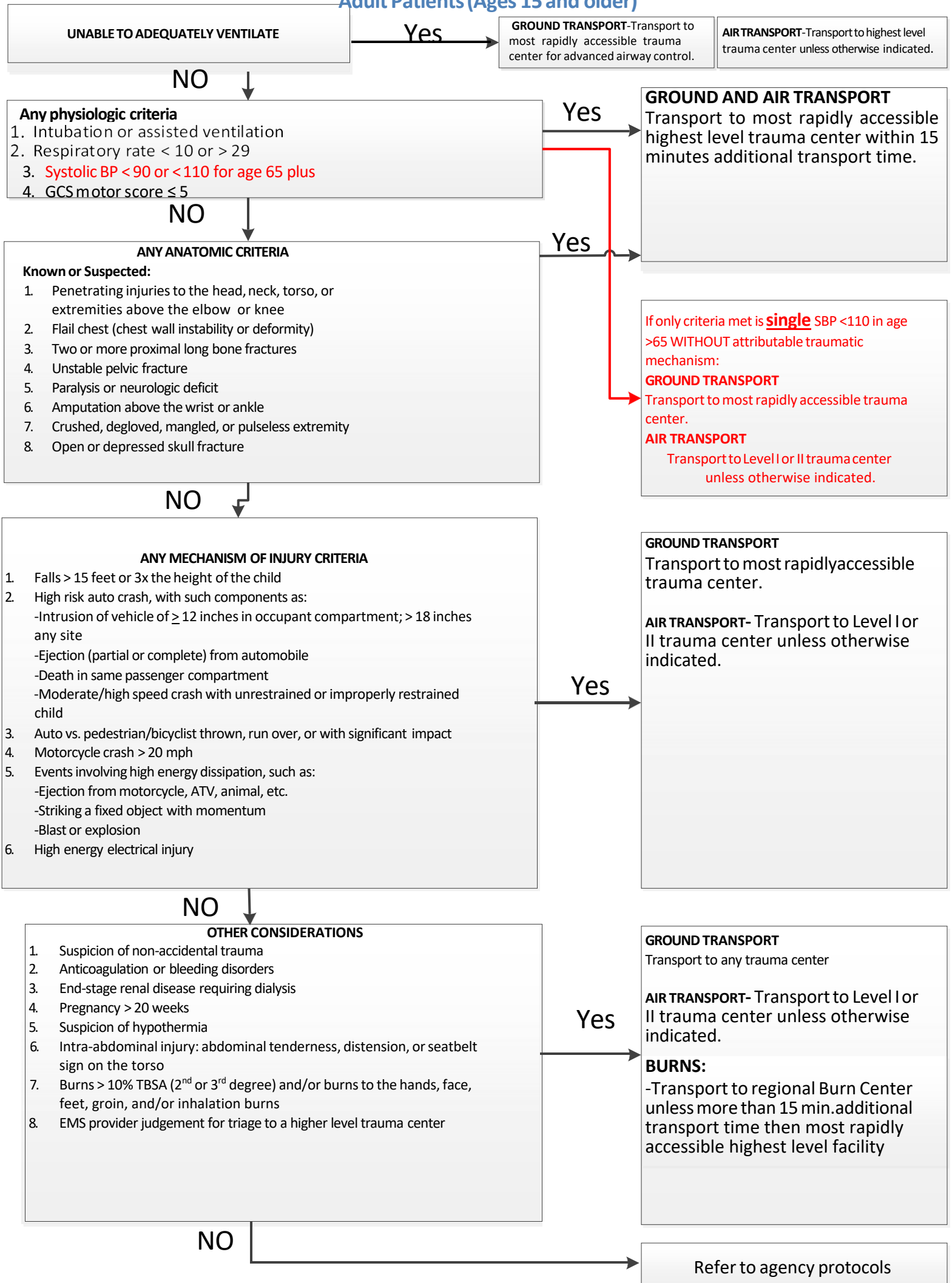


**Policies
Section**

Prehospital Trauma Triage Algorithm Guideline, NCRETAC

Adopted August 18, 2020

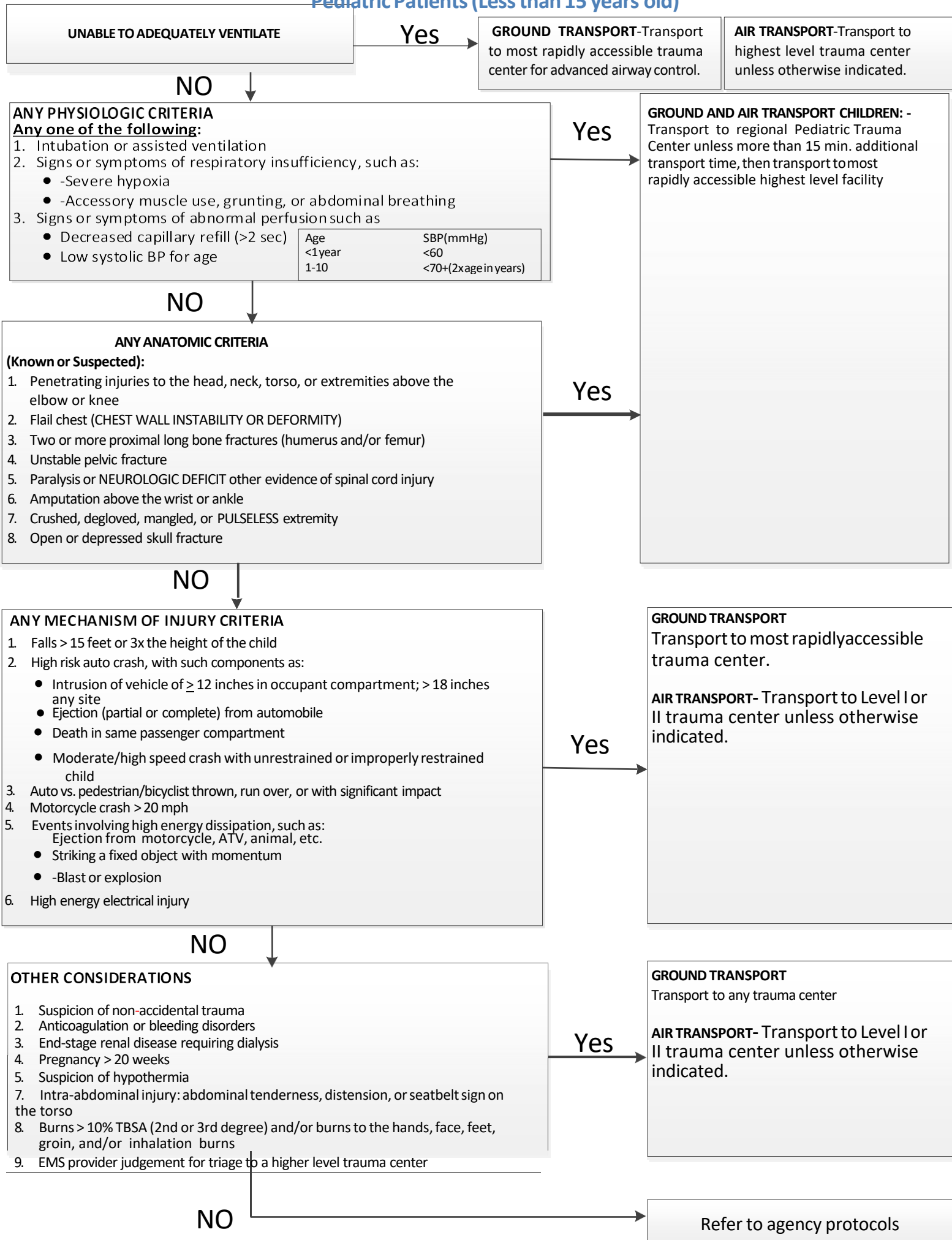
Adult Patients (Ages 15 and older)



Prehospital Trauma Triage Algorithm Guideline, NCRETAC

Approved August 18, 2020

Pediatric Patients (Less than 15 years old)



Weld County 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 canceled.
- 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 canceled 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.

Weld County 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 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.

Policy Statement:

Indications:

- Patients that are less than 90 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.
 - 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 V⁴R lead will be run to rule out right ventricular involvement.

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Supervisor: 970-302-2833



C.R. #



Cardiac Alert Checklist

Patient Name: DOB

Baseline Vitals BP: Pulse: Respirations: O2Sat:

Dispatch Time: Contact: Activation: ED Arrival:

1. Patient with active chest pain or discomfort that is consistent with an acute coronary syndrome (Less then 12 hours).....

OR

2. Other classic symptoms that are consistent with an acute coronary syndrome. (Dyspnea. Syncope. Dizziness. Diaphoresis. N & V)

AND

3. 1mmSTsegment elevation is present in at least two (2) anatomically contiguous leads

4. No left bundle branch block.....

5. No paced rhythm

6. Patient is less than 90 years of age.....

7. A pre-hospital 12 lead EKG has been done(Attach to the back of this form).....

All of the above criteria must be checked in order to activate a "Cardiac Alert" from the field!!

Information that MUST be communicated to ED physician and Cardiologist.

8. Patient is **currently** on an anticoagulant (ex. Coumadin, Xarelto, Eliquis, Pradaxa).....

9. Patient does not have an allergy to contrast dye.....

***** Cardiac Monitor Transmitted to Cardiac Catheterization Lab of Destination by Paramedic # _____ *****

Weld County EMS Protocols

Section 803: Field Pronouncement

Assessment:

- If resuscitation efforts have been initiated, then field pronouncements must be made by the Paramedic 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 remain in persistent PEA/Asystole despite 30 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.**

Special Considerations/Notes:

- For those patients who meet the criteria for **“Withholding Efforts”** 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).

Procedure:	FR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Field Pronouncement – After Resuscitation has begun	—	—	—	—	—	SO
• Field Pronouncement – Withholding Efforts	SO	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 804: Helicopter Utilization Policy

Purpose:

- To establish a procedure for the use of air medical transport services when ground transportation is likely to exceed 15 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 longbone 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.

Weld County EMS Protocols

Section 804: Helicopter Utilization Policy

Operational Considerations:

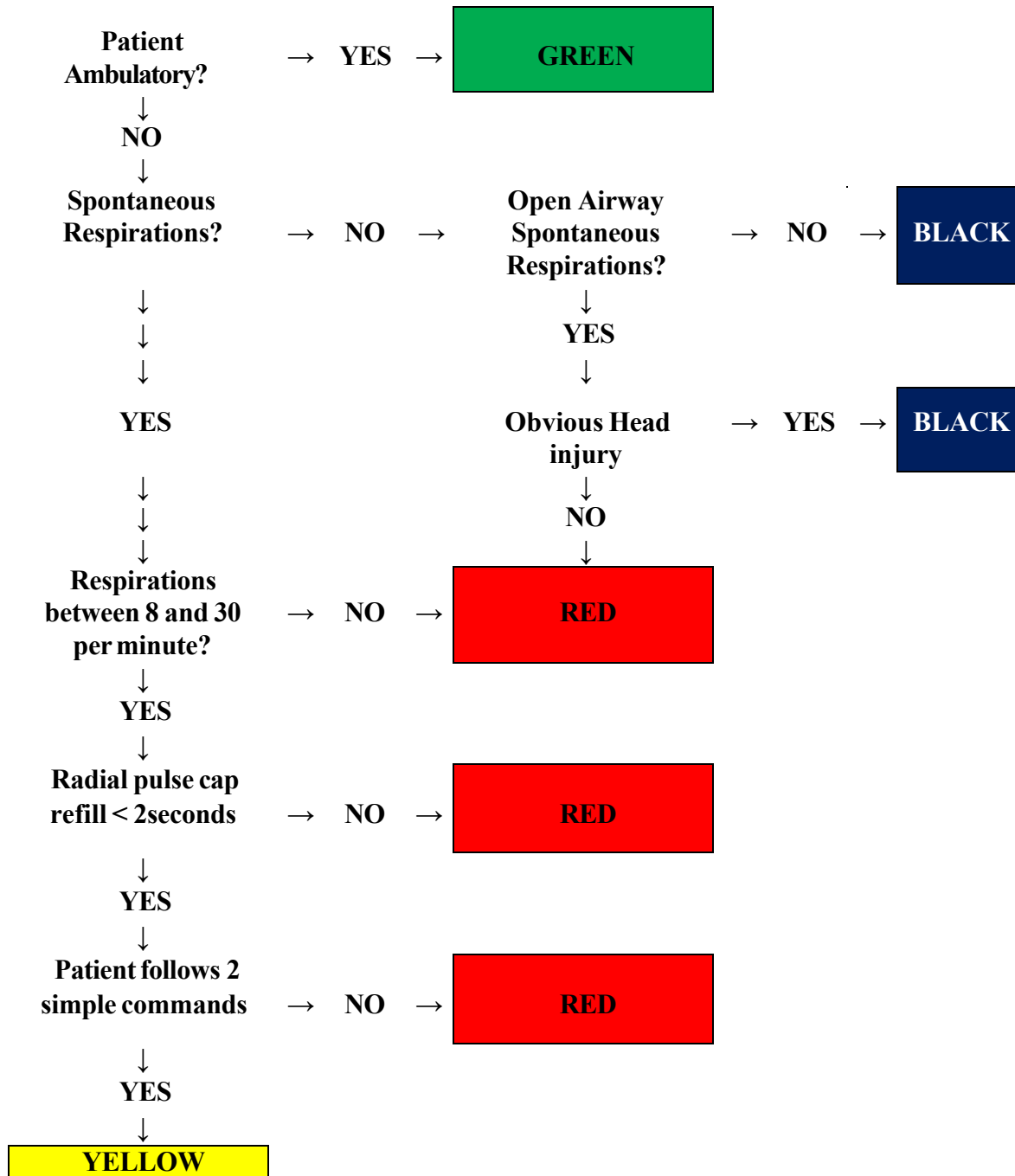
- Vehicle rollover with unrestrained passengers.
- Vehicle striking pedestrians greater than 10 mph.
- Falls greater than 20 feet.
- Intrusion greater than 18 inches into the passenger compartment.
- Ejections from the vehicle.
- Multiple victims.
- Death of another occupant in the same vehicle.
- Prolonged extrication (more than 20 minutes).
- Difficult access, such as wilderness or impeded access or egress.

Weld County EMS Protocols

Section 805 – Mass Casualty Triage Protocol

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).



Weld County EMS Protocols

Section 806: Medical Refusals Policy

Purpose:

- To establish a policy and procedure by which the medical providers of Weld County 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:

- 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.

Weld County EMS Protocols

Section 806: Medical Refusals Policy

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 neuro vascular 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.

Weld County EMS Protocols

Section 807: Physician Involved On Scene Policy

Purpose:

- To establish a policy and procedure that the medical providers of Weld County 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.

Weld County EMS Protocols

Section 808: Poison Control Orders

Purpose:

- To establish a policy and procedure by which the medical providers of Weld County 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.

Weld County EMS Protocols

Section 809: 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.

Weld County EMS Protocols

Section 810: Restraints Policy

Purpose:

- To establish a policy and procedure by which the medical providers of Weld County 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 not allowed.

Weld County 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:	EMR	EMTB	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:						
	EMR	EMTB	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
• 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: Colorimetric Device	_____	PPA	PPA	SO	SO	SO

Weld County EMS Protocols

Section 811 - Scope Of Practice

Oxygen Administration:	EMR	EMTB	EMT IV	AEMT	EMT I	EMTP
• 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:	EMR	EMTB	EMT IV	AEMT	EMT I	EMTP
• Manual chest compressions: (CPR)	SO	SO	SO	SO	SO	SO
• Mechanical compression device.	SO	SO	SO	SO	SO	SO

Trauma Management:	EMR	EMTB	EMT IV	AEMT	EMT I	EMTP
• 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	EMR	EMTB	EMT IV	AEMT	EMT I	EMTP
• 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:	_____	_____	PPA	SO	SO	SO
• Blood glucose monitoring:	PPA	SO	SO	SO	SO	SO

Weld County EMS Protocols

Section 811 - Scope Of Practice

Cardiac Monitor:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• 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	SO
• Nitroglycerin:	_____	DO	DO	SO	SO	SO
• Oral glucose	SO	SO	SO	SO	SO	SO

Medications:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
• Acetylsalicylic Acid: (ASA)	_____	SO	SO	SO	SO	SO
• Adenosine: (Adenocard)	_____	_____	_____	_____	DO/P	SO
• Albuterol: (and Levalbuterol)	_____	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

Weld County EMS Protocols

Section 811 - Scope Of Practice

Medications Continued:	EMR	EMTB	EMT IV	AEMT	EMTI	EMTP
• 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 10%: (Adult patient)	_____	_____	SO	SO	SO	SO
• Dextrose 10%: (Pediatric patient)	_____	_____	SO	SO	SO	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 : 1000) 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
• 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 eclampsia:	_____	_____	_____	_____	DO/ P	SO
• Magnesium Sulfate: Bronchial spasm:	_____	_____	_____	_____	_____	SO

Weld County EMS Protocols

Section 811 - Scope Of Practice

MedicationsContinued:	EMR	EMT B	EMT IV	AEMT	EMT I	EMT P
• Morphine Sulfate:	_____	_____	_____	_____	_____	SO
• Narcan: (Naloxone): Intra-Nasal	_____	SO	SO	SO	SO	SO
• Narcan: (Naloxone): IM, IV, IO	_____	_____	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
• 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:	EMR	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

Weld County EMS Protocols

Section 812: Special Events Policy

Purpose:

- To establish a policy and procedure by which the medical providers of Weld County 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.
- Agencies will notify the Medical Director via e-mail of their commitment to the event at least ten (10) days prior to the event. Forward all scheduled events to:
- ****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 that require a complete medical encounter report include:
 - All patients that require ALS intervention.
 - All patients that will be transported by ALS transport to the emergency department.
- All other patients may be documented on the Special Events Patient Log.
 - Special Event Form is for minor injuries only and multiple supplements can be used.
 - 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.
 - Copy of forms should be sent to the Medical Director.
- Special Event Form 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, earaches, or rash without dyspnea or chest tightness.
 - Minor epistaxis.

**Weld County EMS Protocols
Section 813 - 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: _____

Weld County EMS Protocols

Section 814: Withholding Resuscitative Efforts

Indications:

- If **any** of the following clinical signs of irreversible death:
 - Rigor mortis/dependent lividity.
 - Fetal death after preterm delivery (<20 weeks gestation by best determination).
 - Decapitation, decomposition, or incineration.
 - Trauma Arrest in mass casualty involving other patients and a shortage of rescue personnel.
- And if **all** the of following:
 - Pulseless/no heart tones
 - Apnea
 - No pupillary response
- Or, if no clinical signs of irreversible death in the setting of blunt or penetrating trauma, and if **all** the following:
 - Pulseless/no heart tones
 - Apnea
 - No pupillary response
 - Asystole on cardiac monitor
- If patient has Out-of-Hospital Do Not Resuscitate order.

Special Considerations/Notes:

- Remain with the deceased or leave the deceased with another first responder, unless unsafe to do so.
- Document objective findings including (each responding agency):
 - Position/location found.
 - Environmental hazards or clues. (Examples: Drug overdose, toxic exposure).
 - Any movement of the patient/surroundings.
 - Access limitations.
 - Assessment findings as appropriate.
 - Suspicious/inconsistent scene or physical findings.
 - Downtime or time last seen.

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
● Withholding Resuscitative Effort	SO	SO	SO	SO	SO	SO

Procedure:	EMR	EMTB	EMTIV	AEMT	EMTI	EMTP
● Cardiac Monitoring: Interpretation 4 Lead EKG	___	___	___	___	SO	SO

Section 900



Appendix

Weld County EMS Protocols

Section 901: Waveform Capnography Education

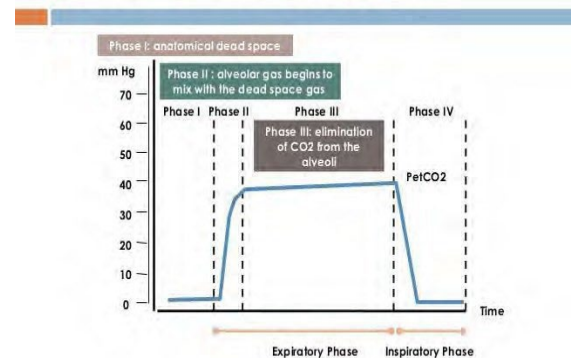
Science

- **Waveform capnography is an infrared technology** that measures the pressure of carbon dioxide (CO₂) in an exhaled breath and is reported in millimeters of Mercury (mmHg). Normal ETCO₂ values are 35-45 mmHg regardless of age.
- **While capnography is measured at the airway, CO₂ is a byproduct of metabolism.** CO₂ is produced when the acidic by products of metabolism are buffered by bicarbonate. This chemical reaction creates carbon dioxide and water. CO₂ then diffuses into the blood stream and is called arterial partial pressure (PaCO₂). PaCO₂ is delivered to the lungs via perfusion and is exhaled out of the system. The pressure of CO₂ is measured by capnography at the end of the exhalation phase as End Tidal Carbon Dioxide (ETCO₂). 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 CO₂ 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 ETCO₂ and the capnogram provides a waveform. Assuming there is no artifact in the waveform, capnometer readings and capnograms are considered diagnostic.

NORMAL CAPNOGRAM



- **Causes of Hypocapnia (ETCO₂ < 35 mmHg):**

- Hyperventilation: CO₂ is being ventilated out of the system **faster** than it is being delivered to the lungs.
- Pulmonary Embolism (PE): CO₂ delivery to the lungs is compromised due to an embolus in the pulmonary circulation.
- Metabolic Acidosis: CO₂ production is decreased due to depleted bicarbonate levels. Research has shown that diabetic patients presenting with hyperglycemia are not in DKA with an ETCO₂ > 30 mmHg. Once a patient’s ETCO₂ 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 CO₂ delivery to the lungs. Research has shown that patient’s with an ETCO₂ > 20 mmHg have adequate perfusion. However, they could still be in compensated shock with an ETCO₂ > 20 mmHg. Once a patient’s ETCO₂ drops below 20 mmHg, they are considered to be in decompensated shock.
- Low Tidal Volume: In healthy patients with normal tidal volume, pressures of ETCO₂ and CO₂ in the blood (PaCO₂) 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, ETCO₂ will be low even if PaCO₂ is high because the ability for CO₂ 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 CO₂ production.

Weld County EMS Protocols

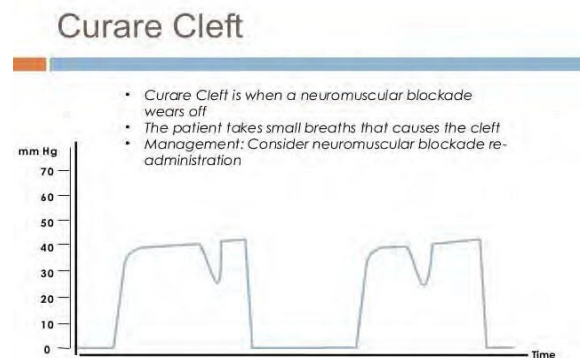
Section 901: Waveform Capnography Education

• Causes of Hypercapnia (ETCO₂>45 mmHg):

- Hypoventilation and/or Airway Patency Issue: CO₂ 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 ETCO₂ 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 ETCO₂ levels as a guide as to when and how much bicarbonate to push in a cardiac arrest. Try to keep the patient's ETCO₂> 20 mmHg during cardiac arrest. If ETCO₂ decreases below 20 mmHg, first make sure the patient is not being hyperventilated. Second, make sure high quality CPR is being performed. If ETCO₂ is still low, consider titrating bicarbonate to increase ETCO₂ 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 ETCO₂ 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).
- CO₂ 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 CO₂ in the stomach are significantly different from waveforms of tracheal ventilation. Furthermore, any initial waveforms caused by CO₂ in the stomach are usually questionable in shape, and always dissipate to flat line within 3-6 breaths.



• Waveform Capnography and Apnea:

- ETCO₂ is in real time. Consequently, when breathing stops it will be seen 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, SPO₂ could remain elevated for several minutes after

Weld County EMS Protocols

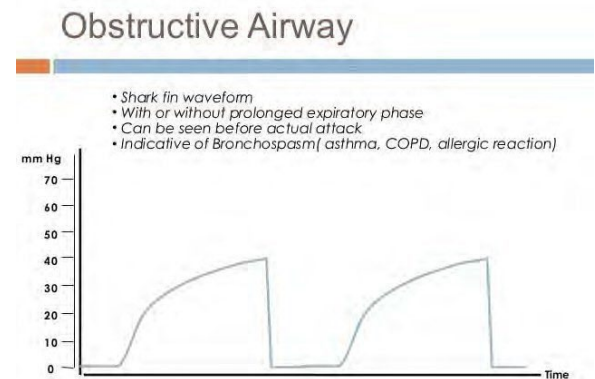
Section 901: Waveform Capnography Education

• Closed Head Injury Patients:

- Ventilate at a rate to keep the patient's ETCO₂ 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 ETCO₂ below 30 mmHg:
 - ETCO₂ < 30 mmHg indicates cerebral perfusion is dangerously low
 - ETCO₂ > 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 ETCO₂ 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 ETCO₂ levels assuming tidal volume is adequate.



- CHF does not cause a waveform shape change because CO₂ diffuses through fluid at the same rate it does through air. CHF patients will have low to normal ETCO₂ 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 ETCO₂ levels to help differentiate which pathology is the primary issue. If the ETCO₂ is in the normal range, consider CHF. If the ETCO₂ is high, consider COPD. However, all patients in severe respiratory distress with adequate tidal volume have high ETCO₂. 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 ETCO₂ 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 ETCO₂ levels move towards a normal value and they still have adequate tidal volume. Patients are worsening when ETCO₂ 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.
- Ensure canine is muzzled for safety, or other bite prevention techniques utilized.
- Allow handler to manage canine as frequently as possible and should remain with dog.
- Use the appropriate equipment to ensure Body Substance Isolation (BSI) precautions.
- Treatment of human patients should always come first.
- Identify the nature of illness or the mechanism of injury.
- Call for assistance if necessary.
- Emergency transport to the facility designated by officer if appropriate.
- Notification of the appropriate facility via cell phone.

Specific Findings:

Complete physical assessment.

- If you cannot safely assess the canine, do not perform treatments/assessments as to not get injured.
- Assess for underlying trauma, or medical condition.
- Assess for signs of irreversible death.
- Check for patent airway, reposition jaw/neck if needed, manage airway if needed and utilize muzzle or improvised muzzle if conscious. If unconscious, obtain airway and utilize kerlix/tube tie to secure tube in muzzle-type fashion.
- Observe breathing and look for chest rise and fall. Auscultate. Panting can be a normal sign, or a sign of distress/heat/pain. Pulmonary edema can be present in a dog in shock. Auscultate frequently.
- Assessing circulation includes pulse check, and cap refill. Pulse can be located by palpating femoral artery, by placing hands on chest and feeling, or by auscultating. Cap refill can be assessed on gums, but have handler lift jowls for safety of provider. Diarrhea may be present in a dog in shock.
- Signs of pain include: Panting, shifting, guarding, avoidance, vocalizing, limping, and aggression.

Special Precautions:

Senate Bill 14-039 was passed in 2014 and allows a provider to treat a domesticated dog or cat in an emergent situation trained to their scope of practice to the extent the provider has received commensurate training. ALWAYS TREAT HUMAN PATIENTS FIRST. Know this is on your comfort level and is not mandatory.

- Make contact with Division Chief regarding situation.
- Most handlers will carry a K9 handler card. This includes information on weight, blood type, medical history etc. and can help with your assessment.
- Be aware, working dogs can be trained to bite, use caution and utilize handler as much as possible. Most handlers have a form fit muzzle for K9.

Weld County EMS Protocols

Section 1002: Working Dog



- Regarding interventions and care, stay within your scope of practice.
- Specialized training is required for specialized procedures.
- Pre-veterinary emergency care does not include care provided in response to an emergency call made solely for the purpose of tending to an injured dog or cat, unless a person's life could be in danger trying to save a dog or cat.

Treatments/Procedures:

- Muzzle dog immediately for safety.
- CPR: Place dog on right or left side. Compressions should be completed with hands distal to the dog's front elbow on chest. Compressions are 100-120/minute. Canine ribs have more natural recoil and compressions should be easier than on a human. Ventilations are performed q 10-12 seconds.
- Canine oxygen masks are to be cleaned and reused after call.
- Intubations can be utilized in appropriate situations. A general tube size for a typical German Shepherd is 8-11. Blades are not always necessary, as the airway is more accessible. Confirm per usual. Secure airway with kerlix in muzzle type fashion around lower and upper jaw. Septum width is a good indicator of tube width for guidance.
- Surgical airways are not appropriate for backup use. Canine surgical airways are tracheostomy's, and therefore are out of scope.
- 4 lead electrodes can be placed on paw pads and taped. Electrical complexes are similar to humans. Sinus arrhythmia related to respirations is a normal finding.
- IV access can be obtained cephalic (Anterior forearm), or saphenous (Hind lateral distal tibia). These sites are typically easy to find with adequate hair clipping. Securing a canine IV requires training.
- Pulse-ox can be placed on tongue if unconscious, or on ear flap/rear leg fold if conscious.
- Splinting and bleeding control can be done similarly to humans.
- Needle decompression site is between the 6th and 8th ribs, on the lateral portion of the chest (behind elbow mid-thorax). A 14/16/18g catheter should be utilized with at least a 1 1/2" catheter. Intercostal nerves and blood vessels run just caudal to the rib, so thoracentesis should be done cranial to the 7th or 8th rib. The pleural space in dogs from side to side often won't communicate, **so you may have to do both sides**. Go ventral (towards the chest) for pleural fluid and dorsal (towards the back) for air.

Procedure:	EMT	EMT-IV	Paramedic
Oxygen	SO	SO	SO
CPR	SO	SO	SO
IV Access		SO	SO
Intubation			SO
Medication Admin.			SO
4 lead interpretation			SO
Bleeding control	SO	SO	SO
Splinting	SO	SO	SO
Decompression			SO

Weld County EMS Protocols
Section 1002: Working Dog

Veterinarian contact information:

Primary location for emergent transport is: PETS Emergency Hospital Evans 970-339-8700, 3629 23rd Ave, Evans CO 80620.
Call via cell phone for patient care report.

Veterinary Emergency and Rehab Hospital in Fort Collins has access to a hyperbaric chamber. They will offer the first treatment for free to cats/dogs removed from structure fires. 970-484-8080

If you contact a dog and offer medical advice for the owner, call the veterinarian and explain the situation. They can offer guidance for follow up treatment and information. Do your due diligence for yourself and the animal.

FOR EMERGENCY USE ONLY - Always Confirm Animals Weight				
Typical German Shepard: WT in lbs = 70 or WT in kgs = 31.8				
Medications:	LOW MG	HIGH MG	ROUTE	NOTES
Midazolam (Sz control)	6.4	15.9	IV	0.2 -0.5 mg/kg
Fentanyl	0.064	0.159	IV	5 mcg/kg
Morphine (can induce vomiting)	15.9	31.8	IM	0.5 -1.0 mg/kg
Atropine	0.6	1.3	IV,IM	0.02 -0.04 mg/kg
Epinephrine (1:1000)	0.032	3.182	IV	0.01 - 0.1 mg/kg
Epinephrine (1:10000)	1.6	15.9	IV	0.05 -0.5 mg/kg
Naloxone	1.3	1.3	IV, IM, SQ	0.04 mg/kg
Diphenhydramine	63.6	127.2	IV,IM	2-4 mg/kg
Zofran	3.2	6.4	IV	0.1 - 0.5 mg/kg: Given every 6-12 hours
DRIP				
Dopamine			IV	5 mcg/kg/min
FLUID ADMINISTRATION				
Shock				20-40 ml/kg over 15-30 mins, can be repeated
Maintenance				2-5 ml/kg/hr
VITAL SIGNS				
Temperature	100-102.5			exertion will cause the temperature to exceed 102.5
Heart Rate	70-120			femoral artery-inguinal region on rear leg, coratid pulse not palpable
Blood Pressure	120/80			NIBP, infant cuff on front forearm
Capno	35-45 mmHg			
Respirations	16-30			controlled pant is normal, blow in face and the panting should stop
Tidal Volume	10-18 ml/kg			Watch for moderate chest rise and fall
4 lead	Tape to paws			similar complexes as human
Mucous Membranes	pink, moist CRT < 2			check gum line, tongue or conjunctiva if pigmented
SPO2	>95			finger probe placed on tongue, ear flap or leg fold

Weld County EMS Protocols

Section 1004: Patient Destination and Diversion

Local Hospital Capabilities:									
Facility	Medical Cardiac Arrest	Full Trauma Alert/ Arrest	Limited Trauma	Stroke Alert	Cardiac Alert	Regional Burn Center	Unable to Ventilate	S.A.N.E Exam	Trauma Designation
NCMC	X	X	X	X	X		X	X	II
MCR	X	X	X	X	X		X	X	I
Good Samaritan Medical Center	X	X	X	X	X		X		II
Poudre Valley Hospital	X		X	X			X	X	III
Longmont United	X		X	X			X		III
Longs Peak Medical Center	X		X	X			X		III
McKee Medical Center	X		X				X		III
Platte Valley Medical Center	X		X	X	X		X		III
UCH Greeley	X		X	X	X		X	X	III
UCH Longs Peak	X		X	X			X		III
Banner Fort Collins	X						X		Non Designation
Stand Alone ER's							X		Non Designation

Weld County EMS Protocols

Section 1004: Patient Destination and Diversion

Purpose:

- Establish transport destination protocols for medical and trauma patients
- Establish Hospital Diversion Procedures

Definitions:

- **Decision Maker:** Generic term used in this protocol that refers to whoever is making the transport destination decision for the EMS patient. This may include the patient, family, private physician, medical personnel managing the patient's care.
- **Cardiac Alert:** Term used to define an alert given to the receiving facility by EMS personnel that a patient has met clinical criteria per protocol and requires emergency **Cath Lab** procedure.
- **Cath Lab:** Sometime referred to as Cardiac Catheterization Lab (Cath Lab) / Percutaneous Coronary Intervention Center (PCI). Generic term used in this protocol to describe a facility certified by the Joint Commission that provides 24/7 cardiac catheterization / percutaneous coronary intervention procedures for patients suffering from cardiac symptoms relating to myocardial infarction.
- **Medical Need:** Term used to define the emergency or non-emergency medical treatment the patient would require based on patient symptoms, clinical findings, vital signs, assessment, **Specialty Care** required, etc.
- **Patient Preference:** Term used to define the patient's decision for destination based on preference, medical provider access, previous treatment, medical records, insurance network, etc.
- **Primary Stroke Center:** Emergency room certified by the Joint Commission that provides 24/7 acute stroke care including CT, administration of fibrinolytic therapy and care of stroke patients.
- **Specialty Care:** Term used to define special care required
- **Stroke Alert:** Term used to define an alert given to the receiving facility by EMS personnel that a patient has met clinical criteria per protocol and requires emergency stroke treatment.
- **Full-Trauma Activation:** Term used to define an alert given to the receiving facility by EMS personnel that a patient has met clinical criteria per protocol and requires a full trauma team including a trauma surgeon.
- **Limited Trauma Activation:** Term used to define an alert given to the receiving facility by EMS personnel that a patient has met clinical criteria per protocol and may require trauma services.
- **Trauma Center:** Term used to define a facility that has been designated by the Colorado Department of Health & Environment to receive trauma patients. Trauma Centers are designated based on the services offered by the facility 24/7. The trauma designations are Level I, II, III, IV & V. The lower the trauma designation is, the higher level of care provided.

Weld County EMS Protocols

Section 1004: Patient Destination and Diversion

Destination Decision:

Every effort should be made to transport the patient to the destination of their choice within reason (i.e. hospital within a reasonable geographical location of the emergency call), unless the patient’s condition or presenting symptoms require specialty care at the closest facility that provides that level of care.

If the patient’s, family member’s, medical provider’s, or private physician’s destination request is not possible based on patient medical needs or hospital diversion status, EMS providers shall make every effort to explain the reason for alternative destination to the decision maker.

Hospital destination decisions for patients shall be prioritized based on the following criteria:

1. Patient **Medical Need**
2. Hospital **Diversion Status**
3. **Patient Preference**
4. Family or private physicians’ preference (if patient is unable to provide information)
5. Patients without a preference who require no **Specialty Care** shall be transported to the closest open general medical designated hospital or emergency room.

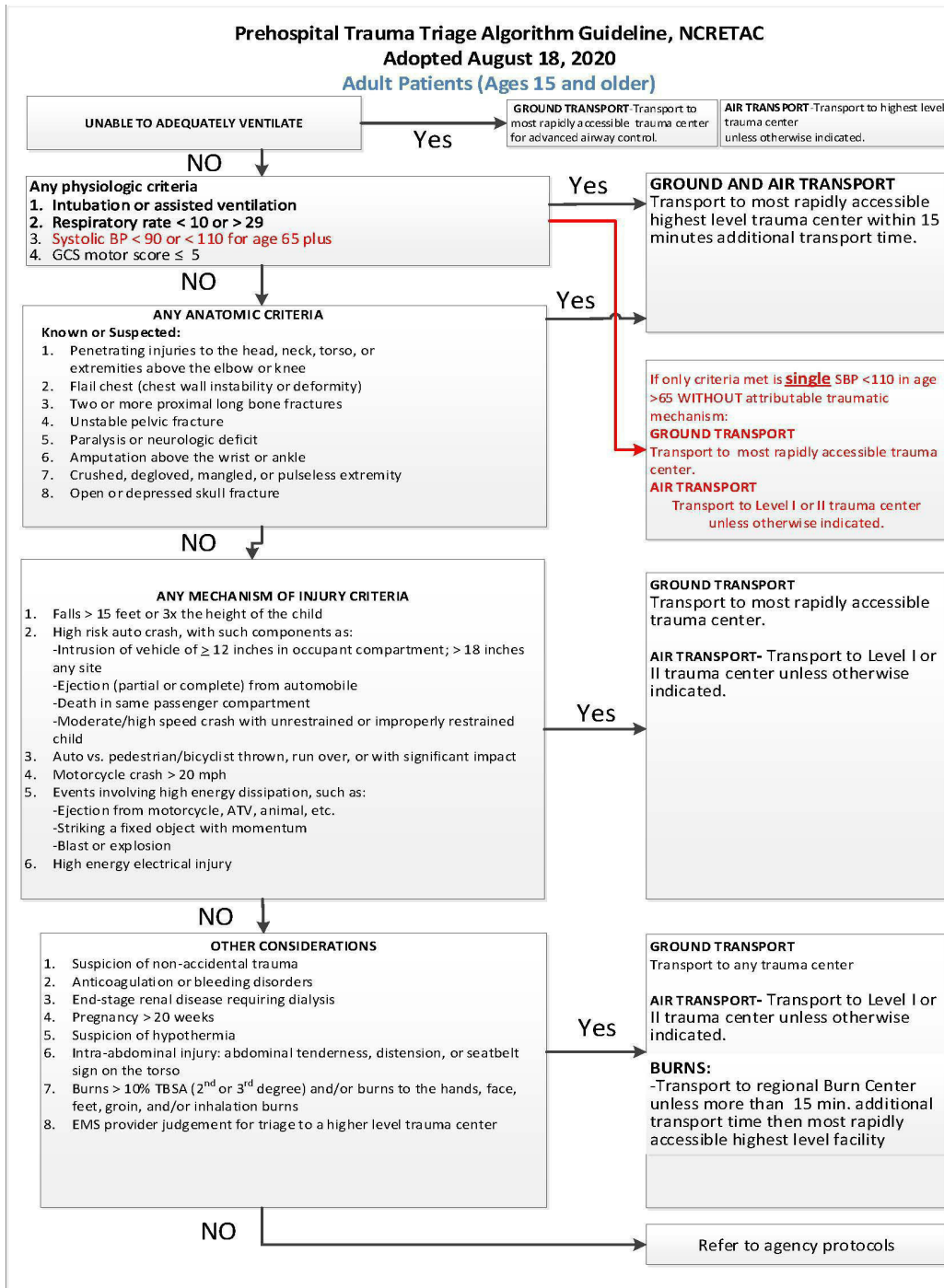
Medical:

Medical Issue	Destination
Cardiac Alert	Transport to nearest Accredited Chest Pain Center w/ Primary PCI, capable of accepting field Cardiac Alerts .
Stroke Alert	Transport to closest Primary Stroke Center or Comprehensive Stroke Center if available . <ul style="list-style-type: none"> ● Destination plan should be utilized for transport times predicted to be less than 30 minutes, otherwise proceed to dosest hospital.
Cardiac Arrest with Return of Spontaneous Circulation	Transport to nearest hospital with operating Cath Lab regardless of diversion status. <ul style="list-style-type: none"> ● Utilize Cardiac Alert if criteria is met.
Cardiac Arrest without Return of Spontaneous Circulation	Transport to the closest Hospital Emergency Room (not free-standing emergency room) regardless of diversion status.
S.A.N.E Exam	Transport to a designated facility capable of preforming a S.A.N.E exam on a sexual assault patient.

Weld County EMS Protocols

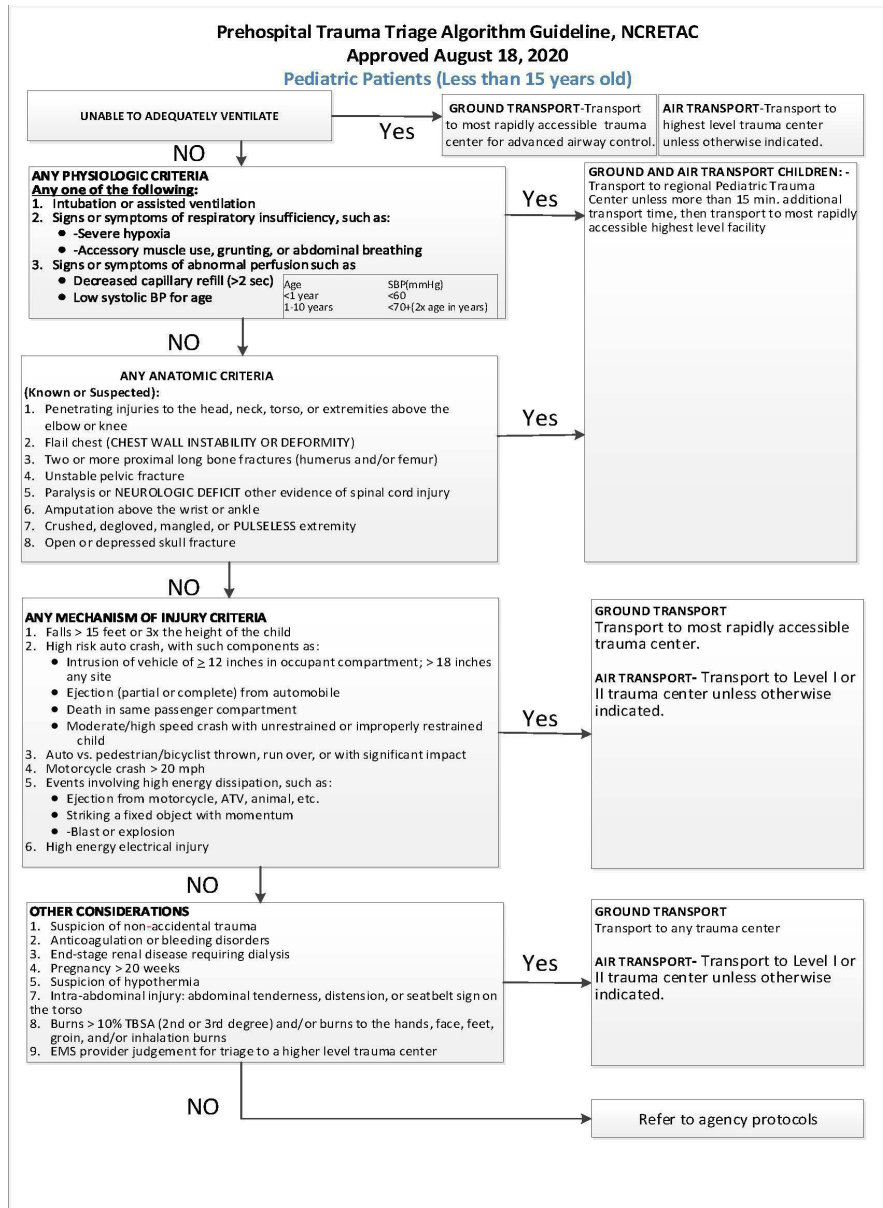
Section 1004: Patient Destination and Diversion

Trauma:



Weld County EMS Protocols

Section 1004: Patient Destination and Diversion



Weld County EMS Protocols

Section 1004: Patient Destination and Diversion

Diversion and Bypass: Adult & Pediatric

- While falling under the Trauma Criteria for patients over the age of 65 with BP <110, contact the closest Level II Trauma Center for bypass permission if patient is requesting a lower level trauma center destination.
- Diversion is a request by a hospital to direct EMS traffic elsewhere due to some specific resource issue at the hospital. Irrespective of the diversion status, an UNSTABLE patient, one who presents with uncorrectable respiratory compromise, or in extremis, or in cardiopulmonary arrest, shall be transported to the closest hospital. It shall be required for the medic to confer with med control on all other diverted patients to assure appropriateness of destination. This is required to ensure the decision will not pose unnecessary risk or harm to the patient and is in the best medical interest of the patient, and to rule out any possible EMTALA violations or inappropriate transports. If transport away from the diverting hospital will cause harm to the patient, the diversion shall be overridden.