NAPA COUNTY EMS AGENCY

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ALS Treatment

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ALS Routine Medical Care

TREATMENT GUIDELINE 9001

9001.1 PROCEDURE

A. Routine medical care shall consist of the following:

1. Body Substance Isolation (BSI) / Personal Protective Equipment (PPE) precautions.
2. BLS Treatment Guidelines.
3. ECG monitoring, as indicated.
4. 12-Lead ECG, as indicated.
5. Pulse oximetry, as indicated.
6. Waveform capnography, as indicated.
7. Temperature, as indicated.
8. Oxygen administration to maintain oxygen saturations > 94% but <100%.
9. IV access and administration of NS, as indicated.
10. Glucose determination, as indicated.
11. Transport (minimize lights and siren transport).

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Airway Management

TREATMENT GUIDELINE 9002

9002.1 PROCEDURE

A. If able to maintain an airway or ventilate and oxygenate the patient with BLS skills, continue and transport the patient. Refer to Advanced Airway Management Guideline # 9801.

1. Effective use of the BVM often requires two (2) people.
2. BLS skills are often the airway procedures of choice if transport time is less than ten (10) minutes.
3. DO NOT DELAY TRANSPORT for advanced airway skills if an adequate BLS airway exists.
4. If unable to adequately maintain the airway, reassess the patient's airway problems and BLS skills application.

B. If stabilization of the airway with BLS skills is unsuccessful, utilize one of the following:

1. King Tube Intubation Guideline # 9804.
2. Advanced Airway Management Guideline # 9801 In patients who are restless / agitated, consider sedation when appropriate; refer to Sedation Guideline # 9005.

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Severe Sepsis / Septic Shock

TREATMENT GUIDELINE 9003

9003.1 DEFINITIONS

A. Systemic Inflammatory Response Syndrome (SIRS) is the body's generalized inflammatory response to a non-specific injury and includes at least 2 of the following criteria;

1. Body temperature of >38 C (100.4 F) or <36 C (96.8F).
2. Respiratory rate >20 breaths per minute.
3. Heart rate >90 bpm.
4. White blood cell count (WBC) <400 / uL or >12,000 / uL

B. Sepsis is life threating condition that typically progresses rapidly due to severe infection of possibly multiple organ systems leading to shock, organ failure and death if not promptly recognized and treated. Simply, sepsis is SIRS with a known infection.

C. Severe sepsis is sepsis with organ dysfunction, hypoxia, decreased organ perfusion, hypotension, elevated serum lactate levels (metabolic acidosis) and consequently low $EtCO_2$ levels.

D. Septic shock is sepsis – induced hypotension despite fluid resuscitation and evidence of hypoperfusion.

E. Multiple – Organ Dysfunction Syndrome (MODS) refers specifically to the organ dysfunction in acutely ill patients with consequent loss of homeostasis where the kidneys, liver and heart are the major initial organs affected. This is often evidenced by decreased urine output and a reduced cardiac output leading to altered mentation and severe hemodynamic instability.

9003.2 PROCEDURES

A. The purpose of sepsis alert is to provide notification in advance to the receiving emergency department to facilitate rapid assessment and treatment of a suspected severe sepsis patient.

B. Sepsis alert will be initiated in the field in any patient in severe sepsis, septic shock or MODS to be determined by the presence of these three (3) criteria:

1. Confirmed or suspected presence of infection (i.e. urinary tract infection, respiratory infection, spreading skin infection, jaundice, recent lab values indicating an elevated WBC, etc.).
2. Any two (2) of the following SIRS markers;
   a. Temperature of >38 °C (100.4 °F) or <36 °C (96.8 °F).
   b. Respiratory rate >20 breaths per minute.
   c. Heart rate >90 bpm.
3. $EtCO_2$ <25 mmhg or blood lactic acid (aka serum lactate) levels >4 mMol.

9003.3 TREATMENT

A. Apply oxygen at ten to fifteen (10-15) LPM via non-rebreather mask.

B. Take temperature and record in degrees F$^{\circ}$ and C$^{\circ}$, (if thermometer available).

C. Measure initial and continuously monitor $EtCO_2$ by mask or advanced airway.

D. Determine if sepsis alert is indicated.

1. Notify receiving ED of sepsis alert.

E. If sepsis alert is NOT indicated but patient meets two (2) of SIRS criteria and has confirmed or suspected source of infection, continuously monitor $EtCO_2$.

1. Establish IV of normal saline (NS) and administer NS fluid bolus of up to one (1) liter during transport, rechecking lung sounds after every 500ml. If lung sounds are not clear, discontinue NS fluid bolus.

F. If sepsis alert is indicated, transport patient immediately.

1. Establish IV of normal saline (NS) en route;

   a. Administer NS fluid challenge of up to 30ml / kg or until the mean arterial pressure (MAP) is >65 mmHg or systolic blood pressure (SBP) is >90 mmHg while rechecking vital signs and lung sounds after every 500ml.

   b. If MAP remains less than 65 mmHg or the SBP remains less than 90 mmHg after 30ml / kg NS is infused or if patient's lungs are not clear, condition continues to deteriorate (i.e. worsening hypotension, signs of impending respiratory collapse) following the initial 30ml / kg NS bolus, consult base hospital physician.

9003.4 MEAN ARTERIAL PRESSURE (MAP)

Map is a more sensitive indicator of central perfusion than systolic blood pressure alone and should be used as benchmark whenever possible.

NOTE: A quick formula for calculating MAP; MAP = Diastolic Blood Pressure + 1/3 the pulse pressure.

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Pain Management

TREATMENT GUIDELINES 9004

9004.1 INDICATION

A. Severe pain in the presence of adequate vital signs and level of consciousness.

B. Extrication, movement or transportation is required which will cause considerable pain to the patient AND there are no known contraindications to administering analgesia.

9004.2 CONSIDERATIONS

A. Use psychological and BLS measures, such as cold packs, repositioning, splinting, elevation, and/or traction splints as appropriate, to reduce the need for pain medication.

B. Monitor any physiologic responses to pain management - continuous pulse oximetry is mandatory.

C. Have naloxone readily available to reverse any respiratory depression that may occur.

D. The use of midazolam in conjunction with fentanyl requires base hospital consultation

E. Use extreme care and give half-dose to patients > 65 years of age.

F. Rapid administration of large quantities of fentanyl has been associated with chest wall rigidity syndrome and is reversible with naloxone.

NOTE: Ondansetron may be prophylactically co-administered with fentanyl only if pain control is necessary and patient asks or has a history of nausea / vomiting with narcotics. Fentanyl causes nausea / vomiting much less frequently than does morphine sulfate.

9004.3 TREATMENT

A. Use O_2 to maintain SPO_2 of ≥95%.

B. Assess and document intensity of pain using the analog pain scale.

C. If BLS measures are unsuccessful at relieving pain, consider:

- Fentanyl – 1 mcg/kg IV/IO/IN/IM Max single dose of 100 mcg. Maximum total dose 200 mcg.
- **Pediatric Dose**: 1 mcg/kg IV/IO/IN, **ONLY** - Use length-based tape measurement and Pediatric Medication Reference, Max single dose of 50 mcg - Maximum total dose of 200 mcg.

D. Contact base hospital physician for additional fentanyl administration requests.

E. Monitor patient and vital signs carefully, ensure patent airway.

9004.4 CONTRAINDICATIONS

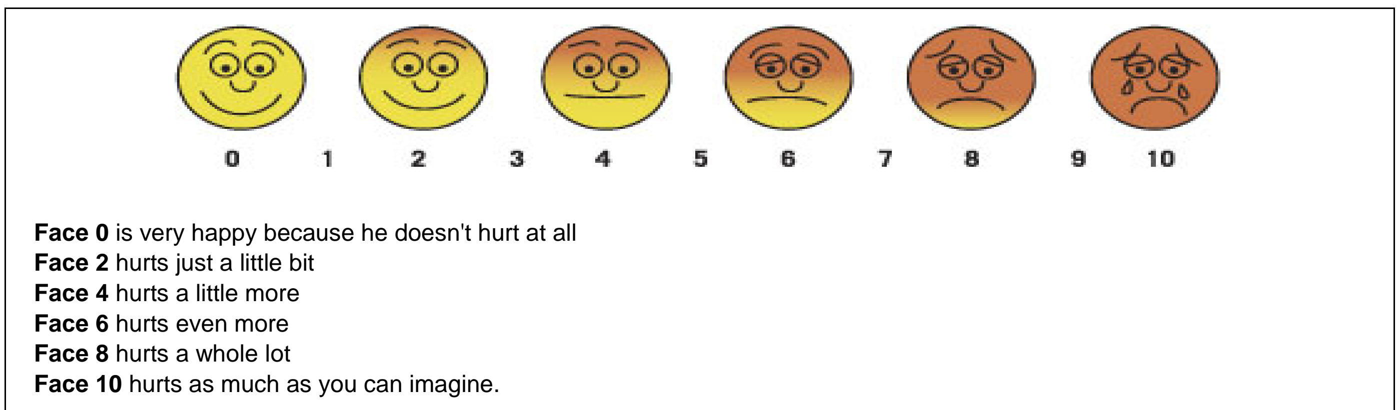
A. Sensitivity / allergy to the medication to be administered.

B. Patients with suspected respiratory failure / depression and/or ALOC require base hospital contact prior to administration of fentanyl.

1. Base contact required for hypotensive patients. Adults <90 mmHg.
2. Pediatrics with a capillary refill >2 seconds.

Pain Management Criteria	Base Contact	Treatment
Any patient with a complaint of significant pain, including: ➔ Significant extremity injuries ➔ Burn patients ➔ Crush injury patients ➔ Prolonged extrication ➔ Severe back and spinal pain ➔ Immobilized patients ➔ Abdominal pain	**No** unless maximum doses for route exceeded	**O_2 – titrate to maintain ≥95 SPO2** **IV/IO NS** or **saline lock** **Fentanyl**: ►►**IN**: 1 mcg/kg, divided into each nare, MAX single dose of 100 mcg; may repeat every 10-15 minutes, to a MAX total dose of 200 mcg. ►►**IV/IO**: 1 mcg/kg, MAX single dose of 100 mcg; may repeat every 5-10 minutes, to MAX total dose of 200 mcg. ►►**IM**: 1 mcg/kg, MAX single dose of 100 mcg; may repeat every 15-20 minutes, to a MAX total dose of 200 mcg. ►►**Pediatric Dose**: 1 mcg/kg IV/IO/IN, **ONLY** - Use length-based tape measurement and Pediatric Medication Reference, Max single dose of 50 mcg; may repeat as above, to Max total dose of 200 mcg
Other patients with a complaint of significant pain, including: ➔ Respiratory depression ➔ Altered mental status ➔ Women in labor ➔ BP < 90mmHg systolic ➔ Patients with pain not covered above	**Yes**	**Contact the base physician** prior to administering any pain medication

FACES SCALE



PAIN SCALE

Sedation

TREATMENT GUIDELINES 9005

9005.1 GENERAL INDICATIONS

A. Anxiety communicated by patient not relieved with other calming measures.

B. Combative behavior that endangers patient or caregivers. This is considered to be "chemical restraint"; careful detailed documentation is required when using sedation for this purpose.

C. Sedation prior to ALS treatment (such as cardioversion, etc.).

D. Trismus.

9005.2 CONTRAINDICATIONS

A. Absolute:

1. Sensitivity to the medication to be administered.

B. Relative:

1. Nausea / vomiting.
2. Depressed mentation. **
3. Hypotension. **
4. Suspected drug / alcohol intoxication. **
5. Head injury. **
6. Multiple systems trauma. **
7. The use of midazolam (Versed) in conjunction with fentanyl (concomitant narcotic administration) requires base hospital physician consultation.

**These may be the proximate cause for the condition that requires proposed sedation. The best judgment of the paramedic is necessary to evaluate the need for sedation.

9005.3 APPROVED AGENTS FOR SEDATION

A. Midazolam.

1. Patients receiving midazolam frequently experience decreased respirations and hypotension. Midazolam must be administered slowly if given intravenously (IV).
2. Administer supplemental oxygen and consider a one (1) - time 250 mL bolus of IV saline prior to midazolam administration.

9005.4 PROCEDURE

A. Monitor closely (i.e. respiratory rate / effort, LOC, O2 saturation, waveform capnography).

B. Give supplemental oxygen.

C. Institute continuous oximetry.

D. Institute continuous cardiac monitoring.

E. Establish IV NS TKO.

F. Be prepared to provide airway / ventilation management.

G. Ensure that receiving personnel are aware that patient has been sedated.

9005.5 INDICATIONS

A. MODERATE – SEVERE SEDATION INDICATIONS:

1. Anticipated cardioversion (in the conscious patient).
2. Anticipated cardiac pacing (in the conscious patient).
3. Severe anxiety.

NOTE: The use of midazolam in conjunction with fentanyl (concomitant narcotic administration) requires base hospital physician consultation.

Adult (> 40kg)

a. IV/IO: 2 mg SLOW IV push loading dose.
    1. May repeat twice to a MAX total dose of 6 mg.
b. IM/IN: 5 mg. May repeat once in 15 minutes

Base contact required for additional dosing

Pediatric (> 5kg and < 40kg)

a. IM/IN **only**: 0.1 mg/kg MAX total dose of 5 mg.
b. See weight-based pediatric drug card

Base contact required for repeat dosing

*****DO NOT use in patients < 5kg*****

9005.6 SPECIAL CONSIDERATIONS

A. Airway management in the sedated patient does not necessarily mandate intubation; assess the patient's ability to protect his / her own airway.

B. Ondansetron may be prophylactically co-administered with fentanyl only if pain control / sedation is necessary and patient asks or has a history of nausea / vomiting with narcotics.

WEIGHT BASED MIDAZOLAM DOSAGE CHART

WEIGHT	DOSE (mg)	GIVE (mL)
GRAY (3-5 kg)	0.4 mg	0.08 mL
PINK (6-7 kg)	0.65 mg	0.13 mL
RED (8-9 kg)	0.85 mg	0.17 mL
PURPLE (10-11 kg)	1 mg	0.2 mL
YELLOW 12-14 kg)	1.3 mg	0.25 mL
WHITE (15-18 kg)	1.7 mg	0.35 mL
BLUE (19-23 kg)	2.1 mg	0.4 mL
ORANGE (24-29 kg)	2.7 mg	0.55 mL
GREEN (30-36 kg)	3.3 mg	0.65 mL
(37-40 kg)	3.9 mg	0.8 mL

Severe Nausea / Vomiting

TREATMENT GUIDELINE 9006

9006.1 INDICATION

Severe nausea or persistent vomiting.

9006.2 TREATMENT

A. Maintain ABCs.
B. Provide oxygen.
C. IV NS TKO if indicated.
D. Consider fluid bolus 250ml NS for volume depletion if patient has been experiencing significant vomiting; repeat as needed.
E. Ask patient if he / she has history of prolonged QT Syndrome or is taking a medication that prolongs the QT interval.
F. **Patients age four (4) years and older**: Ondansetron (Zofran) 4mg IM, PO (dissolvable tablet) or slow IV (over thirty [30] seconds). May repeat every ten (10) minutes to a total of 12mg.
G. If additional doses of ondansetron are required, contact base hospital physician for consult.

9006.3 CONTRAINDICATIONS

A. Known sensitivity to ondansetron or other 5-HT3 antagonists including:
   1. Granisetron (Kytril).
   2. Dolasetron (Anzemet).
   3. Palonosetron (Aloxi).

9006.4 SIDE EFFECTS

May cause hypotension and/or tachycardia.

9006.5 TREATMENT CONSIDERATIONS

A. Do not administer ondansetron if patient gives history of prolonged QT Syndrome or is taking a medication that prolongs the QT interval.
B. Ondansetron can be used in pregnancy and with breastfeeding mothers.
C. Ondansetron may be prophylactically co-administered with Fentanyl only if pain control is necessary and patient asks or has a history of nausea / vomiting with narcotics.
D. Oral disintegrating tablets can be placed on tongue and do not need to be chewed. Medication will dissolve and be swallowed with saliva.
E. Ondansetron has been proven to be ineffective when treated for motion sickness. If patient is experiencing motion sickness due to long transport, e.g., from a rural setting, administer Ondansetron for patients who are vomiting and Diphenhydramine for the motion sickness:
   1. DIPHENHYDRAMINE:

Adult	1 mg/kg IV/IM. MAX dose of 50 mg.
Pediatric	1 mg/kg IV/IM. MAX dose of 50 mg.

*****Base Hospital Contact Required for Repeat Dose*****