OLD DOMINION

EMERGENCY MEDICAL SERVICES ALLIANCE

2013 REGIONAL PREHOSPITAL PATIENT CARE PROTOCOLS

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2012 Regional Prehospital Patient Care Protocols

For

Basic and Advanced Life Support Providers

Table of Contents

3.3	Allergic Reaction/Anaphylaxis Medical – Allergic Reaction/Anaphylaxis
3.4	Behavioral Emergencies General – Behavioral/Patient Restraint
3.5	Cerebrovascular Emergencies Medical – Stroke/TIA
3.6	Dystonic / Extra-pyramidal Reaction Medical – Dystonic/Extra-pyramidal Reaction
3.7	Hyperglycemia Medical - Hyperglycemia
3.8	Hypoglycemia Medical – Hypoglycemia/Diabetic Emergency
3.9	Nausea / Vomiting Medical – Nausea/Vomiting
3.10	Pain Management General – Pain Control
3.11	Respiratory Distress Medical – Respiratory Distress/Asthma/COPD/Croup/Reactive Airway
3.12	Seizures Medical - Seizure
3.13	Shock Medical – Hypotension/Shock (Non-trauma)
3.14	Sickle Cell Anemia Crisis Medical – Sickle Cell Crisis
3.15	Unconscious / Syncope / AMS Medical – Altered Mental Status
3.16	Difficult Airway Airway - Failed

Section 4

ADULT TRAUMA EMERGENCIES	
4.1	Trauma Patient Assessment General - Trauma
4.2	Abdominal Trauma Injury – Abdominal Trauma
4.3	Burns Injury – Burns - Thermal
4.4	Crush Injuries Injury – Crush Syndrome
4.5	Electrical Injuries Injury – Electrical Injuries
4.6	Head Injury Injury- Head
4.7	Inhalation Injury Exposure - Airway/Inhalation Irritants
4.8	Sexual Assault Injury - Sexual Assault
4.9	Elder Abuse
4.10	Conductive Energy Device Injuries Conductive Energy Device Injuries
4.11	Thoracic Trauma Injury - Thoracic

4.12	Field Trauma Triage Scheme

Section 5

ENVIRONMENTAL EMERGENCIES

5.1	Hypothermia Environmental - Hypothermia
5.2	Hyperthermia Environmental – Heat Exposure/Heat Exhaustion Environmental – Heat Stroke
5.3	Bites and Envenomation Injury - Bites and Envenomations – Land
5.4	Drowning / Near-Drowning Injury - Drowning/Near Drowning

Section 6

OB / GYN EMERGENCIES

6.1	Physiologic Changes with Pregnancy
6.2	Delivery – Uncomplicated OB/GYN - Childbirth/Labor/Delivery
6.3	Neonatal Resuscitation Medical - Newborn/Neonatal Resuscitation
6.4	Delivery – Shoulder Dystocia OB/GYN - Delivery Shoulder Dystocia
6.5	Delivery – Breech Presentation OB/GYN - Delivery Breech Presentation
6.6	Ectopic Pregnancy / Rupture OB/GYN - Ectopic Pregnancy Rupture
6.7	Abruptio Placenta OB/GYN - Placenta Abruptio
6.8	Placenta Previa OB/GYN - Placenta Previa
6.9	Umbilical Cord Prolapse OB/GYN - Prolapsed Unbilical Cord
6.10	Hypertension / Eclampsia / HELLPS OB/GYN - Eclampsia
6.11	Premature Rupture of Membranes (PROM) OB/GYN - Premature Rupture of Membranes
6.12	Pre-term Labor OB/GYN - Pre-term Labor
6.13	Postpartum Hemorrhage (PPH) OB/GYN - Post-partum Hemorrhage

Section 7

TOXICOLOGICAL EMERGENCIES

7.1	Opiate Overdose Medical - Opiate Overdose
7.2	Stimulant Overdose Medical - Stimulant Overdose
7.3	Tricyclic Anti-depressant Overdose Medical - Tricyclic Anti-depressant Overdose
7.4	Organophosphate Exposure

	Medical - Organophosphate Exposure
7.5	***Calcium Channel Blocker Overdose*** ***Medical - Calcium Channel Blocker Overdose***
7.6	***Beta Blocker Overdose*** ***Medical - Beta Blocker Overdose***

Section 8

PEDIATRIC CARDIAC EMERGENCIES	
8.1	***BLS Pulseless Arrest***
8.2	***ALS Pediatric Pulseless Arrest*** ***General – Cardiac Arreset***
8.3	***Newborn Resuscitation*** ***Medical - Newborn/Neonatal Resuscitation***
8.4	***Tachycardia with a Pulse*** ***Medical – Supraventricular Tachycardia (including atrial fibrillation)*** ***Medical - Ventricular Tachycardia with a Pulse***
8.5	***Bradycardia*** ***Medical - Bradycardia***

Section 9

PEDIATRIC MEDICAL EMERGENCIES	
9.1	***Pediatric Medical Patient Assessment***
9.2	***Allergic Reaction / Anaphylaxis*** ***Medical - Allergic Reaction/Anaphylaxis***
9.3	***Fever*** ***General - Fever***
9.4	***Foreign Body Airway Obstruction*** ***Airway – Obstruction/Foreign Body***
9.5	***Hyperglycemia*** ***Medical - Hyperglycemia***
9.6	***Hypoglycemia*** ***Medical - Hypoglycemia/Diabetic Emergency***
9.7	***Nausea / Vomiting*** ***Medical - Nausea/Vomiting***
9.8	***Pain Management*** ***General - Pain Control***
9.9	***Poisoning / Overdose*** ***Medical - Overdose/Poisoning/Toxic Ingestion***
9.10	***Respiratory Distress – Asthma*** ***Medical - Respiratory Distress / Asthma / COPD / Croup / Reactive Airway***
9.11	***Respiratory Distress - Croup / Epiglottitis*** ***Medical - Respiratory Distress / Asthma / COPD / Croup / Reactive Airway***
9.12	***Seizures*** ***Medical - Seizure***
9.13	***Shock*** ***Medical - Hypotension/Shock (Non-trauma)***
9.14	***Unconscious / Syncope / AMS*** ***Medical - Altered Mental Status***

Section 10

PEDIATRIC TRAUMA EMERGENCIES

10.1	Abdominal Trauma Injury - Abdomen
10.2	Burns Injury-Burns-Thermal
10.3	Electrical Injuries Injury - Electrical Injuries
10.4	Head Injury Injury-Head

Section 11

CLINICAL PROCEDURES

11.1	12-Lead ECG Acquisition
11.2	Capnography
11.3	Pulse Oximetry
11.4	Needle Thoracentesis
11.5	Oral Intubation
11.6	Nasal Intubation
11.7	Supraglottic Airway
11.8	Surgical Cricothyrotomy
11.9	Oro-gastric (OG) Tube
11.10	Tourniquet
11.11	IO
11.12	Continuous Positive Airway Pressure (CPAP)
11.13	Synchronized Cardioversion
11.14	External (Transcutaneous) Cardiac Pacing
11.15	Mechanical CPR Devices
11.16	Patient Restraint

Section 12

ADMINISTRATION

12.1	Patient and Scene Management
12.2	Documentation Compliance
12.3	Treatment of Minors
12.4	Patient Destination Policy
12.5	Hospital Diversion Policy for Emergency Patients
12.6	Patient Refusal
12.7	Do Not Resuscitate (DNR) Orders
12.8	Cease Resuscitation Orders
12.9	Traumatic Cease Resuscitation
12.10	Inter-facility Transfers
12.11	Infection Control - PPE
12.12	Infection Control - Exposure
12.13	Mass Gatherings

Medication 13

MEDICATION REFERENCE

13.1	ODEMSA Drug Box Contents
13.2	Adenosine (Adenocard)
13.3	Albuterol

Section 14

APPENDICES

SECTION: Introduction

PROTOCOL TITLE: Board of Directors and Faculty

REVISED: 06/2013

Section
1-4

DIRECTORS AND FACULTY

2013
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Protocol
3-10

SECTION: Adult General Medical Emergencies

PROTOCOL TITLE: Pain Management
General - Pain Control

REVISED: 06/2013

PAIN MANAGEMENT

OVERVIEW:
The practice of pre-hospital emergency medicine requires expertise in a wide variety of pharmacological and non-pharmacological techniques to treat acute pain resulting from a myriad of injuries and illness. One of the most essential missions for all healthcare providers should be the relief and / or prevention of pain and suffering. Approaches to pain relief must be designed to be safe and effective in the organized chaos of the pre-hospital environment. The degree of pain and the hemodynamic status of the patient will determine the rapidity of care.

HPI	Signs and Symptoms	Considerations
• Age • Location • Duration • Severity (1 - 10) • Past medical history • Medications • Drug allergies	• Severity (pain scale) • Quality (sharp, dull, etc) • Radiation • Relation to movement, • respiration • Increased with palpation of area	• Musculoskeletal • Visceral (abdominal) • Cardiac • Pleural, respiratory • Neurogenic • Renal (colic)

	A	B	EN	I	P
1. Perform general patient management.	•	•	•	•	•
2. Administer oxygen to maintain *SPO$_2$* 94 - 99%	•	•	•	•	•
3. Determine patient's pain score assessment.	•	•	•	•	•
4. Place patient on cardiac monitor per patient assessment.			•	•	•
5. Establish IV of normal saline per patient assessment.			•	•	•
6. If significant pain, administer FENTANYL 2 mcg / kg INTRANASAL (max first dose of 50 mcg) half dose in each nostril. May consider additional dose of up to 100mcg after 5 minutes if pain persists –OR- *FENTANYL* 1 mcg / kg IV, or IM (max single dose of 50 mcg). Sickle cell patients may be given higher doses up to 100 mcg IV, or IM. *** *There are no documented cases of chest rigidity with the administration of Fentanyl INTRANASALLY* ***				•	•
7. If Fentanyl unavailable, administer *MORPHINE SULPHATE* 0.1 mg / kg IV or IM (max single dose of 5.0 mg). *Sickle cell* patients may be given higher doses up to 10 mg IV or IM.				•	•
8. Repeat the patient's pain score assessment.	•	•	•	•	•

Protocol 3-10

Continued

PAIN MANAGEMENT

	A	B	EN	I	P
9. If indicated based on pain assessment, repeat pain medication administration after 10 minutes of the previous dose. Maximum total dose of Fentanyl is 200 mcg and Morphine Sulphate is 20 mg for non sickle cell patients. Sickle cell patients may have up to a total of 400 mcg of Fentanyl or 40 mg of Morphine Sulphate.				•	•
10. Transport in position of comfort and reassess as indicated.		•	•	•	•

Universal Pain Assessment Tool

Verbal Descriptor Scale	0 1 2 3 4 5 6 7 8 9 10					
	No pain	Mild pain	Moderate pain	Severe pain	Very severe pain	Excruciating Pain
Wong - Baker Scale						
	Alert Smiling	No humor Serious, flat	Furrowed brow Pursed lips Breath holding	Wrinkled nose Raised upper lip Rapid breathing	Slow blink Open mouth	Eyes closed Moaning Crying
Activity Tolerance Scale	No pain	Can be ignored	Interferes with tasks	Interferes with concentration	Interferes with basic needs	Bed rest required
Spanish	Nada de dolor	Un poquito dedolor	Un dolor leve	Dolor fuerte	Dolor demasiado fuerte	Un dolor insoportable

PEARLS:

1. Pain severity (0 - 10) is a vital sign that should be recorded before and after IV or IM medication administration and upon arrival at destination.
2. Contraindications to narcotic medication administration include hypotension, head injury, respiratory depression, and severe COPD.
3. All patients should have drug allergies ascertained prior to administration of pain medication.
4. Patients receiving narcotic analgesics should be administered oxygen.
5. Narcotic analgesia was historically contraindicated in the pre-hospital setting for abdominal pain of unknown etiology. It was thought that analgesia would hinder the ER physician or surgeon's evaluation. Recent studies have demonstrated

Opiate administration may alter the physical examination findings, but these changes result in no significant increase in management errors.[1]

6. Fentanyl is contraindicated for patients who have taken MAOIs within past 14 days, and used with caution in patients with head injuries, increased ICP, COPD, and liver or kidney dysfunction.

[1]Do opiates affect the clinical evaluation of patients with acute abdominal pain?
JAMA. 2006; 296(14):1764-74 (ISSN: 1538-3598)
Ranji SR; Goldman LE; Simel DL; Shojania KG

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Protocol
3-12

SECTION: Adult General Medical Emergencies

PROTOCOL TITLE: Seizures
Medical - Seizure

REVISED: 06/2013

SEIZURES

OVERVIEW:
A seizure is a period of altered neurologic function caused by abnormal neuronal electrical discharges. Generalized seizures begin with an abrupt loss of consciousness. If motor activity is present, it symmetrically involves all four extremities. Episodes that develop over minutes to hours are less likely to be seizures; generally seizures only last one to two minutes. Patients with seizure disorders tend to have stereotype, or similar, seizures with each episode and are less likely to have inconsistent or highly variable attacks. True seizures are usually not provoked by emotional stress. Most seizures are followed by a postictal state of lethargy and confusion.

HPI	Signs and Symptoms	Considerations
• Reported, witnessed • Seizure activity description • Previous seizure history • Medic alert tag information • Seizure medications • History of trauma • History of diabetes mellitus • History of pregnancy	• Decreased mental status • Sleepiness • Incontinence • Observed seizure activity • Evidence of trauma	• CNS (head) trauma • Brain tumor • Metabolic, hepatic, renal failure • Diabetic • Hypoxia • Electrolyte abnormality • Drugs, medications, non-compliance • Infection, fever, meningitis • Alcohol withdrawal • Eclampsia • Stroke • Hyperthermia

	A	B	EN	I	P
1. Perform general patient management.	•	•	•	•	•
2. Support life-threatening problems associated with airway, breathing, and circulation.	•	•	•	•	•
a. Suction the oro / nasopharynx as necessary.	•	•	•	•	•
b. Place a nasopharyngeal airway as necessary (avoid in head trauma).	•	•	•	•	•
3. Administer oxygen to maintain SPO_2 94 - 99%. Support respirations as necessary with a BVM.	•	•	•	•	•
4. Do not restrain the patient. Let the seizure take its course but protect patient from injury.	•	•	•	•	•
5. Perform rapid glucose determination. If glucose less than 60 mg / dL or clinical signs and symptoms indicate hypoglycemia, refer to the *Hypoglycemia protocol*.		•	•	•	•
6. Establish an IV of normal saline at KVO.			•	•	•

Protocol
3-12
Continued

SEIZURES

	A	B	EN	I	P
7. If the seizure persists and the rapid glucose determination is greater than 60 mg / dL, give *MIDAZOLAM* 0.2 mg / kg INTRANASAL (max single dose 5 mg) –OR- give *MIDAZOLAM* 0.1 mg / kg IV / IM (max single dose 5 mg)				•	•
a. Repeat dose in 5 minutes if seizure persists.				•	•
b. If midazolam is unavailable, administer, *DIAZEPAM* 0.25 mg / kg up to 5 mg slow IV push. Repeat once as necessary.				•	•
8. Place patient on cardiac monitor (life-threatening dysrhythmias may cause seizure-like activity).				•	•
9. Consider placing the patient in the recovery position during the postictal period.	•	•	•	•	•
10. Transport and perform ongoing assessment as indicated.		•	•	•	•

TYPES OF SEIZURES		
Generalized	**Simple Partial**	**Complex Partial**
• Absence (Petit-Mal) • Atonic (Drop Attack) • Myoclonic (Brief bilateral jerking) • Tonic-Clonic (Grand-Mal)	• Focal/ Local: Localized twitching of hand, arm, leg, face, or eyes. Patient may be conscious or unconscious	• Temporal Lobe • Psychomotor

PEARLS:

1. Status epilepticus is defined as two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
2. Grand Mal seizures are generalized in nature and associated with loss of consciousness, incontinence, and tongue trauma.
3. Focal seizures affect only a specific part of the body and are not usually associated with loss of consciousness.
4. Jacksonian seizures are seizures that start as focal in nature and become generalized.
5. Petit Mal seizures may be localized to a single muscle group or may not involve visible seizure activity at all. Always examine pupils for nystagmus, which would alert provider to continued seizure activity.
6. Respirations during an active seizure should be considered ineffective and airway maintenance should occur per assessment.
7. Be prepared for airway problems and continued seizures.
8. Investigate possibility of trauma and substance abuse.
9. Be prepared to assist ventilations as dosage Midazolam or Valium is repeated and / or increased.

Protocol
7-1

SECTION: Toxicological Emergencies

PROTOCOL TITLE: Opiate Overdose
Medical - Opiate Overdose

REVISED: 06/2013

OPIATE OVERDOSE

OVERVIEW:
The goal in treating an opiate overdose patient is generally not to wake the patient, but to maintain breathing and the airway. While difficult, this is especially important as opiates are often mixed with stimulants and other drugs at the street level, and the opiate may be masking or suppressing other toxic effects. Unfortunately, the history of poisoning / overdose is notoriously unreliable whether it is obtained from the patient, friends and family members or emergency services personnel, and especially **what else** was taken. Poison Control may be contacted at any time for information on poisoning (1-800-222-1222) but **only Medical Control may give patient care direction**. Despite the possible inaccuracies, the most important historical factors include **what** poison was involved, **how much** was taken, **how** it was taken, **when** it was taken, **why** it was taken **treatment orders**.

HPI	Signs and Symptoms	Considerations
• Use or suspected use of a potentially toxic substance • Substance ingested, route, and quantity used • Time of use • Reason (suicidal, accidental, criminal) • Available medications in home • Past medical history	• Mental status changes • Hypotension / hypertension • Hypothermia / hyperthermia • Decreased respiratory rate • Tachycardia, other dysrhythmias • Seizures	• Tricyclic anti-depressants (TCAs) • Acetaminophen (Tylenol) • Depressants • Stimulants • Anticholinergic • Cardiac medications • Solvents, alcohols, Cleaning agents • Insecticides

	A	B	EN	I	P
1. Obtain general patient assessment.	•	•	•	•	•
2. Administer Oxygen to maintain *SPO_2* 94 - 99%	•	•	•	•	•
3. Suction oropharynx as necessary.	•	•	•	•	•
4. Obtain blood glucose sample. If glucose is < 60 mg / dL or > 300 mg / dL, refer to the *Hypoglycemia or Hyperglycemia Protocol.*	•	•	•	•	•
5. If necessary, refer to *Patient Restraint protocol.*	•	•	•	•	•
6. Place patient on cardiac monitor.				•	•
7. Establish IV of Normal Saline. Titrate rate to maintain systolic BP > 90 mmHg.			•	•	•

Protocol 7-1 Continued

OPIATE OVERDOSE

	A	B	EN	I	P
8. If respiratory effort remains diminished and opiate administration is suspected, give *NARCAN* 0.2 mg / kg INTRANASAL max 2mg –OR- administer *NALOXONE*, 0.4 - 2.0 mg slow IVP/IM to maintain an adequate respiratory effort. Dose may be repeated as necessary.			•	•	•
9. Transport promptly in position of comfort. Reassess VS as indicated.		•	•	•	•

Opiate Toxidrome

• Altered Mental Status • Miosis • Unresponsiveness • Shallow Respirations	• Slow Respiratory Rate • Decreased Bowel Sounds • Hypothermia • Hypotension

PEARLS:

1. If patient is a suspected opiate addict, the administration of Naloxone should be titrated to increase respirations to normal levels without fully awakening patient to prevent hostile and confrontational episodes and withdrawal symptoms.
2. Any patient receiving Naloxone should be transported for continued monitoring. Many opiates have a longer bioavailability than Naloxone, therefore re-sedation may occur.
3. Do not rely on patient history of ingestion, especially in suicide attempts.

Protocol
9-8

SECTION: Pediatric General Medical Emergencies

PROTOCOL TITLE: Pain Management
General - Pain Control

REVISED: 06/2013

PAIN MANAGEMENT

OVERVIEW:
The practice of pre-hospital emergency medicine requires expertise in a wide variety of pharmacological and non-pharmacological techniques to treat acute pain resulting from a myriad of injuries and illness. One of the most essential missions for all healthcare providers should be the relief and / or prevention of pain and suffering. Approaches to pain relief must be designed to be safe and effective in the organized chaos of the pre-hospital environment. The degree of pain and the hemodynamic status of the patient will determine the rapidity of care.

HPI	Signs and Symptoms	Considerations
• Age • Location • Duration • Severity (1-10) • Past medical history • Medications • Drug allergies	• Severity (pain scale) • Quality (sharp, dull, etc) • Radiation • Relation to movement, respiration • Increased with palpation of area	• Musculoskeletal • Visceral (abdominal) • Cardiac • Pleural, respiratory • Neurogenic • Renal (colic)

	A	B	EN	I	P
1. Perform general patient management.	•	•	•	•	•
2. Administer oxygen to maintain *SPO$_2$* 94 - 99%	•	•	•	•	•
3. Determine and document patient's pain score assessment.	•	•	•	•	•
4. Place patient on cardiac monitor per patient assessment.			•	•	•
5. Establish IV of normal saline per patient assessment.			•	•	•
6. If significant pain, administer FENTANYL 2 mcg / kg INTRANASAL (max first dose of 50 mcg) half dose in each nostril. May consider additional dose of up to 100mcg after 5 minutes if pain persists –OR- *FENTANYL* 1 mcg / kg IV, or IM (max single dose of 50 mcg). Sickle cell patients may be given higher doses up to 100 mcg IV, or IM. *** *There are no documented cases of chest rigidity with the administration of Fentanyl INTRANASALLY* ***				•	•
7. If Fentanyl unavailable, administer *MORPHINE SULPHATE* 0.1 mg / kg IV or IM (max single dose of 5.0 mg). Sickle cell patients may be given higher doses up to 10 mg IV or IM.				•	•
8. Repeat the patient's pain score assessment.	•	•	•	•	•

Protocol 9-8

Continued

PAIN MANAGEMENT

	A	B	EN	I	P
9. If indicated based on pain assessment, repeat pain medication administration after 10 minutes of the previous dose. Maximum total dose of Fentanyl is 200 mcg and Morphine Sulphate is 20 mg for non-sickle cell patients. Sickle cell patients may have up to a total of 400 mcg of Fentanyl or 40mg of Morphine Sulphate.				•	•
10. Transport in position of comfort and reassess as indicated.		•	•	•	•

Universal Pain Assessment Tool

Verbal Descriptor Scale	0 1 2 3 4 5 6 7 8 9 10					
	No pain	Mild pain	Moderate pain	Severe pain	Very severe pain	Excruciating Pain
Wong-Baker Scale						
	Alert Smiling	No humor Serious, flat	Furrowed brow Pursed lips Breath holding	Wrinkled nose Raised upper lip Rapid breathing	Slow blink Open mouth	Eyes closed Moaning Crying
Activity Tolerance Scale	No pain	Can be ignored	Interferes with tasks	Interferes with concentration	Interferes with basic needs	Bed rest required
Spanish	Nada de dolor	Un poquito dedolor	Un dolor leve	Dolor fuerte	Dolor demasiado fuerte	Un dolor insoportable

Chart Courtesy of Richmond Ambulance Authority

Age	Term	6 month	1 year	3 years	6 years	8 years	10 years	12 years	14 years
Weight (lb / kg)	6.6 lb 3 kg	17.6 lb 8 kg	22 lb 10 kg	30.8 lb 14 kg	44 lb 20 kg	55 lb 25 kg	75 lb 34 kg	88 lb 40 kg	110 lb 50 kg
Fentanyl IM	3 mcg	8 mcg	10 mcg	14 mcg	20 mcg	25 mcg	34 mcg	40 mcg	50 mcg
Fentanyl IN	6mcg	16mcg	20mcg	28mcg	40mcg	50mcg	50mcg	50mcg	50mcg
Morphine Sulfate 0.1 mg / kg			1.0 mg	1.4 mg	2.0 mg	2.5 mg	3.5 mg	4.0 mg	5.0 mg

PEARLS:

1. Pain severity (0 - 10) is a vital sign that should be recorded before and after IV or IM medication administration and upon arrival at destination.
2. Contraindications to opiate administration include hypotension, head injury, and respiratory depression.
3. All patients should have drug allergies ascertained prior to administration of pain medication.
4. Patients receiving narcotic analgesics should be administered oxygen.
5. Narcotic analgesia was historically contraindicated in the pre-hospital setting for abdominal pain of unknown etiology. It was thought that analgesia would hinder the ER physician or surgeon's evaluation. Recent studies have demonstrated opiate administration may alter the physical examination findings, but these changes result in no significant increase in management errors.[1]
6. Fentanyl is contraindicated for patients who have taken MAOIs within past 14 days, and used with caution in patients with head injuries, increased ICP, COPD, and liver or kidney dysfunction.

[1] JAMA. 2006; 296(14):1764-74 (ISSN: 1538-3598)
Ranji SR; Goldman LE; Simel DL; Shojania KG

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SECTION: Pediatric General Medical Emergencies

PROTOCOL TITLE: Poisoning/ Overdose
Medical - Overdose/Poisoning/Toxic Ingestion

REVISED: 06/2013

Protocol
9-9

POISONING / OVERDOSE

OVERVIEW:
Ingestion and overdose are among the most common pediatric "accidents." The substance usually is a medication prescribed for family members or for the child. Other commonly ingested poisons include cleaning chemicals, plants and anything that fits in a child's mouth. Primary manifestations may be a depressed mental status and / or respiratory and cardiovascular compromise. Contact Medical Control for patient care orders. Contact Poison Control (804-828-1222 or 800-222-1222) for advice. **Do not confuse Poison Control with Medical Control.**

HPI	Signs and Symptoms	Considerations
• Use or suspected use of a potentially toxic substance • Substance ingested, route, and quantity used • Time of use • Reason (suicidal, accidental, criminal) • Available medications in home	• Mental status changes • Hypotension / hypertension • Hypothermia / hyperthermia • Decreased respiratory rate • Tachycardia, other dysrhythmias • Seizures	• Acetaminophen (Tylenol) • Depressants • Stimulants • Anticholinergic • Cardiac medications • Solvents, alcohols • Cleaning agents • Insecticides

	A	B	EN	I	P
1. Perform general patient management.	•	•	•	•	•
2. Support life-threatening problems associated with airway, breathing, and circulation.	•	•	•	•	•
3. Administer oxygen to maintain *SPO$_2$* 94 - 99%	•	•	•	•	•
4. Establish an IV of normal saline per patient assessment.			•	•	•
5. If child is over 20kg and respiratory effort remains diminished and opiate administration is suspected, give *NARCAN* INRANASAL max 2mg -OR- *NARCAN* 0.1 mg / kg slow IVP/IM max 2mg.			•	•	•
6. Place patient on cardiac monitor and monitor pulse oximetry.				•	•
7. Transport and perform ongoing assessment as indicated.		•	•	•	•

Age	Pre-Term	Term	3 mos.	6 mos.	1 year	3 years	6 years	8 years
Weight (lb / kg)	3.3 lb 1.5 kg	6.6 lb 3 kg	13.2 lb 6 kg	17.6 lb 8 kg	22 lb 10 kg	30.8 lb 14 kg	44 lb 20 kg	55 lb 25 kg
Narcan IV 0.1 mg / kg	0.15 mg	0.3 mg	0.6 mg	0.8 mg	1.0 mg	1.4 mg	2.0 mg	2.0 mg

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Protocol
9-12

SECTION: Pediatric General Medical Emergencies

PROTOCOL TITLE: Seizure
Medical - Seizure

REVISED: 06/2013

SEIZURE

OVERVIEW:
A seizure is a period of altered neurologic function caused by abnormal neuronal electrical discharges. Generalized seizures begin with an abrupt loss of consciousness. If motor activity is present, it symmetrically involves all four extremities. Episodes that develop over minutes to hours are less likely to be seizures; most seizures only last 1 - 2 minutes. Patients with seizure disorders tend to have stereotype, or similar, seizures with each episode and are less likely to have inconsistent or highly variable attacks. True seizures are usually not provoked by emotional stress. Most seizures are followed by a postictal state of lethargy and confusion.

HPI	Signs and Symptoms	Considerations
• Reported, witnessed • Seizure activity description • Previous seizure history • Medic alert tag information • Seizure medications • History of trauma • History of diabetes mellitus • History of pregnancy	• Decreased mental status • Sleepiness • Incontinence • Observed seizure activity • Evidence of trauma	• CNS (head) trauma • Tumor • Metabolic, hepatic, renal failure • Diabetic • Hypoxia • Electrolyte abnormality • Drugs, medications, non-compliance • Infection, fever, meningitis • Alcohol withdrawal • Hyperthermia

	A	B	EN	I	P
1. Perform general patient management.	•	•	•	•	•
2. Support life-threatening problems associated with airway, breathing, and circulation.	•	•	•	•	•
a. Suction the oro- and nasopharynx as necessary.	•	•	•	•	•
b. Place a nasopharyngeal airway as necessary (avoid in head trauma).	•	•	•	•	•
3. Administer oxygen to maintain SPO_2 94 - 99%. Support respirations as necessary with a BVM.	•	•	•	•	•
4. Do not restrain the patient. Let the seizure take its course but protect patient from injury.	•	•	•	•	•
5. Perform rapid glucose determination. If glucose less than 60 mg / dL or clinical signs and symptoms indicate hypoglycemia, refer to the *Hypoglycemia protocol*.	•	•	•	•	•

Protocol 9-12 Continued

SEIZURES

	A	B	EN	I	P
6. If the seizure persists and the rapid glucose determination is greater than 60 mg / dL, give *MIDAZOLAM* 0.2 mg / kg INTRANASAL (max single dose 5 mg) –OR- give *MIDAZOLAM* 0.1 mg / kg IV / IM (max single dose 10 mg)				•	•
a. Repeat dose in 5 minutes if seizure persists.				•	•
b. If Midazolam is unavailable, administer, *DIAZEPAM* 0.25 mg / kg up to 5 mg slow IV push, titrated to effect. Diazepam may also be administered Per Rectum (PR) in pediatric patients.				•	•
7. Establish an IV of normal saline at KVO.			•	•	•
8. Place patient on cardiac monitor (sometime life-threatening dysrhythmias can cause seizure-like activity).				•	•
9. Consider placing the patient in the recovery position during the postictal period.	•	•	•	•	•
10. Transport and perform ongoing assessment as indicated.		•	•	•	•

TYPES OF SEIZURES		
Generalized	**Simple Partial**	**Complex Partial**
• Absence (Petit-Mal) • Atonic (Drop Attack) • Myoclonic (Brief bilateral jerking) • Tonic-Clonic (Grand-Mal)	• Focal / Local: Localized twitching of hand, arm, leg, face, or eyes. Patient may be conscious or unconscious	• Temporal Lobe • Psychomotor

Age	Pre-Term	Term	3 month	6 month	1 year	3 years	6 years	8 years
Weight (lb / kg)	3.3 lb 1.5 kg	6.6 lb 3 kg	13.2 lb 6 kg	17.6 lb 8 kg	22 lb 10 kg	30.8 lb 14 kg	44 lb 20 kg	55 lb 25 kg
Midazolam IV	0.15 mg	0.3mg	0.6mg	0.8 mg	0.1mg	1.4mg	2mg	2.5mg
Midazolam IN *$^1/_2$ dose per nostril	0.3 mg	0.6mg	1.2mg	1.6mg	2mg	2.8mg	4mg	5mg
Diazepam IV (5.0 mg / ml) 0.3 mg/kg	0.1 ml	0.2 ml	0.4 ml	0.5 ml	0.6 ml	0.84 ml	1.2 ml	1.5 ml

Diazepam PR (5.0 mg / ml) 0.5 mg / kg	0.15 ml	0.3 ml	0.6 ml	0.8 ml	1.0 ml	1.4 ml	2.0 ml	2.0 ml

PEARLS:

1. Respirations during an active seizure should be considered ineffective and airway maintenance should occur per assessment.
2. Status epilepticus is defined as two or more consecutive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway support, treatment, and transport.
3. Grand Mal seizures are generalized in nature and associated with loss of consciousness, incontinence, and possibly tongue trauma.
4. Focal seizures affect only a specific part of the body and are not usually associated with loss of consciousness.
5. Jacksonian seizures are seizures, which start as focal in nature and become generalized.
6. Petit Mal seizures may be localized to a single muscle group or may not involve visible seizure activity all. Always examine pupils for nystagmus, which would alert provider to continued seizure activity.
7. Be prepared for airway problems and continued seizures.
8. Investigate possibility of trauma and substance abuse.
9. Be prepared to assist ventilations as dosages of benzodiazepines are increased.

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SECTION: Medication Reference

PROTOCOL TITLE: Fentanyl

REVISED: 05/2012

Medication
13-15

FENTANYL

DRUG NAME: Fentanyl Citrate

TRADE NAME: Sublimaze, Atiq (lollypop form for pediatrics)

DRUG CLASS:
1. Synthetic opiate, narcotic analgesic
2. Opiate
3. Schedule II controlled substance

MECHANISM OF ACTION:
Fentanyl is a powerful synthetic opiate with a mechanism of action similar to Morphine, though it is considered both faster acting and of shorter duration than Morphine. Fentanyl interacts with opiate receptors decreasing pain impulse transmission at the spinal cord level and higher in the CNS while also being a potent μ-opiate receptor agonist. Peripheral vasodilation is also caused by fentanyl's ability to increase venous capacitance and decreases venous return (chemical phlebotomy) by depressing the responsiveness of alpha-adrenergic receptors. Since it decreases both preload and afterload it may also decrease myocardial oxygen demand. Fentanyl is metabolized in the liver, excreted by the kidneys, and stored in body fat.

INDICATIONS:
1. Moderate to severe pain
2. Sedation maintenance for mechanically ventilated patients

CONTRAINDICATIONS:
Hypersensitivity

PRECAUTIONS:
1. Respiratory depression
2. Severe heart disease
3. Geriatrics
4. Pregnancy (C), increases to (D) when administered for prolonged periods or high doses when administered to patients who are close to full term
5. Liver / kidney failure (may prolong duration)

DOSAGE:

Adults:
- 1.0 - 3.0 mcg / kg slow IVP, every 20 - 30 minutes as needed
- 2 mcg/kg INTRANASAL (first dose max of 50 mcg) ½ dose in each nostril. May consider additional dose of up to 100 mcg after 5 minutes if pain persists.

Pediatrics:
- 2 mcg/kg INTRANASAL (first dose max of 50 mcg) ½ dose in each nostril. May consider additional dose of up to 100 mcg after 5 minutes if pain persists.
- 1.0 mcg / kg slow IVP

ONSET:
IN: 1-3 minutes IV: 1 - 3 minutes IM: 10 - 20 minutes

FENTANYL

DURATION:
1 - 2 hours, with peak effects 30 minutes post administration

SIDE EFFECTS	
• Dizziness	• Lightheadedness
• Altered level of consciousness	• Bradycardia
• Hallucinations	• Tachycardia
• Euphoria	• Nausea & Vomiting
• Mental impairment	• CNS depression
• Hypotension	• Respiratory depression
• Seizures (rare)	• Muscle rigidity

INTERACTIONS:
1. CNS depressants may enhance effects (antihistamines, anti-emetics, sedatives, hypnotics, barbiturates, and alcohol.
2. No not mix in line with heparin.

PEARLS:
1. Fentanyl MUST be given slowly, as chest wall muscle rigidity, seizures, and hypotension have been associated with rapid administration.
2. Fentanyl is significantly more potent than Morphine (approximately 50 - 100 times as potent, mg to mg). At clinically equivalent doses, Fentanyl is similar in effectiveness to morphine, with a quicker onset and shorter duration.
3. Compared to other opiates (e.g., Demerol or Morphine), it has less profound adverse effects, minimal histamine release, and does not adversely affect the seizure threshold.
4. Apnea and significant respiratory depression have been noted with doses > 5 mcg / kg.
5. Any opiate analgesics can cause spasm of the Sphincter of Oddi (ampulla) and the renal tract. Fentanyl is not believed to have any more adverse effect on this than Morphine.
6. Narcotic analgesia used to be considered contraindicated in the pre-hospital setting for abdominal pain of unknown etiology. It was thought that analgesia would hinder the ER physician or surgeon's evaluation of abdominal pain. It is now becoming widely recognized that severe pain actually confounds physical assessment of the abdomen and that narcotic analgesia rarely diminishes all of the pain related to the abdominal pathology. It would seem to be both prudent & humane to "take the edge off of the pain" in this situation, with the goal of reducing, not necessarily eliminating the discomfort. Additionally, in the practice of modern medicine the exact diagnosis of the etiology of abdominal pain is rarely made on physical examination alone, but also includes laboratory tests, x-ray, ultrasound, and CT scan, essential in the diagnosis of abdominal pain. Therefore medication of abdominal pain is both humane and appropriate medical care.

SECTION: Medication Reference

PROTOCOL TITLE: Midazolam

REVISED: 06/2013

Medication
13-22

MIDAZOLAM

DRUG NAME: Midazolam

TRADE NAME: Versed

DRUG CLASS:
1. Benzodiazepine (non-barbiturate sedative-hypnotic agent)
2. Schedule IV controlled substance

MECHANISM OF ACTION:
Midazolam acts at the level of the limbic, thalamic, and hypothalamic regions of the central nervous system (CNS) through potentiation of GABA (inhibitory neurotransmitter) by decreasing neural cell activity in all regions of the CNS. Anxiety is decreased by inhibiting cortical and limbic arousal while promoting relaxation through inhibition of the spinal motor reflex pathway and depressing muscle & motor nerve function directly. As an anticonvulsant, Midazolam augments the presynaptic inhibitions of neurons, limiting the spread of electrical activity without altering the electrical activity of the seizure's focus. Midazolam has twice the affinity for benzodiazepine receptors than diazepam and has more potent amnesic effects. It is also short acting and roughly 3 - 4 times more powerful than diazepam.

INDICATIONS:
1. Sedation prior to cardioversion
2. Sedation maintenance in mechanically ventilated patients
3. Seizure control

CONTRAINDICATIONS:
1. Shock
2. Coma
3. Hypersensitivity
4. Closed angle glaucoma
5. Pregnancy (D)

PRECAUTIONS:
1. Patients with respiratory insufficiency (asthma, COPD, etc.) are more susceptible to respiratory depression
2. Effects are enhance by other CNS depressants
3. Elderly
4. Hypotension
5. Use caution when administering to patients with:
    - Hepatic dysfunction
    - Renal insufficiency
    - History of drug addiction
    - Parkinson's disease
    - Myasthenia gravis

MIDAZOLAM

DOSAGE:

Adults:

Status epilepticus, Cardioversion and pacing

- 2.5 mg IVP, every 5 minutes as needed, maximum total dose of 20.0 mg.
- 0.2 mg / kg INTRANASAL (max single dose 10 mg)

Sedation

- 0.1 mg / kg slow IVP, every 20 - 30 minutes as needed, maximum single dose 5.0 mg.

Pediatrics:

- 0.05-0.1 mg/kg slow IVP
- 0.2 mg/kg INTRANASAL (max 10 mg half dose per nostril)

ONSET:

IN: 1 - 3 minutes
IV: 1 - 3 minutes
IM: 5 - 15 minutes

DURATION:

2 hours (dose dependant)

SIDE EFFECTS	
Minor	**Major**
• Nausea & vomiting • Headache • Drowsiness • Lethargy • Cough • Hiccups	• Respiratory depression • Apnea • Hypotension • Paradoxical CNS stimulation (i.e., Valium rage) • Cardiac arrest

INTERACTIONS:

Additive with other CNS depressants

PEARLS:

1. Premedication with an opiate may potentiate Midazolam, reducing the dose 30 - 50% is suggested.
2. Can cause phlebitis and pain at the IM injection sight.
3. Has more potential than other benzodiazepines to cause respiratory depression and arrest. Slower administration may reduce the respiratory depressant potential. Use with extreme caution in pediatrics.
4. Elderly, debilitated, or patients under the influence of other CNS depressants require reduced dosages.
5. Midazolam is preferred over other benzodiazepines in cases without IV access due to more rapid IM absorption; however it may have more profound respiratory depression.

SECTION: Medication Reference

PROTOCOL TITLE: Naloxone

REVISED: 06/2013

Medication
13-24

NALOXONE

DRUG NAME: Naloxone

TRADE NAME: Narcan

DRUG CLASS:
Narcotic antagonist

MECHANISM OF ACTION:
Naloxone binds competitively to opiate receptor sites, displacing narcotics and synthetic narcotics. Naloxone also antagonizes all actions of narcotics.

INDICATIONS:
1. Complete or partial reversal of depression caused by narcotics or synthetic narcotics
2. Coma of unknown etiology

CONTRAINDICATIONS:
Known hypersensitivity

PRECAUTIONS:
1. Pre-existing cardiac disease
2. Patients who have received cardio-toxic drugs
3. Pregnancy (B)
4. Abrupt and complete reversal can cause withdrawal-type effects
5. Use caution in poly-pharmaceutical overdoses

DOSAGE:

Adults:
- 0.2 mg / kg INTRANASAL (max 2mg). Dose may be repeated as necessary.
- 0.5 mg – 2.0 mg Slow IVP to maintain good spontaneous respiratory effort. Dose may be repeated as needed. Failure to obtain reversal after 10 mg usually indicates another disease process or overdose on non-opioid drugs.

Pediatrics:
- 0.2 mg / kg INTRANASAL (max 2mg). Dose may be repeated as necessary.
- 0.1 mg / kg IVP. Dosage may be repeated as needed.

ONSET:
IN: 1 – 2 minutes
IV: 1 - 2 minutes
IM: 2 - 8 minutes

DURATION:
30 - 60 minutes

Medication
13-24
Continued

NALOXONE

SIDE EFFECTS	
• Tachycardia • Hypotension • Hypertension	• Dysrhythmias • Nausea & vomiting • Diaphoresis

INTERACTIONS:
Incompatible with alkaline drugs

PEARLS:
1. Many opiates have a longer bioavailability than Naloxone, therefore assess for re-sedation and repeat administration as needed.
2. Failure to obtain reversal after 10 mg usually indicates another disease process or overdose on non-opioid drugs.
3. Use with caution in poly-pharmaceutical overdoses, reversal of opiate may result in an extremely hyperdynamic patient (i.e. "*speedball*").
4. Use just enough Naloxone to reverse severe signs and symptoms (i.e., respiratory depression, loss of airway control, and hypotension). We don't need to completely wake these people up in the field! Doing so may create a situation where a patient may become combative, belligerent, and refuse transport requiring law enforcement intervention.
5. If patient has obviously aspirated, consider bypassing Naloxone administration and transport the patient. Intubate as required.
6. If pushed too rapidly, this medication will induce vomiting.
7. Osterwalder, et al notes that "*In 1000 clinically diagnosed intoxications with heroin or heroin mixtures, from 4 to 30 serious complications can be expected. Such a high incidence of complications is unacceptable and could theoretically be reduced by artificial respiration with a bag valve device (hyperventilation) as well as by administering Naloxone in minimal divided doses, injected slowly."* This is supported by other studies and case reports as well. It is recommended that a couple of minutes of careful ventilation with a BVM (with Sellick's maneuver) be performed prior to Naloxone administration to decrease the incidence of uncommon, but serious, complications.