

CARROLL COUNTY EMERGENCY MEDICAL SERVICES

Statewide
EMS TREATMENT PROTOCOLS
ADULT & PEDIATRIC

January 2012



“Promoting and Protecting the Health of Iowans through EMS”

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IOWA EMS TREATMENT PROTOCOLS

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IOWA EMS TREATMENT PROTOCOLS
Section 1

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Introduction

The purpose of protocols in the out-of-hospital setting is to assure safe and effective intervention during the out-of-hospital phase of patient care. In consideration of the unique resources, needs, population and geography of individual service programs, the physician medical director may choose to enhance or omit portions in accordance with Iowa Code, Chapter 147A. Medical directors are responsible to ensure that EMS personnel use protocols, have the training and skills required, and perform Continuous Quality Improvement (CQI) activities.

Use of skills in the out of hospital setting are limited to the EMS provider's scope of practice and EMS service program level of authorization as approved by the physician medical director. The service program medical director must determine what skills within the level of service authorization and provider scope of practice are to be included or not included for individual EMS services. **The “Iowa EMS Scope of Practice” document, adopted by reference to the administrative rules outlines skills by certification level. It is can be found on the Bureau of EMS website or by contacting the Bureau of EMS.**

Protocols are essential to assure education, training, and standards of care meet the needs of patients. Ongoing review and update of protocols is necessary to keep pace with interventions known to be effective in out-of-hospital care. The challenge is for all EMS providers, to keep current with the protocols so the EMS continuum of care can effectively reduce suffering, disability, death and costs from life-threatening illness and injury.

It is the intent of the Protocol Committee and the Iowa EMS Advisory Council that these protocols will serve as a standard throughout Iowa's EMS system. **Approved current protocols shall be available on all authorized service vehicles.** According to Iowa Administrative Code 641-132.9(2)(a) individual physician medical directors duties include *“developing, approving, and updating protocols to be used by service program personnel that meet or exceed the minimum standard protocols developed by the department.”*

Additionally, according to 641-132.8(3)(b) service programs shall *“utilize department protocols as the standard of care. The service program medical director may make changes to the department protocols provided the changes are within the EMS provider's scope of practice and within acceptable medical practice. A copy of the changes shall be filed with the department.”*

The following authorization page and any changes or revisions made by the EMS service medical director must be on file with the State EMS Field Coordinator.

The complete “Iowa Statewide *EMS Treatment Protocols*,
Adult & Pediatric” is also available on the
Iowa Department of Public Health website
<https://www.idph.state.ia.us/ems/>

Protocols Authorization

Authority:

According to Iowa Code, Chapter 147A, emergency medical personnel may only deliver emergency medical care under the direction of a physician medical director who is licensed in Iowa. The medical practice of out-of-hospital personnel is an extension of the medical director's license.

Protocols shall be approved, signed and dated by the EMS service medical director prior to implementation. Staff training must be documented & on file. Any changes must be on file with your EMS Field Coordinator. Skills must be within the level of service authorization and EMS provider scope of practice.

THE SERVICE PHYSICIAN MEDICAL DIRECTOR MUST APPROVE THE PROTOCOL IN ACCORDANCE WITH THE AUTHORIZED LEVEL OF SERVICE

Carroll County EMS Association

Ambulance Non-transport

A. Level of Authorization:

- x First Responder/EMR
- x EMT-B/EMT
- x EMT-I
- x AEMT
- x EMT-P
- x EMT-P / CCT (attach protocol)
- x PS/Paramedic
- x PS / CCT (attach protocol)

B. These protocols are to be considered a standing order. Radio communications are not required prior to performing any protocol action. EMT's/Paramedics should call in for further direction or confirmation of orders whenever the situation warrants.
 YES NO

C. The emergency medical care provider present with the highest level of certification (on the transporting service) shall determine, based upon patient care needs, the appropriate level of provider to attend the patient during transport.
 YES NO

D. Approval of Skills and Training Level (Physician Medical Director must approve skills based on providers scope of practice & service authorization level)

- Esophageal/tracheal
 - double-lumen airway YES NO
- IV maintenance YES NO
- Glucose Monitor YES NO
- Epinephrine Auto-injector YES NO
- Gastric Tube Insertion YES NO
- Needle Thoracostomy YES NO
- NG Tube Insertion YES NO
- Intraosseous Infusion YES NO
- Intranasal (MAD) administration YES NO
- Needle Crichothyrotomy YES NO
- CPAP YES NO
- RSI (attach protocol) YES NO
- Morgan Lens Irrigation System YES NO
- Nasotracheal Intubation YES NO
- Thrombolytics (attach protocol) YES NO
- Assess.-based Spinal Immob. YES NO

I understand I am responsible for providing appropriate medical direction and overall supervision of the medical aspects of the service program and I have reviewed this document and the Iowa EMS Scope of Practice which is defined by Iowa Administrative Code 641-132.

Dominck Ervelli, D.O.
Physician Medical Director's Name
(please print)

Physician Medical Director's Signature

Date

Protocol Revision

List all changes made by the physician medical director. According to Iowa Administrative Code 641-132.8(3)(b) service programs shall, *“utilize department protocols as the standard of care. The service program medical director may make changes to the department protocols provided the changes are within the EMS provider’s scope of practice and within acceptable medical practice. A copy of the changes shall be filed with the department.”* Include a copy of any additional protocols if approved for use. Submit a revised copy of the drug list on next page if additions or deletions apply.

<u>PAGE</u> (attach copies)	<u>PROTOCOL NAME</u>	<u>CHANGES MADE</u> (may)
II	Protocol Authorization	added intranasal administration
IV	Authorized Drug List	Revised
6	Initial Patient Care Protocol	added “at least” on #5
12	Allergic Reaction	add “Solu-Medrol”
16	Asthma	add “Solu-Medrol”
17	Behavioral Emergencies	exchange Haldol for Geodon and exchange midazolam for diazepam
32	Seizure	use midazolam
59	Seizure Pediatric	use midazolam
II, 19	Protocol Authorization, Burns	add Morgan Lens
II	Protocol Authorization	add Intranasal Mucosal Atomization Devise (MAD)

SERVICE NAME _____ Carroll County EMS Association _____

PHYSICIAN MEDICAL DIRECTOR _____
Signature
Date

IOWA EMS TREATMENT PROTOCOLS

Section 2

Adult Treatment Protocols

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Initial Patient Care Protocol

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1. Scene Size Up
 - a) Review the dispatch information
 - b) As you approach the scene consider safety for yourself and your patient.
 - c) Observe universal precautions
 - d) After determining the number and location of patients, consider the need for additional resources
 - e) Determine mechanism of injury and/or nature of illness
 - f) Reassess the situation often

2. Primary Survey
 - a) Obtain general impression of patient, chief complaint, and priority problems
 - b) Determine responsiveness
 - c) Assess airway
 - d) Assess breathing
 - e) Assess circulation

3. Initial Interventions
 - a) Treat airway/breathing problems
 - b) Treat circulation problems
 - c) Establish IV/IO access if indicated
 - d) Apply cardiac monitor if indicated
 - e) Apply pulse oximetry or EtCO₂ monitor if available and indicated
 - f) Treat pain or nausea if present

4. Secondary Survey
 - a) Perform secondary assessment after initial interventions are completed
 - b) Address problems identified in the secondary survey utilizing the appropriate protocol(s)
 - c) Obtain vital signs including blood glucose if available and indicated

5. Ongoing Assessment
 - a) Repeated evaluation of patient
 - Vitals at least every 5 minutes for unstable patients
 - Vitals at least every 15 minutes for stable patients
 - b) Assess effect of interventions

6. Transport/Contact Medical Control
 - a) Patients should be transported as soon as feasible to an appropriate medical facility. Immediate transport with treatment en route is recommended for patients with significant trauma or unstable airways

Initial Patient Care Protocol (continued)

- b) Tier with an appropriate service if level of care indicates or assistance is needed and can be accomplished in a timely manner
- c) Contact medical direction as soon as feasible for further orders
- d) For seriously injured or critically ill patients, give a brief initial report from the scene when possible, with a more detailed report given to medical direction while en route

Abdominal Pain

(non-traumatic)

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1. Follow Initial Care Protocol for all Patients

BASIC CARE GUIDELINES

- a) Give nothing by mouth

ADVANCED CARE GUIDELINES

- b) Consider a fluid bolus if indicated.
 - c) Evaluate the need for pain and nausea control

Acute Coronary Syndrome

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Place patient in position of comfort, loosen tight clothing and provide reassurance. If patient is complaining of shortness of breath, has signs of respiratory distress and pulse oximetry of less than 94% then titrate oxygen to maintain a saturation of 94-99%
- b) If capability exists, obtain a 12-lead EKG
- c) If patient is alert and oriented and expresses no allergy to aspirin have patient chew nonenteric aspirin 160 – 325 mg
- d) An initial management goal should be to identify STEMI and transport the patient with cardiac symptoms to the facility most appropriate for their needs
- e) Contact medical direction for orders
- f) If the patient has been prescribed nitroglycerin (patients nitro only) and systolic blood pressure is 90 mmHg or above, give one dose. If patient is taking erectile dysfunction drugs such as Viagra, contact medical direction prior to giving nitroglycerin
- g) Repeat one dose of nitroglycerin in 3-5 minutes if pain continues, systolic blood pressure is 90 mmHg or above and authorized by medical direction, up to a maximum of three doses
- h) If systolic blood pressure less than 90 mmHg or patient does not have prescribed nitroglycerin, transport promptly continuing assessment and supportive measures
- i) Further assess the patient and evaluate the nature of pain (unless other treatment priorities exist). Refer to Appendix H (Reperfusion Strategies) as ordered by medical control.

ADVANCED CARE GUIDELINES

- j) If capability exists, obtain a 12-Lead EKG

Acute Coronary Syndrome (Continued)

- k) Establish IV access at TKO rate unless otherwise ordered or indicated
- l) Monitor EKG and treat dysrhythmias following appropriate protocols approved by the medical director, referencing AHA guidelines
- m) Administer nitroglycerin (tab or spray) 0.4 mg sublingually if systolic blood pressure 90 mmHg or above for symptoms of chest pain or atypical cardiac pain. Repeat one dose in 5 minutes if pain continues and systolic blood pressure is greater than 90 mmHg or above. Up to a maximum of three doses should be tried before administering morphine sulfate
- n) If pain continues after administration of nitroglycerin and systolic blood pressure remains above 90 mmHg administer morphine sulfate following the AHA ST Elevated Myocardial Infarction (STEMI) guidelines:
 - STEMI – Morphine 2-4 mg IV may repeat 2-8 mg IV every 5 minutes titrated to pain relief and vitals remain stable to maximum of 10 mg.
 - OR**
 - UA/NSTEMI – Morphine 1-5 mg IV given once

Airway

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

Breathing spontaneous on initial assessment and adequate ventilation present

- a) Maintain oxygenation with cannula or mask if oxygen saturations are below 94% titrate to 94% - 99%

Breathing spontaneous on initial assessment without adequate ventilation present

- a) Check airway for obstruction and clear if needed
- b) After airway is clear, assist ventilation with an appropriate adjunct and oxygen
- c) If adequate ventilation is not maintained, proceed to an advanced airway.

Not breathing on initial assessment

- a) Open airway with head tilt chin lift. If successful, assist ventilations at an adequate rate and depth then reassess
- b) If head tilt chin lift is not successful, check airway for obstruction and clear if needed
- c) After airway is clear, assist ventilation
- d) If adequate ventilation is not maintained, proceed to an advanced airway.

Allergic Reaction

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- 1) Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) If the patient has a physician prescribed Auto-Inject Epinephrine assist with administering it for signs of anaphylaxis

ADVANCED CARE GUIDELINES

- b) Administer epinephrine 1:1,000 concentration 0.01 mg/kg IM, up to a maximum dose of 0.3 to 0.5 mg
- c) Administer diphenhydramine 25 – 50 mg IV/IM
- d) Administer albuterol 2.5mg by nebulizer if respiratory distress
- e) Evaluate need for early intubation if severe anaphylaxis
- f) Evaluate the need for Solu-Medrol 125 mg IV
- g) For cases of severe anaphylaxis consider administration of epinephrine 1:10,000 concentration 0.3 mg - 0.5 mg IV/IO over 3-5 minutes.

Altered Mental Status

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Obtain blood glucose
- b) If conscious & able to swallow, administer glucose 15 gm by mouth

ADVANCED CARE GUIDELINES

- c) If blood sugar less than 60 mg/dL administer D50 12.5 - 25 gm IV
- d) If no vascular access administer glucagon 1 mg IM
- e) Evaluate the need for naloxone 1 mg IV. If no response may repeat in 3 minutes
- f) Evaluate the need for intubation

Amputated Part

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1. Follow Initial Patient Care Protocol
2. Follow Trauma Protocol if indicated

BASIC CARE GUIDELINES

- a) Locate amputated part if possible
- b) Wrap amputated part in saline moistened gauze
- c) Place wrapped amputated part in empty plastic bag
- d) Place the plastic bag with the amputated part in a water and ice mixture
- e) Do not use ice alone or dry ice
- f) Label with patient name, the date, and time
- g) Make sure the part is transported with the patient, if possible

ADVANCED CARE GUIDELINES

- h) Consider pain control

Apparent Death

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1. Follow Initial Patient Care Protocol

Apparent death indications are as follows:

- Signs of trauma are conclusively incompatible with life
- Physical decomposition of the body
- Rigor mortis and/or dependent lividity

If apparent death is confirmed, continue as follows:

BASIC CARE GUIDELINES

- a) The county Medical Examiner and law enforcement shall be contacted
- b) Where possible, contact Iowa Donor Network at 800-831-4131. See Protocol Appendix J
- c) At least one EMS provider should remain at the scene until the appropriate authority is present
- d) Provide psychological support for grieving survivors
- e) Document the reason(s) no resuscitation was initiated
- f) Preserve the crime scene if present
- g) In all other circumstances (except where “NO CPR/DNR” protocol applies; see appendix B) full resuscitation must be initiated

Asthma

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) If patient has a physician prescribed hand-held metered dose inhaler:
 - i. Assist patient in administering a single dose if they have not done so already
 - ii. Reassess patient and assist with second dose if necessary per medical direction

ADVANCED CARE GUIDELINES

- b) Administer albuterol 2.5 mg via nebulizer
- c) Evaluate the need for epinephrine 1:1,000 concentration 0.3-0.5 mg IM.
- d) Evaluate the need for CPAP, if available
- e) Evaluate the need for Solu-Medrol 125 mg IV
- f) Evaluate the need for intubation

Behavioral Emergencies

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1. Follow Initial Patient Care Protocol

- a) If there is evidence of immediate danger, protect yourself and others by summoning law enforcement to help ensure safety

BASIC CARE GUIDELINES

- b) Consider medical or traumatic causes of behavior problems
- c) Keep environment calm

ADVANCED CARE GUIDELINES

- d) For severe anxiety, consider a benzodiazepine such as
 - i. Midazolam 2mg IV every 5 minutes up to 10 mg maximum

OR

 - ii. Midazolam 5-10mg IM

OR

 - iii. Midazolam .5 mg/kg IN via MAD syringe
- e) For excited delirium, consider administering haloperidol 2 – 10 mg IV or 5 – 10 mg IM.

Burns

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1. Follow Initial Patient Care Protocol

Thermal Burns

BASIC CARE GUIDELINES

- a) Initially stop the burning process with water or saline
- b) Perform primary survey with attention to airway and ventilation
- c) Estimate percent of body surface area injured and depth of injury
- d) If wound is less than 10 % Body Surface Area, cool down burn with Normal Saline
- e) Remove smoldering clothing and jewelry and expose area
- f) Continually monitor the airway for evidence of obstruction
- g) Cover the burned area with plastic wrap or a dry sterile dressing
- h) Do not break blisters
- i) Do not use any type of ointment, lotion, or antiseptic
- j) Keep patient warm

ADVANCED CARE GUIDELINES

- k) Establish an IV. Using the Parkland Burn Formula:
 1. 4 ml x total body surface area sustaining 2nd/3rd/4th degree burns x person's weight in kilograms.
 2. Infuse half of this volume over the first 8 hours from the time of the burn, with the remainder infused over the following 16 hrs.
 3. **Quick Calculation for the first hour:** Patient's weight in kilograms x 20 ml = volume for the first hours. The total volume can be calculated when there is time
- l) Refer to Pain Control protocol
- m) Transport to the most appropriate medical facility

Burns (continued)

Chemical Burns

BASIC CARE GUIDELINES

- a) Brush off powders prior to flushing. Lint roller may also be used to remove powders prior to flushing
- b) Immediately begin to flush with large amounts of water
- c) Continue flushing the contaminated area when en route to the receiving facility
- d) Do not contaminate uninjured areas while flushing
- e) Attempt to identify contaminant
- f) Transport to the most appropriate medical facility
- g) Estimate percent of body surface area injured and estimate the depth of burn as superficial, partial thickness or full thickness

ADVANCED CARE GUIDELINES

- h) Refer to Pain Control protocol

Toxin in Eye

BASIC CARE GUIDELINES

- a) Flood eye(s) with lukewarm water and have patient blink frequently during irrigation. Use caution to not contaminate other body areas
- b) Attempt to identify contaminant
- c) Transport to the most appropriate medical facility

ADVANCED CARE GUIDELINES

- d) Insert Morgan Lens following Appendix R if indicated
- e) Establish a large bore IV if indicated and infuse as patient condition warrants
- f) Refer to Pain Control protocol

Burns (continued)

Electrical Burns

BASIC CARE GUIDELINES

- a) Treat soft tissue injuries associated with the burn with dry dressing
- b) Treat for shock if indicated
- c) Transport to the most appropriate medical facility

ADVANCED CARE GUIDELINES

- d) Refer to Pain Control protocol

Cardiac Arrest

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) All levels of providers should perform emergency cardiac care in accordance with protocols approved by the medical director, referencing AHA guidelines

ADVANCED CARE GUIDELINES

- b) All levels of providers should perform emergency cardiac care in accordance with protocols approved by the medical director, referencing AHA guidelines

Childbirth

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1. Follow Initial Patient Care Protocol

Normal Delivery

BASIC CARE GUIDELINES

- a) If delivery is imminent with crowning, commit to delivery on site and contact medical control
- b) If the amniotic sac does not break, or has not broken, use a clamp to puncture the sac and push it away from the infant's head and mouth as they appear
- c) For newborn management, see newborn resuscitation protocol

Abnormal Deliveries:

BASIC CARE GUIDELINES

Breech delivery: (buttocks presentation)

- a) Allow spontaneous delivery
- b) Support infant's body as it's delivered
- c) If head delivers spontaneously, proceed as in Section I (Normal Delivery)
- d) If head does not deliver within 3 minutes, insert gloved hand into the vagina, keeping your palm toward baby's face; form a "V" with your fingers and push wall of vagina away from baby's face, thereby creating an airway for baby
- e) Do not remove your hand until relieved by advanced EMS or hospital staff

Congestive Heart Failure

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Place patient in position of comfort, typically sitting up, loosen tight clothing and reassure
- b) Maintain oxygenation with cannula or mask if oxygen saturations are below 94% titrate to 94% - 99%
- c) Transport immediately if the patient has any of the following:
 - No history of cardiac problems
 - Systolic blood pressure of less than 100.
 - A history of cardiac problems, but does not have nitroglycerin
- d) If capability exists, obtain a 12-lead EKG
- e) Contact medical direction for orders
- f) If the patient has been prescribed nitroglycerin (patient's nitro only) and systolic blood pressure is 90 mmHg or above, give one dose. If patient is taking erectile dysfunction drugs such as Viagra, contact medical direction prior to giving nitroglycerin
- g) Repeat one dose of nitroglycerin in 3-5 minutes if pain continues if systolic blood pressure is 90 mmHg or above and authorized by medical direction, up to a maximum of three doses
- h) Reassess patient and vital signs after each dose of nitroglycerin
- i) Further assess the patient and evaluate possible causes (unless other treatment priorities exist)

ADVANCED CARE GUIDELINES

- j) If not already preformed, obtain a 12-lead EKG
- k) Establish IV access at TKO rate unless otherwise ordered or indicated

Congestive Heart Failure (continued)

- l) Be prepared to intubate patient
- m) Monitor EKG and treat dysrhythmias following the appropriate protocol(s)
- n) Refer to Appendix F (Reperfusion Strategies)
- o) If capability exists, apply CPAP
- p) Administer nitroglycerin (tab or spray) 0.4 mg sublingually if systolic blood pressure 90 mmHg or above

Frostbite

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Remove the patient from the cold environment
- b) Protect the cold injured extremity from further injury (manual stabilization)
- c) Remove wet or restrictive clothing
- d) Do not rub or massage
- e) Do not re-expose to the cold
- f) Remove jewelry
- g) Cover with dry clothing or dressings

ADVANCED CARE GUIDELINES

- h) Establish IV access at a TKO rate. Use warmed IV fluid if possible
- i) Refer to pain control protocol

Heat Illness

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Remove from the hot environment and place in a cool environment (back of air conditioned response vehicle)
- b) Loosen or remove clothing
- c) Place in recovery position
- d) Initially cool patient by fanning
- e) Additionally cool patient with cold packs to neck, groin and axilla
- f) If alert, stable and not nauseated, you may have the patient slowly drink small sips of water
- g) If the patient is unresponsive or is vomiting, transport to an appropriate medical facility with patient on their left side

ADVANCED CARE GUIDELINES

- h) Monitor EKG and treat dysrhythmias following the appropriate protocol(s)

Hypothermia

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Remove wet clothing
- b) If able, check core temperature
- c) Handle patient very gently
- d) Cover patient with blankets

ADVANCED CARE GUIDELINES

- e) Administer warm IV fluids if available, do not administer cold fluids

Nausea & Vomiting

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Give nothing by mouth

ADVANCED CARE GUIDELINES

- b) Consider fluid bolus IV/IO if evidence of hypovolemia and lung sounds are clear
- c) If patient nauseated or is vomiting, consider anti-emetic medication such as ondansetron (Zofran) 4 mg IV
- d) Consider intubating patients with altered mental status who are vomiting and cannot protect their airway

Pain Control

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) First, attempt to manage all painful conditions:
- Splint extremity injuries
 - Place the patient in a position of comfort

ADVANCED CARE GUIDELINES

- b) Consider administration of pain medications for patients that have significant pain, do not have a decreased level of consciousness, are hemodynamically stable, and have oxygen saturations above 94% medication. Example:
- Morphine 2-4 mg via IV, repeated in 5 min up to 10 mg
OR
 - Fentanyl 25 to 50 mcg IV every 5 minutes as needed to a maximum of 100 mcg
OR
 - Fentanyl 2.0 mcg/kg IN via MAD syringe
- c) Administer narcan 1 mg IV for respiratory depression from narcotics. May repeat once if needed
- d) For severe pain consider anxiolytic medication
- Midazolam 0.5-2.5 mg IV / IM repeated every 5 minutes as needed to a maximum of 5 mg
OR
 - Midazolam 0.5 mg/kg IN via MAD syringe
- e) Monitor ECG and O2 saturations

Pain Control (Continued)

- f) The patient must have vital signs taken prior to each dose and be monitored closely. If at any time there is a decreased level of consciousness, decrease in oxygen saturation below 92%, or blood pressure drops to 100 mmHg or less, administration of narcotic medication must stop

Poisoning

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1. Follow Initial Patient Care Protocol
2. Identify contaminate and call Poison Control and follow directions given to provide care: 1-800-222-1222
3. Contact Medical Direction as soon as possible with information given by Poison Control and care given

BASIC CARE GUIDELINES

Ingested poisons

- a) Identify and estimate amount of substance ingested

Inhaled poisons:

- a) Remove patient to fresh air
- b) Administer high flow oxygen.
- c) Estimate duration of exposure to inhaled poison

Absorbed poisons

- a) Identify contaminate! If it will be a hazard to you, use protective clothing and extreme caution

Injected poisons

- a) Be alert for respiratory difficulty. Maintain airway and give high flow oxygen
- b) Check patient for marks, rashes, or welts
- c) Try to identify source of injected poison

Seizure

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1. Follow Initial Patient Care Protocol

Active seizure

BASIC CARE GUIDELINES

- a) Protect airway
- b) Check blood glucose level, if available, and treat hypoglycemia if present

ADVANCED CARE GUIDELINES

- c) Administer midazolam titrate 2 mg IV push until seizure stops or maximum dose of 10 mg is given
- OR**
- d) Administer midazolam 10mg IN via MAD syringe

Post seizure

BASIC CARE GUIDELINES

- a) Protect airway
- b) Check blood sugar and treat hypoglycemia if present

Sexual Assault

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Identify yourself to the patient, assure patient that they are safe and in no further danger
- b) Do not burden patient with questions about the details of the crime; you are there to provide emergency medical care
- c) Be alert to immediate scene and document what you see. Touch only what you need to touch at the scene
- d) Do not disturb any evidence unless necessary for treatment of patient. (If necessary to disturb evidence, document why and how it was disturbed.)
- e) Preserve evidence; such as clothing you may have had to remove for treatment, and make sure that it is never left unattended at any time, to preserve "chain of evidence"
- f) Contact local law enforcement if not present
- g) Treat other injuries as indicated
- h) Treat for shock if indicated

Stroke

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A. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Perform a “FAST” Cincinnati Prehospital Stroke Scale - checking facial droop, arm drift, speech, and time of onset. Notify receiving facility as soon as possible if stroke is suspected
- b) If Stroke Screening is positive expedite transport to the hospital
- c) Refer to Appendix G (Reperfusion Strategies)
- d) Check blood glucose, if available

ADVANCED CARE GUIDELINES

- e) If blood sugar less than 60 mg/dL administer D50 12.5 - 25 gm IV
 - 1) If no vascular access, administer glucagon 1 mg IM
- f) Monitor patient's level of consciousness and blood pressure every five (5) minutes, and keep patient as calm as possible

Trauma

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1. Follow Initial Patient Protocol for all patients
2. Follow the Out-of-Hospital Trauma Triage Destination Decision Protocol for the identification of time-critical injuries, method of transport and destination decision for treatment of those injuries
3. The goal should be to minimize scene time with time critical injuries, including establishing IVs en route.

BASIC CARE GUIDELINES

- a) Hemorrhage Control Protocol
 - Control bleeding with direct pressure. Large gaping wounds may need application of a bulky sterile gauze dressing and direct pressure by hand
 - Consider application of tourniquet if unable to control hemorrhage with direct pressure

ADVANCED CARE GUIDELINES

- b) Establish IV and infuse fluids to maintain a systolic pressure of 90 – 100 mmHg for shock.

Chest Trauma

BASIC CARE GUIDELINES

- a) Seal open chest wounds immediately. Use occlusive dressing taped down. If the breathing becomes worse, loosen one side of the dressing to release pressure and then reseal
- b) Impaled objects must be left in place and should be stabilized by building up around the object with multiple trauma dressings or other cushioning material
- c) Take care that the penetrating object is not allowed to do further damage

Trauma (continued)

Abdominal Trauma

BASIC CARE GUIDELINES

- a) Control external bleeding. Dress open wounds to prevent further contamination
- b) Evisceration should be covered with a sterile saline soaked occlusive dressing
- c) Impaled objects should be stabilized with bulky dressings for transport

Head and Neck Trauma

BASIC CARE GUIDELINES

- a) Establish and maintain manual spinal immobilization
- b) Place the head in a neutral in-line position unless the patient complains of pain or the head does not easily move into this position
- c) Apply cervical collar and maintain manual stabilization
- d) Closely monitor the airway. Provide suctioning of secretions or vomit as needed. Be prepared to log roll the patient if they vomit. Maintain manual spinal stabilization if patient is log rolled
- e) Impaled objects in the cheek may be removed if causing airway problems, or you are having trouble controlling bleeding. Use direct pressure on injury after removal to control any bleeding
- f) Reassess vitals and Glasgow Coma Score (GCS) frequently

ADVANCED CARE GUIDELINES

- g) Consider intubation if GCS is less than 8 or airway cannot be maintained
- h) If patient is intubated or has an airway such as Combitube, King, LMA P_{ET}CO₂ levels should be continually monitored and maintained at 33 – 43 mmHg if available

Trauma (continued)

Extremity Injuries

BASIC CARE GUIDELINES

- a) Assess extent of injury including presence or absence of pulse
- b) Establish and maintain manual stabilization of injured extremity by supporting above and below the injury
- c) Remove or cut away clothing and jewelry
- d) Cover open wounds with a sterile dressing
- e) Do not intentionally replace any protruding bones
- f) Apply cold pack to area of pain or swelling
- g) If severe deformity of the distal extremity is cyanotic or lacks pulses, align with gentle traction before splinting, and transport immediately

ADVANCED CARE GUIDELINES

- h) Monitor EKG and treat dysrhythmias if indicated following the appropriate protocol
- i) Refer to Pain Control protocol

IOWA EMS TREATMENT PROTOCOLS

Section 3

Pediatric Treatment Protocols

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Pediatric Initial Care Protocol

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1. Scene Size Up
 - a) Review the dispatch information
 - b) As you approach the scene, be sure to consider safety for yourself and your patient
 - c) Observe universal precautions
 - d) After determining the number and location of patients, consider the need for additional resources
 - e) Determine mechanism of injury and/or nature of illness
 - f) Reassess the situation often

2. Primary Survey
 - a) Obtain general impression of patient, chief complaint, and priority problems
 - b) Determine responsiveness
 - c) Assess airway
 - d) Assess breathing
 - e) Assess circulation
 - f) Maintain cervical stabilization/immobilization if indicated

3. Initial Interventions
 - a) Treat airway/breathing problems
 - b) Treat circulation problems
 - c) Establish IV access if indicated
 - d) Treat pain or nausea
 - e) Apply cardiac monitor

4. Secondary Survey
 - a) Perform secondary assessment after initial interventions are completed
 - b) Address problems identified in the secondary survey utilizing the appropriate protocol(s)
 - c) Obtain vital signs, including blood glucose if available and indicated
 - d) Assess pain

5. Ongoing Assessment
 - a) Repeated evaluation of patient
 - Vitals every 5 minutes for unstable patient
 - Vitals every 15 minutes for stable patients
 - b) Assess effect of interventions

Pediatric Initial Care Protocol (continued)

6. Transport/Contact Medical Control
 - a) Patients should be transported as soon as feasible to an appropriate medical facility. Immediate transport with treatment enroute is recommended for patients with significant trauma or unstable airways
 - b) Tier with an appropriate service if level of care indicates or assistance is needed and can be accomplished in a timely manner
 - c) Contact medical direction as soon as feasible in accordance with local protocol for further orders
 - d) For seriously injured or critically ill patients, give a brief initial report from the scene when possible, with a more detailed report given to medical direction while en route

Pediatric Airway

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1. Follow Initial Patient Care Protocol

Breathing spontaneous on initial assessment with adequate ventilation

BASIC CARE GUIDELINES

- a) Maintain oxygenation with cannula, mask, or blow-by if oxygen saturations are below 94%, titrate to 94% - 99%

Breathing without adequate ventilation or not breathing

BASIC CARE GUIDELINES

- a) Open the airway
- b) Attempt assisted ventilation using an appropriate adjunct with high-flow 100% oxygen. If unable to ventilate, first reposition airway and attempt to ventilate again
- c) If ventilation still unsuccessful, check airway for obstruction and attempt to dislodge with age appropriate techniques

ADVANCED CARE GUIDELINES

- d) If unsuccessful establish direct view of object and attempt to remove it with Magill forceps

If obstruction cleared

BASIC CARE GUIDELINES

- a) Assist ventilation and provide oxygen

ADVANCED CARE GUIDELINES

- b) If adequate ventilation is NOT maintained proceed to an advanced airway as appropriate for patient size

Pediatric Airway (continued)

If obstruction not cleared

ADVANCED CARE GUIDELINES

- a) Attempt endotracheal intubation and try to ventilate the patient
- b) If endotracheal intubation is not successful, perform needle cricothyrotomy and needle insufflation

Pediatric Allergic Reaction

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Assess airway via Airway Protocol
- b) If the patient has a physician prescribed auto-injectable epinephrine assist with administration and monitor for signs of anaphylaxis

ADVANCED CARE GUIDELINES

- c) Administer epinephrine 1:1,000 concentration 0.01 mg/kg IM, up to a maximum dose of 0.3 - 0.5 mg
- d) Establish IV access
- e) Administer diphenhydramine at 1.0 mg/kg IV or deep IM, up to a maximum dose of 50 mg
- f) Administer epinephrine 1:10,000 concentration 0.01 mg/kg IV for profound shock , up to a maximum dose of 0.3 - 0.5 mg
- g) Administer albuterol 2.5 mg by nebulizer if in respiratory distress

Pediatric Altered Mental Status

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Follow Airway Protocol to ensure adequate ventilation
- b) Obtain blood glucose
- c) Patient conscious- give oral Glucose for children over 2 years of age.

ADVANCED CARE GUIDELINES

- d) Establish IV / IO access

If Hypoglycemic

- e) Patient unconscious; give Dextrose 0.5-1.0 g/kg slowly IV up to 25 grams
- f) Patient unconscious and no IV access; administer Glucagon 0.025 mg/kg IM up to 1 mg maximum
- g) Monitor cardiac rhythm
- h) If no improvement in level of consciousness after glucose administration give Narcan 0.1 mg/kg IV up to maximum dose of 2.0 mg per dose
- i) If there is evidence of shock or a history of dehydration, administer a fluid bolus of normal saline at 20 ml/kg over 10-15 minutes
- j) Reassess patient, if signs of shock persist, bolus may be repeated at the same dose up to two times for a maximum total of 60 ml/kg

Pediatric Apparent Death

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

Apparent death indications are as follows:

- Signs of trauma are conclusively incompatible with life
- Physical decomposition of the body
- Rigor mortis and/or dependent lividity

If apparent death is confirmed, continue as follows:

- a) The county Medical Examiner and law enforcement shall be contacted
- b) Where possible contact Iowa Donor Network at 800-831-4131

See protocol appendix J

- c) At least one EMS provider should remain at the scene until the appropriate authority is present
- d) Provide psychological support for grieving survivors
- e) Document reason no resuscitation was initiated
- f) Preserve the crime scene if present
- g) In all other circumstances (except where “NO CPR/DNR” protocol applies) full resuscitation must be initiated

Pediatric Asthma

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Use Airway Protocol to evaluate the airway and adequacy of ventilation
- b) If patient has a physician prescribed, hand-held metered dose inhaler, contact medical direction for approval to give inhaler treatment
- c) Reassess patient and repeat second dose if necessary per medical direction

ADVANCED CARE GUIDELINES

- d) Administer albuterol 2.5.mg via Nebulizer
- e) Administer epinephrine 1:1,000 concentration 0.01 mg/ kg SC or IM up to a maximum dose of 0.3-0.5 mg

Pediatric Burns

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1. Follow Initial Patient Care Protocol

Thermal burns

BASIC CARE GUIDELINES

- a) Stop the burning process, initially with water or saline
- b) Remove smoldering clothing and jewelry
- c) Continually monitor the airway for evidence of obstruction
- d) Prevent further contamination of wounds
- e) Cover the burned area with a dry sterile dressing or plastic wrap
- f) Do not use any type of ointment, lotion, or antiseptic
- g) Do not break blisters
- h) Transport to the most appropriate medical facility
- i) Estimate percent of body surface area injured and estimate the depth of burn as superficial, partial thickness or full thickness

ADVANCED CARE GUIDELINES

- j) Establish an IV. Using the Parkland Burn Formula:
 1. $4 \text{ ml} \times \text{total body surface area sustaining } 2^{\text{nd}}/3^{\text{rd}}/4^{\text{th}} \text{ degree burns} \times \text{person's weight in kilograms.}$
 2. Infuse half of this volume over the first 8 hours from the time of the burn, with the remainder infused over the following 16 hrs.
 3. **Quick Calculation for the first hour:** Patient's weight in kilograms \times 20 ml = volume for the first hours. The total volume can be calculated when there is time
- k) Treat pain per pain protocol

Pediatric Burns (continued)

Chemical burns

BASIC CARE GUIDELINES

- a) Brush off powders prior to flushing. Lint roller may also be used to remove powders prior to flushing
- b) Immediately begin to flush with large amounts of water. Continue flushing the contaminated area when en route to the receiving facility
- c) Do not contaminate uninjured areas while flushing
- d) Attempt to identify contaminant
- e) Transport to the most appropriate medical facility
- f) Estimate percent of body surface area injured and estimate the depth of burn as superficial, partial thickness or full thickness

ADVANCED CARE GUIDELINES

- g) Treat pain per pain control protocol

Toxin in eye

BASIC CARE GUIDELINES

- a) Flood eye(s) with lukewarm water and have patient blink frequently during irrigation. Use caution to not contaminate other body areas
- b) Continue irrigation until advanced personnel take over
- c) Attempt to identify contaminant
- d) Transport to the most appropriate medical facility

ADVANCED CARE GUIDELINES

- e) Establish a large bore IV if indicated and infuse as patient condition warrants
- f) Treat pain per pain control protocol

Pediatric Burns (continued)

Electrical burns

BASIC CARE GUIDELINES

- a) Treat soft tissue injuries associated with the burn with dry dressing
- b) Treat for shock if indicated

Electrical burns (continued)

- c) Transport to the most appropriate medical facility
- d) Estimate percent of body surface area injured and estimate the depth of burn as superficial, partial thickness or full thickness

ADVANCED CARE GUIDELINES

- e) Treat pain per pain control protocol

Pediatric Cardiac Arrest

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) All levels of providers should perform emergency cardiac care in accordance with protocols approved by the medical director, referencing AHA guidelines

ADVANCED CARE GUIDELINES

- b) All levels of providers should perform emergency cardiac care in accordance with protocols approved by the medical director, referencing AHA guidelines

Pediatric Nausea & Vomiting

REVIEWED 2011

1. Follow Initial Patient Care Protocol

ADVANCED CARE GUIDELINES

- a) Initiate IV access
- b) Consider fluid bolus if evidence of hypovolemia
- c) If patient nauseated or is vomiting administer anti-emetic medication such as ondansetron (Zofran) 0.1 mg/kg IV up to 4 mg maximum
- d) Consider intubating patients with altered mental status who are vomiting and can't protect their airway

Pediatric Near Drowning

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Establish patient responsiveness
- b) If cervical spine trauma is suspected, manually stabilize the spine
- c) Assess airway for patency, protective reflexes and the possible need for advanced airway management. Look for signs of airway obstruction
- d) Open the airway using head tilt/chin lift if no spinal trauma is suspected, or modified jaw thrust if spinal trauma is suspected
- e) Suction as necessary
- f) Consider placing an oropharyngeal or nasopharyngeal airway adjunct if the airway cannot be maintained with positioning and the patient is unconscious
- g) Assess breathing. Obtain pulse oximeter reading
- h) If breathing is inadequate, assist ventilation using an appropriate adjunct with high-flow, 100% concentration oxygen
- i) Assess circulation and perfusion
- j) If breathing is adequate, place the child in a position of comfort and maintain oxygenation with cannula, mask or blow-by if oxygen saturations are below 94% titrate to 94% - 99%
- k) Assess mental status
- l) If spinal trauma is suspected, continue manual stabilization, apply a rigid cervical collar, and immobilize the patient on a long backboard or similar device
- m) Expose the child only as necessary to perform further assessments. Maintain the child's body temperature throughout the examination
- n) If the child's condition is stable, perform focused history and detailed physical examination on the scene, then initiate transport

Pediatric Near Drowning (continued)

- o) If the child's condition is stable, perform focused history and detailed physical examination on the scene, then initiate transport

ADVANCED CARE GUIDELINES

- p) If abdominal distention arises, consider placing a gastric tube to decompress the stomach if available
- q) If the airway cannot be maintained by other means, including attempts at assisted ventilation, or if prolonged assisted ventilation is anticipated
- r) Perform sedatives and paralytic agents, to aid with intubation as permitted by medical direction. Confirm placement of endotracheal tube using clinical assessment and end-tidal CO₂ monitoring as per medical direction
- s) Initiate cardiac monitoring and determine rhythm. Consult the appropriate protocol for treatment of specific dysrhythmias. Refer to AHA guidelines
- t) Obtain vascular access. Administer normal saline at a maintenance rate according to weight
- u) If the child's condition is critical or unstable, initiate transport as quickly as possible. Perform focused history and detailed physical examination en route to the hospital if patient status and management of resources permit

Newborn Resuscitation & Care

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Suction the airway using a bulb syringe as soon as the head is delivered and before delivery of the body. Suction the mouth first, then the nose
- b) Once the body is fully delivered, dry the baby, replace wet towels with dry ones, and wrap the baby in a thermal blanket or dry towel. Cover the scalp to preserve warmth
- c) Open and position the airway. Suction the airway again using a bulb syringe. Suction the mouth first, then the nose
- d) Assess breathing and adequacy of ventilation
- e) If ventilation is inadequate, stimulate by gently rubbing the back and flicking the soles of the feet
- f) If ventilation is still inadequate after brief stimulation, begin assisted ventilation at 40 to 60 breaths per minute using a bag-valve-mask device with room air. If no improvement after 30-60 seconds, apply 100% oxygen
- g) If ventilation is adequate and the infant displays central cyanosis, administer oxygen at 5 lpm via blow-by. Hold the tubing 1/2 to 1 inch from the nose
- h) If the heart rate is slower than 60 beats per minute after 30 seconds of assisted ventilation with high-flow, 100% concentration oxygen, initiate the following actions:
 - Begin chest compressions at a combined rate of 120/minute (three compressions to each ventilation)

Newborn Resuscitation & Care (continued)

ADVANCED CARE GUIDELINES

- i) If there is no improvement in heart rate after 30 seconds. Perform endotracheal intubation
- j) If there is no improvement in heart rate after intubation and ventilation, administer
 - i. epinephrine 1:1000 concentration at 0.1 mg/kg (maximum individual dose 10.0 mg) via endotracheal tube,
 - ii. or epinephrine 1:10,000 concentration at 0.01 mg/kg (maximum individual dose 1.0 mg) IV/IO
 - iii. Repeat epinephrine at the same dose every 3 to 5 minutes as needed
- k) Initiate transport. Reassess heart rate and respirations en route

If the heart rate is between 60 and 80 beats per minute, initiate the following actions:

- Continue assisted ventilation with high-flow, 100% concentration oxygen. If there is no improvement in heart rate after 30 seconds, initiate management sequence described in step H above, beginning with chest compressions
- Initiate transport. Reassess heart rate and respirations en route

If the heart rate is between 80 and 100 beats per minute, initiate the following actions:

- Continue assisted ventilation with high-flow, 100% concentration oxygen. Stimulate as previously described
- Initiate transport. Reassess heart rate after 15 to 30 seconds

If the heart rate is faster than 100 beats per minute, initiate the following actions:

- Assess skin color. If central cyanosis is still present, continue blow by oxygen. Initiate transport. Reassess heart rate and respirations en route

Newborn Resuscitation & Care (continued)

If thick meconium is present

- Initiate endotracheal intubation before the infant takes a first breath. Suction the airway using an appropriate suction adapter while withdrawing the endotracheal tube. Repeat this procedure until the endotracheal tube is clear of meconium. If the infant's heart rate slows, discontinue suctioning immediately and provide ventilation until the infant recovers

Note: If the infant is already breathing or crying, this step may be omitted

Pediatric Pain Control

REVIEWED 2011

1. Follow Initial Patient Care Protocol
2. First attempt to manage all painful conditions with basic care

BASIC CARE GUIDELINES

- a) Splint extremity injuries
- b) Place the patient in a position of comfort

ADVANCED CARE GUIDELINES

- c) Consider administration of pain medications for patients that have significant pain, do not have a decreased level of consciousness, are hemodynamically stable, and have oxygen saturations above 94% medication

Examples:

- Morphine 0.1 mg/kg (maximum individual dose 10 mg) via intravenous or subcutaneous route

OR

- Fentanyl 1.0 mcg/kg (maximum individual dose 100 mcg) via intravenous route

OR

- Fentanyl 2.0 mcg/kg via IN using MAD syringe

- d) Monitor ECG and O2 saturations
- e) The patient must have vital signs taken prior to each dose and be monitored closely. Administration of narcotic medication must stop if at any time there is a
 - decreased level of consciousness,
 - decrease in oxygen saturation below 92%
 - blood pressure drops to 100 mmHg or less

After drug administration, reassess the patient using the appropriate pain scale

Pediatric Poisoning

REVIEWED 2011

1. Follow Initial Patient Care Protocol
2. Identify contaminate and call Poison Control and follow directions given to provide care: 1-800-222-1222
3. Contact Medical Direction as soon as possible with information given by Poison Control and care given

BASIC CARE GUIDELINES

Ingested Poisons

- a) Identify and estimate amount of substance ingested

Inhaled Poisons:

- a) Remove patient to fresh air
- b) Administer high flow oxygen
- c) Estimate duration of exposure to inhaled poison

Absorbed Poisons

- a) If it will be a hazard to you, use protective clothing and extreme caution

Injected Poisons

- a) Be alert for respiratory difficulty. Maintain airway and give high flow oxygen
- b) Check patient for marks, rashes, or welts

Pediatric Seizure

REVIEWED 2011

1. Follow Initial Patient Care Protocol

Active Seizure

BASIC CARE GUIDELINES

- a) Assess airway via Airway Protocol
- b) Check blood glucose, if available

ADVANCED CARE GUIDELINES

- c) Establish IV access
- d) Administer IV midazolam 0.05mg/kg to stop seizure. May repeat dose in 5 minutes if still seizing. (Maximum dose is 2 mg)

OR

- e) Administer IN midazolam 0.3 mg/kg via MAD syringe.
- f) If blood glucose less than 60 mg/dL give IV glucose or glucagon if no IV access

Post Seizure

BASIC CARE GUIDELINES

- a) Protect airway
- b) Check blood glucose, if available

ADVANCED CARE GUIDELINES

- c) Establish IV
- d) If blood glucose less than 60 mg/dL administer Dextrose 500 mg/kg slow IV up to 25 grams

Pediatric Shock

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1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Assess airway via Airway Protocol
- b) Assess circulation and perfusion
- c) Control external bleeding
- d) Assess mental status
- e) Expose the child only as necessary to perform further assessments. Maintain the child's body temperature throughout the examination
- f) Initiate transport. Perform focused history and detailed physical examination en route to the hospital if patient status and management of resources permit

ADVANCED CARE GUIDELINES

- g) Initiate cardiac monitoring
- h) Establish IV access using an age-appropriate large-bore catheter with large-caliber tubing. If intravenous access cannot be obtained in a child younger than six years, proceed with intraosseous access. Do not delay transport to obtain vascular access
- i) Administer a fluid bolus of normal saline at 20 ml/kg over 10 to 15 minutes. Reassess patient after bolus. If signs of shock persist, bolus may be repeated at the same dose up to two times for a maximum total of 60 ml/kg

Suspected Child Abuse

REVIEWED 2011

1. Follow Initial Patient Care Protocol

BASIC CARE GUIDELINES

- a) Approach child slowly to establish rapport (except in life-threatening situations), then perform exam
- b) Treat obvious injuries according to appropriate protocol
- c) Genital exam only if indicated in the presence of blood, known or obvious injury and or trauma
- d) Interview parents separate from child, if possible
- e) Transport if permitted by parents
- f) If parents do not allow transport, notify law enforcement for assistance
- g) Communicate vital information only – additional info can be given to attending RN and/or Physician on arrival
- h) Record observations and factual information on run report
- i) Report all suspected abuse to the National hotline at 1-800-362-2178 within 24 hours of your contact of the patient. This will be an oral report only
- j) Within 48 hours of oral reporting, you must submit a written report for all suspected abuse to the Department of Human Services

Pediatric Trauma

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1. Follow Initial Patient Care Protocol
2. Follow the Out-of-Hospital Trauma Triage Destination Decision Protocol for the identification of time critical injuries, method of transport and trauma facility resources necessary for treatment of those injuries
3. The goal should be to minimize scene time with time critical injuries, including establishing IVs en route.

BASIC CARE GUIDELINES

- a) Follow Shock Protocol if shock is present

Hemorrhage Control:

BASIC CARE GUIDELINES

- b) Control bleeding with direct pressure. Large gaping wounds may need application of a bulky sterile gauze dressing and direct pressure by hand
- c) Elevation of extremity may be used to help control bleeding if no bone or joint injury evident
- d) If bleeding persists, consider appropriate arterial pressure points in upper and lower extremities
- e) If unable to control hemorrhage with direct pressure consider application of a tourniquet

ADVANCED CARE GUIDELINES

- f) Establish large bore IV
- g) Cardiac monitor

Pediatric Trauma (continued)

Chest Trauma:

BASIC CARE GUIDELINES

- a) Seal open chest wounds immediately. Use occlusive dressing taped down. If the breathing becomes worse, loosen one side of the dressing to release pressure and then reseal
- b) Impaled objects must be left in place and should be stabilized by building up around the object with multiple trauma dressings or other cushioning material
- c) Take care that the penetrating object is not allowed to do further damage

Abdominal Trauma

- a) Control external bleeding. Dress open wounds to prevent further contamination
- b) Evisceration should be covered with a sterile saline soaked occlusive dressing
- c) Impaled objects should be stabilized with bulky dressings for transport

Head and Neck Trauma

Establish and maintain manual spinal immobilization

- a) Place the head in a neutral in-line position unless the patient complains of pain or the head does not easily move into this position
- b) Continue manual stabilization, apply a rigid cervical collar, and immobilize the patient on a long backboard or similar device
- c) Closely monitor the airway. Provide suctioning of secretions or vomit as needed. Be prepared to log roll the patient if they vomit. Maintain manual spinal stabilization if patient is log rolled
- d) Reassess vitals, GCS and pupillary response frequently

IOWA EMS TREATMENT PROTOCOLS

Section 4 **Appendices**

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Appendix A

EMS OUT-OF-HOSPITAL DO-NOT-RESUSCITATE PROTOCOL

Purpose: This protocol is intended to avoid unwarranted resuscitation by emergency care providers in the out-of-hospital setting for a qualified patient.¹ There must be a valid Out-Of-Hospital Do-Not-Resuscitate (OOH DNR) order signed by the qualified patient's attending physician or the presence of the OOH DNR identifier indicating the existence of a valid OOH DNR order.

No resuscitation: Means withholding any medical intervention that utilizes mechanical or artificial means to sustain, restore, or supplant a spontaneous vital function, including but not limited to:

1. Chest compressions,
2. Defibrillation,
3. Esophageal/tracheal/double-lumen airway; endotracheal intubation, or
4. Emergency drugs to alter cardiac or respiratory function or otherwise sustain life.

Patient criteria: The following patients are recognized as qualified patients to receive no resuscitation:

1. The presence of the uniform OOH DNR order or uniform OOH DNR identifier, or
2. The presence of the attending physician to provide direct verbal orders for care of the patient.

The presence of a signed physician order on a form other than the uniform OOH DNR order form approved by the department may be honored if approved by the service program EMS medical director. However, the immunities provided by law apply only in the presence of the uniform OOH DNR order or uniform OOH DNR identifier. When the uniform OOH DNR order or uniform OOH DNR identifier is not present contact must be made with on-line medical control and on-line medical control must concur that no resuscitation is appropriate.

Revocation: An OOH DNR order is deemed revoked at any time that a patient, or an individual authorized to act on the patient's behalf as listed on the OOH DNR order, is able to communicate in any manner the intent that the order be revoked. The personal wishes of family members or other individuals who are not authorized in the order to act on the patient's behalf shall not supersede a valid OOH DNR order.

Comfort Care (♥): When a patient has met the criteria for no resuscitation under the foregoing information, the emergency care provider should continue to provide that care which is intended to make the patient comfortable (a.k.a. ♥ **Comfort Care**). Whether other types of care are indicated will depend upon individual circumstances for which medical control may be contacted by or through the responding ambulance service personnel.

♥ **Comfort Care** may include, but is not limited to:

1. Pain medication.
2. Fluid therapy.
3. Respiratory assistance (oxygen and suctioning).

Qualified Patient means an adult patient determined by an attending physician to be in a terminal condition for which the attending physician has issued an Out of Hospital DNR order in accordance with the law. Iowa Administrative Code 641-142.1 (144A) Definitions.

Appendix B

Out of Hospital Trauma Triage Destination Decision Protocol

IOWA'S TRAUMA SYSTEM

ADULT	OUT OF HOSPITAL TRAUMA TRIAGE DESTINATION DECISION PROTOCOL	ADULT
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The following criteria shall be utilized to assist the EMS provider in the identification of time critical injuries, method of transport and trauma care facility resources necessary for treatment of those injuries

Step 1 - Assess for Time Critical Injuries: Level of Consciousness & Vital Signs

Glasgow Coma Score <14
Heart Rate >120

Respiratory diff./rate <10 or >29
Systolic B/P <90

If ground transport time to a Resource (Level I) or Regional (Level II) TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** Trauma Care Facility.

If greater than 30 minutes ground transport time to Resource (Level I) or Regional (Level II)

Transport to the nearest appropriate Trauma Care Facility.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 1 does not apply, move on to step 2

Step 2 - Assess for Anatomy of an Injury

All Penetrating injury to head, neck, torso, and extremities proximal to elbow and knee

Partial or full thickness Burns > 10% TBSA or involving face/airway

Amputation proximal to wrist or ankle

Paralysis or Parasthesia

Suspected two or more long bone fractures

Suspected pelvic fracture

EMS provider judgment for possible abdominal or thoracic injuries.

Crushed, degloved, or mangled extremity

Flail chest

Any open long bone fracture

Open or depressed skull fracture

If ground transport time to a Resource (Level I) or Regional (Level II) TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** Trauma Care Facility.

If greater than 30 minutes ground transport time to Resource (Level I) or Regional (Level II), Transport to the nearest appropriate Trauma Care Facility.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 2 does not apply, move on to step 3

Step 3 - Consider Mechanism of Injury & High Energy Transfer

Falls – Adult: > 20 ft. (1 story = 10 ft)

Intrusion: > 12 in, occupant site; > 18 in, any site,

Death in same passenger compartment, Vehicle telemetry data consistent with high risk of injury

Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact

Motorcycle crash > 20 mph Rollover (unrestrained occupant) Bicyclist into handlebars

Transport to the nearest appropriate Trauma Care Facility, need not be the highest level trauma care facility.

If step 3 does not apply, move on to step 4

Step 4 - Consider risk factors:

Age > 55 yrs (Risk of injury/death increases)

Time-sensitive extremity injury

EMS provider judgment

Anticoagulation and bleeding disorders

Pregnancy > 20 weeks

Transport to the nearest appropriate Trauma Care Facility, need not be the highest level trauma care facility.

If none of the criteria in the above 4 steps are met, follow local protocol for patient disposition.

When in doubt, transport to nearest trauma care facility for evaluation.

For all Transported Trauma Patients

Contact receiving trauma care facility:

1. Give patient report to include: MOI, Injuries, Vital Signs & GCS, Treatment, Age, Gender and ETA
2. Obtain further orders from Medical Control as needed.

Appendix B

Out of Hospital Trauma Triage Destination Decision Protocol

IOWA'S TRAUMA SYSTEM

PEDIATRIC

OUT OF HOSPITAL TRAUMA TRIAGE DESTINATION DECISION PROTOCOL

PEDIATRIC

The following criteria shall be utilized to assist the EMS provider in the identification of time critical injuries, method of transport and trauma care facility resources necessary for treatment of those injuries

Step 1 - Assess for Time Critical Injuries: Level of Consciousness & Vital Signs

Abnormal Responsiveness: abnormal or absent cry or speech. Decreased response to parents or environmental stimuli. Floppy or rigid muscle tone or not moving. **Verbal, Pain, or Unresponsive** on AVPU scale.

OR

Airway/Breathing Compromise: obstruction to airflow, gurgling, stridor or noisy breathing. Increased/excessive retractions or abdominal muscle use, nasal flaring, stridor, wheezes, grunting, gasping, or gurgling. Decreased/absent respiratory effort or noisy breathing. Respiratory rate outside normal range.

OR

Circulatory Compromise: cyanosis, mottling, paleness/pallor or obvious significant bleeding. Absent or weak peripheral or central pulses; pulse or systolic BP outside normal range. Capillary refill > 2 seconds with other abnormal findings.

If ground transport time to a TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** Trauma Care Facility.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 1 does not apply, move on to step 2

Step 2 - Assess for Anatomy of an Injury

All Penetrating injury to head, neck, torso, and extremities proximal to elbow and knee

Partial or full thickness burns > 10% TBSA or involving face/airway

Amputation proximal to wrist or ankle Crushed, degloved, or mangled extremity

Paralysis or Parasthesia

Flail chest

Suspected two or more long bone fractures

Any open long bone fracture

Suspected pelvic fracture

Open or depressed skull fracture

EMS provider judgment for possible abdominal or thoracic injuries.

If ground transport time to a TCF is less than 30 minutes,

Transport to the nearest **Resource (Level I)** or **Regional (Level II)** Trauma Care Facility.

If time can be saved or level of care needs exist, tier with ground or air ALS service program

If step 2 does not apply, move on to step 3

Step 3 - Consider Mechanism of Injury & High Energy Transfer

Falls – > 10 feet or Pediatric: > 2-3 times the victims height.

High-risk auto crash:

Intrusion: > 12 in, occupant site; > 18 in, any site,

Ejection (partial or complete) from automobile

Death in same passenger compartment,

Bicyclist into handlebars

Vehicle telemetry data consistent with high risk of injury

Any intentional injury

Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact

Motorcycle crash > 20 mph Rollover (unrestrained occupant)

Transport to the nearest **(Any Level)** Trauma Care Facility.

If step 3 does not apply, move onto step 4

Step 4 - Consider risk factors:

Age <5 yrs (Risk of injury/death increases)

ETOH/drugs

Time-sensitive extremity injury

Transport to the nearest **(Any Level)** Trauma Care Facility.

For all Transported Trauma Patients

Contact Medical Control:

1. Give patient report to include: MOI, Injuries, Vital Signs & GCS, Treatment, Age, Gender and ETA
2. Obtain further orders as needed

Appendix C

PHYSICIAN ON SCENE

Your offer of assistance is appreciated. However, this EMS service, under law and in accordance with nationally recognized standards of care in Emergency Medicine, operates under the direct authority of a Physician Medical Director. Our Medical Director and physician designees have already established a physician-patient relationship with this patient. To ensure the best possible patient care, and to prevent inadvertent patient abandonment or interference with an established physician-patient relationship, please comply with our established protocols.

Please review the following if you wish to assume responsibility for this patient:

1. You must be recognized or identify yourself as a qualified physician.
2. You must be able to provide proof of licensure and identify your specialty.
3. If requested, you must speak directly with the on-line medical control physician to verify transfer of responsibility for the patient from that physician to you.
4. EMS personnel, in accordance with state law, can only follow orders that are consistent with the approved protocols.
5. You must accompany this patient to the hospital, unless the on-line medical control physician agrees to re-assume responsibility for this patient prior to transport.

Appendix D

AIR MEDICAL TRANSPORT

Utilization Guidelines for Scene Response

These guidelines have been developed to assist with the decision making for use of air medical transport by the emergency medical services community. The goal is to match the patient's needs to the timely availability of resources in order to improve the care and outcome of the patient from injury or illness.

CLINICAL INDICATORS:

1. Advanced level of care need (skills or medications) exists that could be made available more promptly with an air medical tier versus tiering with ground ALS service, and further delay would likely jeopardize the outcome of the patient
2. Transport time to definitive care hospital can be significantly reduced for a critically ill or injured patient where saving time is in the best interest of the patient
3. Multiple critically ill or injured patients at the scene where the needs exceed the means available
4. EMS Provider 'index of suspicion' based upon mechanism of injury and patient assessment

DIFFICULT ACCESS SITUATIONS:

1. Wilderness or water rescue assistance needed
2. Road conditions impaired due to weather, traffic, or road construction / repair
3. Other locations difficult to access

The local EMS provider must have a good understanding of regional EMS resources and strive to integrate resources to assure that ground and air services cooperate as efficiently and effectively as possible in the best interest of the patient.

Medical directors for ambulance services should assure that EMS providers are aware of their own service's abilities and limitations given the level of care and geographic response area being served. Audits should be conducted on an ongoing basis to assure that utilization of regional resources (ground and air) is appropriate in order to provide the level of care needed on a timely basis.

Appendix E

DISCONTINUATION OF RESUSCITATION

INDICATIONS TO CONSIDER TERMINATION OF RESUSCITATION:

1. Patient is in full arrest with no signs of life present.
2. Patient is considered an adult.
3. Full ACLS has been instituted (Paramedic level) to include rhythm analysis and defibrillation if indicated, advanced airway management, and drugs given per protocol.
4. No return of circulation or shockable rhythm exists.
5. Correctable causes or special resuscitation circumstances have been considered and addressed.

TERMINATION OF RESUSCITATION:

1. Patient meets all five criteria under 'indications' above, or patient is terminally ill/DNR where CPR was started prior to knowledge of resuscitation status.
2. *Physician on-line medical direction* is contacted (while ACLS continues) to discuss any further appropriate actions.
3. ACLS may be discontinued if *physician on-line medical direction* authorizes.

OTHER CONSIDERATIONS:

1. Documentation must reflect that the decision to terminate resuscitation was determined by *physician on-line medical direction*.
2. An EMS/health care provider must attend the deceased until the appropriate authorities arrive.
3. All IVs, tubes, etc. should be left in place until the medical examiner authorizes their removal.
4. Implement survivor support plans related to coroner notification, funeral home transfer, leaving the body at the scene, and death notification/grief counseling for survivors.

Physician on-line medical direction includes either of the following:

1. Hospital based physician contact via phone or radio.
2. Patient's primary care physician or on call physician contact via phone or radio.

Special Considerations

Patients with profound hypothermia or drug or toxin overdose may benefit from continued resuscitation.

Appendix F

Strategies for Reperfusion Therapy: Acute Coronary Syndromes

Reperfusion Therapy Screening Not Limited To Paramedic Level

This form should be completed for patients suffering from Acute Coronary Syndromes. This tool will be used to triage patients to the appropriate receiving facility, and provide a template for passing information on to the receiving facility. Fibrinolytic screening may be done at the EMT-B level; however the decision to bypass a local hospital to transport to a Percutaneous Coronary Intervention (PCI) capable facility is reserved for the PS level.

1. If available, obtain 12-Lead EKG
2. EMT level – Transport patient to closest appropriate facility. Contact medical control for decision on completing thrombolytic checklist.
3. PS Level – Evaluate 12-Lead for evidence of STEMI.

If STEMI is present, determine appropriate destination.

- If transport time to a facility capable of providing emergency PCI care is 60 minutes or less, it is recommended that all of these patients be transported directly to the emergency PCI capable facility.
- If transport time to a facility capable of providing emergency PCI care is between 60 - 90 minutes, transport to the PCI capable facility should be considered.
- If transport is initiated to a non-PCI facility:
 1. Complete fibrinolytic therapy checklist on next page.
 2. If a local protocol for fibrinolytic therapy in the field has been established, then proceed with fibrinolytic protocol if:
 - Authorized by voice contact with medical control, and
 - The paramedic specialist has received training and has the approval of their physician medical director

In all instances those patients requiring immediate hemodynamic or airway stabilization should be transported to the closest appropriate facility.

If STEMI is not present, transport patient to closest appropriate facility.

Note: See Fibrinolytic Checklist on the following page

Appendix F

Strategies for Reperfusion Therapy: Acute Coronary Syndromes

If directed by medical control, complete fibrinolytic checklist below

FIBRINOLYTIC CHECKLIST

Any **YES** findings will be relayed to medical control. **Absolute Contraindications** preclude the use of fibrinolytics. **Relative Contraindications** require consultation with medical control.

DATE:	PATIENT AGE:	MALE	FEMALE	INCIDENT/RECORD #:	YES	NO
ABSOLUTE CONTRAINDICATIONS						
Any known intracranial hemorrhage?						
Known structural cerebral vascular lesion?						
Ischemic stroke within 3 months EXCEPT acute ischemic stroke within 3 hours?						
Suspected aortic dissection?						
Active bleeding or bleeding diathesis (excluding menses)?						
Significant closed head trauma or facial trauma within 3 months?						
RELATIVE CONTRAINDICATIONS						
History of chronic, severe, poorly controlled hypertension?						
Severe, uncontrolled hypertension on presentation (S >180mmHg or D>110mmHg)						
History of prior ischemic stroke >3 months, dementia, or known intracranial pathology?						
Traumatic or prolonged (>10 min) CPR or major surgery (<3 weeks)						
Non-compressible vascular punctures?						
Pregnancy?						
Active peptic ulcer?						
Current use of anticoagulants?						
EMS Provider Print Name:				Signature:		

Appendix G

Strategies for Reperfusion Therapy: Acute Stroke

(NEW 2012)

Reperfusion Therapy Screening Not Limited To Paramedic Level

This appendix should be used for suspected acute stroke. This tool will be used to triage patients to the appropriate receiving facility, and provide a template for passing information to the receiving facility.

1. Perform a Cincinnati pre-hospital stroke screen (or other reproducible stroke assessment).
2. If assessment is positive for stroke, and onset of symptoms can be established within the past 4.5 hours, then determine the appropriate destination:
 - a. If transport time to a Primary Stroke Center is less than 30 minutes, it is recommended that all of these patients be transported directly to the Primary Stroke Center
 - b. If transport time to a Primary Stroke Center is greater than 30 minutes, then transport to the nearest stroke capable hospital.
3. Consider the use of air transport if it will facilitate the arrival of the acute stroke patient for treatment within 4.5 hours to a Primary Stroke Center or stroke capable hospital.
4. If transport to a Primary Stroke Center or stroke capable hospital cannot be achieved to arrive within 4.5 hours, then transport to the closest appropriate facility.
5. In all instances, those patients requiring immediate hemodynamic or airway stabilization should be transported to the closest appropriate facility.
6. Complete the fibrinolytic checklist on next page.

Primary Stroke Center – hospitals that have been certified by the Joint Commission on Hospital Accreditation or an equivalent agency to meet Brain Attack Coalition and American Stroke Association guidelines for stroke care

Stroke capable hospital – hospitals that have the following:

- rt-PA readily available for administration
- Head CT, laboratory and EKG capabilities 24/7
- Process in place for transporting appropriate patients to a Primary Stroke Center
- Stroke protocol in place that follows American Stroke Association guidelines
- Emergency department coverage by physician, or advanced practitioner

The list of Iowa Hospital Triage Destinations is available on the Iowa Hospital Association web site at:

[http://www.ihconline.org/UserDocs/Pages/Iowa Hospital Stroke Triage System.pdf](http://www.ihconline.org/UserDocs/Pages/Iowa_Hospital_Stroke_Triage_System.pdf)

Appendix G

Strategies for Reperfusion Therapy: Acute Stroke

If directed by medical control, complete fibrinolytic checklist below

FIBRINOLYTIC CHECKLIST

Any **YES** findings will be relayed to medical control. **Absolute Contraindications** preclude the use of fibrinolytics. **Relative Contraindications** require consultation with medical control.

DATE:	PATIENT AGE:	MALE	FEMALE	INCIDENT/RECORD #:	YES	NO
ABSOLUTE CONTRAINDICATIONS						
Any known intracranial hemorrhage?						
Known structural cerebral vascular lesion?						
Ischemic stroke within 3 months EXCEPT acute ischemic stroke within 3 hours?						
Suspected aortic dissection?						
Active bleeding or bleeding diathesis (excluding menses)?						
Significant closed head trauma or facial trauma within 3 months?						
RELATIVE CONTRAINDICATIONS						
History of chronic, severe, poorly controlled hypertension?						
Severe, uncontrolled hypertension on presentation (S >180mmHg or D>110mmHg)						
History of prior ischemic stroke >3 months, dementia, or known intracranial pathology?						
Traumatic or prolonged (>10 min) CPR or major surgery (<3 weeks)						
Non-compressible vascular punctures?						
Pregnancy?						
Active peptic ulcer?						
Current use of anticoagulants?						
EMS Provider Print Name:				Signature:		

Appendix H

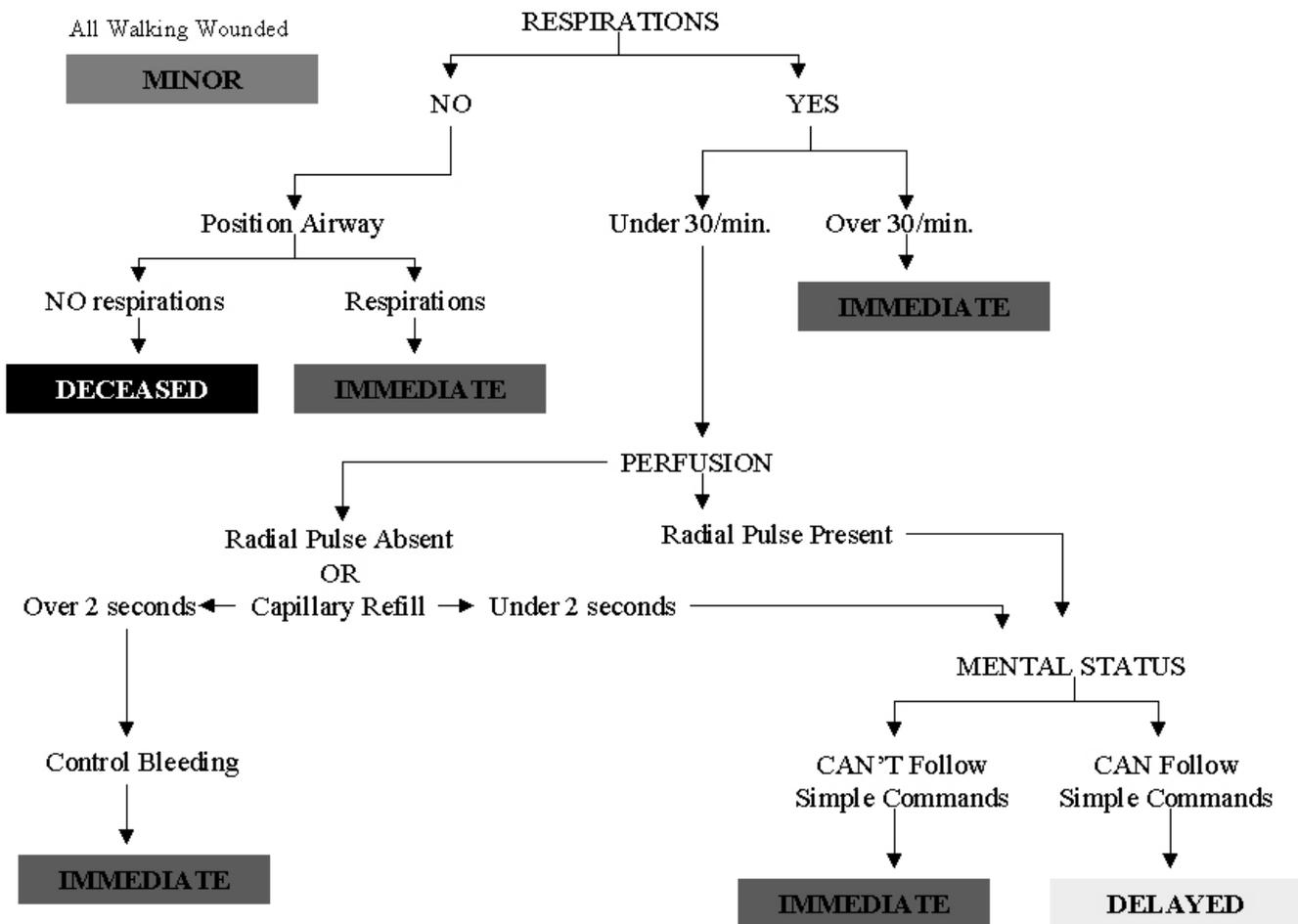
Simple Triage and Rapid Treatment

START

The following are guidelines for initial tactical triage using the START method. START is most useful in initially clearing the disaster zone where there are numerous casualties. **It focuses on respiration rate, perfusion, and mental status and takes under one minute to complete.** Once the patient moves toward a higher level of care (evacuation), a more detailed approach to triage may be needed.

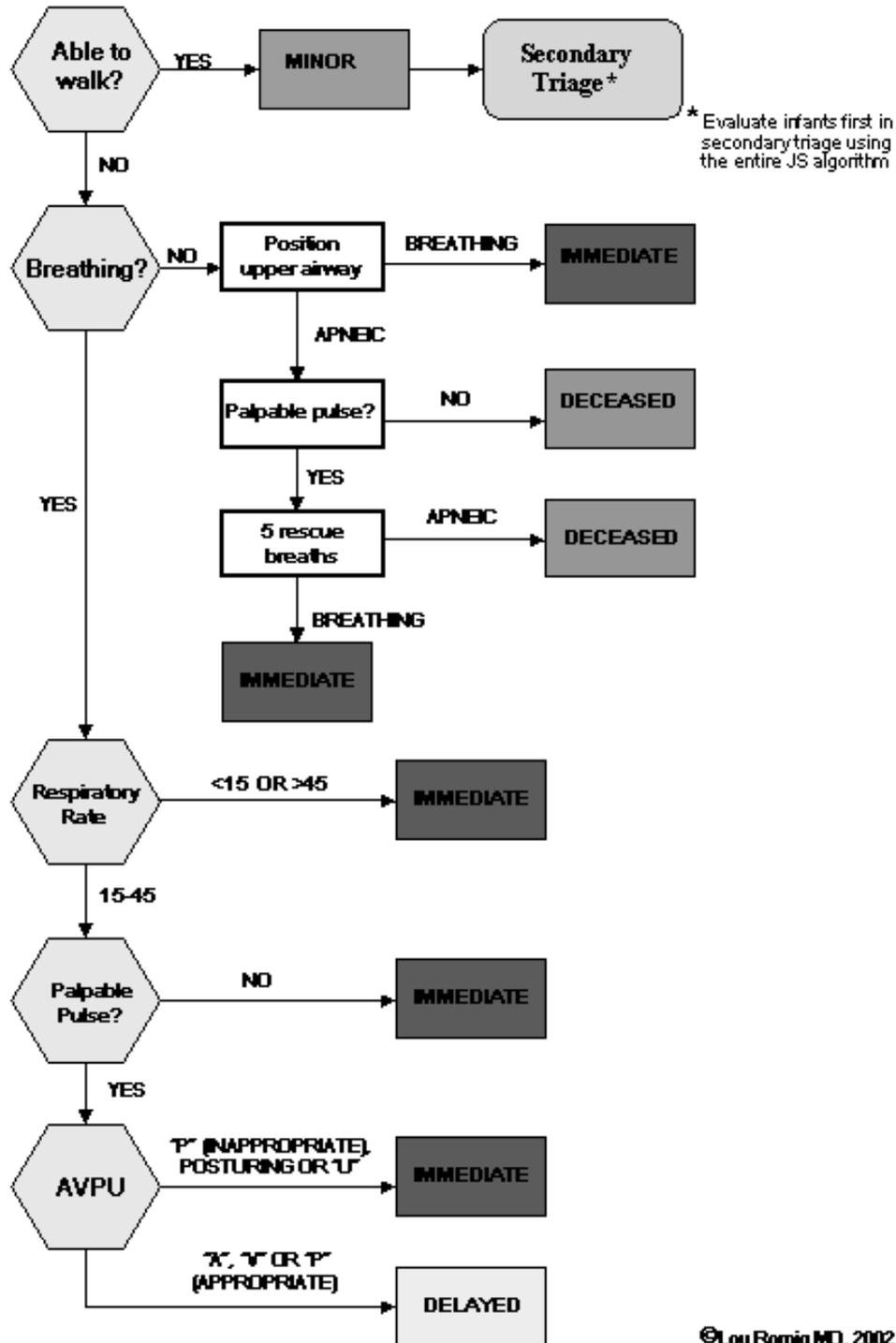
Respirations
Perfusion
Mental Status

Green = Minor/Ambulatory
Yellow = Delayed
Red = Immediate
Black = Deceased/Expectant



Appendix I

JumpSTART Pediatric MCI Triage®



Appendix J

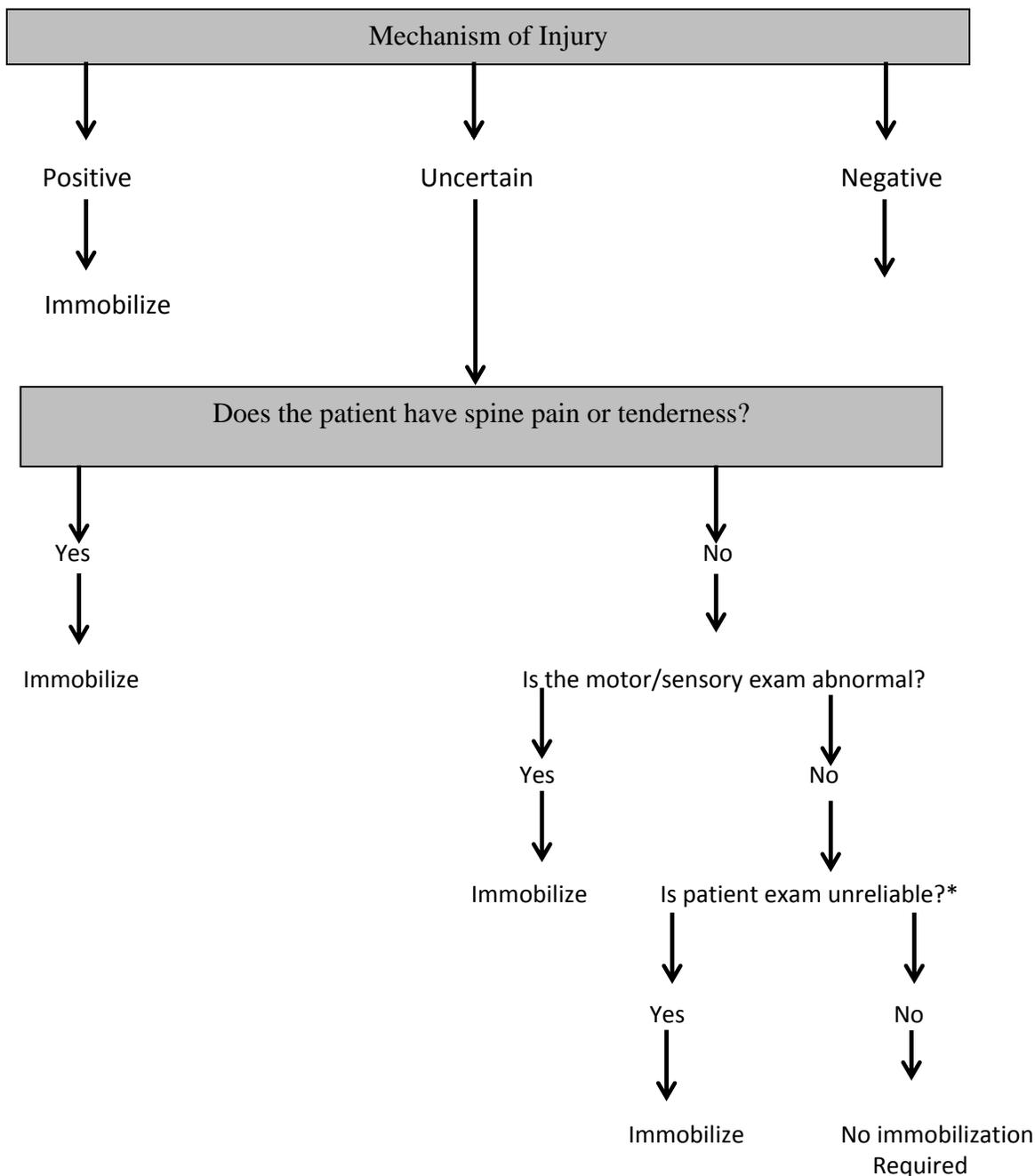
Guidelines for EMS Provider Initiating Organ & Tissue Donation At the Scene of the Deceased

1. All appropriate patient care protocols will be enacted to assure patient care is provided according to prevailing standards.
2. If resuscitation efforts are unsuccessful or if upon arrival the patient is deceased and without indications to initiate resuscitation, then on-line medical direction will be contacted to confirm that no further medical care is to be given.
3. As per Iowa Code 142C.7 a medical examiner or a medical examiner's designee, peace officer, fire fighter, or emergency medical care provider may release an individual's information to an organ procurement organization, donor registry, or bank or storage organization to determine if the individual is a donor.
4. As per Iowa Code 142C.7 any information regarding a patient, including the patient's identity, however, constitutes confidential medical information and under any other circumstances is prohibited from disclosure without the written consent of the patient or the patient's legal representative.
5. At least one EMS provider should remain at the scene until the appropriate authority (medical examiner, funeral home, public safety, etc.) is present.
6. Contact IOWA DONOR NETWORK at 800-831-4131

Appendix K

Assessment Based Spinal Management

The following represents clinical criteria for initial assessment of spine injury for patients with an uncertain mechanism of injury. **The use of this procedure is only approved for the Paramedic Specialist and Paramedic level.**



*Assess for presence of distracting injuries

Definition of "Spinal Immobilization:" Mechanical immobilization of the entire spinal column that is inclusive of the head through the pelvis

Appendix L

Guidelines for EMS Providers responding to a patient with special needs (This Protocol is not intended for interfacility transfers.)

These guidelines should be used when an EMS provider, responding to a call, is confronted with a patient using specialized medical equipment that the EMS provider has not been trained to use, and the operation of that equipment is outside of the EMS provider's scope of practice. The EMS provider may treat and transport the patient, as long as the EMS provider doesn't monitor or operate the equipment in any way while providing care.

When providing care to patients with special needs, EMS personnel should provide the level of care necessary, within their level of training and certification. When possible, the EMS provider should consider utilizing a family member or caregiver who has been using this equipment to help with monitoring and operating the special medical equipment if necessary during transport.

Some examples of special medical devices:

- PCA (patient controlled analgesic)
- Chest Tube

Appendix M

EMS APPROVED ABBREVIATIONS

ā	before	fx	fracture
ABC	airway, breathing, circulation	GI	gastrointestinal
ALS	advanced life support	gm	gram
AMI	acute myocardial infarction	gr	grain
amps	ampules	gt(t)	drop(s)
ASA	aspirin	h,hr	hour
AT	atrial tachycardia	hx	history
AV	atrioventricular	ICU	intensive care unit
bicarb	sodium bicarbonate	IM	intramuscular
BID	twice a day	IN	intranasal
BLS	basic life support	IV	intravenous
BP	blood pressure	Kg	kilogram
BS	blood sugar	KVO	keep vein open
̄	with	L	liter
CAD	coronary artery disease	LOC	level of consciousness
CC	chief complaint	LR	lactated ringers
cc	cubic centimeter	Mgtt	microdrip
CCU	coronary care unit	MD	medical doctor
CHB	complete heart block	mEq	milliequivalents
CHF	congestive heart failure	mg	milligram
cm	centimeter	MI	myocardial infarction
CNS	central nervous system	min	minute
c/o	complains of	ml	milliliter
CO	carbon monoxide	mm	millimeter
CO ₂	carbon dioxide	MS	morphine sulfate
COPD	chronic obstructive pulmonary disease	NaCl	sodium chloride
CPR	cardiopulmonary resuscitation	NaHCO ₃	sodium bicarbonate
CSF	cerebral spinal fluid	NG,N/G	nasogastric
CVA	cerebral vascular accident	nitro	nitroglycerine
D/C	discontinue	NPO	nothing by mouth
DOA	dead on arrival	NS	normal saline
D5W	5% dextrose in water	NSR	normal sinus rhythm
Dx	diagnoses	NTG	nitroglycerine
ED	emergency department	O ₂	oxygen
EKG/ECG	electrocardiogram	— OB	obstetrics
Epi	epinephrine	OD	overdose
ER	emergency room	OR	operating room
ET	endotracheal	P	pulse
ETOH	alcohol	p	after
fib	fibrillation	PAC	premature atrial contraction
fl	fluid	PAT	paroxysmal atrial tachycardia
		PCR	patient care record

Appendix M

EMS APPROVED APBBREVIATIONS

PE	physical exam, pulmonary edema
pedi	pediatric
PERL	pupils equal, reactive to light
PJC	premature junctional
po	by mouth
pr	per rectum
prn	whenever necessary, as needed
PVC	premature ventricular contraction
q	every
QID	four times a day
R	respirations
R/O	rule out
RN	registered nurse
Rx	treatment
\bar{s}	without
SC	subcutaneous
Sec	second
SL	sublingual
SOB	shortness of breath
SQ	subcutaneous
STAT	immediately
s/s	sign, symptoms
SVT	supraventricular tachycardia
Sx	symptoms
TIA	transient ischemic attack
TID	three times a day
TKO	to keep open
VF	ventricular fibrillation
w/s	watt second setting
x	times
y/o	years old

Appendix M

EMS APPROVED ABBREVIATIONS

GUIDELINES FOR NEW PROTOCOL DEVELOPMENT A RATIONAL DECISION MAKING PROCESS*

(Also can be used to evaluate existing protocols)

Making a decision to develop a new protocol or evaluate an existing one should be based on a rational process. Questions that should be asked and answered when considering a new drug therapy or procedure are as follows:

Key Questions for any New Protocol

1. Is the drug therapy or procedure medically indicated and safe?
2. Is it within the scope of practice for the provider?
3. How specifically will this protocol benefit patient care?
4. What specifically is needed to implement this protocol (education/training, medical director protocol development/authorization, equipment needs, etc.)?
5. How will this protocol impact operation?
6. What is the opinion of providers concerning this protocol?
7. Does the medical community support this protocol change?
8. What are all the costs versus benefits associated with implementation and maintenance?
9. What are the medical-legal implications?
10. What ongoing provider involvement such as skills maintenance and continuous quality improvement is necessary?
11. How will success be measured?

Rational Protocol Development Process to Make the Right Protocol Decision

1. Study the issue thoroughly
2. Identify key questions
3. Compare with goals
4. Assess fit with system
5. Cost benefit analysis
6. Identify measuring tools

Stakeholders in this process are recognized to include, but not be limited to:

1. Medical direction (on-line and off-line)
2. Educators/training programs
3. Regulators of policy and rules
4. Service directors
5. Service providers
6. Consumers
7. Third party payers

*Developed based upon discussion at the October 1998 meeting of the Quality Assurance, Standards, and Protocols subcommittee of the Iowa EMS Advisory Council; and on concepts from the article 'When to Implement Clinical Protocol Change?' From EMS Best Practices September 1998

Appendix M

EMS APPROVED ABBREVIATIONS

Appendix N

SPECIAL EVENTS

For all persons seeking minor first aid.

A patient assessment will be completed on all persons following approved protocols.

If a medical emergency exists, follow appropriate protocols for that condition.

If no medical emergency exists but the person wants further care, continue with:

MINOR ACHES AND PAINS.

Provide either Motrin IB or Tylenol Extra Strength following directions on label of product.

PREVENTION OF SUNBURNS

Provide SPF 45 or greater sun block and follow directions on label

TREATMENT OF MINOR SUNBURNS

Apply silver sulfadiazine to burned area using a new tongue blade and follow instructions provided with product.

MINOR CUTS AND SCRAPES

Clean area, stop bleeding and apply a thin antibiotic ointment following product instruction

Appendix M

EMS APPROVED ABBREVIATIONS

APPENDIX O

Accessing Implanted Port

DEFINITION: The process of accessing implanted port for fluid or medication infusion.

INDICATIONS: A qualified EMS provider* may use this skill for the following:

- A. For emergency access for IV infusion of fluids and/or medications when other IV access is unavailable or otherwise not advised.
- B. During life threatening injuries or illness when immediate IV access is necessary.

PROCEDURE:

1. Ensure all equipment is set up for port access
2. Prime tubing of Huber point needle with normal saline and close clamp, leaving syringe in place.
3. Put on sterile gloves
4. Clean the skin with appropriate skin prep provided in VAP kit.
5. Stabilize port with fingers after locating inner septum and push the needle until it contacts the back of the port.
6. Open clamp and flush with remaining sterile NS to confirm patency checking for blood return during flushing.
7. Secure needle in place while supporting the 90 degree angled needle. Use gauze pad if needed.
8. Administer fluids or medication with even slow pressure. Drug administration should be with less force than the force of the IV drip chamber. If the solution backs up in the drip chamber, the force is too great.

***Qualified EMS provider:** A certified EMT-P/PS who has the skills necessary to competently perform this procedure and the approval of their medical director.

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EMS APPROVED ABBREVIATIONS

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Appendix P

MONITORING CHEST TUBES

PURPOSE

To evacuate air and/or fluid from the pleural space or mediastinum.

To prevent air and/ or fluid from reaccumulating in the pleural space or mediastinum.

To reestablish and maintain normal intrathoracic pressure gradients.

To facilitate complete lung re expansion and restore normal mechanics of breathing.

EQUIPMENT

(As required)

Pleur-evac chest drainage system

Sterile normal saline 1000 ml bottle

Occlusive dressing

Sterile gloves

Vaseline gauze

Felt-tip pen

Suction system (portable or wall mount)

Patient care documentation sheets (run report)

ASSESSING PATIENT WITH CHEST DRAINAGE SYSTEM

PROCEDURE

1. When performing a baseline assessment, assess the patient's chest drainage system according to the following guidelines.
 - A. Check the system from the insertion site to the water-seal chamber, and from the suction control chamber to the wall suction unit. Make sure all connections are tight and taped securely.
 - B. Check to see that the dressing around the insertion site is dry and intact.
 - C. Palpate for subcutaneous emphysema around the insertion site, and over the entire chest wall. If present mark the borders with a felt-tip pen and document the location in the run report.
 - D. Auscultate breath sounds. Note any changes, being especially observant of the equality of breath sounds.
 - E. Observe the fluid in the connecting tubing, noting its color and consistency. Note the fluid level in the collection chamber, mark level and continually monitor fluid level in chamber, documenting level in run report.

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EMS APPROVED APBBREVIATIONS

1. Check the water seal system to ascertain proper functioning.
 - A. Temporarily clamp or turn off the suction, if system is functioning properly, there will be fluctuations in the water level with respirations.
 - B. Intermittent air bubbles in the water seal chamber are normal, indicating that the trapped air is being removed from the chest. The tidaling will stop when the lung has re-expanded (unless the tubes are kinked or obstructed.)
 - C. Assess the water level in the suction control chamber. Add to appropriate level as needed.

1. Change the entire drainage system if the collection chamber becomes full
 - A. Setup the new water seal collection system.
 - B. Obtain bottle of sterile water.
 - C. Fill the water seal chamber to the "Fill level" (approximately 55cc).
 - D. Fill the safety seal chamber to the "Fill level" (approximately 53cc.)
 - E. Fill the suction control chamber to the level of Physician prescribed amount of suction (usually 20 centimeter, which requires approximately 500cc H₂O.)
 - F. Temporarily discontinue suction.
 - G. Clamp chest tube between patient and collection with the shodded hemostat.
 - H. Connect chest tube and suction to "new" system.
 - I. Unclamp hemostat and resume suction.
 - J. Discard old system in red trash bag.
 - K. Document date and time new system was installed

TROUBLESHOOTING

1. If continuous bubbling is suddenly observed in the water-seal chamber observe the following guidelines.
 - A. Squeeze the chest tube with fingers close to the insertion site to occlude the tube momentarily. If bubbling stops, the air is leaking from inside the patient or entering the patient at the insertion site and draining through the tube. Try to create a seal around the insertion site by pressing hands gently over the dressing surrounding the tube. If bubbling continues the air is leaking from the pleural space. Notify the Physician.
 - B. If bubbling does not stop when the chest tube is squeezed near the insertion site, the leak is distal to the point where the tube is occluded. Squeeze the tubing below the connection between the chest tube and the drainage tubing. If bubbling stops, the leak is in the connection. Reinforce this connection with tape.
 - C. If bubbling continues when the tube is occluded at the connection, change the Pleur-evac. The leak may be in the apparatus or the chest drainage tubing itself.
 1. If there are no fluctuations in the water-seal chamber.
 - A. Make sure the suction source is occluded when you check for respiratory fluctuations.
 - B. Check the drainage tubing for kinks or loops.
 - C. Make certain the patient is not lying on the tube .
 1. If the chest tube is accidentally completely pulled out, place an occlusive dressing over the site and notify the Physician immediately. If the patient exhibits signs of respiratory distress, uncover the site momentarily to allow air to escape. If the chest tube is partially pulled out, observe for bubbling in the water-seal chamber. If

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present, one of the eyelets in the chest tube may be lying outside the chest wall. Place an occlusive dressing over the partially dislodged chest tube to prevent any possibility of air leaking retrograde into the patient's pleural space. Notify the referring or receiving Physician immediately. Assess lung sounds and document incident and findings on patient run report.

DOCUMENTATION

Size and location of tube

Amount of suction

Condition of dressing

Color, quantity ,and consistency of drainage

Presence or absence of bubbling and fluctuations

Presence or absence of subcutaneous emphysema and location

Problems with chest tube system and actions taken by Critical Care Paramedic or RN

Equality of breath sounds and chest excursions

Appendix M

EMS APPROVED APBBREVIATIONS

ADMINISTRATION OF BLOOD AND BLOOD COMPONENTS

PURPOSE

To provide health care personnel with guidelines for the administration of blood and blood components.

Indications for transfusion of blood products

- A. Red blood Cells (RBC's) used for correction of red blood cell deficiencies including volume replacement in hemorrhagic shock.
- B. Platelets- used for treatment or prevention of coagulopathies and bleeding during massive blood transfusions. Also used to treat other conditions involving thrombocytopenia or inadequate platelet function.
- C. Fresh Frozen Plasma- used for replacement of clotting factors, and occasionally for emergency volume expansion.

Equipment

IV site with at least 20 gauge Intravenous catheter, (adult) 22 gauge (pediatric)

Appropriate blood product

Appropriate blood tubing

Standard IV tubing

Normal Saline

Blood return bag

Fenwal sampling site coupler (blood bag plug)

Hospital documentation forms

Blood reaction Medications

Guidelines and precautions

- A. Hospital Paramedics, Paramedics Specialist, and Critical Care Paramedics are authorized to administer blood and blood products during interfacility transfers, per Physician orders.

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- B. Approved Ambulance staff must show competency in administration of blood and blood products with documentation of competency on file with Departmental Management.
- C. Typed and cross-matched blood products should be used whenever possible. Incompletely cross-matched blood products may be ordered if the additional delay in obtaining cross-matched blood would be likely to further endanger the patient.
 - 1. O-negative blood is usually given when blood must be administered immediately
 - 2. Type-specific cross-matched blood should be given as soon as it is available. Continue to administer type O negative RBC's if more than 4/5 units of type O negative RBC's already have been given.
- A. Check the patient's identification and verify that each blood product has been properly matched with the patient. **If there are any discrepancies in verification of patient and blood product identification tags, blood or blood product may not be given.** Carefully document all information.
- B. Use large diameter blood tubing with an inline filter to remove aggregates of cells, platelets, and fibrin from the transfusion.
- C. RBC's must be administered within 30 minutes after being removed from monitored refrigerator or approved storage device.
- D. RBC's must be infused within 4 hours.
- E. Only Normal Saline will be administered with RBC's.
- F. No medications will be administered through IV line while blood is running.
- G. Provide vascular access (saline lock or second IV site) in event of infusion reaction.

Procedure

- H. Verify and document the following information.
 - 1. Match the name and number on the patient's ID band with the name and number on the blood product label
 - 2. Match the donor number on the blood product label with the number on blood product issue form.
 - 3. Match the blood type and R h factor on the blood product label with the blood product issue form.
 - 4. Check the expiration date on the blood product label.
- A. If possible, obtain blood sample drawn by the referring facility and bring it with the patient.
- B. Record the patient's vital signs, including temperature, before starting the transfusion and every 15 minutes throughout the transport.
- C. Using sterile technique, connect the administration set to the bag, and invert and prime the tubing. Use an 18-gauge or larger catheter, and verify patency of the IV site.
- D. Monitor the patient carefully for the following complications.
 - 1. Transfusion reaction- elevated temperature and shaking chills are a frequent early signs. Typical signs and symptoms may not be evident in infants, unconscious patients, or patients who are anesthetized or paralyzed.
 - 2. Hypothermia is common, especially with massive transfusions. Mix warmed IV fluids with cold blood products whenever possible.
 - 3. Increased hemorrhage due to insufficiency of platelets and clotting factors, especially in massive transfusions.
 - 4. Cardiac arrhythmias in patients with hypothermia or hyperkalemia.
 - 5. Volume overload, especially in pediatric patients. Congestive failure and pulmonary edema may develop.
 - 6. Air embolism, especially with pressurized infusions.

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- A. Change the administration set after each three units of blood product infused.
- B. After the transfusion is completed, flush the tubing with normal saline and maintain patency of the IV line.
- C. Save the empty blood product bags in a separate red bag for the receiving hospital's blood bank.

Transfusion Reactions

- D. Classification and description.
 - 1. Febrile reaction-most common type of transfusion reaction.
 - A. Clinical presentation is usually fever, chills, and weakness, rarely progressing to respiratory distress or hypotension.
 - B. Presentation is similar to the early phase of hemolytic reaction. If signs and symptoms occur, the transfusion should be discontinued immediately and the patient carefully observed for further complications.
 - 1. Allergic reaction.
 - A. Most likely to occur in patients with history of previous allergic reaction to transfusion, or in patients with multiple allergies.
 - B. Clinical presentation includes itching, urticaria, and other typical signs of allergic reaction.
 - C. Treatment is the same as for patients with allergic reactions from other causes.
 - 1. Hemolytic reaction- most serious type of transfusion reaction.
 - A. Most often results from transfusion of incompatible blood due to clerical error in identification of patients, blood samples, or blood units.
 - B. Signs and symptoms appear within minutes after the transfusion is started. Clinical presentation includes:
 - 1. Fever, chills, headache, low back pain, and muscle aches.
 - 2. Burning sensation at the infusion site and proximally along the vein.
 - 3. Later manifestations may include chest pain or tightness, shortness of breath, hypertension, and petechiae and other signs of bleeding. Cell lysis releases potassium, which may cause cardiac dysrhythmias.
 - 4. Renal failure, irreversible shock, and death may occur, especially if more than 100ml of incompatible blood is transfused.
 - B. Treatment of transfusion reactions.
 - 5. Discontinue the infusion immediately, remove and save the blood product bag and tubing, and notify medical control as soon as possible
 - 6. Infuse normal saline into the IV site.
 - 7. Administer oxygen and monitor ECG.
 - 8. Treat allergic reaction with **Diphenhydramine (Benadryl)** and **Epinephrine** as needed.
 - 9. For a hemolytic reaction, give **Furosemide (Lasix)**, 80-100 mg by slow IV bolus on verbal orders from Medical Control. Continue to infuse IV fluids as needed to maintain vascular volume.
 - 10. Continue careful monitoring of patient status, including temperature and other vital signs.

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RESPIRATORY SUPPORT

CPAP BiPAP

Indications

Provide a method of ventilation that is indicated in patients that have been diagnosed with obstructed sleep apnea, and in patients that are in non-acute respiratory failure, to improve oxygen transfer into the lungs.

Equipment

CPAP/BiPAP Ventilatory support system

Disposable nasal masks in patient specific sizes

King system inflatable full-face masks in sizes medium and large

Respironics disposable CPAP BiPAP circuits

Hudson RCI disposable oxygen valve

Respironics Softcap mask hole

Respironics Whisper Swivel exhalation port

Procedure

- A. Verify Physicians orders
- B. Verify patients identity by checking his/her Identification bracelet
- C. Assemble equipment
 1. Plug in ventilatory support system into wall outlet controlled by inverter
 2. Attach disposable circuit to the CPAP unit.
 3. Assess patient to verify mask comfort and size.
 4. Apply patient specific mask to the patient end of the exhalation port.
 5. Turn on ventilatory support system and set the unit to EPAP/CPAP.
 6. Apply Respironics Softcap to patient, place mask on the patient's face and hookup the Softcap to the mask.
 7. Add pressure slowly by turning the EPAP knob to desired Physicians orders.
 8. Adjust the Respironics Softcap to cease any air leaks that may arise with the mask as the CPAP pressure increases.

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9. Continue to reassure the patient of what he or she may be feeling while hooking up the CPAP unit and mask.
10. Continually monitor patient and unit for airway patency and desired results.
 - A. Check Ambulance oxygen supply, prior to transport, to verify adequate oxygen supply to meet demands of transfer and need for reserve supply.
 - B. Be prepared for changes in respiratory status and need for interventions.

Documentation

Ambulance Patient care run report

Ventilator flow sheet

1. Date and Time
2. Mode
3. FIO₂
4. Respiratory rate
5. CPAP pressure settings
6. SAO₂
7. Breath sounds

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SURGICAL CRICOTHYROTOMY

Purpose

To provide emergency airway when all other means of airway interventions have failed, or patient has severe orofacial injuries or complete airway obstruction that preclude orotracheal or nasotracheal intubation.

Equipment

Sterile gloves

Betadine swabs

Oxygen source

End-tidal CO2 monitor

13-14 gauge over the needle Cricothyrotomy catheter

15 scalpel blade

10cc syringe

Procedure

- A. Assemble all equipment needed for surgical airway procedure.
- B. Aseptic techniques should be used whenever possible.
- C. Identify the Cricothyroid membrane between the Cricoid and Thyroid cartilages.
- D. Carefully palpate the Cricothyroid membrane and while stabilizing the cartilage, make a vertical incision in the midline using the # 15 short handle scalpel blade. An adequate incision eases introduction of the dilator and airway.
- E. With the 10cc syringe attached to the 13-14 gauge catheter needle advance it through the incision into the airway at a 45 degree angle to the frontal plane in the midline in a caudad direction. When advancing the needle forward, verification of the entrance into the airway can be confirmed by aspiration on the syringe resulting in free air return.
- F. Remove the syringe and needle, leaving the catheter in place. Advance the soft, flexible end of the wire guide through the catheter and into the airway several centimeters.
- G. Remove the catheter, leaving wire guide in place.
- H. Advance the handled dilator, tapered end first, into the connector end of the airway catheter until the handle stops against the connector. **Note** this step may be performed prior to beginning the procedure. Use of lubrication on the surface of the dilator may enhance fit and placement of the emergency airway catheter.
- I. Advance the emergency airway access assembly over the wire guide until the proximal stiff end of the wire guide is completely through and visible at the handle end of the dilator.
- J. It is important to always visualize the proximal end of the wire guide during the airway insertion procedure to prevent its inadvertent loss into the trachea.
- K. Maintaining the wire guide position, advance the emergency airway access assembly over the wire guide with a reciprocating motion, and completely into the trachea.
- L. Care should be taken not to advance the tip of the dilator beyond the tip of the wire guide within the trachea.
- M. Remove the wire guide and dilator simultaneously.
- N. Fix the emergency airway catheter in place with the cloth tracheostomy tape strip in a standard fashion.
- O. Connect the emergency airway catheter, using its standard 15-22 adapter to an appropriate ventilatory device.
- P. Place End-tidal CO₂ monitor in line between catheter and ventilatory device. Note CO₂ levels on documentation records.

MULTI-LUMEN

CENTRAL VENOUS CATHETER MONITORING

Purpose

When providing inter-facility transport of Critical patients, who have Multi-lumen Central Venous Catheters in place. Establishment of Central Venous Catheter by a Physician are for the purpose of providing access for administration of fluid, parenteral nutrition, medication administration, access for venous blood sampling, administration of blood products, and monitoring of central venous pressures.

Personnel

Critical Care Paramedics

Registered Nurses

Equipment

Alcohol preps

Infusion plugs for each lumen (plus extra)

Heparin flush

Heparinized saline syringes (3ml)

Supplies for dressing change (as required)

Normal saline

3ml and 10 ml syringes (as required)

Procedure

1. When a multi-lumen central line is in place, suggested uses for the Lumina are as follows
 - A. Distal lumen (largest lumen, closest to right atrium)
 1. CVP monitoring
 2. Blood administration
 3. High volume or viscous fluids

4. Colloids
5. Medications
 - A. Medial lumen
 1. Parenteral nutrition (or capped for future parenteral nutrition use)
 2. Medications (only if parenteral nutrition is not used or anticipated)
 - A. Proximal lumen
 1. Blood sampling
 2. Medications
 3. Blood administration
4. Identify each port (pigtail) on the multi-lumen catheter. On the arrow triple-lumen central venous catheter, the pigtails are of varying lengths to aid in lumen identification and are marked with the gage size and position of the lumen

*Shortest length- distal lumen (16 gauge)

*Medium length- medial lumen (18 gauge)

*Longest length—proximal lumen (18 gauge)

Additionally, sliding clamps are provided on the pigtails to occlude flow through each lumen during tubing or injection cap changes. Incompatible medications may be administered simultaneously through separate Lumina of a triple-lumen line.

5. Note the type of fluid infusing in each lumen.
6. Lumina not in continuous use should be capped with a needle less injection cap.
7. Every four hours, verify blood return from each lumen, use a separate syringe for each lumen.
 - A. if a hemodynamically active medication is infusing into a lumen, blood return must be checked carefully to prevent bolus infusion or withdrawal of medication. Aspirate slowly, closely watching the pigtail where it emerges from under the dressing for the appearance of blood return. When blood return is seen in the lumen, reinfuse the exact volume aspirated. Check the patient's vital signs to make sure they remain stable.
 - B. If the lumen is heparin-locked, aspirate gently until blood is noted in the catheter lumen, and then flush with 3 ml of heparinized saline.
 - C. If blood return cannot be obtained, check the slide clamp and stopcock position and check for kinking of the catheter. If none of these conditions is present, gently flush the lumen with 5ml of normal saline, if any resistance is met, do not continue flushing, as the lumen may be clotted. Notify Medical control. Label the lumen "Do not use" and continue infusions through the Lumina. This practice does increase the risk of catheter-related infections.
 - D. If there is no blood return present but the lumen flushes easily, it may be in the vein but against the vessel wall. However, lack of blood return may also indicate catheter malposition. For example, the tip of the catheter may have perforated the vessel wall and the distal port opening may be exterior to the vein (indicated by no blood return but flushes easily) and the proximal and medial port opening within the vein (blood return present). It is also possible that the proximal port opening has migrated to an extra vascular location, with the medial and distal port openings remaining intravascular.
 - E. Medical control should be notified if a lumen does not show a blood return, even if it flushes easily.
 1. Flush all heparin-lock Lumina with 3ml of heparinized saline at least every 8hours.
 2. Check the date/time on all IV solutions. Change IV solutions every 24 hours.
 3. Check the date/time on IV tubing. Tubing, stopcocks, and injection caps should be changed every 72 hours. Injection caps on heparin-locked ports should be changed every 72 hours. When changing the tubing (or injection cap), observe the following guidelines.

- A. Scrub the connection between the injection cap and catheter with alcohol.
- B. Clamp the tubing with the slide clamp.
- C. Instruct the patient to take a deep breath and hold it.
- D. Rapidly disconnect the old tubing and connect the new tubing.
- E. If the patient is receiving mechanical ventilation, time the change of tubing with the ventilator, during the exhalation phase.

- 1. Monitor all connections to be sure they remain tight.
- 2. When numerous infusions are in progress, label IV tubing near the junction with the pigtail with the type of solution/medication infusing to prevent confusion in the event of an emergency.
- 3. Make sure the dressing remains clean, dry and intact. Palpate the site over the dressing to check for heat, swelling, tenderness or drainage. Change the dressing using aseptic technique every 72 hours or any time the dressing becomes soiled, wet or loose. Do not use betadine ointment at the catheter insertion site. At each dressing change, inspect the catheter site for redness, inflammation, or purulent drainage, and check for loose sutures or a change in the position of the catheter. If the site is infected, notify medical control or Physician, as the catheter needs to be removed.
- 4. If the slide clamp on the pigtail is maintained in a closed position, vary the position of the clamp along the pigtail to prevent a permanent kink in the pigtail.
- 5. Follow aseptic technique when manipulating injection ports stopcocks, or tubing. Vigorously cleanse the injection ports with alcohol prior to use for blood sampling, medications or flushing.
- 6. If intermittent medication is through a heparin-locked port.
 - A. Vigorously cleanse the injection cap with alcohol swab.
 - B. Flush with 3 ml of saline to prevent interaction of the heparin with the medication.
 - C. Administer medication.
 - D. Flush with 3ml of saline.
 - E. Flush with 3ml of heparinized saline.
 - F. If frequent intermittent medications are being given, flush the catheter with saline only, to prevent excessive heparin administration.

- 1. For blood sampling from a central line.
 - A. Be familiar with hospital policy regarding collection of blood from central lines.
 - B. Try to minimize blood withdrawals from the central line by clustering laboratory tests when possible. This minimizes the risk of infection by limiting manipulation of the system, and it may prolong patency of the catheter by reducing fibrin accumulation in the catheter.
 - C. The proximal port is used for blood sampling. Blood flow should carry fluids infusing through distal ports away from the sampling port, decreasing the chance that the blood sample will be contaminated. Still it is recommended that distal infusions be turned off for 1 minute before obtaining the blood sample to optimize accuracy of laboratory results. Use clinical judgment whether turning off the infusion will compromise the patient's clinical status.
 - D. Wash your hands.
 - E. Don gloves.
 - F. Vigorously cleanse the injection cap with alcohol.
 - G. Slowly withdraw approximately 5-7 ml of blood for discard, consider the dead space volume of the catheter when determining the amount to discard.
 - H. Withdraw the amount of blood required for specimens, using a Vacutainer system or syringe.
 - I. Flush the catheter lumen with 10ml of normal saline.

- J. Flush the catheter lumen with 3ml of heparin flush.
- K. Clean the injection cap with alcohol.
- L. Check for tightness of cap.
- 1. Document all patient interventions on patient care report.
- 2. Complications of Central Venous Catheter insertion and use include.
 - A. Venous air embolism
 - B. Cardiac Tamponade
 - C. Catheter embolus / rupture
 - D. Dysrhythmias
 - E. Nerve injury
 - F. Catheter Malposition
 - G. Pneumothorax / hemothorax
 - H. Catheter-related infection
 - I. Catheter-related thrombus
 - J. Hydrothorax / vessel erosion

Documentation

Ambulance patient care report

ADVANCED AIRWAY VENTILATORY SUPPORT

Purpose

During interfacility transport of Critical patient, that may develop respiratory complications that may need intervention by Critical Care Paramedic. Patients suspect of complications, patients where normal endotracheal intubation attempts have failed, facial trauma, or C/Spine compromise and immobilization. Critical Care Paramedics through course of transport may need to provide life-sustaining advanced airway interventions.

RETROGRADE TRACHEAL INTUBATION

Equipment

Laryngoscopes with a selection of blades

A variety of endotracheal tubes

A reliable suction unit

Retrograde intubation kit

Oxygen supply

End-tidal CO₂ monitor

A trained assistant

BVM or Automatic Transport Ventilator

ET tube secure device

Procedure

- K. Lay out needed supplies for procedure
- L. Have suction readily available and in working order
- M. Pre oxygenate patient prior to procedure
- N. Landmark cricothyroid membrane
- O. Puncture cricothyroid membrane with needle
- P. Pass guide wire through cricothyroid needle aimed in the cephalad direction (towards the head) so that distal end of wire may be retrieved from mouth, or if desired, nose of patient. Magill forceps may be needed to assist wire into desired location.
- Q. Withdraw needle off wire
- R. Load ET tube over oral (or nasal) end of wire, passing wire into tube through Murphy's eye.
- S. Pull wire relatively taught and straight.
- T. Advance ET tube over wire into trachea to cricoid area, then gradually relaxing cricothyroid end of wire advance ET tube to appropriate Endotracheal location.
- U. Release cricothyroid end of wire and withdraw wire out of ET tube.
- V. Attach Bag valve device or Automatic Transport Ventilator
- W. Auscultate breath sounds and confirm placement by two methods
- X. Secure ET tube using tube secure after confirming placement.
- Y. Control bleeding at insertion site as needed.
- Z. Place end-tidal CO2 monitor between tube and ventilatory support device.
- AA. Continually monitor patient for appropriate response to treatment, intervene as required.
- BB. Document procedure, noting date and time and patient response.

DIGITAL OR BLIND INTUBATION

Equipment

Laryngoscope and Various ET tube selection

Oxygen source

Ventilatory support device (BVM or ATV)

End-tidal CO2 monitor

ET tube secure device

Procedure

- CC. Position yourself at the patients left side; if in line spinal immobilization should be maintained have second rescuer maintain immobilization.
- DD. Ensure hyperventilation with 100 % oxygen for at least two minutes prior to intubation
- EE. Use a dental clamp, bite stick or other device to hold the patients mouth open, protecting fingers
- FF. Place stylet in chosen ET tube and bend in J or hockey stick configuration.
- GG. Insert the gloved left middle and index finger into the patient's mouth. Alternating fingers walk down the patients tongue, pulling the tongue and epiglottis away from the glottic opening.
- HH. When a flap of cartilage covered by m mucous membrane is felt with the middle finger the epiglottis has been located. Maintain contact and advance the ET tube with the right hand, using the index finger of the left hand as a guide. The index finger maintains the tube position against the middle finger, leading the tip of the tube into the glottic opening. The sellick's maneuver may need to be performed by second rescuer to prevent aspiration.
- II. Once the cuff of the ET tube passes the tips f the Paramedics fingers, inflate the cuff, remove the stylet and verify placement.
- JJ. Secure ET tube with tube secure.
- KK. Attach ventilatory support device check patient response and monitor.
- LL. Attach end-tidal CO2 detector and monitor.
- MM. Document procedure, date and time and patient response.

AUTOMATIC TRANSPORT

VENTILATORS

Indications

Interfaculty transport of patients that are apneic or exhibiting agonal respirations, or patients with respiratory compromise, requiring ventilatory support, that have been nasally or orally intubated with endotracheal tube, with proper placement confirmed prior to transport.

Contraindications

Patients with suspected pneumothorax / tension pneumothorax.

Patients with history of spontaneous Pneumothorax's. (Physician order to transport)

Equipment

Approved Automatic Transport Ventilator

Oxygen source

Bag valve device

Intubation equipment

End-tidal CO₂ detector (if patient has pulses)

Procedure

1. Determine need for Automatic Transport Ventilator or assisted ventilations.
2. Confirm security and proper placement of endotracheal tube, by using Bag-valve device auscultation and conventional assessment methods.
3. End-tidal CO₂ detector shall be used if patient has pulses
4. Assemble components of Automatic Transport ventilator and insure proper working order, including pressure limit alarm.
5. Obtain pertinent Patient information and Physician orders concerning Patient care and Ventilator settings.
6. Determine proper tidal volume for patient. (Use the following equation for adult and pediatric patients.)
 $10 \text{ ml} \times \text{weight in Kilograms} = \text{Tidal Volume (10ml/kg)}$
7. Set the Tidal Volume on the ventilator's control module accordingly.

- 8 Set desired breaths per minute on the ventilator's control module. Adult (12-15 per minute, adult)
Pediatric (20-24 per minute, pediatric)
- 9 Remove Bag-valve device and attach the outlet port of the ventilator assembly to the Endotracheal tube.
- 10 Observe chest rise during the ventilation cycles. Chest rise should appear normal and symmetrical.
- 11 Personnel should continue to monitor chest rise throughout remainder of patient care.
- 12 Continually monitor Ventilator setting and patient's response to treatment
- 13 Personnel shall continually monitor PSI level in oxygen cylinder.

Precautions

The Critical Care Paramedic is ultimately responsible for all airway management and must frequently reassess endotracheal tube placement. Bilateral breath sounds are to be checked after each patient movement (placing patient on cot, moving patient to ambulance, loading patient into ambulance, etc.)

Automatic transport ventilators are not intended, nor shall be used to reduce current personnel staffing levels. Minimum staffing for Ventilator assisted patient will be two properly trained personnel in back of rig, plus driver.

INTERNAL CARDIAC PACING

MONITORING

Purpose

To deliver electrical stimuli to the endocardium of the right atrium, right ventricle, or both, via a pacing catheter inserted in order to effect cardiac depolarization and contraction.

Equipment

Procedure

1. Obtain following patient information concerning pacer placement, retain to accompany patient during transport
 - A. Reason for pacemaker placement, goal of therapy
 - B. Patients underlying rhythm
 - C. Date of pacemaker insertion
 - D. Current status on / off
 - E. Type of pacemaker and ordered settings
 - F. History and Physical, Nurses notes concerning pacer and patient care
1. Assess patient with pacemaker frequently as follows
 - A. Assess the insertion site. Make sure the dressing is dry and intact, the pacing catheter is taped securely, and the site is immobilized.
 - B. Check to be sure that all connections are secure and connected properly
 - C. Make sure that there is no tension on the wires that could cause dislodgment of the catheter
 - D. Avoid tangling of wire or cable that could damage the system
 - E. Identify the type of pulse generator in use. (Single chamber, dual chamber, DDD)
 - F. Note the date and time the battery was changed
 - G. Identify the pacing mode, usually designated by a three-letter code that determines how the pacemaker should operate
 1. Note which chamber(s) are paced (atrium, ventricle or both)
 2. Note which chamber(s) are sensed (atrium, ventricle, or both)
 3. Note how the pacemaker responds to a sensed beat (by inhibiting or triggering a response.
 - A. Check the pacemaker settings relevant for the pacing mode, if the settings are not consistent with the Physicians orders, consult with the Physician.
 - B. Analyze the rhythm strip.
 - C. Assess the patient's hemodynamic response to pacing. Consider whether adjustments, such as a rate change, may be indicated to optimize vital signs or cardiac performance. Consult with the Physician as appropriate.
 - D. Auscultate heart sounds. A paradoxical split S2 is a normal finding during ventricular pacing. A pericardial friction rub may indicate ventricular perforation.

1. Monitor the EKG continuously for appropriate pacing, sensing and capture, and for the presence of arrhythmias, select a monitoring lead that provides the best display of pacemaker spikes, as well as intrinsic cardiac activity.
2. Recognize, interpret, and correct abnormal pacemaker function.
 - A. Obtain a rhythm strip.
 - B. Identify and problems.
 1. Failure to pace (inappropriately long pauses). No pacing spike is detected when one should be present.
 2. Failure to capture. Pacing spikes are occurring when needed but are not followed by a QRS complex or in the case of atrial pacing, by a P wave.
 3. Failure to sense. Pacing spikes are occurring when not needed, and are too close to preceding complexes.
 - A. Assess the patient.
 1. If the patient is stable, troubleshoot the problem.
 2. If the patient is unstable, prepare to intervene with transcutaneous pacing or emergency medication if the problem cannot be resolved quickly using troubleshooting techniques.
 - A. Investigate the cause of the problem once the patient is stabilized.
 - B. Documentation.
 1. Problem
 2. Patient assessment
 3. Action taken
 4. Results of action taken.
 5. Copy of rhythm strips showing problem and resolution.
 6. Times of event, medications administered and patient interventions
 7. Note the frequency of pacing and the circumstances under which pacing occur. That is, note whether the patient is dependent on the pacemaker, requiring pacing most of the time, or whether he/she is pacing intermittently.
 8. Follow electrical safety precautions. Pacing lead wires provide a direct path by which electrical current can travel to the myocardium, Micro-shocks can cause ventricular fibrillation.
 - A. Be sure all electrical equipment in the ambulance is grounded.
 - B. Keep the dressings over the pacemaker dry at all times.
 - C. Wear gloves when handling exposed pacemaker lead wires.
 - D. Do not touch electrical equipment and lead wires simultaneously.
 - E. Cover exposed lead wires with an insulated cover
 1. With a Transvenous pacemaker, a chest x-ray is usually ordered daily to verify proper catheter position. An atrial pacing catheter should be positioned in the right atrial appendage. A ventricular pacing catheter should be positioned in the right ventricular apex. Copies of x-ray shall accompany patient to receiving hospital.
 2. A 12 lead EKG is also to be ordered daily to verify proper position of the pacing catheter in the patient with a pacemaker. With the typical catheter placement in the right ventricle, a left BBB pattern will occur. If a right BBB is seen, the catheter may have perforated the ventricular septum, and pacing is originating in the left ventricle.
 3. Monitor the patient for additional potential complications including,
 - A. Catheter related infection.
 - B. Perforation of the pericardium or septum (rare) by the pacing wire. Signs and symptoms may include.
 1. Pericardial friction rub.
 2. A change in EKG pattern (RBBB pattern instead of LBBB on 12 lead EKG.
 3. Symptoms of cardiac tamponade, (muffled heart sounds, pulsus paradoxus, hypotension, tachycardia, jugular venous distention.)
 - A. Lead dislodgment or lead fracture that may cause pacing and/or sensing problems
 - B. Pacemaker malfunction

1. Monitor the patient for factors that may increase the pacing threshold and lead to failure to pace or increased mA requirements. Thresholds tend to increase over time as fibrous tissue forms around the tip of the catheter
2. Continually monitor patient and pacemaker for failure of unit, procure intervention supplies (Monitor / De-fib / Pacer unit), medications, and have in close proximity of patient.

THREE LETTER NORTH AMERICAN SOCIETY OF PACING AND
ELECTROPHYSIOLOGY CODE

1 st letter (chamber paced)	2 nd letter (chamber sensed)	3 rd letter (Sensed response)
V—Ventricle		V—
Ventricle		T—Triggers
A—Atrium		A—AtriumI—
Inhibits		
D—Dual (A+V)		D—Dual (A+V)D—Dual
O—None		O—
None		O—None

Appendix Q
Skills Maintenance/QA Policy

The following persons will act as my designees in the EMS areas of skills maintenance, medical audits and run reviews:

John Knorr, CRNA
Kellie Holt, CRNA
Dave Pederson, CRNA
Kevin Bohac, CRNA
Tammy Roetman, RN
Darlene Rueter, RN
Angela Albertson, RN, Director of ER
Bill Fish, EMT-PS, CCP, Director of EMS

For EMT-I, EMT-B or First Responder skills maintenance, the service director may designate persons to complete the quarterly reviews.

To remain an active member and or employee of Carroll County Ambulance Service and Carroll County EMS Association, each individual shall maintain, as a minimum, the following:

1. Current EMS certification from the IOWA Department of Health, Bureau of EMS and apply by all rules and regulations of that agency.
2. Attend and successfully complete on at least a quarterly basis, the necessary skills training sessions as required by the IOWA Department of Health, Bureau of EMS.
3. EMT-Paramedics must successfully start at least six (6) peripheral IV's and successfully complete three (3) intubations per quarter with at least one (1) under the supervision of CRNA's.
4. EMT-Intermediates must successfully start six (6) peripheral IV's per quarter and successfully complete one (1) King airway procedure under the guidance of a paramedic.
5. EMT-B's who are trained in manual defibrillation must successfully recognize V-fib and pulseless V-tach by demonstrating defibrillation procedures in various scenarios.

The Medical Director reserves the right to audit any service run report and /or individual's skills log or compliance with QA directives at any time and hereby direct those acting as my designees to bring to my attention any significant departure from written protocol and/or standard medical practice.

The Medical Directors designee will review a sampling of all runs each month, especially those that fall out of suggested goals and requirements.

At least quarterly, the Medical Director will review all cardiac arrest run reports and any report where patient care did not follow written protocols.

All monthly and quarterly QA audits will be reviewed by staff at monthly meetings.

Appendix R

Morgan Lens

The Morgan Lens Eye Irrigation System will be used for continuous medication or lavage to the cornea, conjunctiva and entire cul-de-sac; ocular injuries due to acid burns or solvents, gasoline, detergents, etc. alkali burns; non-embedded foreign bodies; foreign body sensation with no visible foreign body; and severe infections. The Morgan Lens is not to be used with penetrating injuries, suspected or actual rupture of the globe, or to instill anesthetic agents with known allergies.

Procedure:

1. Gather all equipment to be used including Morgan lens, Tetracaine, irrigation solution and tubing, towels and tubs for fluid collection.
2. Follow all guidelines for other emergency care.
3. Prepare and explain procedure to patient.
4. Instill two or three Tetracaine drops into the affected eye.
5. Attach Morgan Lens to IV tubing.
6. Prime tubing and lens with irrigation solution.
7. Have patient look down, insert lens under upper lid.
8. Have patient look up, retract lower lid and drop lens in place.
9. Release lid over lens and adjust flow to desired rate.
10. Tape tubing to patient's forehead
11. Direct and absorb outflow with towels and collection tubs.
12. Irrigate with appropriate amount of fluid and do not stop irrigation flow unless recommended by Medical Control.
13. To remove lens, continue flow, have patient look up, retract lower lid, hold position and slide lens out. Terminate flow.
14. Discard lens, irrigation solution and tubing in appropriate container.
15. Document patient tolerance, amount of fluid instilled, outcome and visual acuity pre- and post-therapy.