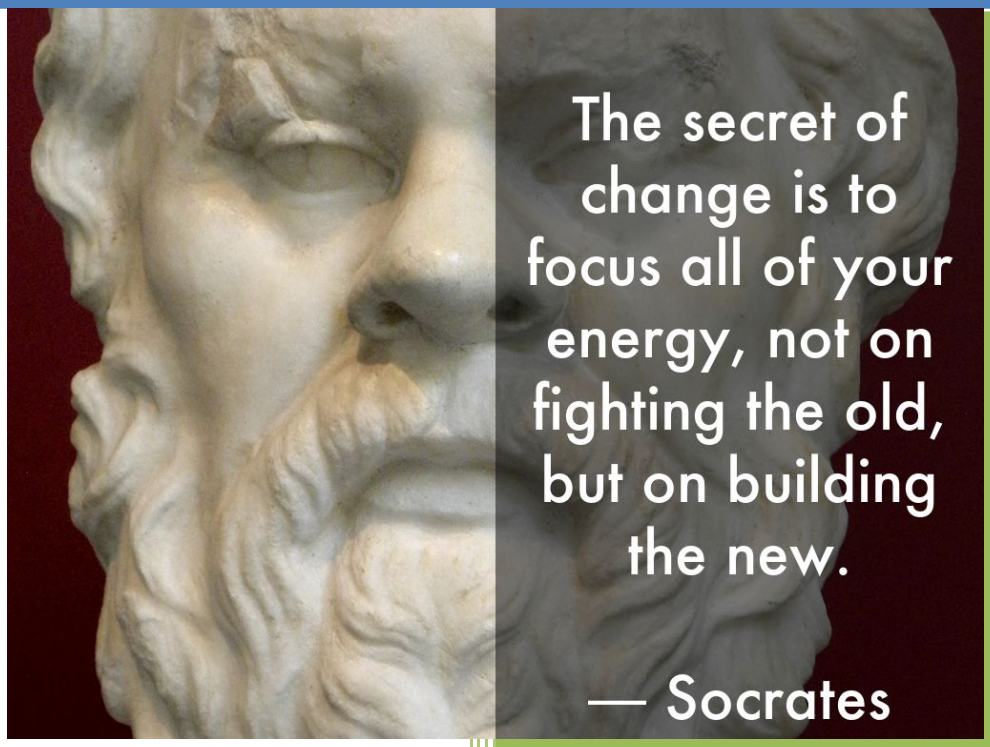
NORTHWEST COMMUNITY EMERGENCY MEDICAL SERVICES SYSTEM

EST 1972

May 2019 CE

SOP Changes and Rationales



Objectives:

After completing the class, reading this document and the new SOPs, each participant will do the following with a degree of accuracy that meets or exceeds the standards established for their scope of practice without critical error:

***Cognitive*:** Identify the major changes in each section of the new SOPs and explain their rationales.

***Psychomotor*:** Safely and competently adapt EMS practice to implement the changes when caring for patients or providing OLMC no later than June 1, 2019.

***Affective*:** Accept and defend the need to modify System protocols and practice based on high quality research, literature, EMS practice standards and guidelines, or legislative and/or regulatory changes.

Goal: All EMS practitioners are well-informed about evidence-based updates to care and translate this knowledge into clinical practice.

This document explains the changes, why they are necessary, and provides strategic resources to support them.

Questions and comments welcome. Direct to:

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NWC EMS 2019 SOP Changes, rationales, & references

SOP section	CHANGES, RATIONALE, CITATIONS
General editorial style	Major change in printing SOP on white paper with colored ink/highlighting for easier reading and drawing eye to major elements within a page. Requested by System members. Checklists incorporated for Suicide Assessment and Stroke **Rationale for checklists** from: Loscar, T. (2018). The midlife medic: Making a list and checking it twice. EMS World. https://www.emsworld.com/article/219584/midlife-medic-making-list-and-checking-it-twice "One need look no further than the aviation industry to see what crew resource management (CRM) has done to reduce errors and improve the standard of safety for all involved. One of the primary tools at the heart of CRM is the use of protocols—the checklist. Retired airline pilot Capt. Chesley B. "Sully" Sullenberger, is best known as the pilot of US Airways Flight 1549, the "Miracle on the Hudson." Sullenberger attributes the success of that fateful landing to deeply ingrained culture that resulted from the longstanding implementation of CRM in aviation. In a 2016 interview, he explained that **checklists remain invaluable, a simple inexpensive tool that can reduce errors and promote effective team function.** "The list is simply a way to focus individual intention toward group goals. It's a way of formalizing best practices. It's a way of literally getting everyone on the same page." There are **plenty of substitutes for memorization; most of them include making mistakes.** Consistent use of an accurate and up-to-date checklist reinforces that organic learning and helps develop procedural memory that will enhance practical application in critical situations. As (former) surgeon and Harvard professor Atul Gawande says, "Checklists, smartphone apps, or other interventions are penicillin-like in their lifesaving potential." He believes much of our reluctance to use checklists has to do with the drive to be heroes, to be active in the role of saving a life. Our culture should move away from the idea that checklists are a crutch or an indication of inability. **We should foster the idea that they will enhance our performance, making it consistent, measurable, and safer for practitioner and patient alike."**
Cover	No change to content. Dr. Jordan's signature authorizes this document.
Introduction	Healthcare facility transport changed to **Alternative Destination Transport t**o provide flexibility to accommodate changes in EMS models to allow different patient dispositions. Driving sources: EMS Agenda 2050, EMS 3.0; ET3 model and National Model EMS Clinical Guidelines.. https://www.ems.gov/projects/ems-agenda-2050.html https://www.naemt.org/initiatives/ems-transformation https://innovation.cms.gov/initiatives/et3/ NASEMSO National Model EMS Clinical Guidelines Version 2.2 January 2019. https://nasemso.org/wp-content/uploads/National-Model-EMS-Clinical-Guidelines-2017-PDF-Version-2.2.pdf
EMS Scopes of Practice	Updated to ensure that Paramedics and PHRN are clearly noted as performing **BLS + ALS interventions.** Select changes due to the **2019 National EMS Scope of Practice Document** – Ex. EMTs can give NTG for chest pain from suspected ischemia; Tranexamic acid (TXA) added as a Region IX option if available. Will continue to study need for universal adoption of this drug for the NWC EMSS. https://www.ems.gov/
General patient assessment / IMC	**CPAP:** Clarified indications and added reference to see more detail in Appendix. **ECG (12 L)**: Added abdominal pain, AMS, and several impressions as indications. Clarified when ongoing ECG monitoring may not be needed. Deleted **pain** interventions from this protocol and created new Pain Mgt. SOP (next page) **Patient disposition**: Added option of alternative destination (from introduction).

SOP section	CHANGES, RATIONALE, CITATIONS
NEW **Pain management**	• **Under person-centered approach:** - Adds new caveat about determining whether pain is acute, chronic or acute on chronic. - Assess pain medication history – especially if patient is opiate naïve (do not take them regularly) or opiate tolerant or dependent. • **Goal of pain mgt**: Clarified to quantify 2 point reduction on pain scale. Consistent with past CE and current practice. • Adds highlighted bar to **verify Dosing using the Rights of Medication Administration** (added to Appendix) including an independent cross-check • Adds **pharmacologic and non-pharmacologic options** at the BLS and ALS levels • Provides **two controlled substance options:** Traditional Fentanyl (no change in dose) plus **NEW – Ketamine** if opiate tolerant or dependent, allergy to fentanyl or if patient requires sedation plus analgesia. **Ketamine dose for pain CHANGED** to 0.3 mg/kg. Updated table added to appendix. • Clarifies post-analgesia ongoing monitoring requirements. **References:** Bronsky, E.S., Koola, C., Orlando, A., Redmond, D. et al. (2018): **Intravenous low-dose ketamine provides greater pain control compared to fentanyl in a civilian prehospital trauma system:** A propensity matched analysis, Prehospital Emergency Care, DOI: 10.1080/10903127.2018.1469704
Emergency Drug Alternatives	**Options for inopressors expanded within Region IX:** NWC EMSS retains norepinephrine as inopressor of choice. **Norepinephrine initial dosing remains the same.** No need to escalate dosing in most patients. The dosing table created after the last SOP was issued has been put into the appendix. **NEW: Push dose epinephrine:** NWC EMSS may use this option during a drug shortage of norepinephrine. **References:** Weingart S. (2015). Push-dose pressors for immediate blood pressure control. Clin Exp Emerg Med; 2(2), 131-132. Selde, W. (2014). Push dose epinephrine as a temporizing measure for drugs causing hypotension. JEMS. https://www.jems.com/articles/print/volume-39/issue-9/features/push-dose-epinephrine-temporizing-measure-0.html Epinephrine has alpha 1 and 2 and beta 1 and 2 effects, so it is an **inopressor.** The onset of effects are seen in <1 minute and while the duration of a single dose may last 10 minutes, in almost all cases the effects are gone within five minutes. Bolus doses of vasopressors have been used in the operative setting for decades. This technique of administration offers immediate control of hypotension. OLMC only: **Adult**: **PUSH DOSE EPI**: Instructions: waste 9 mL of Epi 1mg/10mL (cardiac preload); draw up 9 mL NS (10mcg/mL or 1:100,000) Label syringe. Give **0.5 to 2 mL** (5-20 mcg) IVP/IO q. 1-5 min; reassess after each increment. **Do not** give cardiac arrest doses of epineprhine (1 mg) to patients with a pulse. Mixing instructions, cheat sheets, videos, and a podcast on push-dose pressors can be found at http://emcrit.org/push-dose **Peds: PUSH DOSE EPI**: Mixing instructions: put the standard cardiac Epi 1 mg/10 mL 0.01mg/kg dose for the child based on their weight (see chart in drug appendix) into a 10mL syringe then dilute with NS to make a total of 10mL of fluid in syringe. Each 1 mL now has 1 mcg/kg epi **for that specific patient**. Label syringe. **Give 1 mL every 2-5 min** IVP/IO to desired hemodynamic effect. For more on pediatric mixing instructions and dosing: https://rebelem.com/pediatric-push-dose-epinephrine-epi-spritzers-vs-peppinephrine-vs-low-dose-epinephrine-bolus/ **Resuscitation Guidelines: Push dose epi for Peds** A recent AHA Publication reviewed PALS care for pediatric patients with cardiac disease. Epi dosing at 1mcg/kg as a push dose medication to be given as a bridge to other interventions was discussed. (Circulation, May 2018. PMID: 29685887.

SOP section	CHANGES, RATIONALE, CITATIONS
	"A prearrest small dose of epinephrine can be used in treatment of hypotension or persistent bradycardia with a pulse in the patient with an at risk myocardium to prevent cardiac arrest and allow time to treat an acute reversible problem (e.g., draining of pericardial effusion, sternal opening, revascularization of a shunt) or to initiate ECLS without requiring ECPR. Doses in this scenario should be administered via a central venous catheter or intraosseous catheter and titrated to effect based on the patient's response, with a reasonable starting dose of 1 microgram/kg (i.e., one-tenth the standard resuscitation dose for pulseless cardiac arrest or symptomatic bradycardia) page e32. **Recommendations – Pharmacologic interventions:** For treatment of hypotension or persistent bradycardia with a pulse in the patient with an at risk myocardium, it is reasonable to titrate a smaller prearrest dose of epinephrine (e.g., 1 microgram/kg [0.001 mg/kg] to achieve a desired hemodynamic effect and reduce the risk for ventricular arrhythmias (Class IIa; Level of Evidence C). Page e36-37.
OLMC / Handover report	Adds a line to encourage calling an ALERT early in the OLCM report.
Withholding or Withdrawing Resuscitative Efforts	No change
Termination of Resuscitation	Adds concession that most OLMC physicians will be unwilling to declare TOR in children. Provides direction for transport with CPR in progress if TOR denied.
Elderly patients	No change.
Extremely Obese patients	Redefines obesity and adds health consequences Requires $ETCO_2$ monitoring to ensure good ventilatory status; notes that advanced airway size does not change due to obesity.
Airway obstruction	No change in practice.
Drug Assisted Intubation (DAI) **changed to Advanced Airway**	• **Positioning:** Need for sniffing position deleted as not needed for videolaryngoscopy • **Pre-ox**: Ongoing need for high flow O_2/NC throughout procedure added to traditional pre-ox methods due to high evidence of hypoxia danger during intubation attempts. Clarified RR to determine O2 delivery device and SpO_2 targets. • SOP references **both ETI and Extraglottic (i-gel) as advanced airways** and allows for sedation prior to i-gel insertion. • Changed **KETAMINE to sedative of choice** for most patients (unless contraindicated) as it adds analgesic as well as sedative properties, has a rapid onset of action and may help improve BP in patients with borderline hypotension. No dose change for sedation. • Adds an objective assessment tool (Richmond Agitation Sedation Scale) to **determine need for Postinvasive airway sedation and analgesia** (PIASS) • If pt. needs PIASS, **allows for Ketamine** (at the pain dosing) or midazolam if ketamine is contraindicated • Adds caveat to consider need for fentanyl if midazolam used for PIASS. **References** Antevy, P., Lyng, J.W., Perlmutter, M.C. (2018). **The A1 sedation package: Better care for intubated patients.** https://www.emsworld.com/node/220258 Postinvasive airway sedation and analgesia (PIASA) is as critical to our patients' well-being as our careful management of oxygenation and perfusion in the pre- and peri-intubation periods. In addition to anesthesia awareness, inadequate sedation and analgesia in paralyzed and intubated patients can lead to increased catecholamine release, increased production of lactic acid, and increased metabolic oxygen demands, all of which can contribute to significant morbidity and mortality in patients who are already critically ill. Until very recently deep sedation was considered the mainstay of post intubation care. Unfortunately this approach fails to recognize that **sedation does not equal analgesia**. Consequently patients are frequently left heavily sedated but still in pain. Agitation is a frequent result of this approach, and instead of leading us to administer pain medication, we frequently and mistakenly interpret the agitation as a sign that even more sedatives are needed. In place of the historical sedative-driven model, we should now be moving toward what Dr. Scott Weingart and others have called **"A1 sedation"—for analgesia first, then sedation.**

SOP section	CHANGES, RATIONALE, CITATIONS
	We should first address the primary problem associated with intubation: pain. Provide aggressive analgesia first, followed by small doses of sedation when necessary. Ketamine is now approaching etomidate in its frequency of use for EMS and ED RSI, especially for patients in or at risk of shock. In patients with intact catecholamine reserves, ketamine administration may be hemodynamically neutral and may in fact increase HR and BP. However, like any anesthetic agent, ketamine can negatively impact the BP of patients whose endogenous catecholamine reserves are depleted, such as patients in any stage of shock. For these pts, care must be taken to reduce the dose to avoid peri- and postintubation hypotension. The shock index, which is calculated by dividing the HR by the SBP, is a useful predictor of occult shock in a variety of conditions (covered previously with shock CE). **When dosed appropriately** to the hemodynamic parameters specific to each case, **ketamine is likely the most hemodynamically stable anesthetic agent currently available.** By carefully monitoring and observing the hemodynamic status of each pt prior to RSI, the clinician can tailor the dose of ketamine to provide excellent analgesia and anesthesia while minimizing the likelihood of postintubation hypotension. Following airway placement **ketamine can be used to provide both analgesia and sedation.** Boluses of 0.5–2 mg/kg can be given as a slow IV push every 15–45 minutes as needed for pain control and sedation. Such doses will provide excellent analgesia and near-total dissociation, which may be desirable in EMS and ED settings. One significant benefit of ketamine is that unlike propofol and benzodiazepines, ketamine possesses potent analgesic properties at low doses and both analgesic and sedative effects at higher doses. ********** De Jong, A., Rolle, A.; Molinari, N. et al. (2018). **Cardiac arrest and mortality related to intubation procedure in critically ill adult patients: A multicenter cohort study.** Critical Care Medicine, 46 4), 532, 539. In multivariate analysis, the main predictors of **intubation-related cardiac arrest** were arterial **hypotension** (SBP <90 mm Hg) prior to intubation (odds ratio = 3.406 [1.797–6.454]; p = 0.0002), **hypoxemia prior to intubation** (odds ratio = 3.991 [2.101–7.583]; p < 0.0001), **absence of preoxygenation** (odds ratio = 3.584 [1.287–9.985]; p = 0.0146), overweight/ obesity (body mass index > 25 kg/m2; odds ratio = 2.005 [1.017–3.951]; p = 0.0445), and age more than 75 years old (odds ratio = 2.251 [1.080–4.678]; p = 0.0297). ********** Driver, B. et al. (2017). The **bougie** and first pass success in the emergency department. Annals of EM, June, 2017. Followed by Beam article with Brian Driver Interview (June 2018). https://5minuteairway.com/2018/06/11/beam-article-with-brian-driver-interview/ ********** ENA. (2017). Clinical Practice Guideline: **Capnography during Procedural Sedation/Analgesia**. https://www.ena.org/ ********** Jarvis, J. L., Gonzales, J., Johns, D., Sager, L. (2018)**. Implementation of a clinical bundle to reduce out-of-hospital peri-intubation hypoxia.** Annals of Emerg Med, 72(3), 272-279. In a before-after analysis of 191 out-of-hospital nonarrest patients, protocolized use of head positioning, **apneic oxygenation,** delayed paralytic administration, and **minimum oxygenation saturation thresholds** reduced peri-intubation hypoxia in adult non-arrest patients requiring intubation from 44.2% to 3.5%. Their protocol did not allow EMS personnel to proceed with intubation if oxygen saturation goals were not satisfied. If O_2 sat goals were not achieved, the protocol prescribed the use of continued BVM ventilation or insertion of a supraglottic airway. Sedation involved the initial administration of **IV ketamine 2 mg/kg.** Intubation was accomplished by using only the **channeled King Vision** (Ambu, Copenhagen, Denmark) video laryngoscope. Paramedics were allowed a **maximum of 2 laryngoscopy attempts**. **Continuous waveform capnography was required** They assert that the strict use of multiple pre-ox modalities may help to minimize out-of-hospital peri-intubation hypoxia. **********

SOP section	CHANGES, RATIONALE, CITATIONS
	Rubin, M. (2018). **Airway Management Research Update: What works**. www.emsworld.com/node/220849 Weingart, S.D., Trueger, N.S., Wong, N., Scofi, J., Singh, N., Rudolph, S.S. (2015). Delayed sequence intubation: A prospective observational study. Annals of Emergency Medicine, 65 (4), 349-355.
Allergic reaction Anaphylaxis:	• Adds warning at top of protocol to go straight to Rx if ABCs compromised • Ask about **Anaphylaxis Emergency Action Plan** • Clarifies **2+ Rule** to assess for Moderate - Severe Reactions if 2 or more systems are involved. • Adds option of PO diphenhydramine for moderate reaction if no airway compromise or vomiting **Reference**: Sicherer, S.H., Estelle, S.R. (2017). **Epinephrine for firstaid management of anaphylaxis.** Pediatrics. e20164006; doi: 10.1542/peds.20164006. Wang, J., Sicherer, S.H. (2017). Guidance on completing a written allergy and anaphylaxis emergency plan. Pediatrics. e20164005; doi: 10.1542/peds.2016400 The **American Academy of Pediatrics (AAP) confirmed epinephrine as a firstline medication** for treatment of anaphylaxis and offered information on effective epinephrine use and emergency response plans. The reports reaffirm that although other medications, such as H1 antihistamines and bronchodilators, provide helpful additional interventions, they should not replace epinephrine as the treatment of choice. They recommend the preparation of allergy action plans and how the medication can be used most effectively. Authors note that epinephrine administered in a health care setting should be dosed at 0.01 mg/kg in prepubescent children and up to 0.5 mg in teenagers. The reports also state that although there are only 2 autoinjector dosage strengths available (0.15 and 0.3 mg), the lower dose may still be too high for many infants who weigh 16.5 pounds or less. However, alternative options may mean a delayed or inaccurate dose. **The 0.3mg dose is recommended for individuals who weigh at least 55 pounds.**
Asthma/COPD	No change. **References:** Updated Guidelines for Noninvasive Ventilation in Acute Respiratory Failure http://erj.ersjournals.com/content/50/2/1602426.short Long, B., April, M.D. (2017). What Is the utility of noninvasive ventilation in the management of acute hypercapnic respiratory failure associated with chronic obstructive pulmonary disease? Annals of Emerg Med (pre-publication copy) In patients with acute respiratory failure from COPD exacerbation, noninvasive ventilation reduces death and intubation compared with standard treatments.
Patients w/ Tracheostomy/ Laryngectomy	• Significant changes to add information currently included in PM and CE class education: • Note type and size of tube • Interventions for partial and complete trach tube dislodgement • Interventions for respiratory distress and options if a suction catheter will or will not pass • Section ADDED on **laryngectomy** – these patients eat through their mouth, but breathe through their neck. Cannot assist ventilations with mask on face; place mask over stoma. Addresses recent practice concerns. • Adds box with general types of trach tubes **Reference:** Educational materials provided by Daniel Mazzolini Jr., RRT – ACCS; Clinical Specialist – Respiratory Care; Advocate Aurora Lutheran General Hospital
NEW **Acute Respiratory Disorders**	• Aligns us with National Model EMS Guidelines – need to address i**nfluenza, pneumonia, standard precautions and pulmonary embolus.** • CDC: Guidelines on influenza
Acute Coronary Syndromes (ACS)	• Added information to obtain about medication history • Clarified contraindications for giving ASA • Added notes on gaining best 12 L ECG tracing by prepping skin • Reinforces need to get serial 12 L ECGs with ongoing S&S

SOP section	CHANGES, RATIONALE, CITATIONS
	• Corrects historical error on minimum SBP for repeat NTG dosing • Clarifies that pain medication may be used immediately if NTG contraindicated • Adds ketamine as pain option per Pain Mgt SOP
Bradycardia with a Pulse	• Clarifies indication for O_2 • References Pain Mgt SOP • Redefines Stable symptomatic bradycardia and Bradycardic periarrest or moderate to severe cardiorespiratory compromise consistent with Ntl model guidelines • Adds junctional rhythm as possible cause • Clarifies **drugs vs pacing sequencing** Q: Why is pacing contraindicated in hypothermia w/ bradycardia? A: Bradycardia may be physiologic in the hypothermic patient and an appropriate response to the decreased metabolic rate that occurs with hypothermia. The hypothermic ventricle is more prone to fibrillation with any sort of irritation and TCP could induce VF. Once the hypothermic ventricle begins to fibrillate, it is more resistant to defibrillation. Warm the patient and then treat any remaining arrhythmias.
Narrow QRS Complex Tachycardia	• Underlying causes amplified (dehydration, sepsis) • No change in drug dosing; reduced saline flush amount following adenosine to 10 mL consistent with current literature • Added note on rare need for cardioversion in AF
Wide Complex Tachycardia w a pulse	• No change in treatment steps. • Added caveat about proximal line if giving adenosine per OLMC
V-Fib / Pulseless VT changed to Cardiac Arrest for adults and peds (no matter what rhythm)	**Complete revision of SOP based on evolving literature** • Emphasis on bundles of care: CPR, Defibrillation if shockable rhythm; advanced airway; vascular access; regulating intrathoracic pressure; drugs; considering the Hs&Ts; ROSC management; and/or Termination of Resuscitation (TOR) • Specific details were taught during the March 2019 CE classes. **Notable changes:** o Determine down-time to estimate **phase of arrest: electrical, circulatory, metabolic** o **Will work children on the scene unless contraindicated** o Focus on **high perfusion, minimally interrupted CPR** – start with manual and transition to machine compressions ASAP if available and pt meets protocol o **Apneic oxygenation** clarified with $ETCO_2$ NC sensor/NRM at 15L O_2 unless arrest caused by hypoxic event. **Ideally have ETCO2 sensor that delivers O_2.** o **Determine if ECG monitor displays native rhythm** that is readable through compressions. If yes, will not need to pause compressions for rhythm check. o **Rhythm check -**pause no longer than 5 sec. Print strip if cannot rapidly read ECG. o **Timing of defibrillation:** Short downtime and $ETCO_2$ > 20 – defib immediately Adds criteria for **delayed defibrillation** based on science that a hypoxic, acidotic heart will not repolarize following defibrillation. **Better chance of gaining a sustainable rhythm if $ETCO_2$ >20.** o Allows i–gel insertion into children without OLMC o **Extends epinephrine dosing to q. 6 minutes** to align with 2 minute rhythm check cycles and in deference to new literature that suggests too much epinephrine reduces neurological outcomes once ROSC occurs. o Clarifies **post-ROSC care** o Adds same caveat about TOR unlikely in children. **References:** https://digital.pennwell.com/pennwellevents/jems_2019_state_of_the_future_of_resuscitation?pg=13#pg13 Banerjee, P., Ganti, L., Pepe, P.E. et al.. (2019). Child's play: **Scoop-and-run may not be best for kids in cardiac arrest.** https://www.emsworld.com/article/1222042/childs-play-scoop-and-run-may-not-be-best-kids-cardiac-arrest

SOP section	CHANGES, RATIONALE, CITATIONS
V-Fib / Pulseless VT changed to Cardiac Arrest for adults and peds (no matter what rhythm) cont.	"There is a universal element of fear and denial when it comes to critically ill infants and children. The infrequency with which they present, along with the inherent emotional stress they create, creates the perfect storm of chaos on scene. By default, when faced with circumstances they cannot interpret or comfortably manage, responders will turn to the idea of "definitive care" (the hospital) to help them. Thus, in their minds, the speed with which they can get the patient to the hospital where that care resides may be their best opportunity to improve the patient's chance of survival. There is no clearer evidence of this than in POHCA cases. However, even in the best rapid evacuation and transport scenario, there will be a risk of delayed critical early interventions and suboptimal compressions, with the resulting significant impact in survival rates." ********** Holley, J. (2019). **Supraglottic airways: Use in cardiac arrest remains controversial**. JEMS. Accessed on line: https://www.jems.com/articles/supplements/special-topics/state-of-the-future-of-resuscitation/supraglottic-airways-use-in-cardiac-arrest-remains-contro%e2%80%a6.html When CPR is performed supine with any of these methods of CPR, a**n ITD was essential to create a negative intrathoracic pressure.** With mechanical CPR, there was no vacuum in the absence of the ITD. This is important for those using a **mechanical chest compression device, as it shows that it doesn't work nearly as well alone as with the ITD**. When looking at the generation of negative intrathoracic pressure with the five different airways, three of the SGAs (the LMA, **i-gel** and AirQ) and the ET tube resulted in the greatest negative intrathoracic pressure during the recoil phase of CPR, suggesting these airways **should be used in an optimal bundle of care.** By contrast, the Combitube and King SGA failed to adequately seal the airway consistently during the decompression phase of CPR, and this resulted in an inferior vacuum compared to the other three SGAs. ********** Jabre, P., Penaloza, A., Pinero, D. et al. (2018). Effect of bag-mask ventilation vs endotracheal intubation during cardiopulmonary resuscitation on neurological outcome after out-of-hospital cardiorespiratory arrest. A randomized clinical trial. JAMA, 319(8), 779-787. doi:10.1001/jama.2018.0156 ********** Kern, K.B. (2017). **Trends & changes in cardiac resuscitation**. JEMS. https://www.jems.com/articles/supplements/special-topics/ems-state-of-the-science/trends-changes-in-cardiac-resuscitation.html?cmpid=enl_jems_now%E2%80%A6 Just as primary percutaneous coronary intervention (PPCI) has become the preferred method of reperfusion in ST-segment elevation, myocardial infarction (STEMI) patients, it also appears to be the best option for successful reperfusion during cardiac arrest, given the results of the TROICA study. If timely reperfusion with PPCI is desirable for those with refractory OHCA, one must determine how to get them to the hospital while providing systemic circulatory support to their brain and heart during transport? The answer: mechanical chest compression devices. According to the few studies that have looked at their impact on resuscitation, such devices have failed to improve overall outcomes when used routinely for all OHCA patients. Nevertheless, the current cardiopulmonary guidelines recommend their consideration in some special circumstances, such as during transport when CPR is necessary. The AHA 2015 CPR and ECC guidelines note, "The **use of mechanical piston devices may be considered** in specific settings where the delivery of high-quality manual compressions may be challenging or dangerous for the provider (e.g., limited rescuers available, **prolonged CPR**, during hypothermic cardiac arrest, **in a moving ambulance,** in the angiography suite, during preparation for extracorporeal CPR [ECPR]), **provided that rescuers strictly limit interruptions in CPR during deployment** and removal of the devices (Class IIb, LOE C-EO)." Manual chest compressions during transport are frequently interrupted and often more shallow than recommended. However, mechanical compressions in a moving ambulance achieved the recommended rate and depth, while improving the CPR fraction compared to manual compressions.

SOP section	CHANGES, RATIONALE, CITATIONS
	Cardiac arrest is defined as refractory if standard treatments are completed but cardiac arrest persists. **NWC EMSS definition: Three shocks and administration of IV or intraosseous (IO) amiodarone** (both doses). In the future, early transport to an ECMO/PCI center with ongoing mechanical chest compressions may change how refractory cardiac arrest victims are treated. ********** Moore, J.C., (2019) Head-up CPR may Improve Neurologically Intact Survival Rates https://www.jems.com/articles/supplements/special-topics/state-of-the-future-of-resuscitation/head-up-cpr-may-improve-neurologically-intact-survival-rates.html More recent animal studies have focused on the optimal head-up CPR height and timing of head and thorax elevation. To date, no optimal angle has been determined, however a sequence effect has emerged, where animals treated with a controlled progressive elevation after two minutes of "priming"—to a final head height of 22 cm and a heart height of 9 cm—had sustained CerPPs and also higher coronary perfusion pressures > 70% of baseline values after > 15 minutes of ACD+ITD CPR. Most recently, head-up CPR has been incorporated into bundles of care in Palm Beach County, Fla., and Rialto, Calif. As part of these bundles, survival rates in these two EMS systems have essentially doubled. Head-up CPR, when applied correctly and as part of a bundle of care, has the potential to improve neurologically intact survival rates after cardiac arrest. ********** Nikolla, D.A., Carlson, J.N. (2017). **Which compression-to-ventilation ratio yields better cardiac arrest outcomes**? [Published online on November 14, 2017]. Ann Emerg Med. doi:10.1016/j.annemergmed.2017.10.009 Investigators concluded that both 30:2 compression-to-ventilation ratio CPR and compression-only CPR with asynchronous ventilations in adults and 30:2 and 15:2 CPR in pediatric patients resulted in improved neurologic and survival outcomes. Therefore, clinicians should continue to educate and perform CPR utilizing these ratios. ********** Powell, J., Dearden, K., Grayson, S. (2017). Seven tools result in dramatic improvements in cardiac arrest outcomes in **Rialto, Calif.** JEMS 42(12), 28-34. https://www.jems.com/articles/print/volume-42/issue-12/features/seven-tools-result-in-dramatic-improvements-in-cardiac-arrest-outcomes-in-rialto-calif.html **Rialto's Toolkit:** In 2016, the RFD developed the **seven components of cardiac survivability**, referred to as the RFD Cardiac Survivability Tools: 1. Continuous uninterrupted compressions utilizing an automated CPR device; 2. Apneic oxygenation; 3. Use of an impedance threshold device (ITD); 4. Heads-up CPR; 5. Delaying defibrillation for a certain subset of patient presentations; 6. Expanded utilization of waveform capnography; and 7. Deprioritizing epinephrine in the order of interventions. ********** Spiegel, R. (2018). Myths in Emergency Medicine: No benefit of epinephrine in OCHA. Emergency Medicine News, 40(10), 1, 49. doi: 10.1097/01.EEM.0000547193.55654.48 PARAMEDIC-2 does not entirely eliminate the potential benefits of epinephrine administered in drip form or titrated to a physiological endpoint, but **these results do not support the continued use of bolus dose epinephrine in patients experiencing OHCA**. Not only did the authors fail to demonstrate improvement in neurologically intact survival, epinephrine's use was associated with a significant increase in critically ill patients with no hope of neurological recovery. That's a heavy cost for such an ineffective therapeutic agent. ********** Savastano, S., Baldi, E., Raimondi, M. (2017). **End-tidal carbon dioxide and defibrillation success in out-of-hospital cardiac arrest**. Resuscitation 121, 71–75

SOP section	CHANGES, RATIONALE, CITATIONS
	This is the first demonstration of how $ETCO_2$ may help to predict the effectiveness of defibrillation. At least a minute of High Quality CPR monitored by $ETCO_2$ increases the likelihood of defibrillation effectiveness. Should our results be confirmed, $ETCO_2$ could be proposed to guide defibrillation. **The higher the quality of CPR, the better is the perfusion of the heart resulting in faster restoration of ATP levels in the myocardial cells increasing the chance of successful defibrillation.** This is supported by the evidence that the higher was the METCO260 the higher was the chance not only to provide a successive shock but also to achieve ROSC after defibrillation. **It means that a good perfusion of the heart preceding the shock puts the heart in the best conditions not only to restore a regular rhythm but also to reestablish the excito-contraction coupling.** **USE OF SODIUM BICARB IN CARDIAC ARREST** Swaminathan, A. (2018). **"Sodium Bicarbonate in Cardiac Arrest Management",** REBEL EM blog, June 15, 2018. Available at: https://rebelem.com/sodium-bicarbonate-in-cardiac-arrest-management/ Background: As with all medications in cardiac arrest (i.e. epinephrine, amiodarone) the benefits of sodium bicarbonate administration have been discussed and debated for decades. While it is clear that sodium bicarbonate can play a role in resuscitation of arrest due to hyperkalemia, its role in patients with acidemia resulting from or causing arrest is unclear. In theory, raising the pH may be beneficial but the **use of bicarbonate increases serum CO_2** which may be deleterious as it creates a respiratory acidosis. $$H_2O + CO_2 \leftrightarrow H_2CO_3 \leftrightarrow HCO_3 + H$$ Despite the absence of good evidence, sodium bicarbonate continues to be used in non-hyperkalemic cardiac arrest management. Article: Ahn, S et al. (2018). **Sodium bicarbonate on severe metabolic acidosis during prolonged cardiopulmonary resuscitation:** a double-blind, randomized, placebo-controlled pilot study. J Thorac Dis; 104(4), 2295-2302. [Epub Ahead of Print] **Author's Conclusions**: "The use of sodium bicarbonate improved acid-base status, but **did not improve the rate of ROSC and good neurologic survival.** We could not draw a conclusion, but our pilot data could be used to design a larger trial to verify the efficacy of sodium bicarbonate." REBEL EM conclusions: While the use of NaHCO3 improved the surrogate endpoint of acid-base status, there was **no patient centered improvement seen in this study.** **Potential to Impact Current Practice:** This small pilot study **should not change clinical practice**. **Indiscriminate use of NaHCO3 in cardiac arrest should not be performed.** However, providers should continue to use their judgement as to which patients with arrest may benefit from NaHCO3. **Bottom Line:** The use of NaHCO3 does not appear to improve clinically meaningful outcomes. A larger study should be undertaken to further evaluate this clinical question.
HF/ pulmonary edema	Drug reference section updated.
LVADs	• Added language at top regarding purpose of LVADs and how they work. • Note that these pts may tolerate sustained ventricular dysrhythmias Gopinathannair, R., Cornwell, W. K., Dukes, J.W. et al. (2019). Device therapy and arrhythmia management in left ventricular assist device recipients: A scientific statement from the American Heart Association. *Circulation,* 139:00–00. DOI: 10.1161/CIR.0000000000000673.
Acute abdominal/ flank pain	• Reference to new Pain Mgt. SOP • Added option to seek OLMC for TXA if active GI bleed if available
Dialysis/Chronic Renal Failure Emergencies	No change.
Alcohol intoxication/ withdrawal	No change

SOP section	CHANGES, RATIONALE, CITATIONS
Altered mental status/Syncope	Notes added to consider vulnerability factors; delete reference to Cincinnati stroke screen, and to look for body language that would suggest that the patient is in pain. All **NALOXONE** dosing changed to 1 mg increments.
Drug OD/Poisoning	• Assessment parameters added under IMC special considerations • Formatting changes for standard dosing of NALOXONE, MIDAZOLAM and KETAMINE • Added fast KETAMINE dosing approach to pt with excited delirium – consistent with previous CE
Carbon monoxide / cyanide poisoning	• Clarified which patients are likely candidates for HBO- added pregnant patient. • Dosing for Hydroxocobalamin clarified (adult and peds) – peds dosing chart included.
Cold emergencies	• Severe hypothermia: Airway option changed from ETI to Advanced Airway • Pulse check time clarified at 30 sec – and then start compressions if none detected.
Submersion Incidents	No change.
Heat emergencies	Added note to avoid cooling methods that make patient shiver.
Diabetic / glucose emergencies	• Adds note to assess for glucose monitoring devices • Adds reference ranges for normal glucose levels (fasting and non-fasting) • Adds table of S&S of hypoglycemia by mild, moderate and severe • Adds option of glucose tabs if available
Hypertension/ hypertensive crisis	• Distinguishes between Hypertensive urgencies and emergencies; defines end organ damage S&S • Adds note to ask about drug use of sympathomimetics • IMC: Adds notes about checking BP supine and sitting and in both arms • Adds need to do a 12 L ECG and repeat assessment q. 15 minutes • Adds trauma and aortic aneurysm as history factors • Adds note about seizure management if pregnant and non-pregnant **References:** Whelton P.K, et al. (2017) High blood pressure clinical practice guideline: Executive Summary. American College of Cardiology Foundation and the American Heart Association, Inc. Hypertension; 00:e000-e000. Hypertension is available at http://hyper.ahajournals.org Hopkins, C., Brenner, B.E. (2018). Hypertensive emergencies. Uncontrolled Blood Pressure, Management of Hypertensive Emergencies. Accessed on line: https://emedicine.medscape.com/article/1952052-overview#showall
Psych/BEHAVIORAL/ Agitated/VIOLENT adult and peds	**Substantial changes** • Adds note about vigilant **situation awareness** • Get consent to touch unless immediate intervention'/restraint needed • Medical etiologies of behavior amplified • Note added on protecting suicidal patients from harm with **continuous visual observation** • **Assessing decisional capacity**: whole section revised – read thoroughly • **Suicide screen: ALL NEW** – use as a screening tool for all those who meet risk factors for suicide as listed • Note to **not leave a patient alone** who is non-decisional and/or a threat to self or others or is unable to care for themselves • **Need for sedation clarified** (anxiety vs. severe agitation/violence). **KETAMINE use clarified** to use with caution in someone with active psychosis. • Whole section added on what to **document** **References:** Campbell-Watt, A. (2019). The complexities behind the act of suicide. Psychiatric Times, 36(3). Accessed on line: https://www.psychiatrictimes.com/suicide/complexities-behind-act-suicide?elq_mid=6552&elq_cid=888962 Columbia Suicide Severity Rating Scale

SOP section	CHANGES, RATIONALE, CITATIONS
	Suicide Prevention Resource Center (2015). Caring for adult patients with suicide risk A consensus guide for emergency departments. http://www.sprc.org/ Phone: 877-GET-SPRC (438-7772)
Stroke	**Substantial formatting change to use BEFAST screen** although much of the history and assessments to obtain remain the same from the previous SOPs Added note to attempt to determine patient's base line status **Destination hospital decision** simplified purely based on time since onset of S&S. **Added tables comparing characteristics of various types of stroke and stroke mimics** **Added Stroke Alert Checklist introduced in March CE classes.** This checklist is not intended to be scanned or inserted into the patient's official medical record as the elements should be documented into Image Trend. It is a fast and easy reference for completing assessments in the field and calling in the stroke alert. If agencies wish to duplicate and use a stand-alone edition of this form, a version exists that indicates it is not intended to be part of the official medical record and may be provided to receiving hospital personnel. This form will be posted to the System website. **Supporting information:** See March 2019 CE materials
Seizures	Note to consider if patient is pregnant and suffering from eclampsia – use Magnesium instead of Midazolam for initial seizure management in these patients.
Sepsis and Septic Shock	New as a stand-alone SOP. This content was rolled out in October 2018 CE. • Format clarified to ensure order of assessment priorities: **1.** Suspected **Infection** 2. **ETCO2 < 31:** Reminder: ETCO2 levels decline in both poor perfusion and metabolic acidosis. Therefore, ETCO2 level is inversely proportional to lactate levels. As lactate levels rise in septic patients, ETCO2 levels fall. 3. Then **qSOFA assessment** of GCS; RR; SBP **If ≥2 criteria are present: Call SEPSIS ALERT** • Added boxes to clarify Warm vs. Cold stage of shock • Added box with indicators of infection • Norepinephrine remains our preferred inopressor if patient is hypotensive and does not respond to first 500 mL of IVF. **References:** Marry, N.M. (2017). Sepsis: qSOFA more accurate than previous criteria in ED. Medscape Medical News January 19, 2017. SCCM, ESICM taskforce. (2016). The third international consensus definitions for sepsis and septic shock. JAMA, 315(8), 801-810. **See October 2018 CE materials**
Shock Differential/ Hypovolemic	• Added note on why standard shock stage tables may not be relevant in real patients. • Emphasized hemorrhage control as top priority • Adds possible option of TXA if acute active bleeding of < 3 hours
Initial Trauma Care	• Words removed whenever possible for easier reading. Ex: Tourniquet caveats removed and assumed knowledge per procedure. Pelvic splinting: deleted "wrapping in sheet" option • TXA added as possible option with active bleeding < 3 hours **Reference throughout Trauma section:** ACS Committee on Trauma. (2018). **Advanced Trauma Life Support:** Student Course Manual, 10th edition: Chicago.
Trauma Triage & Transport Criteria	Clarifications on Extremity Injury criteria for Level I vs. Level II TC
Cardiac arrest due to Trauma	• Emphasis on likely NOT resuscitating patients found in asystole following trauma • Resuscitation encouraged for those with any vital signs prior to arrest; immediate transport • Notes added for those whose mechanisms of trauma include submersion, lightning strike, and hypothermia

SOP section	CHANGES, RATIONALE, CITATIONS
Conducted electrical weapon: Post-Taser care	Added option to care for probes per System procedure. (NWC EMSS allows removal under specified circumstances - see Procedure Manual.)
Burns Adults & peds	• Added assessment caveats under Airway/breathing and under Circulation • Hospital to calculate burn formula IVF if pt in shock as they differ and each facility may have a preference. • Rx of pain now references Pain Mgt SOP (ketamine may be the find thing to do) • Burn illustration for adult changed to colored images; infant changed for bigger image
Chest trauma	**Open pneumothorax**: Clarified wound covering options; preference for vented/channeled dressing and removed Vaseline gauze taped on 3 sides (not a standard)
Eye trauma	No changes other than to add "per procedure" for eye irrigation as some Systems use a Morgan lens and others do not. NWC EMSS does not advocate its use.
Facial trauma	References Pain mgt SOP
Head trauma/Traumatic Brain Injury (TBI)	**Emphasis** • $ETCO_2$ monitoring required with Moderate to Severe injury (GCS ≤13) • Change in advanced airway recommendations to if unable to oxygenation, ventilate, or protect airway. Must monitor with ETCO2. • Added section on **Concussion** – review in detail **References:** Carney, N., Totten, A.M., O'Reilly, C.O., Ullman, J.S., et al. (2016). Guidelines for the management of severe traumatic brain injury, Fourth Ed. Brain Trauma Foundation. *Neurosurgery* 0:1–10, DOI: 10.1227/NEU.0000000000001432 www.neurosurgery-online.com Brain Trauma Foundation: www.braintrauma.org Brain Injury Association of America: www.BIAUSA.org CDC (Center for Disease Control) Traumatic Brain Injury Prevention & Management www.cdc.gov EAST (Eastern Assoc for the Surgery of Trauma), www.EAST.org http://www.glasgowcomascale.org/downloads/GCS-Assessment-Aid-English.pdf?v=3 National Institute of Neurological Disorders and Stroke (NINDS) Traumatic Brain Injury information: www.ninds.nih.gov/health_and_medical/disorders/TBI_doc.htm WEST (Western Assoc for the Surgery of Trauma), www.WEST.org
Musculoskeletal trauma	References Pain Mgt SOP
Spine trauma	**Rewritten to comply with the 2018 Joint Position Statement** issued by The American College of Surgeons Committee on Trauma (ACS-COT), American College of Emergency Physicians (ACEP), and the National Association of EMS Physicians (NAEMSP). Removed old decision tree that started with MOI. https://www.tandfonline.com/doi/pdf/10.1080/10903127.2018.1481476?needAccess=true • **Substantial redesign** to eliminate old decision tree; bringing exam findings that suggest SCI to first page; pulling SMR indications directly from Joint Position Statement; and expanding section that references methods of providing SMR. • New statement that **SMR cannot be performed with c-collar only** or a patient in a sitting position. See new underlined language page 2 of protocol.
Multiple patient incidents	No changes other than formatting
Haz-mat incidents	No change
Chemical agents	Just added that agent may be found as particulate matter.
NEW **CHEMPACK Requests**	Provides direction on Chempack assets, how to request them, the forms used when mobilized, and how to demobilize the assets – review entire protocol so you are familiar with the details.

SOP section	CHANGES, RATIONALE, CITATIONS
Active ~~shooter~~ Assailant response	No change other than title to active assailant.
Widespread disease outbreak	No change.
Adult Abuse & mal-treatment: Domestic, sexual, elder	Note added under point 4: "document statements made by patients/bystanders".
Trauma in pregnancy	• Added to exam: Note any presenting parts • TXA option added **References:** Battaloglu; E., Porter, K. (2017). **Management of pregnancy and obstetric complications in prehospital trauma care.** Emerg Med J. 34(5), 318-325 This consensus statement provides clear guidance for the management of pregnant trauma patients in the prehospital setting. Pregnant patients sustaining trauma have certain clinical management priorities beyond that of the nonpregnant trauma patients and that if overlooked may be detrimental to maternal and fetal outcomes
Childbirth	TXA option added for post-partum hemorrhage
Newborn & post-partum care	No change.
Delivery complications	TXA option added for uterine inversion with hemorrhaging
Newborn resuscitation	No change
OB complications	Preeclampsia BPs updated.
Pediatric patients **Peds initial medical care**	Reference: **2019 PALS Algorithms**. https://www.acls-pals-bls.com/algorithms/pals/ • Emphasize throughout peds section that normal SpO_2 in children is ≥95% • Reference to new Cardiac Arrest SOP for adults and children • Clarification of QRS width changes in small children • Note to stop IVF boluses if evidence of fluid in lungs • Balance added to neuro assessment • Peds PAIN Mgt protocol added – Ketamine option • Peds transport references updated to Child Passenger Protection Act effective 1-1-19 that requires children 2 years and younger to ride in a rear-facing child restraint system unless child weighs 40 or more pounds or are 40 or more inches tall. This does not apply if transporting a child in in the Quantum **ACR-4** (Ambulance Child Restraint) system: • Adds Peds Trauma Center to Selection of Receiving Facility. • Emphasizes that **ALL peds refusals must be called in** even if parent/guardian on scene.
Children with special needs	No change other than references to intubation changed to advanced airway.
Peds Airway Adjuncts	• May make 1 attempt at advanced airway (i-gel) per SOP. Removing peds ETI from NWC EMS scope of practice. Will retain "choking kit". • I-gel sizing chart inserted • Sedation prior to i-gel added if responsive to pressure and/or gag reflex present • Same addition as adult advanced airway SOP for assessing need for Postinvasive sedation and analgesia and use of ketamine as preferred sedative. **References:** https://www.emsworld.com/article/220734/pediatric-alternative-airways-what-you-need-know-and-where-find-it
Pediatric foreign body airway obstruction	Removed reference to intubate and push obstruction into R mainstem. Change to use choking kit and remove with suction/forceps.
Peds Respiratory Arrest	No change

SOP section	CHANGES, RATIONALE, CITATIONS
SIDS	No change
Brief resolved unexplained events (BRUE)	No change
Peds Allergic Reaction Anaphylaxis	Same changes as to adult protocol; Renewed focus on early EPINEPHRINE IM. Epi dose simplified based on weight.
Peds Asthma	Same changes as to adult protocol. IM epi dosing clarified.
Croup / Epiglottitis Respiratory syncytial virus / bronchiolitis	No changes
Peds Bradycardia	Same changes as to adult Bradycardia with a pulse SOP – except epinephrine continues to be used as the preferred inopressor.
Peds Narrow QRS Complex Tachycardia	Clarification in synchronized cardioversion J settings based on regular or irregular QRS
Peds V-Tach w/ Pulse	Added acidosis (think sepsis) as a consideration.
Peds V-Fib & asystole	Deleted and incorporated into adult Cardiac Arrest SOP
Peds Altered Mental Status	Same changes as the adult protocol.
Peds Drug Overdose/ Poisoning	Same changes as the adult protocol – just with peds dosing.
Peds CO / Cyanide Poisoning	Deleted and incorporated into adult SOP
Peds Glucose/Diabetic Emergencies	Same changes as the adult protocol – just with simplified peds dosing for glucagon.
Peds Seizures	Added increased ICP (shunt placed?) and tumor to possible etiologies.
Peds SEPSIS and Septic shock	Same changes as adult SOP, just with peds qSOFA criteria, IVF boluses, and norepinephrine dosing
Peds Initial Trauma Care	• Updated to mirror adult ITC with peds target VS & IVF volumes; Pain mgt per peds IMC • Note added to document history and physical exam findings • Peds Trauma Score table updated so score can be added up
Peds Trauma Management of specific injuries	All systems injuries can be referenced to the adult SOPs with peds IVF and drug doses Kochanek PM, Tasker RC, Carney N, et al. (2019). Guidelines for the management of pediatric severe traumatic brain injury, third edition: update of the brain trauma foundation guidelines. *Pediatr Crit Care Med.*, 20(3S), S1-S82.
Child Abuse or Neglect	No changes other than formatting
CPR/Resuscitation guidelines for Adults, children, infants	• Note added that mechanical chest compression device can be used per System policy/procedure • Notes on apneic oxygenation inserted
Drug Appendix	• Selectively updated and aligned to language on each page of the body of the SOPs. o Ex: Max single dose of midazolam for peds reduced from 5 mg to 2 mg increments. o Dose timing for sedation: q. 2 minutes o Dose timing for seizures: q. 30-60 sec. o Only larger bolus dose of midazolam given at once is for pre-cardioversion where we need to put them down rapidly • Font size increased for easier reading • **7 Rights of Medication Administration** added. Must do independent cross check of controlled substances, IV inopressors, and high risk meds (all peds doses)
Pediatric drug calculations	Formatting change with colored columns. Naloxone doses added. Designed to be a pull out that can be laminated front to back as a reference. Includes pediatric cardioversion/defib calculations by weight as well.

SOP section	CHANGES, RATIONALE, CITATIONS
Ketamine dosing table	Totally reworked for peds and adults on same page; pain and sedation doses
Norepinephrine dosing chart	Based on various macrodrip rates – calculated for standard dose of 8 mcg/min as well as maintenance doses at 2 to 4 mcg/min
12 L criteria and QT intervals	No change
Approved abbreviations	Minimally updated to include a couple of new abbreviations.
Differentials for SOB & CPAP	CPAP indications and contraindication criteria updated
Biologic, nuclear, incendiary, chemical agents	No change
Bioterrorist agents	Deleted as they were too small to read. Will post as reference tables on the System website
Chemical Terrorism agents	Same as above
Hospital OLMC contact info	Selective updates as we were informed of changes Dr. Jordan's cell phone number included.
Hospital Designations for Specialty Transports	Updated; Level III NICUs listed and those hospitals without OB services: http://www.dph.illinois.gov/sites/default/files/publications/level-0-hospitals-032718.pdf
Pain scales	Updated to include several more languages

Notes:

Notes:

ASK the EMS MD

Please list any questions that you have about the new SOPs that have not been answered to your satisfaction in class, the handouts, or the protocols.

Answer:

If you would like us to respond to you personally, please list your contact information:

Name (PRINT): _____ AGENCY: _____

Contact e-mail: _____