MAINE EMS 2019 PROTOCOL LESSON PLAN

	RED SECTION	
SLIDE #	***LESSON***	***NOTES***
1	1. Red- Title slide	
2	2. Chest Pain - Suspected Cardiac Origin #1 a. EMT i. Item #1- *"Administer O_2 to keep sats greater than or equal to 94% and less than 99%"* 1. Clarified verbiage for O_2 use **2.** MDPB has written this sentence several times in this protocol to convey their concern for empirically administering oxygen to cardiac complaints. The evidence is clear that both hypoxia and hyperoxia worsen cardiac outcomes. MDPB revised this for clarity.	
3	3. Chest Pain - Suspected Cardiac Origin #2 & STEMI Criteria b. Paramedic i. Item #11- considering NTG and giving Fentanyl ii. MDPB Removed OLMC from the use of fentanyl in the context of chest pain – to better reflect the lack of OLMC for fentanyl elsewhere.	
4	iii. STEMI Criteria 1. Criteria for ST elevation in leads V_2, and V_3 have been updated in accordance with 2018 AHA guidelines a. 2 mm- Males 40 y/o and older b. 2.5 mm- Males younger than 40 y/o c. 1.5 mm- Women, independent of age	
5	4. Chest Pain - Uncertain Etiology a. Item #8- Chest pain in stable patient i. "Contact OLMC" removed from use of Fentanyl ii. MDPB removed OLMC from the use of fentanyl in the context of chest pain – to better reflect the lack of OLMC for fentanyl elsewhere	
6	5. Cardiac Arrest Overview a. **Blue Hospital symbol-** i. Used to designate a potentially complex patient for whom OLMC collaboration may be helpful. This is not intended to act as a request to access any part of the protocol, but instead act as a "consult" of On-Line Medical Control for patients who are potentially complex	
7	6. Cardiac Arrest #1 a. EMT- Compression to Ventilation Ratios i. Item #4 1. Compression to Ventilation ratio of 30:2 has been added to the protocol to align with AHA guidelines.	*There is currently no evidence that asynchronous compressions to ventilations is more or less effective than a 30:2 ratio. However, both the Seattle and MD Resuscitation Academies teach 30;2, as*

	a. One ventilation every ten compressions was the ratio previously recommended and is still approved by MDPB ii. Item #7- If ROSC obtained 1. Adult Post-Resuscitation protocol is specified if ROSC occurs 2. There is a lack of data and research for EMS regarding Peds post-resusc care. 3. Therefore, there is not yet a separate guideline for pediatric post-resus care.	*10:1 requires much more skills practice to obtain and maintain proficiency.*
8	b. Paramedic i. Item #14- Consider Causes of OHCA 1. Consider H's & T's 2. During prolonged working code contacting OLMC is advised for discussion with physician for complex patient, and to alert them of possible arrival of pt. 3. The Hospital "H" for consult- This is NOT introduced as a measure of restricting access to interventions, but to promote provider-physician relationship for benefit of patient outcome	*This is an extremely important point to make, as it is the desire of the physicians to enable the ALS providers to be comfortable discussing patient care with the physician and using the physician as a guidance resource vs access to interventions restricted by protocols*
9	7. Cardiac Arrest #2 a. Pediatric PEARL-- Common causes and Tx of arrest in peds i. Pediatric Arrest 1. Consider most common causes first– and early 2. Hypoxia/respiratory issue 3. Foreign Body Airway Obstruction	
10	8. Mechanical CPR Devices (mCPR) a. The MDPB has introduced the **OPTION** of mechanical CPR (mCPR) devices in the 2019 protocols. These devices are not **MANDATORY** but have been introduced **IF** the EMS service chooses to implement the device. It is important to recognize that these devices will NEVER replace manual CPR, but may act to support resuscitative efforts in three distinct circumstances: i. Few rescuers ii. Prolonged resuscitation iii. Arrest (or re-arrest) during transport 1. Unfortunately, it is difficult to determine the “proper” number of rescuers to run a code and it is equally difficult to determine when a code becomes “prolonged”. As these are difficult to place definitions on, the MDPB offers EMS agencies to determine those definitions for themselves and to self-	

	determine if these devices would be beneficial in their operations.	
11	b. In almost all instances, **MANUAL** CPR is the foundation for resuscitation events. Manual CPR is always available and is easiest as well as quickest to implement. Please remember, right now, all of you in this room have "normal" circulation or "normal" blood flow. Once a patient arrests, they are experiencing NO blood flow. No chest compressions simulate normal flow, but will be able to provide ENOUGH blood flow to essential organs. One of our main focuses is to absolutely limit the NO flow period by providing prompt, effective and high-performance chest compressions. The fastest way to offer this is through high performance manual CPR. It is because of this that the MDPB is focusing on manual CPR in the initial phases of resuscitation.	
12	c. No matter the methods of delivery, effective CPR MUST be delivered at the proper rate and depth, with proper time for chest recoil, and should NOT be interrupted. Benchtop research suggests that even seemingly short interruptions, on the matter of seconds, can be deleterious to patient survival. As a responding group of EMS Providers are orchestrating the complex mechanism of placement of a mechanical CPR device, it is imperative to be well rehearsed so that interruptions in chest compression are kept to an absolute minimum, and no more than 10 seconds. One of the known challenges with mCPR devices is when long interruption occur – leading to prolonged NO FLOW states and poor survival. This is such a well-known vulnerability with such devices that the MDPB suggests the following should be mandatory for an EMS Agency that chooses to implement a mCPR program: i. Service leadership and QI programs should find a mechanism to track pauses in CPR to ensure the following steps are being performed routinely and that pauses are always less than 10 seconds. ii. Service leadership and education programs should find means to regularly train on BOTH high-performance CPR as well as placement of a mCPR device to ensure that patients are NEVER encountering unnecessary delays or inadequate chest compressions.	
13	d. The following slides describe the protocol and the PROCESS for placement of these devices that focuses on the values of maximizing the effectiveness of CPR events along with minimizing interruptions in CPR. As manual CPR is the EASIEST and FASTEST means of preforming chest compressions, this should almost always be the first step. These should be continued for a minimum of 2 cycles of CPR and pulse checks. Placement of the mCPR device may	

		begin AFTER the second cycle of CPR and be orchestrated with future CPR pauses for pulse rhythm checks in a way that keeps all pauses in manual chest compressions to less than 10 seconds.	
14		e. In this fashion, application of the device may still take 2 or more cycles of CPR to apply, leading to initiation of the mCPR device around the 4th or 5th cycle of CPR. Well-orchestrated teams that are highly trained and practiced may be able to apply the device faster, however, most services will apply the device over 1, 2 or even 3 rounds of CPR.	
15		f. The following is a 50 second video of the Seattle Fire Department and MEDIC ONE staff implementing a mechanical CPR device in a simulated cardiac arrest circumstance. This video is from the Resuscitation Academy and the Heart Rescue Project, of which Maine is a member. These providers practice high performance CPR, incident command for cardiac arrest, ALS skills, and application of the mCPR device on a regular basis which are all part of why they have such a high survival rate. While this video demonstrates application in one step – services who are not as well practiced in high performance CPR, ICS for cardiac arrest, ALS skills and mCPR device placement may instead choose to apply the device over 2 or more cycles of CPR.	
16		g. There are contraindications for the use of these devices including age and body habitus. *Patients less than 18 years old should have manual* CPR performed rather than mechanical CPR. Also, patients above the age of 18 who are either too large to fit in the device or too small for the device to operate should not undergo mechanical CPR.	***Some manufacturer contraindications:*** • *Pt too small* • *Pt too large* • *Inability to position device SAFELY or CORRECTLY on pt's chest* • ***Pregnancy in and of itself IS NOT a contraindication unless it interferes with the ability to correctly place device on pt's chest***
17		h. Patients may be placed in the device pre-emptively, in a "stand-by" mode. This is most applicable for patients whom have just received return of spontaneous circulation (ROSC) and are being transported to the hospital. As a number of these patients will re-arrest in route to the hospital, a mechanical CPR device may be placed pre-emptively and started should the patient re-arrest.	
18		i. Should a service wish to implement a mechanical CPR device, please review the 2019 MDPB white paper focusing	

	on these devices, which is listed in the Publications and Forms section of the Maine EMS website. Within this document include a number of best practices and MDPB suggestions for the use of these devices. One such best practice is regular training on high-performance CPR and ICS for cardiac arrest as well as regular training dedicated to the use of mechanical CPR devices that focuses on minimizing interruptions and keeps all pauses in CPR to less than 10 seconds. While it is impossible for the MDPB to advise all services the proper training frequency, services with the best survival from cardiac arrest train 2-4 times a year on top of their very busy clinical experience in managing OHCA. Further questions can be sent to Chris Azevedo, Maine EMS Education Coordinator and Lead Staff for the Maine EMS Resuscitation Academy (Resusc ME).	
19	9. Pediatric Cardiac Medications & Dosages a. TABLE MOVED FROM PINK SECTION	
20	10. Termination of Resuscitation #2 a. PEARL NEW i. Protocol for notifying the New England Donor Services ii. Has been a consideration for some time. iii. Now in protocols to promote awareness of the service.	
21	11. Adult Post-Resuscitation Care a. EMT i. Item #1- Manage Airway 1. O_2 administration guidelines clarified in same manner as in Blue section b. AEMT/Paramedic i. SBP goal here INCREASED to reflect current practices in the POST arrest patient and to ensure adequate cerebral perfusion pressure. ii. Please note – there are different SBP goals across the protocols depending on the CAUSE of hypotension. iii. In the case of post-arrest care – the goals are to ensure adequate perfusion to the brain given the inherent brain injury that occurs with cardiac arrest and poor cerebral blood flow during the NO FLOW state.	*SYSTOLIC BP goal is now 100 mmHg*
22	12. Tachycardia #1 a. Paramedic i. Item #6 Synchronized Cardioversion 1. Three classes of tach a. Regular Narrow b. Irregular Narrow c. Regular Wide 2. Energy Sequences have changed	

23	**<u>Diagram- Tachycardia Decision Tree</u>** • Slide is a diagram of interventions based upon rhythm found • This is an instructor resource and is NOT in the protocol itself • Instructors can cover this as an optional education item for local content at their discretion • PDF is available as a handout	
24	ii. Paramedic Item #7 1. In cases of A-Fib/Flutter a. OLMC is required BEFORE providing metoprolol in AF. b. The MDPB asks to evaluate for wheezing and discuss the presence of wheezing with OLMC before providing a beta blocker.	
25	13. Bradycardia #1 a. New consult advisory to contact OLMC in cases where patient remains unstable despite interventions and provider is now considering an Epi drip. i. Again, this is about having a conversation with the physician regarding a complex or critical patient. Patient is unstable, being paced. 1. BP should be monitored for pacing effect ii. Epinephrine is the preferred agent for refractory hypotension in the bradycardic patient for inotropic effect. Providing epinephrine in this context does not require OLMC	
26	14. Ventricular Assist Devices #1 a. The Ventricular Assist Devices section was removed from the Brown Section. b. A new 2018 VAD Protocol was placed in the Red Section and is inclusive of the Brown Section information but more detailed.	
27	15. Ventricular Assist Devices #2 a. PEARLS for VADs i. This lists device and assessment characteristics that are common to various types of VADs. ii. This is no substitute for the literature for specific type of VAD that your patient has	
28	16. Questions???	
END OF RED SECTION		