

PALS 2020 Update

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Introduction and Disclosures

- ILCOR PLS TF member
 - AHA ECC Science Subcommittee and Pediatric Emphasis Group
 - PALS 2020 writing group member
 - PALS Medical Director and Instructor
 - MNCYN medical co-director
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- No Disclosures



Objectives

- Review PALS 2020 Guideline Updates for **In-Hospital setting**
 - Cardiac arrest
 - Sepsis
 - Intubation
- What's next for PALS courses
- Resuscitation during COVID
- Q&A

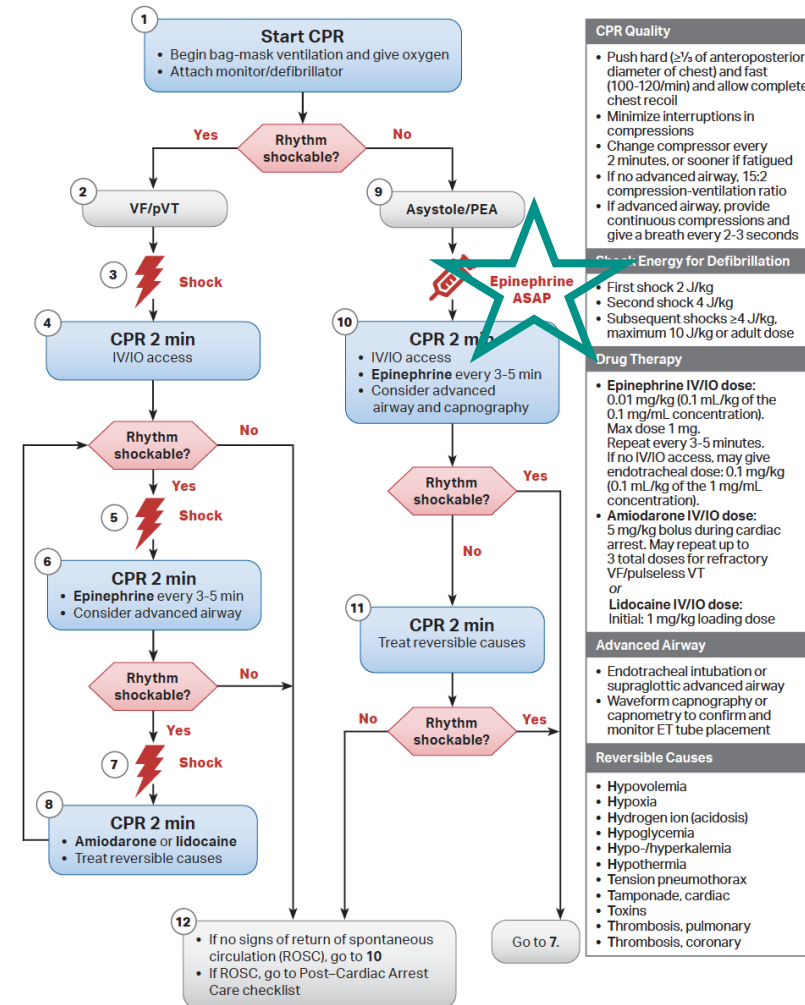
Early Epinephrine

- Epinephrine improves coronary perfusion pressure
- Better coronary perfusion pressure → higher chance of ROSC
- Every minute counts for both IHCA and OHCA

Pediatric Cardiac Arrest Algorithm



Pediatric Advanced Life Support



Ventilation Rate During CA

- Goal: optimize oxygen delivery
- Children use relatively more O₂
- At least ½ arrests in infants
- At least ½ arrests due to hypoxia
- Hypoxia and acidosis impede ROSC
- Hyperventilation threshold different in children



High Quality CPR

- Push 100-120bpm
- Depress chest at least 1/3 AP diameter
- Allow for complete recoil
- Minimize # and duration of interruptions
- Avoid excessive ventilation *



Post-arrest Care

- SpO₂ 94-99%
- EtCO₂, pCO₂ = 35-45mmHg*
- Targeted Temperature Management
 - Constant temperature monitoring
 - Aim for 36-37.5, avoid fever
- Avoid hypotension; set MBP targets
- Monitor for seizures, ideally with continuous EEG; treat clinical seizures



Sepsis updates

- Fluid resuscitation:
 - 10-20 ml/kg over 5-20 minutes
 - Frequent reassessment for HR, rales, respiratory distress, hepatomegaly?
 - Repeat as needed
- Inotrope/vasoactive
 - If signs of shock persist after 40-60ml/kg
 - Epinephrine or norepinephrine
 - May need ongoing fluid resuscitation
- Lactate is a more useful marker than ScvO₂
- Monitor clinical signs of shock: mental status, HR, temperature, SBP and DBP, CRT

First Hour

Intubation

- Choose a Cuffed endotracheal tube
- Avoid cricoid pressure
- COVID considerations...

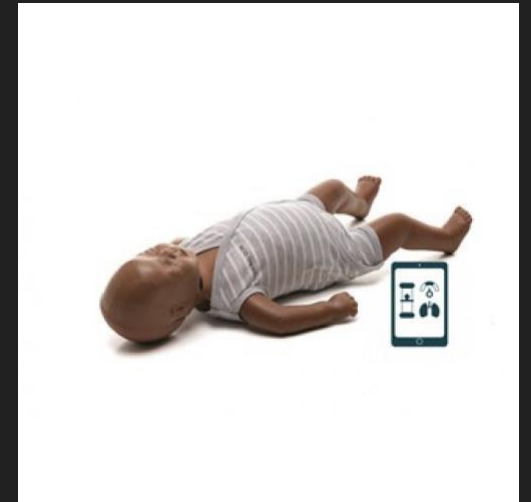


High Performance Team

- Focus on:
 - Timing: immediate CPR, defibrillation
 - Quality: best possible performance of each team member
 - Coordination: team works seamlessly
 - Administration: leadership, planning, quality improvement
- CPR Coach = new team role
 - Provides feedback about the compressor's rate, depth, recoil
 - Ensures proper ventilation rate and volume
 - Seamless transitions between pauses

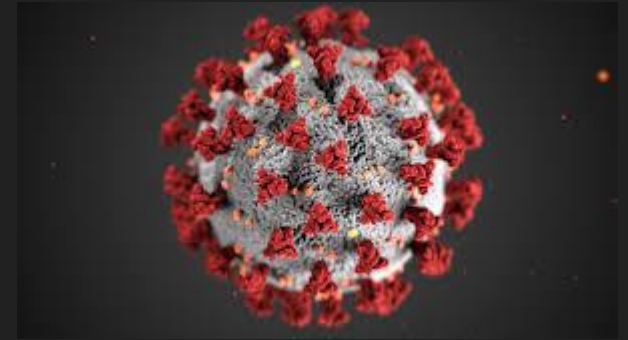
PALS Course Updates

- “Digital First”/Blended Learning
 - Videos, knowledge checks, and exams online prior to in-person course
- Feedback devices



Hospital Resuscitation During COVID-19

- Same team composition, minimize # if possible
- Have enhanced PPE ready to go
- Move to negative pressure room if feasible
- Do AGMP pause prior to BMV, defibrillation, intubation
- Intubate early
 - Most experienced intubator
 - First pass success key- hold compressions during intubation, consider paralytic, video laryngoscopy
 - Inflate cuff prior to bagging



	CODE TEAM	SUPPORT TEAM
Personnel	- Team Leader (MD)* - Airway and Breathing (2: RRT + MD)* - Compressor (1-2: RN or MD)* - Drugs (RN)* - Runner/Recorder (RN)* * AGMP PPE	- Runner x 2 - Parent support - Administrator - PPE Safety/Operational Lead - Security *Please note at least 1 "back-up" RN and RRT in AGMP PPE
Planning	- Bring airborne PPE - Bring communication device - Call PED MD prn (RRT) - Bring: - Glidescope - Hepafilter, HiOx device, Kelly clamp - Prepare room in PCCU	- Bring arrest cart to outside room - Epi pre-loaded syringe, backboard, Broselow tape, syringes into room - Chest compressions only until AGMP PPE donned - Ensure patient on monitor with new vital signs, IV access functioning, provide medications as appropriate, provide O2 via NRB with filter or NC with mask over
AGMP PAUSE: "Is everyone in AGMP PPE? Are doors closed?"		
PALS	- Avoid BMV if possible, consider flow-inflating bag with PEEP 5cmH2O with good seal if necessary - Hold CPR during intubation, give paralytic - Early intubation - First pass success is key - Inflate cuff prior to bagging	1 RN support family member (>2m from patient, consider same COVID status as patient)
Post-Resuscitation	"Clean" team transfers patient to PCCU - Security clears way, - Discard contaminated equipment correctly in room	- Safety Leader supervises doffing, staggered - Notify environmental services

* Examples of Aerosol generating medical procedures (AGMP):

- Intubation
- Extubation
- Non-invasive positive pressure ventilation
- High flow NC
- BMV
- Deep suctioning
- Nebulizer treatments

AGMP PPE DONNING	DOFFING
- Hand hygiene - Level 4 Gown for AGMP - N95 Respirator Mask - Head/Eye Protection (Goggles → Face shield → Bouffant) - Gloves (long cuff) AGMP PPE in bottom drawer and back of arrest cart AGMP PPE if within 2m of patient	- Remove gloves - Hand hygiene - Remove gown - Hand hygiene - Remove Head Protection - Hand hygiene - Remove Eye Protection - Hand hygiene - Remove N95 Respirator Mask - Hand Hygiene

Enhanced PPE for AGMP

Level III Gown or Higher		Full Face Shield	
Extended Cuff Gloves		Goggles or Protective Eyewear	
N95 Respirator (Fit-tested)		Bouffant Cap	

Our Lessons Learned

1. Enhanced PPE: everyone in the room, pre-made packages readily available
2. Communication is very challenging
3. Determining most skilled intubator in various scenarios
4. Moral distress

Thank you!

