Detroit SonoWAR 2024

#9 Resuscitation Station

You are watching the Detroit Grand Prix when the excitement becomes too much for a nearby fan and he clutches his heart and collapses. EMS is called and bystanders bring you a nearby AED. It advises no shock. You begin CPR. But how do you know if it is high quality CPR?

References to ruminate on en route to this station

1. Cohen, A. *Femoral artery Doppler ultrasound is more accurate than manual palpation for pulse detection in cardiac arrest*. Resuscitation, 2022.

2. Rolston, D. Time is running out for manual pulse *checks as ultrasound races past*. Resuscitation, 2022. https://www.resuscitationjournal.com/article/S0300-9572(22)00622-0/fulltext
3. Rabjohns, J et al. *Pesudo-pulseless electrical activity in the emergency department, an evidence based approach*. The American Journal of Emergency Medicine, 2020. https://www.sciencedirect.com/science/article/abs/pii/S0735675719306527?via%3Dihub
4. Koch, M et al. *Carotid Artery Ultrasound in the (peri-) Arrest Setting – A Prospective Pilot Study*. Journal of Clinical Medicine, 2022.
5. Adedipe, A et al. *Carotid Doppler blood flow measurement during cardiopulmonary resuscitation is feasible: a first in man study*. Resuscitation 2015.
6. Catena, E et al. *Association between left ventricular outflow tract opening and successful resuscitation after cardiac arrest*. Resuscitation, 2019.

1 Point Discover this station and complete it within 10 minutes

1 Point How accurate is a manual pulse check for determining pulselessness?

1 Point What is the difference between PEA and “pseudo”-PEA?

1 Point How can you tell the difference without ultrasound?

1 Point List at least 3 ways you can use POCUS to assist in differentiating whether there is true pulselessness at a pulse check (i.e. how do you get better information than just your finger)

Carotid doppler blood flow measurement is currently being researched as a means of guiding adequate CPR[4,5]. In particular, the carotid End Diastolic Velocity (EDV) is proposed to be an important indicator, since adequate diastolic flow is required to ensure steady cerebral perfusion.[4]

1 Point What is a normal physiological EDV? (High quality CPR should try and match this!)

1 Point Identify the common carotid artery and the bifurcation into the internal and external carotid artery

1 Point Measure the carotid End Diastolic Velocity on your teammate.

1 Point It is a known phenomenon that POCUS can prolong pulse checks if left to run wild. List at least 3 ways you can improve time off chest while still using ultrasound.

1 Point Peak systolic velocity of the femoral artery has been shown to correlate with blood pressure in cardiac arrest. Specifically, accuracy of a PSV ≥ 20 cm/s was higher than manual palpation to detect SBP ≥ 60 mmHg. For one point successfully measure the femoral artery PSV on a teammate (for SonoW.A.R. measure at the mid-thigh level for modesty and also because it’s more of a challenge!)