

All personnel:

Significant changes are happening in the way we perform CPR and treat cardiac arrests. This is brief overview of what to expect. Please realize that these changes reflect an attempt to use the information from numerous scientific studies to improve the outcome from cardiac arrests. It will require that everyone let go of a few past notions and practices. Paramedics have been given a brief introduction to this change during recent EMS shift meetings and I want to make sure that all other personnel have an understanding of these changes.

Two major goals of the Medical Director are: 1) significantly improve the outcome from cardiac arrest in Anchorage and, 2) use all available means and technologies to allow AFD to achieve the best possible outcomes.

Importance of CPR

Early, high-quality CPR in unwitnessed cardiac arrests is the most important early activity that influences survival from a cardiac arrest. Compressions must be deep enough and fast enough to provide perfusion but also must be minimally interrupted for the positive benefit to be realized. CPR now is to occur BEFORE any other activity except to confirm the presence of cardiac arrest and the absence of airway obstruction. Yes, before AED application, before rhythm check and before establishment of endotracheal airway. CPR will be done for 5 cycles (about 2 minutes) before the first pause for anything. While CPR is being performed it is expected that personnel will apply monitor pads, BVM mask, attempt IV and a paramedic will set up for or try intubation without interrupting compressions. After this period, there will be a brief pulse check and a monitor rhythm check. If the rhythm is VF/VT without pulse, one defibrillation will be done at maximum output and compressions will be resumed WITHOUT pulse check and without rhythm check for another 5 cycles of CPR. Drugs may be given during this period. AED protocols will also reflect these changes.

Since we've all been taught that defibrillation is the most important early intervention why are we now withholding this vital treatment? As it turns out, it seems that if we defibrillate a heart that is not prepared for defibrillation it may actually DECREASE the chance of survival. So in an unwitnessed arrest we do compressions to put blood through the coronary arteries, to the brain and try to wash out the toxins from the "stagnation." We then try to reset the heart with a shock.

This information comes from various sources but one interesting finding was that in a system that had an enviable cardiac arrest save rate, there was a trend toward worse outcomes when the first responders began using AEDs. It appeared that instead of providing a couple of minutes of CPR prior to ALS arrival, the early use of AED with its accompanying head scratching, rhythm analysis and stacked shocks ultimately lead to a poorer outcome.

Oxygen and Ventilation

In the absence of circulation, providing fresh oxygen and ventilations are not of immediate importance. Ventilations provided with too big of a breath and/or too frequently leads to poorer cardiac output from CPR. We therefore work on this as a secondary measure. Combitube is an acceptable alternative to endotracheal intubation and may be easier to do without interrupting CPR.

Technologies

Anchorage Fire Department has invested in technologies that may further help us achieve these goals:

Autopulse: when available, should be applied early.

ResQpod: to be used as per protocol in cardiac arrest

EZ-IO (bone drill): alternative vascular access when IV cannulation is unavailable

Transport

Pulseless electrical activity (PEA): patients in PEA should be transported with Autopulse if possible and interventions directed at PEA applied en route. Other patients should be transported as soon as resuscitation achieves restoration of pulse or PEA. Terminations of cardiac arrest in the field will be declared as in the past.

Please review the attached matrix. We will be directing training towards achieving this transition, but will also be moving toward this method in the field even before all training is complete due to its importance to our patients.

There is a saying “Evolve or die”...with regard to the issue of CPR and cardiac arrest, we must evolve or they will die.

Michael Levy, MD