TITLE: COMPARISON OF DOPAMINE, DOBUTAMINE AND EPINEPHRINE IN CPR

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Methods
Mongrel dogs weighing 12-20 kg were anesthetized with 35 mg/kg sodium pentobarbital, intubated and ventilated with a Bird Mark VII ventilator driven by oxygen. The femoral artery was cannulated to record arterial blood pressure with a Statham P23db pressure gauge; the adjacent femoral vein was cannulated to permit drug and fluid administration. Lead II of the electrocardiogram was continuously monitored. Data were charted on a Hewlett-Packard 7700 recorder. Two groups of 40 dogs each underwent AA or FA. AA was induced by clamping the endotracheal tube at end expiration. Arrest was defined as that point at which aortic pulse pressure had decreased to zero. FA was induced by applying an AC current through the heart with an epicardial electrode.

Ten dogs in each arrest group were randomly assigned to receive EPI 1 mg, DOP 40 mg, DOB 50 mg, or no drug. Following five minutes of AA or FA, artificial ventilation and closed chest cardiac massage (AV/CCCM) were instituted and 30 seconds later one of the drugs was administered by iv bolus. In the AA group, AV/CCCM were continued for five minutes or until resumption of spontaneous circulation. In the FA group, AV/CCCM were continued and external defibrillation was attempted 90 seconds following drug injection. The initial countershock was 7 watt sec/kg body weight. If unsuccessful, AV/CCCM were continued and a further shock of 10 watt sec/kg was delivered every 90 seconds until defibrillation occurred or 12 minutes of resuscitation elapsed. Successful defibrillation was defined as conversion to any electrical pattern other than ventricular fibrillation.

Results
DOP or EPI treatment resulted in 90-100% successful resuscitation from either AA or FA (see Table) while DOB or no drug resulted in 0-30% success, a statistically significant difference (p < 0.01). There were no significant differences among drug groups in success of defibrillation, time for resuscitation, or diastolic blood pressure at resuscitation.

Discussion
The importance of alpha receptor stimulation for resuscitation from either asphyxial or fibrillatory arrest is again demonstrated. Dopamine, in a single 40 mg iv bolus, exerts sufficient alpha receptor activity to render an incidence of resuscitation much like that obtained with epinephrine. Dobutamine appears to be valueless for the initial therapy of cardiopulmonary arrest.

References