**Vasopressor Bolus Effects on Dynamic Arterial Elastance (EaDyn) and Contractility (dP/dt)**

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**Introduction**
- The Hypotension Prediction Index is a machine learning derived algorithm that predicts intraoperative hypotension.
- The algorithm provides two additional hemodynamic parameters, EaDyn and dP/dt, that characterize the physiological changes and may provide guidance regarding the most efficacious treatments.
- dP/dt correlates with ventricular contractility from peripheral artery waveforms
- EaDyn (dynamic arterial elastance) is the ratio of pulse pressure variation and stroke volume variation (PPV/SVV), correlating with peripheral vascular resistance

**Objective**
To characterize the responses of EaDyn and dP/dt to boluses of phenylephrine and ephedrine.

**Methods**
- Single center study at UC Davis Medical Center including cardiac and general surgery patients.
- Baseline analysis performed at time of drug administration, compared with 2-5 minutes after onset of change. Normality assessed with D’Agostino Pearson test.
- HPI parameters downloaded from Edwards LifeScience monitors.
- Arterial waveforms tracked via Edwards LifeScience IQ sensor. Pressor administration timed by changes in blood pressure.

**Results**
- 101 surgical patients recruited; on controlled mechanical ventilation and with arterial line placement
- 205 doses of phenylephrine; mean: 2.73 doses/patient, median: 2 doses/patient
- 101 doses of ephedrine; mean: 1.98 doses/patient, median: 2 doses/patient

**Discussion**
- To date, this is the largest sample of surgical patients analyzed for vasopressor mediated responses in EaDyn and dP/dt.
- For comparable increases in MAP, phenylephrine and ephedrine result in increased cardiac output (CO), decreased SVV, increased dP/dt and no change in EaDyn.
- Ephedrine demonstrates statistically significant greater increases in CO and dP/dt than phenylephrine.
- Minimum and maximum values need further examination to ensure confidence in accuracy and to rule out any outlier data.

**References**

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