Many EMS systems have implemented biphasic defibrillators despite a paucity of human outcome data to support the change. Our objective was to compare the outcomes of cardiac arrest victims treated with prehospital monophasic or biphasic defibrillation in an urban EMS system.

**OBJECTIVE**
- Many EMS systems have implemented biphasic defibrillators despite a paucity of human outcome data to support the change.
- Our objective was to compare the outcomes of cardiac arrest victims treated with prehospital monophasic or biphasic defibrillation in an urban EMS system.

**METHODS**

**DESIGN:** Retrospective case review was conducted on electronic prehospital and hospital records for victims of prehospital cardiac arrest in whom a defibrillator was utilized.

**STUDY PERIOD:** August 2000 to July 2004. This time span includes two years before and two years after implementation of biphasic defibrillators.

**SETTING:** Fresno County EMS Agency, Fresno, CA.

**MAIN OUTCOME MEASURES:** Return of spontaneous circulation (ROSC), survival to hospital discharge, and the percentage of patients discharged to home rather than to an extended care facility.

**STATISTICS:** Between-group comparisons were accomplished using t-tests and Fisher’s exact test as appropriate.

**RESULTS**
- 394 cases of cardiac arrest in Fresno County during the study period that met inclusion criteria and had records available for review.
- 219 patients were treated with monophasic defibrillation, and 175 patients were treated with biphasic defibrillation.
- There were no statistically significant differences in age, gender or initial rhythm between the biphasic and monophasic groups (see table).
- ROSC was achieved in 68 (31%) of 219 patients in the monophasic group, and in 58 (33%) of 175 in the biphasic group (p = 0.66) (see figure).
- Survival to hospital discharge was identical in both groups (9.1%, p = 1.0). Discharge to home with good neurologic function was accomplished in 14 (6.3%) of the monophasic patients and in 13 (7.4%) of the biphasic group (p = 0.69).

**LIMITATIONS**
- Retrospective case review, with selection bias:
  - Only included cases in which defibrillator used
  - Bias toward inclusion of VT/VF patients, higher survival
- Included only patients with electronic record
- Bias toward urban patients
- Potential advantages of the biphasic waveform not studied:
  - Lower energy may produce less myocardial damage in survivors
- No systematic assessment of neurologic outcomes in survivors

**CONCLUSIONS**
- We found no differences in ROSC or survival to hospital discharge between monophasic and biphasic defibrillation in the treatment of prehospital cardiac arrest.