

## BACKGROUND

Continuous high quality chest compressions are associated with improved survival in cardiac arrest. To maximize the number of patients that return home neurologically intact we felt that additional cornerstone treatments should be included in a systematic approach to cardiac arrest management. These included a demonstrated proficiency in the basics of CPR by providers from multiple jurisdictions who may be called upon to care for the same patient. Interventions with unproven value, such as intubation, pressors and antiarrhythmics were afforded low priority.

## OBJECTIVE

To determine if a comprehensive system of education, training, treatment protocols and quality improvement would affect survival of patients in sudden cardiac arrest.



## METHODS

This is a before and after study in two counties with populations 440,000 (A) and 840,000 (B).

The counties have tracked performance using the Cardiac Arrest Registry to Enhance Survival (CARES) program for 5 and 8 years respectively.

The Cardiac Arrest Management (CAM) system was introduced and survival rates for the year following were compared to the year prior.

- Main components of CAM included:
  - jurisdiction-wide all-provider standardized treatment protocols and rescuer roles;
  - prioritization of basic life support measures;
  - immediate continuous high-quality chest compressions with interposed bag-mask ventilations;
  - targeted, goal-directed education with individual and multi-agency joint team training;
  - mandatory minimum proficiency thresholds; and a quality improvement program evaluating both process and outcome measures and providing prompt rescuer feedback, and;
  - process and outcome-based quality improvement program.

## RESULTS

In the year following the intervention, County A showed a statistically significant increase in all-rhythm cardiac etiology survival from 8.0% to 18.0%, ( $p = 0.002$ ), compared to the CARES national means of 10.0% and 10.6%. (FIG 1)

County B showed a non statistically significant increase in survival from 14.2% to 15.6%, ( $p = 0.597$ ), vs. CARES means of 10.6% and 10.3%. (FIG 2)

Survival from bystander-witnessed arrests with shockable first rhythm were similar, increasing from 26.9% to 47.9% ( $p > 0.05$ ) vs. CARES 31.7% and 33.0% in County A; and 38.2% to 50.9% ( $p > 0.05$ ) vs. CARES 33.0% and 32.8% in County B.

### Quality Improvement Process including CodeStat Analytics for feedback to crews

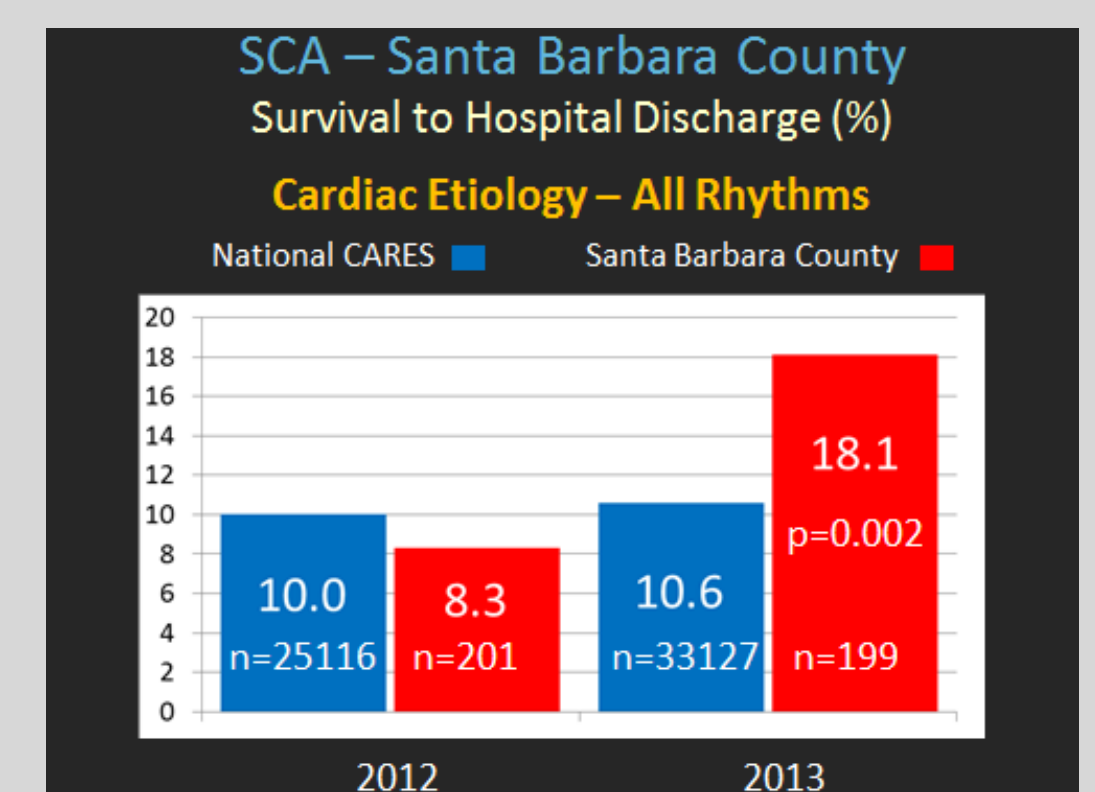


Fig 1, County A

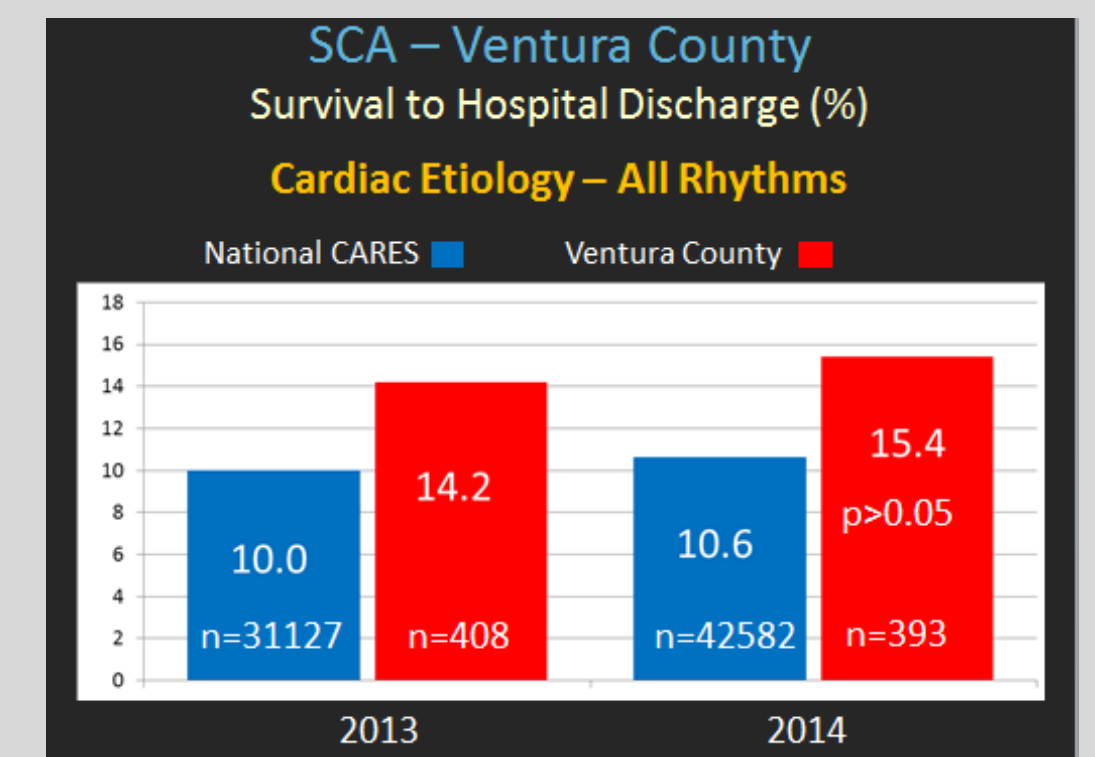


Fig 2, County B

## CONCLUSIONS

- Introduction of Cardiac Arrest Management (CAM) resulted in a significant improvement in one county and a trend toward significance in improvement in another
- Simultaneous introduction of entire bundle of care resulted in more convincing single-step improvement
- Improvements were more substantial in the system with lower baseline survival.