

State: New Jersey
Title: Comparative Effectiveness of Prehospital and Hospital Emergency Care
Principal Investigator: Joel C. Cantor
Organization: Rutgers The State University of New Jersey, New Brunswick
Project Dates: September 30, 2010, to September 29, 2013
Grant Number: R01 HS20097-01

Patients with critical conditions such as cardiac arrest or major trauma often depend on prehospital emergency medical services (EMS) for life-saving care. Nevertheless, the evidence base for that care, particularly as it relates to transitions between prehospital and hospital settings, is extremely limited. These transitions are poorly understood because data linking prehospital and hospital services are lacking. Without linked data, many important questions about the effectiveness of emergency care systems and protocols cannot be answered. This project will create a data infrastructure for comparative effectiveness research (CER) that bridges prehospital and hospital care using newly available electronic patient care records for prehospital EMS transports in New Jersey.

The aims of this study are as follows:

- Newly available electronic patient care records for pre-hospital EMS transports will be linked to all-payer hospital discharge abstract data and death certificates to support a wide range of comparative effectiveness studies on patient- and system-level interventions where prehospital and hospital services are tightly connected. The linkage draws on an innovative partnership between academic researchers and the New Jersey Department of Health and Senior Services (DHSS), which has access to confidential patient identifiers.
- The data infrastructure will be applied to a comparative effectiveness study of clinical outcomes after provision of therapeutic hypothermia (TH) for initial survivors of out-of-hospital cardiac arrest. Out-of-hospital cardiac arrest (OHCA) is a major public health challenge, afflicting over 295,000 U.S. residents annually. Two small randomized clinical trials demonstrated that therapeutic hypothermia can improve neurologically intact survival among patients with restored spontaneous circulation following OHCA. Nevertheless, despite the promulgation of national guidelines for use of hypothermia treatment, there have been no large-scale studies comparing this treatment to usual normothermic post-arrest care. The study will compare rates of neurologically intact survival at discharge and at 30 days between OHCA patients receiving and not receiving TH. Multivariate models will be used to adjust for confounders such as patient risk factors, EMS response times, and prehospital procedures performed. Differences in in-hospital complications (e.g., seizures, arrhythmias, shock) and resource use (overall length of stay and days in the ICU) will also be compared. Finally, access to this technology will be assessed among AHRQ priority populations.