Background. The Partners for Child Passenger Safety (PCPS) project is a five-year investigation into child occupant protection in automobile crashes. Funded by the State Farm Insurance Companies (SFIC), the research is conducted at The Children’s Hospital of Philadelphia (CHOP) and the University of Pennsylvania Medical Center (UPMC). The goal of the PCPS project is to identify ways to reduce the morbidity and mortality of children involved in automobile crashes. We address this goal through a multidisciplinary approach that incorporates clinicians, bioengineers, epidemiologists, and informaticians to identify a spectrum of modifiable risk factors for pediatric injury in crash events.

System. The PCPS system is built around the four main institutional and operational components of the project: SFIC; CHOP/UPMC; Response Analysis Corporation (RAC), a survey research firm; and Dynamic Science, Inc. (DSI), a crash investigation firm. The PCPS project uses insurance claims data from 15 states and the District of Columbia on automobile crashes involving at least one child less than 16 years of age. Approximately 25,000 such claims are received from SFIC each year. Encrypted claims data are transferred via Internet from SFIC to CHOP/UPMC. Upon arrival at UPMC, these data are decrypted, and a series of rigorous quality assurance procedures are performed. Level I errors are defined as those which prevent a claim record from entering the database. An example would be a missing value for the consent field. Level II errors require electronic or voice communication with staff at SFIC, but do not prevent a record from being added to the surveillance database. Discrepancies between two or more fields would be classified as a Level II error. Reports describing the sources and types of data errors are produced and reviewed on a weekly basis by PCPS project investigators and staff.

Of the 25,000 claims received from SFIC each year, 20% are sampled for telephone interview to obtain detailed injury and crash circumstance information from the driver of the car involved in the crash and from the parents or guardians of the involved child(ren). Those that have been selected are encrypted and sent via Internet to RAC, where they are decrypted and incorporated into a survey database for use with a computer-assisted telephone interview system. Completed telephone interviews are returned daily to CHOP/UPMC and incorporated into the main survey database after a series of quality assurance procedures have been performed.

Approximately 2500 (1%) crashes are selected for an in-depth crash investigation to elucidate detailed characteristics of the automobile, the crash, and any child restraint devices. Cases are selected for crash investigation based on the characteristics of the crash. We are particularly interested in severe crashes in which no injuries were incurred by children, as well as minor crashes in which children were severely injured. PCPS staff notifies the central DSI office of an investigation by fax transmission of initial crash data. After the investigation has been performed, a report is sent by mail on CD-ROM to CHOP/UPMC for incorporation in the crash investigation database. These reports include numeric and free-text narrative data, as well as numerous photographic images. We plan to develop an archiving and indexing system for these data to facilitate their use in analyses.

The data from these sources: surveillance, interview, and crash investigation, are used to relate child occupant injuries to automobile, restraint, crash dynamics, and child passenger characteristics in such a way as to provide rapid dissemination of this information for use in developing interventions and improving child restraint and vehicle crash protection technology and practice.

Evaluation. Since the initiation of the surveillance system in January 1998, a total of 5,015 claims have been transferred to UPMC from SFIC, representing a total of 7,342 children involved in automobile crashes. A total of 1,080 claims (21.5%) were discarded as Level I errors; 3,921 (78.1%) contained Level II errors, and their resolution is in process. We have successfully completed 276 telephone interviews, and are now piloting communications and investigations with DSI. On the basis of the initial surveillance period, we are re-parameterizing the sampling algorithms to reflect empirically observed injury rates.

Conclusion. The PCPS system demonstrates the feasibility of integrating existing information resources such as the Internet with other communication technologies, such as voice telephony and fax, to support a large-scale, nationwide injury surveillance system.