2016 CSTE Abstract
Camry Hess
Indiana State Department of Health

Roadmap for Choosing Probabilistic Matching Software

Background
The Indiana State Department of Health (ISDH) needed a software program to link incidents between the Emergency Medical Services (EMS) and trauma databases, transfers from hospital to hospital, and incidents between the trauma and rehabilitation databases. There was no unique identifier that followed patients throughout the system so a roadmap for choosing probabilistic matching software was pursued.

A roadmap for determining which software to purchase and which steps needed to be considered was created, using Flannagan, Rupp and Mann's *Summary of a Roadmap for Linking Crash, EMS, and Medical Outcome Data at the State Level* as a template.

Methods
Ten steps were completed in this process. The first was to find and collaborate with all agencies that cover the databases. Second, the schemas and inclusion criteria for each database were compiled. Next, a list of which databases would be linked was made and then common variables between those databases were recorded. Fifth, which type of linkage (deterministic, probabilistic, hand linkage) and how to store the data were determined. The data elements used for linking were put in the same format and a sample was used for a run thru. A year's worth of data was used to determine stable weights and then statewide linkage was pursued.

Results
All of the databases (EMS, trauma and rehabilitation) are housed at the ISDH. Formats and schemas were determined and harmonized by referencing the data dictionaries. These dictionaries were also referenced when searching for elements which, used together, would provide a highly confident match. Since there is no unique variable that follows a patient throughout the three databases and for ease of linkage and review of the results, probabilistic software was chosen. Fourteen programs with nine essential criteria were reviewed. A plan was made for data storage. A sample file and then a year's worth of data were run to determine stable weights.

Two programs provided a demonstration of their product. LinkSolv 2009 was chosen for purchase based on the cost and support available in training to use the software and for continued support.

Conclusions
Description of the main outcome of the study:
The ISDH created and followed a roadmap for linking EMS to trauma incidents, hospital to hospital transfers and hospital to rehabilitation incidents. Two programs demonstrated their products and LinkSolv 2009 was chosen.