Collaborative Research Study Exploring STR and YSTR DNA Analysis Findings in Sexual Assault Cases

Julie Valentine MS, RN, CNE, SANE-A; Suzanne Miles BS, Senior Forensic Scientist

BYU College of Nursing

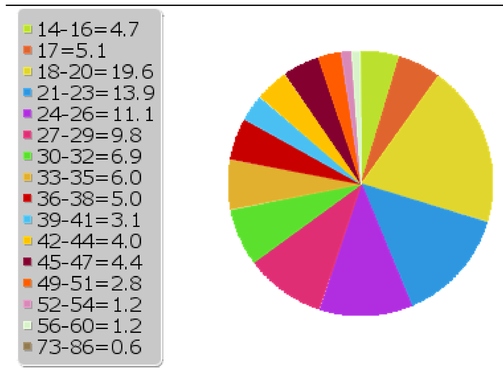
Objectives:

- Determine percentage of collected sexual assault kits (SAKs) submitted to crime lab for analysis (n=314 cases) in 2010 in Salt Lake County, Utah.
- Determine percentage of submitted SAKs analyzed for STR and/or Y-STR DNA.
- Determine percentage of analyzed SAKs with development of probative DNA profile.
- Share findings with vested community partners to encourage submission of SAKs by law enforcement (LE) to crime lab for analysis.

Methods & Design:

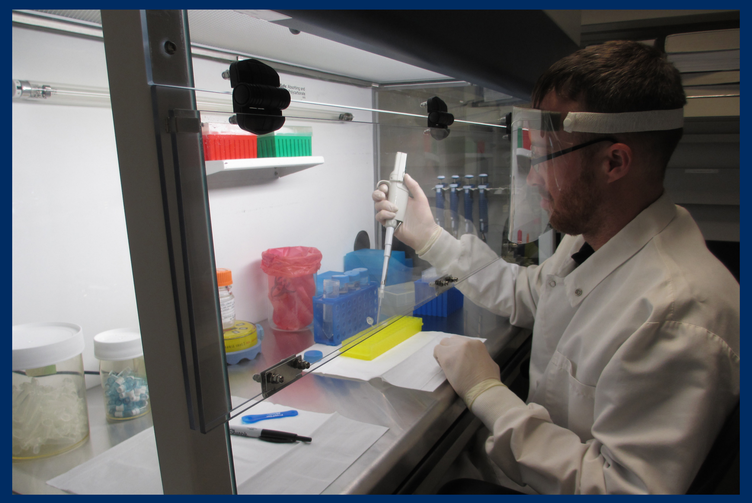
- Retrospective chart review linking data from state sexual assault examination form with data from state crime laboratory analysis records on 314 sexual assault cases in a Mountain West urban community.
- Create a robust dataset in SPSS of 215 variables for each case to prepare for expansion of the study to include additional cases throughout state.
- Descriptive statistics examining demographic information and DNA analysis findings.

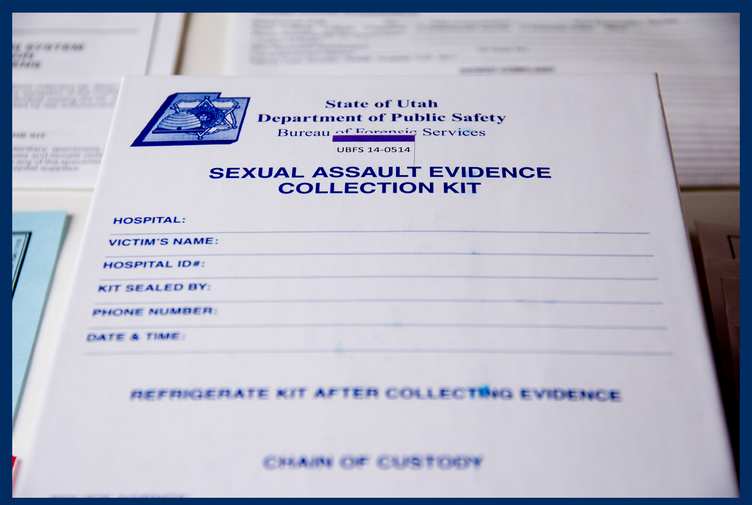
Age of Patients



Results of Study:

- 29.2% (94 kits) of collected SAKs were submitted by LE to state crime laboratory for analysis.
- Out of SAKs brought to crime lab for analysis, 43.6% (41 kits) underwent either STR or Y-STR DNA analysis or both:
  - 31 kits were tested for STR DNA and 24 kits were tested for Y-STR DNA.
  - STR DNA analysis yielded positive autosomal DNA profile in 87% (27 kits) of kits tested with this method.
  - Y-STR DNA analysis yielded a positive Y-STR profile in 79% (19 kits) of kits tested with this method.
- Reasons found for SAKs not being processed for DNA:
  - No standards submitted by LE (required in approximately 25% of cases).
  - LE stated no further testing was needed.
  - No bodily fluids were identified.





Community response to results:

- LE is encouraged to submit ALL sexual assault kits to crime laboratory for analysis.
- State crime laboratory is now tracking all SAKs to determine how many collected SAKs are returned for analysis.
- State crime laboratory policy has changed to complete DNA analysis on all submitted SAKs regardless of serology findings.
- State crime laboratory has partnered with local forensic nursing team to have nurses determine most probative swabs for DNA analysis and package these swabs in separate envelope. Forensic scientists will do DNA analysis first on these selected swabs. Serology will be completed if requested following DNA analysis.

Implications:

- Collaborative research between forensic health care providers and forensic scientists is imperative to establish best practice guidelines for collection and analysis.
- Additional cases need to be included in the study to allow logistic regression analysis exploring the relationship between patient variables (such as showering) and assault variables (such as use of a condom during assault) on DNA analysis findings.