



B34 A Casework Review for Determining Time Since Intercourse in Boston, Massachusetts

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Learning Overview: After attending this presentation, attendees will be able to comprehend and utilize a reliable framework for estimating time since intercourse in living victims.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing information on the estimation of time since intercourse.

Time since intercourse (TSI) is the approximate time elapsed between an alleged sexual assault and the collection of a Sexual Assault Evidence Collection Kit (SAECK) from a victim. The estimation of TSI, or Post Coital Interval (PCI), can be crucial information for particular cases in which the time between offense and the collection of a SAECK is in question. Often, forensic scientists must evaluate the significance of biological evidence in SAECKs, but the variability in current literature complicates interpreting these results. Developing a method to estimate TSI based on a more extensive review of forensic casework would provide investigators with a fundamental tool for estimating a general timeline in which the offense occurred. This information may play an important role in supporting or refuting a narrative or weighing the significance of the evidence at hand.

This study aims to develop a reliable framework for estimating TSI in living victims based on casework received by Boston Police Department Crime Laboratory, Boston, MA. Additionally, this study seeks to determine if any statistical significance exists between the victim's reported post-coital activities and the collection of evidence, including the presence of intact sperm cells.

The need to expand research on estimating TSI for sexual assault victims using actual forensic casework is crucial to provide a more reliable method for TSI estimation, compared to previous studies, which have generally been based on fertility studies. Between the years of 2009 and 2017, over 1,800 reported SAECKs were submitted to the Boston Police Department for evidence processing. Approximately 500 of these kits tested positive for the identification of sperm cells during original kit processing. More than 250 cases met the qualifications for this study, including a living victim, smear slides prepared by a medical professional, and the identification of sperm cells. To estimate TSI, the smear slides from these cases were microscopically examined for the presence of intact sperm cells with the aid of Kernechtrot Picroindigocarmine (KPIC) stain.

Preliminary results indicate that the observation of intact sperm on vaginal smear slides rarely surpasses a TSI of 25 hours, with an average of 12 hours. Furthermore, preliminary results indicate that the observation of intact sperm on anal and oral smear slides rarely surpasses a TSI of 15 hours, with an average of 6 hours, and 3.75 hours, with an average of 3.75 hours, respectively. This study provides reliable evidence based on actual casework samples for more accurately estimating the time since intercourse in living victims of sexual assault crimes.

Time Since Intercourse (TSI), Sexual Assault Collection Kit, Post-Coital Interval (PCI)