K6 Development of a Comprehensive Forensic Drug Information Web Site and Concentrations Database

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Upon completion of this presentation, participants will learn about:
(1) a Forensic Drug Information (FDI) web site that provides access to a drug induced/drug related deaths database that allows for direct online data entry by medical examiners, (2) the use of the database to analyze drug toxicity characteristics and patterns including the influence of factors such as other drugs, patient characteristics, sample site, and time since death and other selected death investigation findings on concentrations or toxicity potential, and (3) the use of the web site to find summaries of key drug characteristics and links to Medline/Toxline abstracts involving specific drug overdose and toxicity reports.

Deaths associated with drug ingestions can be difficult to interpret for several reasons, including possible interactions or varying patient character- istics, unclear relationships of drug/metabolite concentrations to toxicity, or the influence of sample site and postmortem interval on concentrations. Although some references provide toxic and lethal drug concentration ranges, they usually involve blood or plasma and have not been established for many drugs. The Drug Abuse Warning Network (DAWN) provides valuable information about drug ingestions that result in deaths or emergency depart- ment visits; however, actual concentrations are not recorded, in addition to other limitations. This presentation will impact the forensic science community by demonstrating how the Forensic Drug Database (FDD) is designed to collect a broad range of drug and metabolite data and character- ize the interrelationships among possible factors influencing toxicity. If certain patient attributes or drug combinations are found to be associated with death, educational efforts can be targeted to help prevent these types of deaths. Medical examiners can enter data from drug-induced or drug-related death cases directly into the FDD from remote locations. At present, data from over 600 cases have been entered. Simple database reports can be run from the Forensic Drug Information (FDI) web site, with participating medical examiners and coroners having complete access to the data reports.

The objectives of this project were to: (1) develop an online drug induced/related deaths database that allows for direct data entry by medical examiners, (2) classify the data using standardized DAWN terminology, (3) describe drug toxicity characteristics and patterns including the influence of factors such as other drugs, patient characteristics, sample site, and time since death and other selected death investigation findings on concentrations or toxicity potential, and (4) develop a forensic drug information web site providing database access and other features.

A Forensic Drug Information (FDI) web site (http://www.forensic di.org) was developed that includes three main parts: (1) Forensic Drug Database (FDD) – compiles data about the drug(s), concentrations, and other relevant information found in drug-induced or drug-related death cases,
(2) Database Reports – allows for online user-customized and administra- tor generated reports from data stored in the FDD, and (3) Literature Abstracts - contains regularly updated links directly to the Medline/Toxline abstracts of reports of specific deaths involving drugs (legal, illicit), listed alphabetically by drug name.

As of July 2007, the FDD contains over 640 cases of drug-induced or drug-related deaths compiled from the files of the West Virginia Office of the Chief Medical Examiner. Of these decedent cases, approximately 34% were female and 66% were male. The most commonly detected drugs were methadone (32% of cases), cocaine (23% of cases), diazepam (21% of cases), ethanol (20% of cases), and hydrocodone (19% of cases). Cases are contin- ually being added to the FDD, and new medical examiners interested in contributing case data to the database are welcome (visit FDI web site to register). A variety of types of reports and statistical analyses of the drugs, decedent characteristics, and concentrations are currently in preparation. Participating medical examiners will have access to these database reports in addition to the other web site features.

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Drugs, Concentrations, Toxicity

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