K20 A Tale of Two Drugs in Southwestern Virginia: Oxycodone and Methadone

George S. Behonick, PhD, Virginia Division of Forensic Science, Western Laboratory; William Massello III, MD, Office of The Chief Medical Examiner, Western District, and James J. Kuhlman, Jr., PhD, Virginia Division of Forensic Science, Western Laboratory, 6600 Northside High School Road, Roanoke, VA; and Joseph J. Saady, PhD, Virginia Division of Forensic Science, Central Laboratory, 700 North Fifth Street, Richmond, VA*

The objective of this presentation is to provide forensic toxicologists and pathologists with statistical drug-related case data for a five year period from 1997 to 2001 for the drugs oxycodone and methadone. To understand patterns of oxycodone and methadone misuse and abuse and become familiar with factors responsible for absolute and relative changes in case statistical profiles over time.

The problem of prescription drug misuse and abuse contributes to significant morbidity and mortality in Southwestern Virginia. Opiate and opioid drugs are in great demand by misusers and abusers. Beginning in 1999 the Toxicology Section of the Virginia Division of Forensic Science (DFS) Western Laboratory together with the Office of the Chief Medical Examiner (OCME) for the Western Region noted a dramatic rise in drug-related fatalities involving oxycodone. The trend continued through 2000 and 2001. Investigative information, drug paraphernalia recovered from death scenes, decedent history and witness statements chronicled in a substantial number of cases implicated involvement of the sustained release formulation of oxycodone (OxyContin®). OxyContin®, a single-drug entity designed for sustained release over a 12 hour period, is easily compromised by abusers to achieve a powerful morphine-like high. The drug is diverted and supplied to abusers by a number of means: Illegal prescriptions by unscrupulous physicians ("pill mills"), illicit black market sales, pharmacy thefts, fraudulent prescriptions, "doctor shopping," and diversion from sources in Mexico and Canada.

Methadone, a drug traditionally used as a heroin substitute for treating addiction, exhibited a similar increase in frequency in Western District postmortem cases over the same time period. Methadone is also prescribed in the treatment of chronic pain syndromes. The data suggests a hypothesis of a classic "supply and demand" scenario. Intense interdictive efforts by law enforcement, attention by legislative officials and widespread media attention curbed "supply" of oxycodone, but not "demand." Additionally, physicians cognizant of the controversy substitute methadone for the treatment of chronic pain syndromes formerly managed with oxycodone, more specifically, OxyContin®.

The data presented includes: the total number of Western Region drug-related deaths, cases in which oxycodone and methadone were determined to be significant in terms of cause of death and statistics in which oxycodone and methadone were determined to be present in the blood and postmortem tissues of decedents. Retrospective review of information in the DFS database and information derived from the database of the OCME for the Commonwealth of Virginia constituted the methodology of the study. OCME, Western Region certified 519 drug deaths from 1997 to 2001. Thirty-four percent (n=175) of the certifications identified oxycodone (n=82) or methadone (n=93) as being significant to the cause of death. The three-year period 1999 to 2001 illustrated increases in the total number of drug deaths and deaths attributed to oxycodone and methadone. Deaths attributable to oxycodone or methadone represented the following proportions for the period 1999-2001: Thirty-one per cent, thirty per cent and fifty-eight per cent, respectively. OCME, Western Region conducted 676 autopsies in the most recent calendar year (2001), certifying 23 per cent as drugrelated (n=155). Fifty-eight per cent (n=90) identified oxycodone or methadone as primary agents in establishing cause of death. All cases were initially screened by FPIA (Abbott TDx™) and a basic drug screen using solid phase extraction (SPE) followed by GC-NPD and/or GCMS. Methadone was quantitated using a basic drug SPE and GC-NPD or SIM GC-MS. Oxycodone was quantitated by forming oxime/TMS derivatives and SIM GC-MS. Mean blood methadone concentrations during the 1997-2001 period were 0.28 mg/L (n=6), 0.29 mg/L (n=8), 0.36 mg/L (n=19), 0.47 mg/L (n=22) and 0.65 mg/L (n=50), respectively. Mean blood oxycodone concentrations during the 1999-2001 period were: 0.61 mg/L (n=21), 0.37 mg/L (n=27) and 0.62 mg/L (n=39), respectively.

Conclusions from the data indicate serious public health concerns posed by the misuse and abuse of prescription drugs, particularly opiate and opioid drugs such as oxycodone (OxyContin®) and methadone. Southwestern Virginia's experience in this regard is similar to reports of abuse in other geographical regions of the U.S. An initial trend in the misuse and abuse of oxycodone, principally in the form of OxyContin®, followed by alarmingly widespread misuse and abuse of methadone resulting in remarkable drug-related mortality. The potential or likelihood of abusers seeking other opiate and opioid drugs (e.g., heroin, hydrocodone, fentanyl and hydromorphone) when "supply" of oxycodone and methadone is curtailed is a disturbingly high probability.

Oxycodone, Methadone, Abuse

 ** Presenting Author*