



Pathology & Biology Section – 2008

G40 The Continued Role of Over the Counter Drugs in Drug Related Deaths

Anna C. Noller, PhD, and Marcella F. Fierro, MD, Office of the Chief Medical Examiner, 400 East Jackson Street, Richmond, VA 23219*

After attending this presentation, attendees will better understand the epidemiological characteristics of over-the-counter (OTC) drug deaths.

This presentation will impact the forensic community and public health agencies by: (1) serving as a reminder of the continued dangers of the publicly-perceived safe OTC drugs, and (2) the epidemiological trends of who is most likely impacted by these drugs which may help in creating public health safety messages and prevention strategies.

All cases from 2001-2005 in which OTC drugs contributed to the decedents' deaths were analyzed. The OTC drugs, in order of prevalence, were diphenhydramine, acetaminophen, dextromethorphan, chlorpheniramine, salicylate, ethylene glycol (not an OTC drug but included in analysis), ibuprofen, methanol, ephedrine, and naproxen. All 292 cases were investigated by the Virginia Office of the Chief Medical Examiner (OCME). The data extracted from the OCME database included age, sex, race, manner of death, residency, and toxicological results. OTC deaths were categorized into 5 types: OTC alone, OTC with prescription drug(s), OTC with illicit drug(s), OTC with prescription and illicit drugs, and OTC with carbon monoxide. Virginia residents were analyzed separately to obtain rates.

Considering all drug poisonings, males tend to shoulder the burden of drug-related deaths with an overall ratio of 1.8 to 1 compared to females. For accidents the ratio is 2.4:1 for males to females. Males and females have a similar amount of suicides via drug poisonings (1:1.1). These trends change when looking at the role of OTC drugs. The female/male ratio is 1.45:1 and this ratio stays very similar when examining both accidents and suicides.

Suicides accounted for 51.4% of the OTC deaths, accidents for 46.6% and undetermined for 2%. The combination of OTC with prescription drugs accounted for 66.8% of OTC deaths. Interestingly, OTC alone deaths were almost 3 times higher in suicides than accidents while OTC with illicit or OTC with prescription and illicit drugs were 5 and 4.2 times higher, respectively in accidents than in suicides. Ethanol involvement was found to contribute to death in 16.1% of cases, in 50% of the OTC with illicit drug deaths and in 17.2% of the OTC alone deaths.

Virginia residents accounted for 95.2% (N=278) of the OTC drug deaths. The rate of all OTC drug deaths is 7.5 per million Virginia residents with female rates of 8.9 per million compared to 6.1 for males. Whites carried the burden of these deaths with a rate of 9.1 per million, which was 3.4 times that of blacks and 5.2 that of Asians. The highest burden of OTC deaths was in the 35-34 and 45-54 age groups with almost 2 times the rate of any other age group. Remarkably, the rate for the infant age group (<1 year old) was 4 per million.

While most of the OTC drugs were all found in accidents, suicides, and undetermined cases, some OTCs were detected in a higher percentage of a particular manner than the others. Acetaminophen (70.9%), salicylate (77.8%) ethylene glycol (85.7%), and ibuprofen (88.9%) were found more frequently in suicides than accidents. Additionally, women were 3 and 1.8 times more likely to have used ibuprofen or acetaminophen, respectively than males as all or part of their suicidal drug poisoning. However, males were 3 times more likely to use ethylene glycol than women and also accounted for all the suicides due to diphenhydramine, alone or in combination. Chlorpheniramine (70.8% of all usage) and dextromethorphan (66.7%) were more frequently associated with accidents than suicides. Males were two times more likely to accidentally use ephedrine than females.

In conclusion, OTC drugs continue to be a source of both accidental and suicidal deaths. Women are at a higher risk than men of dying from OTC drugs either alone or in combination with other drugs. Whites also have a higher rate of using a lethal amount of OTC drugs than other races.

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