

## 222. Tracking the trends over time of global adult human exposures to benzodiazepines and opioids reported to poison centres in the Global Toxicsurveillance Network

Darcey J. G. Johnson<sup>a</sup>, Gillian Cooper<sup>b</sup>, Franca Davanzo<sup>c</sup>, Martin Ebbecke<sup>d</sup>, Michael Eddleston<sup>b</sup>, Robert Garnier<sup>e</sup>, Zachary R. Margolin<sup>a</sup>, Bruno Mégarbane<sup>e,f</sup>, Andreas Schaper<sup>d</sup>, Fabrizio Sesana<sup>c</sup>, Simon H. L. Thomas<sup>b</sup>, John P. Thompson<sup>b</sup>, J. Allister Vale<sup>b</sup> and Jody Green<sup>a</sup>

<sup>a</sup>Rocky Mountain Poison & Drug Center, Denver, USA; <sup>b</sup>National Poisons Information Service, Cardiff, UK; <sup>c</sup>Poison Control Centre of Milan, Milan, Italy; <sup>d</sup>GIZ-Nord Poisons Centre, University Medical Center, Göttingen, Germany; <sup>e</sup>Department of Medical and Toxicological Critical Care, Lariboisière Hospital, Paris-Diderot University, Paris, France; <sup>f</sup>INSERM U1144, Paris-Descartes University, Paris, France

**Objective:** To determine if rates of adult human exposures for benzodiazepines are experiencing similar patterns over time as for opioid exposures reported to poison centres (PCs) in France, Germany, Italy, the UK and the US. **Methods:** Human exposures to benzodiazepines (alprazolam, diazepam, etizolam, flunitrazepam, lorazepam, lormetazepam, nitrazepam, oxazepam, phenazepam, temazepam) and opioids (buprenorphine, fentanyl, hydrocodone, hydromorphone, methadone, morphine, oxycodone, oxycodone, pethidine, tramadol) reported to Global Toxicsurveillance Network (GTNet) PCs were examined to observe trend similarities. Adult ( $\geq 18$  years) human exposures occurring from 2012–2014 were obtained from PCs in Paris (France), Göttingen (Germany), Milan (Italy), the UK (4 sites), and the US. UK PCs provide medical management assistance to healthcare providers only, while services in other participating countries are also available to the public. Defined regions of call coverage exist for the Paris, Göttingen, UK, and US sites, while Milan handles 65–70% of calls in Italy. Rates are expressed as the number of exposures per 100,000 population (extrapolated from country census data) separately for total, all intentional, and all unintentional exposures. Poisson regression was used to determine differences in rate change between benzodiazepines and opioids with both discrete and continuous covariates. **Results:** Intentional benzodiazepine exposure rates were consistently higher than opioid exposure rates in each country. The magnitude of difference between rates of benzodiazepine and opioid exposures appeared greater for intentional exposures than unintentional exposures in each country. For total exposures, overall decreases exist for both benzodiazepines and opioids in France, Germany, the UK, and the US. Within these countries, the decreasing slopes of benzodiazepine and opioid exposures did not differ significantly from each other. An analysis of covariance identified a statistically significant difference between the slopes of total exposure rates for benzodiazepines and opioids ( $p = 0.0226$ ) only in Italy, where opioid exposures increased over time ( $p = 0.0571$ ) and significantly decreased for benzodiazepines ( $p = 0.0134$ ). Overall decreases in intentional benzodiazepine exposures were observed in all countries. Overall decreases in intentional opioid exposures were similarly observed in all countries except Italy, where exposures increased. The difference between intentional benzodiazepine and opioid slopes was not significant in any country. **Conclusion:** As benzodiazepine exposures (both total and intentional) decreased overall in France, Germany, the UK,

and the US, a similar decrease was observed for opioid exposures in these countries. The only statistically significant difference between rate change slopes exists in Italy, where total exposures to benzodiazepines decreased and total exposures to opioids increased.

## 223. Carbamazepine enquiries to the National Poisons Information Centre of Ireland: a prospective 7 year study

Niamh English, Edel Duggan and Annette Cooke  
National Poisons Information Centre Ireland, Dublin, Ireland

**Objective:** To characterise the epidemiology of carbamazepine enquiries to the National Poisons Information Centre (NPIC) Dublin. **Methods:** This study prospectively examined all enquiries involving carbamazepine reported to the NPIC from 1 May 2006 to 30 April 2013. Variables collated included age, sex, intent, location of incident, severity and symptoms. **Results:** During the 7 year study period there were 256 enquiries relating to 222 patients; 51.4% ( $n = 114$ ) were females, 47.7% ( $n = 106$ ) were males and gender not recorded 0.9% ( $n = 2$ ). The mean age was 32 years (range 11 months – 94 years). The circumstances of the exposure were a) intentional (51.3%;  $n = 114$ ), b) accidental/therapeutic error (47%;  $n = 103$ ) and c) unknown intent (1.8%;  $n = 4$ ). Of the intentional overdoses, 83% ( $n = 95$ ) were symptomatic and required active treatment. The most common features reported were dizziness, ataxia, vomiting, blurred vision, tremor, tachycardia and decreased Glasgow Coma Scale (GCS). In all cases where the GCS was  $< 10$ , a mixture of drugs including alcohol were co-ingested. Carbamazepine was the only substance taken in 38.7% of cases ( $n = 86$ ), all of which had a GCS  $\geq 10$ . The majority of adult ( $> 12$  years) exposures ( $n = 192$ ) occurred in a domestic setting (74%;  $n = 142$ ); however 23.4% ( $n = 45$ ) of enquiries originated in a residential care home. Of these 93.3% of enquiries were due to accidental/therapeutic overdose. Only 6.8% of enquiries from residential settings were symptomatic with drowsiness and vomiting the most common symptoms. There were 30 enquiries (13.5%) concerning children (age  $\leq 12$  years) with a preponderance of boys (53.3%;  $n = 16$ ). All incidents occurred in a domestic setting. Only 16.7% ( $n = 5$ ) developed symptoms with vomiting ( $n = 3$ ), unsteady gait ( $n = 2$ ) and drowsiness ( $n = 1$ ); 46.6% ( $n = 14$ ) of children had no symptoms and 36.7% ( $n = 11$ ) had no recorded symptoms. **Conclusion:** Over 50% of cases involving carbamazepine were intentional overdoses and the majority (83%) of these were symptomatic. The GCS only fell below 10 when carbamazepine was ingested with other drugs and/or alcohol. A significant percentage, 93.3% of residential care home enquiries were due to therapeutic errors but less likely to have symptoms. All paediatric cases occurred in the home indicating that storage of medicines may not be adequate.

## 224. Radiation incident preparedness of Dutch hospitals

Ronald De Groot<sup>a</sup>, Cornelis J. Van Loon<sup>b</sup>, Marianne E. C. Leenders<sup>a,c</sup> and Jan Meulenbelt<sup>a,d</sup>

<sup>a</sup>National Poisons Information Center, University Medical Center Utrecht, Utrecht, The Netherlands; <sup>b</sup>Radboud University Medical Center, Nijmegen, The Netherlands; <sup>c</sup>Division of Anesthesiology, Intensive Care and Emergency Medicine, University Medical Center