

**American Academy of Clinical Toxicology
Special Interest Group: Herbs & Dietary Supplements
CURRENT AWARENESS SERVICE**

Editors note: The Herbs & Dietary Supplements SIG of the AACT will periodically provide to its members a new abstracting service of recent scientific articles that may be of interest to the membership. Enjoy. Co-Chairs: Miguel Fernandez, Olga Woo, Alan Woolf

February 2, 2008

1. Jorissen J. Literature review. Outcomes associated with postnatal exposure to polychlorinated biphenyls (PCBs) via breast milk. *Adv Neonatal Care.* 2007;7:230-7.
Forty years ago manufacturers commonly used polychlorinated biphenyls (PCBs) in a wide variety of products. In the late 1970s, following research demonstrating neurotoxicity in animals, even at low levels, PCBs were banned internationally. Today PCBs are widespread environmental contaminants and may be isolated from breast milk of women worldwide. This article provides an overview of the current research on the relationship between PCBs in breast milk and their effects on breastfed children with regard to neurological effects, growth and maturity, potential mitigating effects of breastfeeding, and immunologic effects. The vast majority of results from this body of research indicate that despite higher PCB loads, breastfed children continue to fare better than their formula-fed peers. At this point, there is no evidence of a threshold among the general population beyond which the risks of breastfeeding outweigh the benefits, nor is there any evidence demonstrating a clinically significant negative effect of postnatal exposure to PCBs via breast milk. To date the majority of studies conclude that despite substantially higher PCB loads among breastfed infants, breastfeeding is still preferable to formula feeding.
2. Hon KL, Leung E, Burd DA, Leung AK. Necrotizing fasciitis and gangrene associated with topical herbs in an infant. *Adv Ther.* 2007;24:921-5.
A 4-mo-old Chinese infant developed necrotizing fasciitis and gangrene from a small skin infection on his buttock that was treated with topical herbs. Sequential cultures revealed a number of organisms: Enterococcus species, sensitive to ampicillin, were isolated throughout the course, and coagulase-negative staphylococci replaced gram-negative rods during the later phase of the illness. The infant required prolonged intravenous antibiotic treatment and underwent multiple surgical procedures for debridement and reconstruction. This report serves to alert the public of the importance of avoiding application of unknown topical herbs in children with skin disease. A seemingly small wound, if inappropriately treated, may result in extensive tissue destruction and require extensive surgery.
3. Bahna SL, Khalili B. New concepts in the management of adverse drug reactions. *Allergy Asthma Proc.* 2007;28:517-24.
Our understanding of drug reactions and their management has changed markedly in recent years with the development of several new concepts. Epidermal cell death seen in Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) may result from Fas-Fas ligand-mediated apoptosis. Intravenous immunoglobulin (IVIG) contains anti-Fas antibodies that can abrogate apoptosis. Most studies on IVIG in SJS and TEN reported improvement in arresting disease progression and reduction in time to healing. Furthermore, several studies have dispelled the myth of sulfonamide cross-reactivity. Immune-mediated reactions against antibacterial sulfonamides are directed against two unique side chains that non-antibacterial sulfonamides do not contain. Certain patients seem to have a genetic predisposition for "multiple drug sensitivities." Hence, they may react to several drugs that are not necessarily cross-reacting. Also, multiple studies have shown that IgE-mediated nonsteroidal anti-inflammatory drugs (NSAIDs)

cross-reactivity is uncommon. Rather, it is cyclooxygenase (COX) 1 inhibition that results in pseudoallergic reactions to multiple NSAIDs. Several studies have indicated that selective COX-2 inhibitors can be safely administered in patients with aspirin-exacerbated respiratory disease and NSAID-induced cutaneous reactions, although their use has been curtailed by their cardiovascular side effects. Biological agents, such as infliximab, are being increasingly used for a variety of diseases and have caused adverse reactions in some patients. Studies differ as to whether concomitant immunosuppressive use with infliximab affects the development of drug-specific antibodies and infusion reactions. Successful desensitization protocols have been developed for reactions to some of these agents.

4. Verduin ML, Payne RA, McRae AL, Back SE, Simpson SA, Sarang RY, Brady KT. Assessment of club drug use in a treatment-seeking sample of individuals with marijuana dependence. *Am J Addict.* 2007;16:484-7.
Club drug use is becoming increasingly popular in the United States and has been associated with chronic psychiatric symptoms and neuropsychological abnormalities. Patterns of club drug use and characteristics of club drug users are not homogeneous. Thus, treatment-seeking marijuana-dependent individuals may have a differential pattern of club drug use. Baseline assessments collected from 55 individuals participating in a pharmacological treatment study for marijuana dependence were examined. Individuals completed a 16-item self-report questionnaire assessing club drugs used, frequency and patterns of use, problems associated with use, and reasons for use. Subjects were primarily male (87.3%) and Caucasian (81.8%), with a mean age of 32.1 (+/-9.1 years). As expected, a large number of individuals had used ecstasy (75%). However, LSD and methamphetamine use was also reported by many users (82.5% and 47.5% respectively), with many individuals reporting the use of more than one club drug. Notably, 31.6% of individuals reported tolerance to club drugs. These results emphasize the significant co-occurrence of club drug use in marijuana-dependent individuals. This appears to be the first study to report on club drug use in treatment-seeking marijuana-dependent individuals. Clinical implications and directions for future research are discussed.
5. Tehranifar P, Leighton J, Auchincloss AH, Faciano A, Alper H, Paykin A, Wu S. Immigration and risk of childhood lead poisoning: findings from a case control study of New York City children. *Am J Public Health.* 2008;98:92-7.
OBJECTIVES: We investigated whether foreign birthplace and residence were associated with an increased risk of childhood lead poisoning. METHODS: We conducted a matched case-control study among New York City children (mean age=3 years) tested for lead poisoning in 2002 (n=203 pairs). Children were matched on age, date of test, and residential area. Blood lead and housing data were supplemented by a telephone survey administered to parents or guardians. Conditional logistic regression analysis was used to examine the relationship of lead poisoning status to foreign birthplace and time elapsed since most recent foreign residence after adjustment for housing and behavioral risk factors. RESULTS: Both foreign birthplace and time since most recent foreign residence had strong adjusted associations with lead poisoning status, with children who had lived in a foreign country less than 6 months before their blood test showing a particularly elevated risk of lead poisoning relative to US-born children with no foreign residential history before their blood test (odds ratio [OR]=10.9; 95% confidence interval [CI]=3.3, 36.5). CONCLUSIONS: Our findings demonstrate an increased risk of lead poisoning among immigrant children.
6. Lee HL, Lin HJ, Yeh TY, Chi CH, Guo HR. Presentations of patients of poisoning and predictors of poisoning-related fatality: findings from a hospital-based prospective study. *BMC Public Health.* 2008;8:7.
ABSTRACT: BACKGROUND: Poisoning is a significant public health problem worldwide and

is one of the most common reasons for visiting emergency departments (EDs), but factors that help to predict overall poisoning-related fatality have rarely been elucidated. Using 1512 subjects from a hospital-based study, we sought to describe the demographic and clinical characteristics of poisoning patients and to identify predictors for poisoning-related fatality. **METHODS:** Between January 2001 and December 2002 we prospectively recruited poisoning patients through the EDs of two medical centers in southwest Taiwan. Interviews were conducted with patients within 24 hours after admission to collect relevant information. We made comparisons between survival and fatality cases, and used logistic regressions to identify predictors of fatality. **RESULTS:** A total of 1512 poisoning cases were recorded at the EDs during the study period, corresponding to an average of 4.2 poisonings per 1000 ED visits. These cases involved 828 women and 686 men with a mean age of 38.8 years, although most patients were between 19 and 50 years old (66.8%), and 29.4% were 19 to 30 years. Drugs were the dominant poisoning agents involved (49.9%), followed by pesticides (14.5%). Of the 1512 patients, 63 fatalities (4.2%) occurred. Paraquat exposure was associated with an extremely high fatality rate (72.1%). The significant predictors for fatality included age over 61 years, insufficient respiration, shock status, abnormal heart rate, abnormal body temperature, suicidal intent and paraquat exposure. **CONCLUSIONS:** In addition to well-recognized risk factors for fatality in clinical settings, such as old age and abnormal vital signs, we found that suicidal intent and ingestion of paraquat were significant predictors of poisoning-related fatality. Identification of these predictors may help risk stratification and the development of preventive interventions.

7. Soldo I, Kucan Z, Timarac J, Mihaljevic I, Matijevic M, Peric L, Lisnjic D, Sesar Z, Kadojic D, et al. Mushroom poisoning. *Coll Antropol.* 2007;31:1099-103.
In the research we included a total of 207 subjects with the dismissal diagnosis of "mycetismus", who were treated at the Department of Infectious Diseases, General Hospital Osijek, during the 1983-1992 period. 32 of them were children. There were 44.93% of men, 39.61% of women and 15.45% of children. The latent time > 6 hours was determined in 51 (25%) and < 6 hours in 75% of subjects. In 156 of patients with the latent time > 6 hours, "false" poisoning occurred, while 51 patients experienced real mushroom toxins poisoning. At the admission to the hospital, in patients with the latent time > 6 hours, a pathological PT (prothrombine time) was established only in women, leukocytosis in both women and children, increased concentration of GGT (gamma-glutamyl-transferase) in men, increased AST (aspartate-aminotransferase) and ALT (alanin-aminotransferase) only in women, and increased urea in both women and children. After 24 hours, control measuring established high values of AST and ALT extended PT uremia and exalted amount of ammonia in blood in 11 of patients (2 men, 7 women and 2 children). They had severe liver and kidney damage, the most probably caused by *Amanita phalloides* toxins. The latent time lasted 9 to 13 hours. Of the 11 above mentioned patients, 2 women, aged 74 and 43, and one girl, aged 6, died. No pathological laboratory parameters were established in 40 of subjects with the latent time of 6 and more hours, and the disease manifested through vomiting and diarrhea that lasted for several days. These subjects most probably suffered from mushroom toxins poisoning. Mushroom toxins irritate the mucuous membrane of the gastrointestinal tract, and there are many such poisonous mushrooms. There were no mortalities in this group of subjects.
8. Brasch J. 'New' contact allergens. *Curr Opin Allergy Clin Immunol.* 2007;7:409-12.
PURPOSE OF REVIEW: Due to the continuously changing environmental conditions, it is necessary to regularly monitor and update the spectrum of contact allergens that elicit contact dermatitis. New contact allergens and known contact allergens with currently increasing importance need to be identified for diagnostic and preventive purposes. **RECENT FINDINGS:** Within the last few years, allergic contact allergy to a number of substances derived from plants and other materials was reported for the first time. Furthermore, it has become obvious that dyes,

especially paraphenylenediamine-related dyes, and fragrances are sources of contact allergens with increasing frequency. It is likely that within these groups of substances some as yet unidentified agents are relevant allergens. SUMMARY: It is an ongoing challenge for clinicians to meticulously explore the exposure of eczema patients to possible new allergens. Dyes and fragrances, in particular, are of increasing significance not only because of their known ingredients but also because of new allergenic compounds.

9. Nisse P, Soubrier S, Saulnier F, Mathieu-Nolf M. Torsade de pointes: A severe and unknown adverse effect in indoramin self-poisoning. *Int J Cardiol.* 2008.
We report the two first cases of torsade de pointes associated with QT interval prolongation following a large ingestion of indoramin.
10. Heudorf U, Mersch-Sundermann V, Angerer J. Phthalates: toxicology and exposure. *Int J Hyg Environ Health.* 2007;210:623-34.
Phthalates are used as plasticizers in PVC plastics. As the phthalate plasticizers are not chemically bound to PVC, they can leach, migrate or evaporate into indoor air and atmosphere, foodstuff, other materials, etc. Consumer products containing phthalates can result in human exposure through direct contact and use, indirectly through leaching into other products, or general environmental contamination. Humans are exposed through ingestion, inhalation, and dermal exposure during their whole lifetime, including intrauterine development. This paper presents an overview on current risk assessments done by expert panels as well as on exposure assessment data, based on ambient and on current human biomonitoring results. Some phthalates are reproductive and developmental toxicants in animals and suspected endocrine disruptors in humans. Exposure assessment via modelling ambient data give hints that the exposure of children to phthalates exceeds that in adults. Current human biomonitoring data prove that the tolerable intake of children is exceeded to a considerable degree, in some instances up to 20-fold. Very high exposures to phthalates can occur via medical treatment, i.e. via use of medical devices containing DEHP or medicaments containing DBP phthalate in their coating. Because of their chemical properties exposure to phthalates does not result in bioaccumulation. However, health concern is raised regarding the developmental and/or reproductive toxicity of phthalates, even in environmental concentrations.
11. Rogan WJ, Ragan NB. Some evidence of effects of environmental chemicals on the endocrine system in children. *Int J Hyg Environ Health.* 2007;210:659-67.
Pollutant chemicals that are widespread in the environment can affect endocrine function in laboratory experiments and in wildlife. Although human beings are commonly exposed to such pollutant chemicals, the exposures are generally low and clear effects on endocrine function from such exposures have been difficult to demonstrate. Human data including both exposure to the chemical agent and the endocrine outcome are reviewed here, including age at weaning, age at puberty, anogenital distance, and sex ratio at birth, and the strength of the evidence are discussed. Although endocrine disruption in humans by pollutant chemicals remains largely undemonstrated, the underlying science is sound and the potential for such effects is real.
12. Si Y, Li Q, Xie L, Bennett K, Weina PJ, Mog S, Johnson TO. Neurotoxicity and toxicokinetics of artelinic acid following repeated oral administration in rats. *Int J Toxicol.* 2007;26:401-10.
Neurotoxicity secondary to oil-soluble artemisinins has been reported in various animal species. The onset of neurotoxicity and toxicokinetics of oral artelinic acid (AL), a water-soluble artemisinin, were investigated. After dose range study, rats were dosed at either 160 mg/kg daily for 9 consecutive days or at 288 mg/kg once every other day for five doses, so that the total dose (1440 mg/kg) and duration (9 days) were identical. Neuronal damage of varying severity was identified beginning as early as 1 day after completing dosing and continued for up to 10 days

post dosing. Neuronal injury was most severe 7 days after the last treatment in each of the two dosing regimens. The rats dosed with 160 mg/kg of AL daily showed moderate neurotoxicity and lost 22% of their body weight during treatment. Compared with the first dose, the toxicokinetic profile of this regimen changed significantly, with the elimination half-life increasing 3.82-fold and the volume of distribution increasing 5.23-fold on the last day of dosing. In the animals treated with AL at 288 mg/kg every other day for 5 doses, minimal neuronal degeneration (severity score 1.17) was identified and the body weight was only 8% loss. Furthermore, there were no obvious differences in the pharmacokinetic parameters between first and last dosing days with this regimen. Additionally, a progressively drug retention in stomach and drug accretion in blood were only found in rats treated with 160 mg/kg daily for 9 days. These results imply that delayed gastric emptying resulted in AL accumulation in blood and prolonged a neurotoxic exposure time (186 h) in 160 mg/kg rats when compared to that (75 h) in 288 mg/kg animals. Therefore, the drug exposure time is a key factor in the neurotoxicity induced by AL.

13. Aglan A, Kerfoot M, Pickles A. Pathways from adolescent deliberate self-poisoning to early adult outcomes: a six-year follow-up. *J Child Psychol Psychiatry*. 2008.
Background: Prospective studies show that the adult outcomes of adolescents who deliberately harm themselves are marked by high rates of adversity and psychiatric disorders. The goal of this study was to identify pathways linking childhood risk factors to early adult outcomes of suicidal adolescents. Methods: A clinical sample of 158 adolescents who deliberately poisoned themselves was followed up six years later. Eighty per cent of the cohort (n = 126) were interviewed in early adulthood using a battery of standardised measures of psychopathology and social functioning. Results: Multivariate mediation path analysis identified four pathways linking child and adolescent risk factors to adverse outcomes in early adulthood. Family dysfunction, conduct disorder and hopelessness contributed to the risk of high adversity in early adulthood indirectly through its effect on other risk domains, including dropping out of school and adopting adult roles at a younger age. Hopelessness not only predicted dropping out of school but also independently contributed to the risk of chronic major depressive disorder in early adulthood. Child sexual abuse independently predicted high adversity and chronic major depression over and above the influence of hopelessness. Juvenile onset major depression independently predicted chronic major depression in early adulthood. A substantial proportion of the effects of child sexual abuse and hopelessness on the risk of deliberate self-harm in early adulthood was mediated by high adversity and the duration of major depression. However, chronic major depression was the only risk factor independently associated with deliberate self-harm in adulthood once correlation with adversity was taken into account. Conclusions: Chronic major depressive disorder is central to deliberate self-harm repetition. However, adult outcomes of suicidal adolescents are also dominated by the accumulating effects and consequences of other childhood risk factors, including child sexual abuse and adolescent hopelessness.
14. Lal AA, Murthy PB, Pillai KS. Screening of hepatoprotective effect of a herbal mixture against CCl₄ induced hepatotoxicity in Swiss albino mice. *J Environ Biol*. 2007;28:201-7.
The hepatoprotective potential of a herbal mixture was evaluated against CCl₄ induced liver injury in Swiss albino mice. Liv 52, a commercially available polyherbal hepatoprotective drug was evaluated for comparison. The potential toxicity of the above herbal hepatoprotective agents was also compared. It was observed that there was a reduction in the enzyme biomarkers (Aspartate and Alanine Transaminase) of liver injury in the herbal mixture treated groups, which was similar to the reduction initiated by Liv 52. An increase in glutathione was observed in the herbal mixture treated groups and it was assumed that the herbal mixture protects the liver by virtue of its antioxidant nature along with high regeneration initiation potential. From the study it is also concluded that the herbal mixture is safer than Liv 52.

15. Hodgman MJ, Horn JF, Stork CM, Marraffa JM, Holland MG, Cantor R, Carmel PM. Profound metabolic acidosis and oxoprolineuria in an adult. *J Med Toxicol.* 2007;3:119-24.
INTRODUCTION: Profound metabolic acidosis in critically ill adults sometimes remains unexplained despite extensive evaluation. CASE REPORT: A 58-year-old female presented in a confused state to the emergency department; she had been confused for several days. Laboratory evaluation revealed a high anion gap metabolic acidosis and modestly elevated acetaminophen level. Lactic acid was only modestly elevated. There was no evidence of ketoacids, salicylate, methanol, or ethylene glycol. A urine sample submitted on day 1 of hospitalization revealed a markedly elevated level of 5-oxoproline. DISCUSSION: Originally described in children with an inherited defect of glutathione synthetase, 5-oxoproline is an unusual cause of metabolic acidosis. More recently this disturbance has been recognized in critically ill adults without a recognized inherited metabolic disorder. In most of these cases there has been the concomitant use of acetaminophen. Any causal relationship between acetaminophen and this disturbance is speculative. CONCLUSION: In critically ill adults with unexplained metabolic acidosis, 5-Oxoproline should be considered in the differential.
16. LoVecchio F, Shriki J, Innes K, Bermudez J. The feasibility of administration of activated charcoal with respect to current practice guidelines in emergency department patients. *J Med Toxicol.* 2007;3:100-2.
OBJECTIVE: The American Academy of Clinical Toxicology, European Association of Poisons Centres, and Clinical Toxicologists recommend administration of activated charcoal (AC) within one-hour of an acute toxic ingestion [1]. Our poison control center periodically and upon request faxes an abbreviated protocol to hospital emergency departments, reminding physicians of these current AC recommendations. This study was conducted to describe how often patients present within the one-hour time frame and how often the guidelines in the above position statement are being followed. METHODS: Following a brief training of systematic chart review, reviewers blinded to the purpose of the study completed a standardized data collection sheet. Three years after publication of these consensus statements, a period of 3 consecutive years of poison center patient encounters were reviewed. Recorded data included age, outcomes, and time to administration of charcoal. RESULTS: Approximately 150,000 reported toxic exposures were reviewed, of which 16,914 patients of acute ingestions presented to a health care facility. The mean age of the group that presented was 25 years [range 1 month-87 years]. A total of 2,700 (16%) patients that presented were within 60 minutes of an acute overdose and all were administered AC in accordance with the recommended guidelines. Interestingly, pre-hospital personnel administered AC within 60 minutes to 762 (28% of 2,700) patients. Correspondingly, 14,214 (84%) patients presented more than 60 minutes after an acute overdose. Of this latter group AC was withheld in 341 (2.4% of 14,214) patients, and 13,873 (97.6% of 14,214) patients received charcoal despite having arrived more than 60 minutes after ingestion. The mean time to the first administration of AC in this latter group was 225 minutes [range of 61-2160 minutes] following ingestion. CONCLUSIONS: Only a small percentage of patients treated for an acute overdose (16%) present within 60 minutes and are given charcoal according to the current guidelines. A large subset of these patients (28%) is given AC in a pre-hospital setting. Few patients presenting to a health care provider after an acute toxic ingestion are treated in accordance with the current recommendations for activated charcoal.
17. Zhipeng W, Mingkai L, Shuyu C, Min J, Jingru M, Xue M, Yumei W, Xiaoxing L. Toxicity of coenzyme Q(10): a report of 90-day repeated dose toxicity study in rats. *J Toxicol Sci.* 2007;32:505-14.
Potential toxicity of CoQ(10) was studied in rats by oral gavage for 90 days at 500, 1500, and 3000 mg/kg.day. A 15-day recovery period after the administration period was investigated. Body weight and food consumption were measured throughout the study. Meanwhile, clinical

observations were recorded. Hematological and blood chemistry parameters were evaluated at both the end of the dosing period and the end of the recovery period. Gross-pathologic and histopathologic examination was performed on select tissues from all animals. No adverse changes in mortality and clinical signs occurred. The body weights of males in the 1500 mg/kg dosage group were slightly reduced; likewise, the food consumption in 3000 mg/kg female rats decreased, but this is not a dose-dependent behavior. Significant change of liver function (TRIGL) and CHOL did not show a dose-dependent effect. Weight of ovary and ovary-to-body weight ratio decreased in the 1500 mg/kg dosage groups. Meanwhile, the uterus -to-body weight ratio increased in the 3000 mg/kg dosage groups. However, there were no significant histopathological changes observed in ovary and uterus: so they were not considered to be adverse. It suggested that CoQ(10) is relatively safe on the test dosage administration. Nevertheless, appetite the body weight, blood lipid and liver function should be observed during long-term clinical administration of this drug with high dosage. Overall, CoQ(10) was well tolerated by male and female rats at dose levels up to 3000 mg/kg.day.

18. Vallejo ML, Bridges C, Angeloni M, Simon PR. Refugee health update: lead exposure in refugee children. *Med Health R I.* 2007;90:367-8.
19. Hays JH. Toxikon: an ancient word fits modern-day poisons. *MLO Med Lab Obs.* 2007;39:10-2, 14-7; quiz 18-9.
20. Nankivell BJ, Murali KM. Images in clinical medicine. Renal failure from vitamin C after transplantation. *N Engl J Med.* 2008;358:e4.
21. Tomlinson DR, Gardiner NJ. Glucose neurotoxicity. *Nat Rev Neurosci.* 2008;9:36-45. Neurons have a constantly high glucose demand, and unlike muscle cells they cannot accommodate episodic glucose uptake under the influence of insulin. Neuronal glucose uptake depends on the extracellular concentration of glucose, and cellular damage can ensue after persistent episodes of hyperglycaemia--a phenomenon referred to as glucose neurotoxicity. This article reviews the pathophysiological manifestation of raised glucose in neurons and how this can explain the major components of diabetic neuropathy.
22. Kostrzewa RM, Segura-Aguilar J. Botulinum neurotoxin: evolution from poison, to research tool - onto medicinal therapeutic and future pharmaceutical panacea. *Neurotox Res.* 2007;12:275-90. Botulinum neurotoxin (BoNT), for more than a hundred years, has been a recognized poisonous principle in spoiled food. As its chemical structure became unraveled, and as more knowledge was gained over its mechanism of toxicity, it became clear that BoNT had the potential to act therapeutically as a targeted toxin that could inactivate specific nerve populations, and thus achieve a therapeutic goal. BoNT has evolved over the past 25 years into a viable therapeutic, now being a first line treatment for dystonia, overtly altering the course of progression of this disorder. BoNT is used for hyperhidrosis and gustatory sweating syndrome, alleviation of pain, as a treatment for overactive bladder, achalasia and anal fissure; and it has gained popularity as a cosmetic aid. Many other possible uses are being explored. The greatest potential for BoNT may lie in its being a molecular Trojan Horse - able to carry a specific enzyme or specific drug to the inside of a cancer or other type of cell while bypassing other cells and thereby having little or no ill effect. BoNT's pharmaceutical potential is boundless.
23. Underwood K, Rubin S, Deakers T, Newth C. Infant botulism: a 30-year experience spanning the introduction of botulism immune globulin intravenous in the intensive care unit at Childrens Hospital Los Angeles. *Pediatrics.* 2007;120:e1380-5.
OBJECTIVE: To report a tertiary care hospital's 30-year experience with the diagnosis,

treatment, and outcome of infant botulism in the PICU before and after the availability of Botulism Immune Globulin Intravenous. **METHODS:** This was a retrospective medical chart review of the 67 patients who had received a diagnosis of infant botulism and were admitted to the ICU from 1976 to 2005. The ages on presentation, length of hospital stay, length of ICU stay, length of mechanical ventilation, and type of botulism toxin were recorded and compared for patients who had received Botulism Immune Globulin Intravenous and those who had not. On the basis of our results, conclusions were drawn regarding the effect of Botulism Immune Globulin Intravenous on the morbidity of infant botulism. **RESULTS:** Sixty-seven patients' charts were reviewed; 23 male and 29 female patients did not receive Botulism Immune Globulin Intravenous. Of patients who did not receive Botulism Immune Globulin Intravenous, the median age at presentation was 71 days, median length of hospital stay was 35 days, ICU stay was 24 days, and duration of mechanical ventilation was 17 days. A total of 40% had type A toxin, and 60% had type B toxin. There was a significant difference between patients with toxin types A and B in length of hospital stay but not length of ICU stay or mechanical ventilation. Patients with type A toxin were significantly older than patients with type B toxin. Fifteen children received Botulism Immune Globulin Intravenous. There were statistically significant differences in length of hospital stay, length of ICU stay, and length of mechanical ventilation between patients who received Botulism Immune Globulin Intravenous and those who did not. **CONCLUSIONS:** The use of Botulism Immune Globulin Intravenous significantly decreased the length of ICU stay, length of mechanical ventilation, and overall hospital stay in children with infant botulism.

24. Kuspis DA, Mrvos R, Krenzelo EP. The epidemiology of poisonings in infants <6 months of age. *Przegl Lek.* 2007;64:197-8.
Contrary to popular belief, children that are less than six months of age are the common victims of unintentional poisoning. The purpose of this study was to examine the profile of poisoning exposures of children as they matriculate through their first six months of life by examining actual exposure data from a certified regional poison information center. Data analysis revealed that adult caregivers were responsible for the majority of exposures in children 0-3 months of age as a consequence of medication administration errors. Due to enhanced motor skills, children from 4-6 months of age frequently exposed themselves to potential poisons that were within their grasp. Parents and caregivers need to be educated proactively by health care professionals to prevent unintentional poisoning exposures in children less than six months of age.
25. Belon P, Banerjee A, Karmakar SR, Biswas SJ, Choudhury SC, Banerjee P, Das JK, Pathak S, Guha B, et al. Homeopathic remedy for arsenic toxicity?: Evidence-based findings from a randomized placebo-controlled double blind human trial. *Sci Total Environ.* 2007;384:141-50.
Millions of people are at risk of groundwater arsenic contamination, but supply of arsenic-free drinking water is grossly inadequate. The present study was intended to examine if a potentized homeopathic remedy reportedly showing ameliorating potentials in people inhabiting high-risk arsenic-contaminated areas but drinking arsenic-free water, can also ameliorate arsenic toxicity in subjects living in high-risk arsenic-contaminated areas, and drinking arsenic-contaminated water. This pilot study was conducted on 20 males and 19 females of village Dasdiya (arsenic contaminated) who initially agreed to act as volunteers; but as many as 14, mostly placebo-fed subjects, later dropped out. 18 volunteers, 14 males and 4 females, from a distant village, Padumbasan (arsenic-free), served as negative controls. In a double blind placebo-controlled study, a potentized remedy of homeopathic Arsenicum Album-30 and its placebo (Succussed Alcohol-30) were given randomly to volunteers. Arsenic contents in urine and blood and several widely accepted toxicity biomarkers and pathological parameters in blood were analyzed before and after 2 months of administration of either verum or placebo. Elevated levels of ESR, creatinine and eosinophils and increased activities of AST, ALT, LPO and GGT were recorded in arsenic exposed subjects. Decreased levels of hemoglobin, PCV, neutrophil percentages, and

GSH content and low G-6-PD activity were also observed in the arsenic exposed people. The administration of "verum" appeared to make positive modulations of these parameters, suggestive of its ameliorative potentials. Most of the subjects reported better appetite and improvement in general health, thereby indicating possibility of its use in remote arsenic-contaminated areas as an interim health support measure to a large population at risk.