Journal of Urban Health: Bulletin of the New York Academy of Medicine, Vol. 81, No. 2,
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DOI: 10.1093/jurban/jth103

LITERATURE IN BRIEF

Fire, Food, Water

Birnbaum LS, Staskal DF. Brominated flame retardants: cause for concern? *Environ Health Perspect*. 2004;112:9–17.

SUMMARY

Fire prevention is a major public health objective, with deaths, disability, and medical and human costs running high. Of the several hundred different kinds of flame retardant materials, halogenated (brominated or chlorinated) compounds are among the most common, with more than 75 in commercial use. The brominated flame retardants are ubiquitous additions to textiles, electrical equipment, furniture foam, and many other products for which fire resistance is a desirable quality. This article surveys what is known about this group of compounds, many of which tend to bioaccumulate in the environment and in human tissues, primarily fatty tissues, and to show up in human breast milk. Levels of one type, the polybrominated diphenylethers (PBDEs), are found in breast milk in the United States at levels 10 or more times higher than Europe, which has had steadily declining levels following a voluntary ban a few years ago. This is a review primarily of what is not known (which is substantial) rather than what is known (which is meager) about the biological and health effects of this broad group of chemicals. Concerns involve possible effects on neurodevelopment, the immune system, and cancer.

COMMENTARY

Brominated flame retardants, or more specifically PBDEs, are the newest in the emerging threat from chemicals with public health significance that is unknown, but for which population exposure is ubiquitous, especially to developing fetuses and infants. It is sobering to see how little is known about these chemicals and how much there is reason to be concerned based on the little that is known. It is hard to understand how we have gotten ourselves (once again) into this predicament because there were ample reasons for concern in the 1970s when these compounds were introduced into commerce. The reason PBDE breast milk levels are so much higher in the United States compared to Europe is also unknown, as are the main sources of this exposure. It is likely that, as I sit here writing these words, I am being exposed to PBDEs from the electronics before me. PBDEs are likely new to most readers. I predict we will be hearing much more about them in years to come as we grapple with this vexing problem.

Rohrer CA, Hieber TE, Melnyk LJ, Berry MR. Transfer efficiencies of pesticides from household flooring surfaces to foods. *J Exposure Anal Environ Epidemiol*. 2003;13:454–464.

SUMMARY

If you spray your house or day-care center for cockroaches and then drop a slice of bologna, apple, or American cheese on the floor, how easy is it for insecticide to get on the food? This

article set out to answer that question, using aqueous emulsions of commercial preparations of diazinon, heptachlor, malathion, chlorpyrifos, isofenphos, and *cis*- and *trans*-permethrin (commonly used household pesticides) applied to three kinds of flooring: ceramic tile, hardwood, and carpet. Pesticides can also be tracked in from lawns and gardens; once inside, they are protected from environmental degradation by sunlight and outdoor microbial agents. Children are readily exposed because they crawl, drop food on the floor, and exhibit hand-to-mouth behavior. Various contact times and scenarios were studied. Transfer efficiencies from tile or hardwood within the first minute was usually small for most agents (around 1%), increasing to about 30% after 10 minutes and to more than 50% over an hour, with organophosphate pesticides transferred most efficiently. Transfer from carpets was negligible.

COMMENTARY

This is a very preliminary article, but it addresses a question many have either wondered (worried?) about or just taken for granted: that food dropped on the floor gets contaminated by pesticides and other chemicals. The surprise (to this reviewer) was how little transfer occurs if the food is picked up right away (short contact time). It is perhaps less surprising that carpet, with its small area in contact with the food, appears to transfer a negligible amount. This seems to be the first article to address this question (also a surprise). Although not glamorous, this kind of basic exposure investigation is badly needed if the relative contributions of various portions of the daily environment to the overall burden of xenobiotics are to be understood.

Schillinger J, Knorr SDV. Drinking-water quality and issues associated with water vending machines in the city of Los Angeles. *J Environ Health*. 2004;66:25–33.

SUMMARY

Water vending machines purveying allegedly safe drinking water are making their appearance in many American cities. They are generally regulated at the state and local levels with varying degrees of diligence and rigor. California has one of the best-funded and active state health departments, and it requires permits and periodic testing of water vending machines in the state. Forty machines located throughout Los Angeles were tested and classified as to accessibility of the vendor company, updated permits, and external conditions (doors that closed, cleanliness, graffiti, etc.). *Pseudomonas* spp. (7.5% of samples), fungi (no figure given), and coliforms (30% total coliforms, 20% fecal coliforms) were found and associated with factors indicating quality of machine maintenance and operator accessibility (working or answering phone numbers, posted permits).

COMMENTARY

Mistrust of public drinking water has led to a market for point-of-use water purifiers, bottled waters, and water vending machines in cities. Runners or workers who carry water bottles also fill up from such machine sources. A number of studies, of which this is the latest, have suggested that faith in bottled and vended water might be misplaced. The threat to most people may be minimal (although the basic epidemiology has yet to be performed), but specially sensitive or immunocompromised patients are plausibly still at risk. The bottom line here is that most people are better off drinking ordinary tap water at a thousandth of the cost. This is yet another small sector of society for which the downsizing and cutbacks in routine public health services (in this case, regulation of water vending machines) is a threat to everyone's "homeland security."

David Ozonoff

Health Issues in Prisons and Jails: Implications for Urban Health

Dolan KA, Shearer J, MacDonald M, Mattick R, Hall W, Wodak AD. A randomised controlled trial of methadone maintenance treatment versus wait list control in an Australian prison system. *Drug Alcohol Depend*. 2003;72:59–65.

SUMMARY

To determine whether methadone maintenance treatment in prison reduced heroin use, syringe sharing, and human immunodeficiency virus (HIV) or hepatitis C incidence among prisoners, a randomized trial was performed on 382 inmates. There were 129 treated and 124 controlled inmates followed up at 5 months. Heroin use, injection and syringe sharing were all significantly reduced among treated subjects. The authors called for the introduction of prison methadone programs, particularly where community-based programs exist.

COMMENTARY

In the United States, the majority of heroin injectors are incarcerated at some point during their disease. As expected, a large number of people addicted to heroin reside in these settings; many continue to use heroin even while incarcerated. Although it is not surprising that methadone works in the incarcerated setting, more important will be linkage to methadone treatment after release, which should decrease risk behavior, risk of overdose death, risk of return to heroin use, criminal behavior, and reincarceration.

Moser DJ, Arndt S, Kanz JE, et al. Coercion and informed consent in research involving prisoners. *Compr Psychiatry*. 2004;45:1–9.

SUMMARY

In an attempt to estimate possible coercion and capacity for voluntary informed consent among prisoners, the authors designed a study involving 30 mentally ill prisoners and 30 healthy nonprisoner controls. The groups were compared on the ability to provide informed consent to a hypothetical drug trial, susceptibility to possible coercion, neuropsychological functioning, and psychiatric symptoms. The authors found that all controls and all but one of the prisoners demonstrated adequate capacity to consent to the hypothetical drug trial. However, when decisional capacity was measured quantitatively, prisoners performed significantly worse. Prisoners' main reasons for participating in research included avoiding boredom, meeting someone new, appearing cooperative in the hopes of better treatment, and helping society. Neuropsychological functioning correlated with decisional capacity. The authors concluded that a high percentage of particularly vulnerable mentally ill prisoners demonstrated adequate capacity to consent to research. They postulated that prisoners may have become an overprotected population. They also suggested that additional efforts to avoid coercion are warranted.

COMMENTARY

Prisoners as a class have, in the past, been subject to unethical studies. With the improvement in evaluation and review of research in human subjects, prisoners have appropriately been given special protections to prevent further abuse. The Federal Office for Human Research Protections has delineated limited circumstances in which research involving prisoners may

occur. This limitation and the accompanying documentation requirements have had the unfortunate effect of discouraging much research on prisoners and prison health. With the skyrocketing prison population and the increased prevalence and risk of numerous diseases, including human immunodeficiency virus (HIV), addiction, sexually transmitted diseases, viral hepatitis infections, and mental illness, further research involving this special population is certainly warranted. This study moves the field in the right direction, encouraging research, and closer to defining the special precautions that should be taken when performing research on this vulnerable population.

Grinstead O, Seal DW, Wolitski R, Flanigan T, Fitzgerald C, Nealey-Moore J, Askew J; Project START Study Group. HIV and STD testing in prisons: perspectives of in-prison service providers. *AIDS Educ Prev*. 2003;15:547–560.

SUMMARY

The researchers interviewed 72 service providers working in US prisons in four states to explore opportunities to provide human immunodeficiency virus (HIV) and sexually transmitted disease (STD) testing. These service providers included administrators, educators, security personnel, counselors, and medical personnel. The provider's knowledge of prison procedures and programs related to HIV and STD testing was narrowly limited to their specific job duties. The authors found many missed opportunities for prevention, counseling, and referral. The authors called for improved posttest counseling, providing additional prevention programs for incarcerated persons, improving staff training about HIV and STD testing, and improving communication both among providers in prison and between corrections and public health staff.

COMMENTARY

Up to one in four of all individuals infected with HIV in the United States passes through a correctional facility each year. It could be postulated that a comparable proportion of persons at risk for HIV pass through the incarcerated setting annually as well. Most of these individuals are members of an otherwise "hard-to-reach" population with limited access to public health and medical providers. Prisons and jails are thus ideal venues to provide HIV and STD screening as well as prevention education. This publication underscores important areas to capitalize further on this tremendous public health opportunity.

Josiah D. Rich

Child and Adolescent Health Reviews

Gaffney M, Gamble M, Costa P, Holstrum J, Boyle C. Infants tested for hearing loss—United States, 1999–2001. *MMWR Morb Mortal Wkly Rep*. 2003;52:981–984.

SUMMARY

This report from the Centers for Disease Control and Prevention (CDC) summarizes surveillance data from 1999–2001 for early hearing detection and identification (EHDI) in newborn infants. By 2001, an EHDI tracking program was in place in 48 states/areas. (Areas include the District of Columbia, Guam, Puerto Rico, and the US Virgin Islands.) Key EHDI components are hearing screening before age 1 month, diagnostic audiologic evaluation before age 3 months for infants who fail screening, and enrollment in early intervention services before age 6 months for those found to have hearing loss. Facilities that screen a majority of infants are classified as universal newborn hearing screening (UNHS) facilities. Surveillance data were requested from 54 states/areas.

Over the 3 years, the number of states/areas responding increased from 22 to 52. Screening rates also increased, as did the number of infants receiving diagnostic evaluations and enrolling in early intervention. In 2001, there were 2,115,869 newborns screened, for an overall rate of 65.4% in the states/areas that reported. Screening rates in individual states varied from 26.1% (California) to 99.8% (Rhode Island), with 20 states reporting 90% or more. Altogether, 73.2% of hospitals and birthing centers were classified as UNHS facilities. Average referral rates fell from 4.0% in 1999 to 2.0% in 2001, in keeping with the goal of high specificity for the screening tests. A little over half of the infants who were referred actually received a diagnostic evaluation, and of those found with hearing loss, 879 (about 65%) were enrolled in early intervention, three quarters by age 6 months.

COMMENTARY

In 1999, the Task Force on Newborn and Infant Hearing of the American Academy of Pediatrics issued its endorsement of universal newborn hearing screening along with a statement of the primary objectives, important components, and recommended screening parameters for effective programs. In the years since then, progress toward universal screening has been impressive, but far from complete. Perhaps the most troublesome finding in the CDC surveillance is the huge gap between the number of infants who reportedly screened positive and those who received diagnostic audiologic evaluation. No information is available for why so many infants were not evaluated. Were they lost to follow-up? Were diagnostic services unavailable? Were parents noncompliant for various reasons? Given that discharge planning for full-term healthy newborns who do not have a private pediatrician is often sketchy, what with early discharge, rapid turnover of babies, and understaffing of so-called normal nurseries, it would not be surprising if many of the screened infants who reportedly did not receive audiologic evaluation were indeed simply lost to follow-up.

Of course, the problem for the newborn of the disconnect between the birth facility and the infant's primary health care in the community goes well beyond the hearing screening program. Medicaid enrollment, breastfeeding support, metabolic screening, and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) screening are only a few examples of areas in which needed follow-up can be and often is lost in transition.

But, regardless of the nature of the program, a facility that undertakes to screen newborns is obligated to ensure effective follow-up of those who fail screening and should be assisted in that effort by public health agencies. In the case of hearing screening, CDC is offering widespread support for EHDI tracking and surveillance. It is hoped the trends reported for the first 3 years will continue to improve over the next 3 years and begin to approach the task force goals for 95% of newborns to be screened and 100% of all infants referred to receive follow-up.

Kemper AR, Bruckman D, Freed GL. Receipt of specialty eye care by children. *Ambul Pediatr*. 2003;3:270–274.

SUMMARY

Using the Sample Child component of the National Health Interview survey for the year 2000, the authors studied the relationship of several variables, including age, gender, race/ethnicity, family income, health insurance status, and receipt of well child care, with the receipt of care from an eye care specialist in the preceding 12 months for children aged 6–17 years. Almost 25% of children in the survey had received eye care from a specialist (defined as an ophthalmologist, optometrist, "eye doctor," or someone who can prescribe eyeglasses). Statistical analysis showed that younger (elementary school aged) children were less likely to have received eye care (21.3%) than middle school and high school ages (28.1% and 28.9%, respectively), and boys were less likely to receive care than girls (22.2% vs. 27.3%, respectively). Similarly, Hispanic and black children received less care than whites, and low-income, uninsured children and those lacking well child care received less care than children with higher income families, health insurance, or well child care. Among children who had no well child care, older children (15–17 years) were more likely to have had eye care; a similar difference held for children who did have well child care. Logistic regression models showed that minority children had less eye care than whites regardless of age, gender, family income, health insurance, and receipt of well child care ($P = .0001$ each). In low-income families (< 200% of federal poverty level), children with public health insurance had greater odds of receiving eye care than those without insurance or with private insurance. In higher income families, children with either public or private insurance had greater odds than uninsured children of receiving care from an eye specialist.

COMMENTARY

In spite of the high prevalence of visual impairment in children, there have been no recent studies of its epidemiology in the United States. As a result, the interpretation of the age, gender, and racial/ethnic disparities in use of eye care services found in this study must be done with caution. Do they reflect differences in prevalence or differences in access and other factors? Do younger children and boys receive less care because they have fewer vision problems or because it is harder to recognize and identify their problems? Assessing the racial/ethnic differences in receipt of care is especially complex. If they are the result of differences in prevalence, what accounts for that difference? If there are no racial/ethnic differences in prevalence and other studies confirm that racial/ethnic differences in receipt of care are independent of insurance status and family income, then remediation of disparities will be even more challenging. On a less-speculative note, the positive effect of public health insurance on eye care for low-income children is a gratifying, although not unexpected, finding, but the plight of uninsured children continues in this area of care as in so many others.

Finally, this article deserves special recognition for calling attention to an area of children's health and health care that is understudied and with an importance that is underappreciated. Although it is routine for research articles to conclude with recommendations for additional study, in this case the authors' strong plea for development of population-based data on prevalence of visual impairment by the use of standardized examinations goes beyond the merely routine. It should be heard and acted on by those who fund and design national surveys.

Walsh C, Ross LF. Are minority children under- or overrepresented in pediatric research? *Pediatrics*. 2003;112:890–895.

SUMMARY

To determine the representation of minority children in pediatric research, full-length articles published in the paper editions of three general pediatric journals from July 1999 through June 2000 were collected and reviewed. Authors of the articles were surveyed to clarify race/ethnicity (R/E) data. The number and R/E of all subjects, type of research, and type of data collected were recorded. R/E data were available for 128 studies. The articles used over 10 different labels to describe R/E, with inconsistent use of "Hispanic" as a separate racial category, an ethnic nonracial classification, or both. The number and percentage of subjects in each R/E category were tabulated in the study articles and compared with census data. For subsequent analysis, the subjects were assigned to one of four categories: white, black, Hispanic, and other. Research categories were therapeutic studies, clinical trials, nontherapeutic studies, nontherapeutic research involving invasive methods, and potentially stigmatizing research (PSR) that covered topics such as child abuse, human immunodeficiency virus (HIV), psychiatric issues, and high-risk behaviors.

Of the 58,413 child subjects overall, 54% were white, 26% black, 10% Hispanic, and 10% other. Census proportions were 69% white, 15% black, 17% Hispanic, and 17% other, which led to the conclusion that in general blacks were overrepresented in pediatric research and whites and Hispanics were underrepresented. In specific research categories, black children had their highest representation in clinical trials (32%) and Hispanic children their lowest (6.6%). Highest representation for Hispanics was in PSR studies (17%), with blacks at 30% and whites lowest at 50%. White children's highest involvement was in nontherapeutic research involving invasive methods (60%). All these differences were statistically significant.

COMMENTARY

Medical research with children as subjects has posed ethical, legal, and social questions ranging from how consent is obtained to the pervasive omission of children in trials of new pharmaceuticals. Until recently, less attention has been paid to the R/E composition of children in research studies. The careful review summarized here provides some reassurance that, in general, minority children are not being overlooked and probably are not being exploited. However, there are some findings that merit continued monitoring: the underrepresentation of Hispanics in clinical trials and their overrepresentation, along with blacks, in potentially stigmatizing research.

In the course of their review, the authors struggled with a marked lack of uniformity in R/E classifications by researchers as well as the absence of any reported classifications at all. The difficulties in categorizing Hispanics are well known, and in spite of official efforts to standardize such reporting, the situation is only likely to get worse in the face of changing patterns of immigration and assimilation and their accompanying social and political responses. Nevertheless, for the foreseeable future, the collection of R/E data will be necessary and important as a way to help reach that dreamed-of time when the color of children's skin and the language they speak will be irrelevant to their health and well-being.

Katherine S. Lobach