

Beyond Alcohol and Tobacco Smoke: Are We Doing Enough to Reduce Fetal Toxicant Exposure?

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J Obstet Gynaecol Can 2016;38(1):56–59

EVIDENCE OF A PROBLEM

There is increasing evidence that exposure to environmental toxicants during fetal development is a risk factor for a range of brain-based disorders, such as ADHD and cognitive delays, as well as chronic diseases including asthma, diabetes and certain cancers.^{1–8} Reducing toxicant exposures prior to conception and in utero can be expected to help reduce the incidence of these conditions.

Pregnancy is considered a critical “teachable moment”, and reproductive care providers have played a key role in educating prospective parents about the importance of reducing fetal exposures to some toxicants, namely tobacco smoke and alcohol. The risks of these toxicants are routinely discussed during prenatal visits, and we have seen

considerable success in Canada in reducing exposures.⁹ However, prospective parents are increasingly concerned about the ubiquitous exposures to the dozens of known or suspected toxic substances found in our day-to-day environments,^{10,11} and these are rarely discussed.¹⁰

Lead, mercury, pesticides, phthalates, bisphenol A (BPA), and flame retardants are among the dozens of toxic substances that are found in the air, water, and food we consume, and in countless household items, such as cosmetics, cleaning products, and plastics.^{7,12} Most of these chemicals can cross the placenta and accumulate in the fetus.^{13,14} The fetus is uniquely susceptible to these chemicals due to the dynamic and complex processes that occur as the brain and other organ systems develop.⁷ Day-to-day exposures to certain toxic chemicals during the prenatal period, even at extremely low doses, have been linked to the numerous adverse health effects named above.^{1–8}

A ROLE FOR REPRODUCTIVE CARE PROVIDERS

Due to early and regular contact with prospective parents during pregnancy, and the professional authority and trust they hold, reproductive care providers are in an ideal position to educate future parents about environmental health risks and protective actions even before pregnancy occurs.

Key Words: environmental toxicants, education, prenatal care

Competing interests: None declared.

Received on May 1, 2015

Accepted on July 24, 2015

<http://dx.doi.org/10.1016/j.jogc.2015.10.009>

In the United States, the American Medical Association and the American Congress of Obstetricians and Gynecologists (ACOG) are among the professional associations calling for a reduction of exposures to environmental toxins, as well as an increase in efforts by health care providers to educate patients and the general public about ways to reduce exposures. In a recent Committee Opinion paper,¹⁵ the ACOG states that the evidence linking exposure to toxic substances and adverse reproductive and developmental health outcomes is adequately robust and it joins “[...] numerous other health professional organizations in calling for timely action to identify and reduce exposure to toxic environmental agents [...]” [p.931]. In the United Kingdom, the Royal College of Obstetricians and Gynaecologists¹⁶ recommends that environmental health information “be conveyed routinely at infertility, antenatal and all women’s clinics” to ensure that women can “make informed choices regarding lifestyle changes [...] to minimise environmental exposure to their unborn child” [p.5]. Joining these professional health associations in calling for timely action, the International Federation of Gynecology and Obstetrics recommends that reproductive and other health professionals “advocate for policies to prevent exposures to toxic environmental chemicals” and “make environmental health a part of health care”.¹⁷

Despite the potential benefits of early prevention, reproductive care providers are typically not broaching the topic of toxic exposures with their patients. In an Ontario study, only 8% of new mothers reported having received any information related to environmental toxins from their reproductive care providers.¹⁸ In the United States, a national survey of obstetricians and gynaecologists similarly found that doctors commonly discuss risks associated with smoking, diet, and alcohol consumption with their pregnant patients, yet pesticides, BPA, mercury, lead, and second hand smoke are overlooked.¹⁸ This not only represents a missed educational opportunity, it also undermines any messaging prospective parents may be receiving from other reputable sources.

TOWARDS REDUCING FETAL TOXICANT EXPOSURES

The most effective and equitable approach to reducing exposures is through regulatory change, preventing the production and use of known and suspected toxic substances and their release into the environment. But regulatory change is slow. Until regulatory changes occur, we believe that reproductive care providers have an opportunity and responsibility to inform patients about ways to reduce exposures. Studies have found that

behavioural changes, including eating less canned food, avoiding certain types of fish, switching to organic produce, and using non-toxic household cleaning products and cosmetics, can reduce body burdens of chemicals including BPA, mercury, pesticides, and phthalates in both children and adults.^{19–24} Although costs may present barriers to taking some actions (e.g., eating organic food), many other actions (e.g., not microwaving plastics, or wet mopping in the home to reduce dust, an important source of contaminant exposure for children) cost little or nothing. Making prospective parents aware of these hazards and the protective actions they can take has the potential to have a significant impact.

In response to the identified need in Canada for improved prenatal environmental health education in the clinical setting, the Prenatal Environmental Health Education Forum was convened in 2014 at the University of Ottawa. The Forum brought together more than 100 experts in reproductive clinical care (obstetricians, family physicians, midwives, and nurses), environmental medicine, public health, research, policy, and education for the purposes of sharing knowledge related to priority environmental health issues and education practices, and developing recommendations for improving environmental health education in the reproductive care context. Recommendations focused on the need to build knowledge and capacity among reproductive care providers, to develop educational resources for parents that can be integrated into the clinical care setting, and to promote prevention-oriented regulatory change.²⁵

RECOMMENDATIONS FOR ACTION

Integrate environmental health into post-secondary curricula

Basic education about environmental toxins, common sources of exposure, and protective actions to reduce exposures must be made part of health care professional training. This could include integrating an environmental health component into undergraduate medical, midwifery, and nursing education, and developing accredited continuing medical education and professional development opportunities. Such educational and training opportunities are rare in Canada today.²⁶

Modify antenatal intake forms

Standardized questions about toxic exposures (similar to those for smoking and alcohol) should be integrated into existing antenatal intake forms and other reproductive

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