

## INTRODUCING THE NEW CHILDHOOD LEAD SCREENING QUESTIONNAIRE

ONE OF THE GREAT public health triumphs of the last 30 years has been the dramatic decline in children's blood lead levels. Although rates of childhood lead poisoning, defined as a venous blood lead level  $\geq 10 \mu\text{g/dL}$ , have declined, the problem remains. The best current estimates are that the prevalence of childhood lead poisoning in Oregon children under age 6 is 1–2 %.

In Oregon we have struggled for years with how best to approach this problem. On the one hand, the relatively low prevalence of lead poisoning here argues against universal screening. Partisans in this corner of the ring point to the scarcity of face-to-face time with their patients, and are loathe to waste any of that precious resource on something that is unlikely to yield substantial benefit to the patient. Moreover, those familiar with the epidemiologic principles of screening know that even a highly sensitive and specific test, when used in a population with a low prevalence of the disease of interest, will give you many more false positives than true positives, making universal screening for childhood lead poisoning not the strategy of choice.

On the other hand, although the prevalence of childhood lead poisoning in Oregon may sound low, it translates into an estimated 2,000–5,000 children with lead levels  $\geq 10 \mu\text{g/dl}$ . Despite periodic rumors to the contrary, every county in Oregon has at least some pockets of homes with lead-based paint hazards, and lead-based paint is not the only source of exposure, so the risk of exposure is real throughout the state. Moreover, children who get lead poisoning may be an especially vulnerable group. Often these children have little developmental "reserve" by virtue of poverty and other risk factors in their lives, and lead poisoning adds one more neurological insult to the mix. Lead poisoning disproportionately affects minority children, and thereby contributes to health disparities among different racial and ethnic groups.

On the third hand\* in the ideal world preventing children from getting poisoned in the first place would be the strategy of choice. There is no threshold level below which lead poisoning has no effect, and the effects of lead poisoning cannot be undone — at least not easily. So why not put all our efforts into removing the sources of lead, rather than screening? Alas, we do not live in the ideal world, and without a massive infusion of effort (and cash) into primary prevention activities, a substantial number of Oregon children are still likely to get lead poisoning. Moreover, while screening may not be primary prevention for the screened child, it often *is* for siblings or other children who share the same environment, such as a day-care facility.

### SO WHAT'S A POOR HEALTH CARE PROVIDER TO DO?

Over the past three years the Oregon Childhood Lead Poisoning Prevention Program (OCLPPP) has collaborated with a task force to develop a lead-screening plan. Task force members included health-care providers and individuals from county health departments and community groups. The group reached consensus that universal screening is not warranted, but screening of children at high risk is. A lead risk assessment questionnaire was developed as a tool to help clinicians target their screening efforts. This issue of the *CD Summary* describes this tool and the rationale behind each of the questions.

### THE NUTS AND BOLTS OF THE QUESTIONNAIRE

Based on data from public health surveillance of childhood lead poisoning in Oregon, the questionnaire aims to identify the known major risk factors for lead poisoning. All children should be assessed for risk of lead exposure by administration of the questionnaire at 1 and 2 years of age and between the ages

of 3 and 5 years if not previously assessed. If the answer to any question is "Yes" or "Don't know," a blood lead test should be performed. Depending on the characteristics of the clinic and the patient population, the questionnaire can be administered by staff or self-administered by parents or caretakers. It will be available in several languages. OCLPPP will evaluate the effectiveness of the questionnaire through ongoing surveillance and a follow-up survey of pediatric health-care providers.

### THE QUESTIONNAIRE

1. Does your child live in or regularly visit a home, child-care or other building built before 1950?
2. During the past 6 months has your child lived in or regularly visited a home, childcare or other building built before 1980 with recent or ongoing painting, repair, remodeling or damage?
3. Does your child have a brother, sister, other relative, housemate or playmate with lead poisoning?
4. Does your child spend time with an adult that has a job or hobby where they may work with lead (such as painting, remodeling, auto radiators, batteries, auto repair, soldering, making sinkers, bullets, stained glass, pottery, going to shooting ranges, hunting or fishing)?
5. Do you have pottery or ceramics made in other countries or lead crystal or pewter that are used for cooking, storing or serving food or drink?
6. Has your child ever used any traditional, imported or home remedies or cosmetics such as Azarcon, Alarcon, Greta, Rueda, Pay-loo-ah, or Kohl?
7. Has your child been adopted from, lived in or visited a foreign country in the last 6 months?
8. Do you have concerns about your child's development?

\* OK, none of us has 3 hands, but you get the idea that this is a complicated and contentious issue.



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### REASONING BEHIND THE QUESTIONNAIRE

Questions 1 and 2: Nearly half of all the investigations for childhood lead poisoning in Oregon found that remodeling or repainting was the likely source of exposure. Prior to 1950 most house paints, including those used in Oregon, contained high amounts of lead. From 1950 to 1978, the amount of lead in residential paint was reduced, and by 1978 regulations required that residential paint not contain more than 0.5% lead (dry weight). Both nationally and within Oregon, it has consistently been shown that children who live in or regularly visit houses built before 1950 are at significant increased risk for exposure to lead-containing paint dust. Houses built prior to 1980 pose a risk during remodeling, renovating, repainting or any process that causes the old paint to chip or pulverize. In recent years there has been a significant movement of middle- and upper-class families into older neighborhoods throughout the state, resulting in increased risk of lead exposure if remodeling is not done in a lead-safe manner. Health-care providers should be aware of this demographic shift, which adds to the populations at risk for lead exposure. (Note: Individuals can determine the age of their housing by contacting their local county tax assessor or within Portland visit <http://www.portlandmaps.com>. They can also obtain information on lead-safe work practices by going to our website, <http://www.healthoregon.org/lead>).

Question 3: Children who have a sibling, playmate or other family member with an elevated lead level are at increased risk due to a common exposure

or from a secondary exposure, such as work clothes or dust in the car.

Question 4: Occupations and hobbies of parents or other caretakers can be a source of lead exposure for children. Children can have direct exposures if these activities occur in the home and indirect exposures if lead dust is brought home on clothes or shoes. Children can also swallow sinkers, bullets, and other lead objects, which can result in rapid poisoning and even death.<sup>1</sup>

Question 5: Most of us know the hazards (and benefits) of eating beans, but who ever would have thought that beans could be a source of lead exposure? Recently a case of childhood lead poisoning was traced back to beans that were soaked in a ceramic pot from Mexico, which contained lead in the glaze. Ceramics, leaded crystal or pewter may contain lead. The amount of lead that leaches from dishes varies depending on the acidity of the food or liquid and the length of time in the dish.

Question 6: There are many home remedies (traditional or imported) that contain lead. For example, azarcon is a lead-containing home remedy that is commonly used in some Latino communities for empacho (stomach ache). For a detailed list, see <http://www.healthoregon.org/lead>.

Question 7: Adoption from certain other countries is a risk factor for lead poisoning. The American Academy of Pediatrics recommends that children who have emigrated or been adopted from countries where lead poisoning is prevalent (China, Russia, Eastern Europe) should be screened for elevated lead levels.<sup>2,3</sup> Although the source of exposure may no longer be an issue, it is important to assure the child has adequate follow-up and is not placed in a situation where they could be exposed to more lead.

Question 8: Lead is known to contribute to developmental and behavioral problems including aggression, hyperactivity, attention deficit, school problems, learning disabilities, as well as growth, speech and language delays and hearing loss.<sup>4</sup> There does not appear to be a threshold for harm, and recent evidence shows that children with any blood lead concentration, even <10 µg/dL can have lowered IQs.<sup>5</sup> Not only can lead cause these problems, but children with these problems may be more likely to display behaviors, such as pica or excessive hand-to-mouth activities, which increase the risk of lead exposure. Part of the work-up for any of these problems should include a blood lead level.

For more information and copies of the questionnaire contact the Oregon Childhood Lead Poisoning Prevention Program, 503/731-4025, or see our web site, <http://www.healthoregon.org/lead>.

For general questions about lead, call the Lead Line, 800/368-5060 or 503/988-4000

### REFERENCES

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