Screening for High Blood Lead Levels in Children and Pregnant Women

The US Preventive Services Task Force (USPSTF) recently published recommendations on screening for high blood lead levels in children and pregnant women.

Where Is Lead Found and Why Is It a Concern?
Common sources of lead exposure include leaded gasoline, lead paint, lead-based pipes, and lead-based food and water storage containers. Exposure can also come from work or hobbies (eg, ceramics, medicines, candy, herbal remedies, cosmetics).

Young children and fetuses in utero are at higher risk of lead poisoning compared with adults because lead can more easily enter their developing brains. Although most children with high lead levels do not have symptoms, lead poisoning can lead to problems such as decreased IQ, learning disabilities, hyperactivity, hearing problems, and impaired growth. Rarely, more severe neurological symptoms such as seizures and coma can occur. In pregnancy, lead exposure can affect development of several fetal organ systems. It can also increase risk of preeclampsia and other pregnancy complications.

The mainstay of treatment for lead poisoning is removing the source of lead exposure. For more severe cases, other treatments such as chelation therapy can be used. However, many symptoms of lead poisoning are irreversible.

What Screening Tests Are Used to Detect High Lead Levels?
High lead levels can be detected by capillary blood testing—taking a small sample of blood from the small blood vessels near the surface of the skin. This is what is usually done in children with a finger or heel stick. High lead levels can also be detected by venous blood testing, which is done by drawing blood from a vein such as in the inner elbow. Venous blood testing is more accurate than capillary blood testing (fewer false-positive results), but both tests can identify people at risk of lead poisoning.

Another way to screen for high lead levels is with questionnaires that ask about risk factors for lead poisoning such as living in a house built before 1960, having a sibling or close contact with lead poisoning, living with an adult exposed to lead through work or hobbies, or living near a lead-based industry. However, these questionnaires have been found to be inaccurate as a screening test.

What Is the Population Under Consideration for Screening for High Lead Levels?
This USPSTF recommendation applies to children aged 5 years or younger as well as pregnant women.

What Are the Potential Benefits and Harms of Screening for High Lead Levels?
The main potential benefit of screening for high lead levels is finding cases and preventing further exposure before symptoms of lead poisoning develop. Although prevention measures such as residential hazard control and treatments such as chelation therapy can decrease blood lead levels, there is not enough evidence to say that these decreased lead levels lead to improved health outcomes in children (cognitive/behavioral problems, learning disabilities) or in pregnant women (perinatal/maternal outcomes, cognitive problems in children). There is a potential public health benefit in finding unknown sources of lead in the community, which can help protect others. Potential harms of screening for high lead levels include false-positive results that can cause anxiety, as well as side effects from unnecessary treatments (particularly chelation therapy).

How Strong Is the Recommendation to Screen for High Lead Levels in Children and Pregnant Women?
The USPSTF found insufficient evidence to say that screening for high lead levels in children and pregnant women who do not have symptoms of lead poisoning leads to better health outcomes.

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While most people with high blood lead levels do not have symptoms, lead poisoning in children and babies can result in cognitive problems that are often irreversible.

Population
Children aged 5 years and younger and pregnant women

USPSTF recommendation
There is not enough evidence to weigh the risks and benefits of screening for high blood lead levels in children and pregnant women who do not have symptoms of lead poisoning.

FOR MORE INFORMATION
US Preventive Services Task Force

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