INFORMATION SHEET ON CHILDREN'S ENVIRONMENTAL HEALTH FOR CLINICIANS

Pollution free environments for healthy generations – what every clinician needs to know about children's environmental health

World Health Organization

Key facts

Early-life environment exposure affects lifelong health and risk for disease
Environmental threats during preconception, prenatal life and early childhood can have immediate and future health consequences.

Unhealthy environment causes death
In 2016, the environment was responsible for an estimated 13.7 million (or 24% of) deaths globally, including 1 in 4 deaths of children under 5 years of age and 23% of all disease burden.[1]

Prevention works
Decreasing exposure to air pollution and hazardous chemicals and waste, while securing access to safe water and adequate hygiene and sanitation, reduces disease.

Action to reduce early exposure can protect health
Reducing and potentially eliminating the exposure of children to environmental threats in the early years of their lives, and even before conception, can protect their health and that of future generations.

What can clinicians do?

The role of clinicians can be likened to that of sentinels of early-warning signs. Having first-hand contact with pregnant women and their families, as well as infants and children, they are important sentinels of the impact of environmental contaminants on people's health. Their work provides them the opportunity to raise awareness and communicate crucial information about exposure to environmental hazards, its health effects, and what can be done to protect children from it.

In their everyday work, clinicians can take the following specific actions:

- identify links between health outcomes and environmental and occupational sources of exposure in children;
- disseminate knowledge and educate families and communities about the most common environmental risks and measures to prevent them;
- as health professionals at the forefront of health surveillance, advocate protective measures against environmental hazards and report cases of environmental disease;
- identify environmental risks and raise related health concerns to influence decision-makers in implementing action to protect people from pollution, hazardous chemicals and waste;
- keep abreast of emerging environmental research and concerns.

[1] Preventing disease through healthy environments. A global assessment of the burden of disease from environmental risks. Updated 2016 data tables. Geneva: WHO; 2016 (https://www.who.int/publications/i/item/9789241565196, accessed 7 October 2022).

Select issues related to children's environmental health of which every clinician should be aware (examples)

Air pollution

Health effects

Air pollution can result in:

- reduced lung function and rate of lung growth, respiratory infections (for example, pneumonia), and exacerbation or aggravation of asthma;
- some adverse outcomes, including pre-term birth, low birth weight, still birth and small for gestational age;
- impairment of children's cognitive and neurological development;
- increased risk and incidence of otitis media;
- development of some childhood cancers, including leukaemia;
- some chronic health conditions later in life, for example lung disease.

Sources and pollutants

Pollutants with the strongest evidence for public health concern, include particulate matter (PM), ozone (O_3), nitrogen dioxide (NO_2), sulphur dioxide (SO_2). Carbon monoxide (CO) is particularly relevant in the context of household air pollution.

Household air pollution is generated from the use of unclean fuel and cooking, heating and lighting technologies (wood, crop waste, charcoal, coal, dung, and kerosene).

Also of concern is ambient air pollution, which derives mainly from fossil fuel (for example, coal, oil or natural gas) combustion, industrial processes, waste incineration, agricultural practices, and natural processes, such as wildfires, dust storms and volcanic eruptions.

There are many other indoor air pollutants, including volatile organic compounds from household products and building supplies, asbestos, pesticides, radon, biological pollutants and tobacco smoke.

Recommended actions

Be informed about existing and emerging evidence on the health effects of exposure to air pollution, paying particular attention to susceptible and vulnerable population groups, such as children, with the aim of educating patients and peers.

Recognize and assess exposure risks in pregnant women and/or child patients via their medical histories and by talking to them.

Advise people about behaviours that promote sustainable lifestyles with a positive impact on people's health and mitigate air pollution and greenhouse-gas emissions. These include walking, cycling, using public transport, limiting red meat consumption, and – where possible – buying locally produced food.

Advise people on the importance of switching to clean household fuels and fuel devices, increasing indoor ventilation, and keeping indoor environments dry and free of mould.

Foster research in the field of air pollution and children's health.

Engage with other sectors on the adoption of air pollution policies in line with the WHO Air Quality Guidelines and provide leadership in health matters, advocating this goal at the local and national levels.

Be aware of local, national and international medical and health-related societies that are active in the field of air pollution and health with the aim of staying informed about and supporting or engaging in their activities.

Chemicals (heavy metals, persistent organic pollutants, pesticides and endocrine disrupting chemicals)

Health effects

Exposure to:

- lead in utero and during childhood can cause reduced intelligence quotient (IQ), behavioural changes, such as reduced attention span and increased antisocial behaviour, and reduced educational attainment;
- mercury and methylmercury in utero and during early life can cause neurological and behavioural disorders.

Acute pesticide poisoning is also a serious public health problem in many parts of the world, its health effects depend on the type and quantity of pesticide involved, duration and timing of exposure.

Children are particularly vulnerable to chemicals as their unique exposure pathways and developmental physiology increase their risk of exposure and effects on their development and health.

Many persistent organic pollutants (POPs) are also endocrine disrupting chemicals (EDCs) and may impact the immune, reproductive and neurodevelopmental systems.

Sources

Lead can be found, for example, in household paint, water, toys, and ceramics. Traditional medicines, battery recycling, open burning of electronic waste, improper waste management and industrial emissions are also sources of lead contamination.

Exposure to methylmercury occurs mainly through the consumption of contaminated fish and seafood. Mercury may be present in items found in the home, such as, thermometers, cosmetics, and traditional medicines.

Young children at play may be exposed to pesticide containers and surface residues, and they may ingest contaminated soil and dust. Children may also be exposed to pesticides via their mothers (either in utero or through breastfeeding). However, WHO recommends exclusive breastfeeding up to 6 months of age as breastfeeding is critical and has many benefits for the infant and mother.[2]

[2] Breastfeeding – Infant and young child feeding, 9 June 2021. Geneva: WHO: 2021 (https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding, accessed 7 October 2022)

POPs remain in the environment for long periods of time and magnify as they move through the food chain. They can be ingested through the consumption of dairy products and fatty tissue in fish and meat, as well as through inhalation and dermal absorption.

Recommended actions

Remind patients that some fish and seafood can be contaminated with mercury and raise awareness of the essential need for uncontaminated local sources.

Advise patients to limit their intake of POPs from food by following the advice of the local food-safety authorities.

Identify traditional practices and folk medicines as sources of mercury and spread awareness of the potential harm from their use, and work with individuals and communities to identify substitute practices.

Advise patients about the dangers of informal recycling of lead-containing products in and around the home backyard and community areas.

Advise people against keeping toxic chemicals in the home. Promote the safe packaging and clear labelling of toxic substances, as well as their storage out of the reach of children to prevent poisoning.

Advise parents and caretakers about the importance of preventing children from accessing waste sites, especially hazardous waste sites.

As clinicians, advocate at the local, regional and community levels for health policies aimed at reducing chemical exposure.

Water, sanitation and hygiene

Health effects

Lack of safe water, sanitation and hygiene (WASH) is a major risk factor for diarrhoea, parasitic infections and malnutrition in children, as well as school absenteeism.

Diarrhoea is the fourth leading cause of death among children under 5 years[3], while 24% of the world's population are infected with soil-transmitted helminths, causing impaired growth and physical development in children[4].

Infections associated with unclean births account for 26% of neonatal deaths and 11% of maternal