Key messages

» Globally, 93% of children under 18 live with air pollution levels above WHO guidelines.

» Air pollution causes over half of all child deaths from acute lower respiratory infection (ALRI) in children under five in LMICs.

» Air pollution exposure is linked to a wide range of adverse health outcomes in children, including infant mortality, asthma, neurodevelopmental disorders, and childhood cancers.

» By “prescribing” clean air for children, policy-makers can protect them from the lifelong effects of air pollution exposure.
**Introduction**

Air pollution exposure is a global health emergency for children. Globally, 93% of children under 18 live with air pollution levels above WHO guidelines. In low- and middle-income countries (LMICs), 98% of all children under five live in areas where air pollution (PM2.5) levels exceed WHO guidelines.

Exposure to air pollution causes over half of all deaths from acute lower respiratory infection (ALRI) in children in LMICs. Combined, ambient and household air pollution caused 543,000 deaths from ALRI in children under five in 2016.

These deaths and lost years of healthy life are largely preventable. Healthcare professionals and policymakers can work together to lift this terrible burden on the world’s children, by ensuring they are not exposed to dangerous air pollution in their early, most vulnerable, years.

**Why it matters: children are more vulnerable**

Air pollution damages children’s health in many different ways, through both chronic and acute effects. It is linked to an increased risk of childhood cancers, infant mortality, ear infections, reduced lung function and developing asthma. A growing body of research suggests that air pollution can impair cognitive development. There is growing evidence of links between maternal exposure and stillbirth, premature birth, and low birth weight.

Children are uniquely vulnerable to air pollution. They breathe faster than adults, taking in more pollutants relative to their body size. Their lungs, brains, organs and cardiovascular systems are still maturing, and more sensitive to inflammation and other impacts.

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![IMPACT OF AIR POLLUTION ON CHILDREN’S HEALTH](image)

A child who is exposed to unsafe levels of pollution can face a lifetime of health impacts. Exposure in the womb or in early childhood can lead to:

- Stunted lung growth
- Reduced lung function
- Increased risk of developing asthma
- Acute lower respiratory infections
- Impaired mental and motor development
- Behavioral disorders
- Low birth weight
- Premature birth
- Infant mortality
- Childhood cancers
- Increased risk of heart disease, diabetes and stroke in adulthood

Because children have a longer life expectancy than adults, diseases have more time to emerge. The consequences of exposure early in life – whether via inhalation, ingestion or in utero – can lead to lifelong burdens, including increased risks of heart disease, stroke and cancer.

The danger is especially high in a place that is supposed to shelter children: the home. In many parts of the world, children spend much of their time with their mothers as they tend the hearth. In 2016, smoke from the use of polluting cooking fuels caused 403,000 premature deaths in children under five.
These risks persist despite the fact that children have a basic human right to breathe clean air in their homes, schools, and communities. The Convention on the Rights of the Child requires States to pursue full implementation of children's right to the highest attainable standard of health, “taking into consideration the dangers and risks of environmental pollution.”

**Challenges and gaps**

Children’s exposure to air pollution is a health crisis that has largely been overlooked to date. Challenges both within and beyond the health sector must be addressed to move this crisis higher up the policy agenda.

Paediatricians, family doctors, gynaecologists, obstetricians, midwives, nurses and community health care workers must all take on a larger role in managing children’s exposure to air pollution, through improved methods of care, prevention and collective action.

Healthcare professionals commonly treat the effects of exposure-related illness, but they rarely receive training in identifying and managing the underlying causes or in treating air pollution as an important risk factor. It is essential that health professionals be informed about evidence on the risks of air pollution to children. They can identify air pollution-related risk factors by asking pertinent questions about the child’s or pregnant mother’s environment. Such questions can be part of a routine check-up, and lead to advice about ways to reduce exposure at home, in school, or in other settings.

Many families have limited options to improve air quality in their own homes. Clean household fuels and technologies may not be affordable, available or accessible, especially in low-income settings. Stronger public policy protections are essential. Programmes and subsidies to expand access to clean energy for cooking, heating and lighting can help children breathe easier. Evidence-based air quality standards and monitoring programmes, along with proper enforcement mechanisms, can make a huge difference for children’s health.

**Priorities and opportunities: prescribing clean air**

The overarching imperative is collective, coordinated action to reduce children’s exposure to air pollution. The best prescription is, simply, clean air.

Health professionals are well positioned to communicate the risks of exposure to decision-makers, conduct health-based assessments, support improved air quality improved standards, and advocate for monitoring and tracking of progress. Health professionals can also advocate for specific policy measures to protect children, including:

- national campaigns to improve access to clean household fuels and technologies;
- transferring subsidies from kerosene to clean fuels like solar and LPG;
- reducing emissions from heavy-emitting diesel vehicles through grants and low-cost loans;
- and expanding public transport, bicycle and walking networks as safe routes to school.

**The way forward**

The launch of the 2030 Agenda for Sustainable Development offers an unparalleled opportunity to reduce the environmental hazards that threaten children’s health. Implementing evidence-based policies and practices to protect children from air pollution will, in turn, contribute to achieving multiple SDGs.

The WHO Department of Public Health, Environmental and Social Determinants of Health (PHE) is working at the global, regional and country levels to protect children from environmental risks, by developing technical guidance and field interventions to prevent childhood diseases related to key environmental risks such as air pollution. WHO is also working to build the capacity of the health sector through training materials to help health professionals recognize and mitigate key risk factors.

PHE is also working with several global initiatives dedicated to advancing children’s health, to increase the focus on prevention of risks such as air pollution. These include WHO’s Global Strategy for Women’s, Children’s and Adolescents’ Health; WHO’s Nurturing Care Framework for Early Childhood Development; and the Global Action
Plan for the Prevention and Control of Pneumonia and Diarrhoea. The BreatheLife campaign, co-led by UN Environment, WHO and the Climate and Clean Air Coalition, has made children’s health central to its messaging on the multiple benefits of clean air.

Children’s exposure to air pollution is a global health crisis. It must be treated with the corresponding urgency. Children depend entirely on adults to protect them from the threat of unsafe air. Everyone has a role to play, at every level: individuals, families, family doctors, health care providers, communities, national governments and international agencies.

Table 1. Death rate per 100 000 children attributable to the joint effects of HAP and AAP in 2016, by WHO region and income level

<table>
<thead>
<tr>
<th>WHO region</th>
<th>Income level</th>
<th>Children &lt; 5 years</th>
<th>Children 5–14 years</th>
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<tbody>
<tr>
<td>African</td>
<td>LMIC</td>
<td>184.1</td>
<td>12.9</td>
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<tr>
<td></td>
<td>HIC</td>
<td>4.3</td>
<td>1.4</td>
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<tr>
<td>Region of the Americas</td>
<td>LMIC</td>
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<tr>
<td></td>
<td>HIC</td>
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<td>0.0</td>
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<tr>
<td>South-East Asia</td>
<td>LMIC</td>
<td>75.0</td>
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<tr>
<td></td>
<td>HIC</td>
<td>8.8</td>
<td>0.6</td>
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<tr>
<td>European</td>
<td>LMIC</td>
<td>98.6</td>
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<tr>
<td></td>
<td>HIC</td>
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<tr>
<td>Eastern Mediterranean</td>
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</tr>
<tr>
<td></td>
<td>HIC</td>
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<tr>
<td>Western Pacific</td>
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<tr>
<td></td>
<td>HIC</td>
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<tr>
<td>World</td>
<td>LMIC</td>
<td>80.5</td>
<td>4.1</td>
</tr>
</tbody>
</table>

LMIC, low- and middle-income country; HIC, high-income country.