What do we know about air pollution, COVID-19 and NCDs

International Day of Clean Air for blue sky
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Air Pollution, NCDs and COVID-19: Challenges and Opportunities for a Healthy Recovery
WHO / PAHO webinar

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Overview

1. Air pollution: the basics
2. Air pollution & NCDs
3. Air pollution & COVID-19
4. Conclusions
Air pollution is a health issue

7 million deaths per year as a result of ambient and household air pollution exposure

Ambient air pollution
4.2 million deaths/year

Household air pollution
3.8 million deaths/year
Air pollution: the basics
1. A little bit of history

Milestones on air quality and health

1958
1964
1972
(1976-84)
1987
2000
2005
2009
2010
2014
2015
2018
2020

WHO Technical reports
WHO Air Quality Guidelines
WHO Guidelines for Indoor Air Quality
WHA Resolution 68.8
First WHO Global Conference on Air Pollution and Health
First UN Day of Clean Air for blue sky
Geographical distribution of published research in outdoor air pollution and respiratory health (1900-2017)

Number of publications / year with key words “Air pollution and health” in PubMed, 1950-August 2019
(Almost) every organ is affected

2. Health effects of Particulate Matter

Eye diseases

Respiratory disease mortality
Respiratory disease morbidity
Lung cancer
Pneumonia
Airway inflammation
Decreased lung function
Decreased lung growth

Insulin resistance
Type 2 diabetes
Type 1 diabetes
Bone metabolism

High blood pressure
Endothelial dysfunction
Increased blood coagulation
Systemic inflammation
Deep venous thrombosis

Stroke
Neurological development
Mental health
Neurodegenerative diseases

Cardiovascular disease mortality
Cardiovascular disease morbidity
Myocardial infarction
Arrhythmia
Congestive heart failure
Changes in heart rate variability
ST-segment depression

Skin ageing

Premature birth
Decreased birthweight
Decreased fetal growth
Intrauterine growth retardation
Decreased sperm quality
Pre-eclampsia

Slide courtesy of Annette Peters
3. There is enough data on exposure and health impacts

Global monitoring and reporting

- **Air quality in cities**: 91% of the world is exposed.
- **Clean energy access**: 3 billion people rely on polluting fuels.
- **Mortality from air pollution**: 7 million deaths.

[Logos of Sustainable Cities and Communities, Affordable and Clean Energy, and Good Health and Well-Being]
Increase in publicly available information & monitoring of air quality

Number of cities and towns with PM10 and/or PM2.5 measurements in the WHO air quality database

- Increasing number of air quality data
- Increasing interest from countries to share data
- Increase in all regions, but mostly in Europe

**PM$_{2.5/10}$**: Particulate matter of a diameter equal or less than 2.5/10 microns
Beyond PM monitoring, source apportionment is crucial

... but often missing or incomplete
3. The WHO AQGs summarize the evidence for further policy action

Uptake of WHO AQG in air quality standards – PM$_{2.5}$

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

App: [https://whoairquality.shinyapps.io/AirQualityStandards/](https://whoairquality.shinyapps.io/AirQualityStandards/)
OVER 40 countries and 70 cities representing 750 million people answered WHO’s call to provide citizens with CLEAN AIR by 2030.
4. Tools exist to engage with other sectors

Analytical tools to support Health and Economic Impact Assessments and policy choices

Clean Household Energy Solutions Toolkit (CHEST)

Information & tools to transition to clean energy in the home

Development and application of analytical tools to support the assessment of the health and economic impacts of interventions in key sectors, including on transport, household energy, green space and land-use, solid waste management (open source, flexible, evidence-based tools)
Air pollution & NCDs
Mortality from air pollution, 2016

7 millions deaths – 89% are non communicable disease

- Acute lower respiratory infections
- Chronic obstructive pulmonary disease
- Ischaemic heart disease
- Lung cancer
- Stroke
Air pollution moves up on the global NCD agenda – moving towards policy options to address air pollution

Air pollution is the second leading cause of deaths from noncommunicable diseases (NCDs), after tobacco-smoking.
Best buys for tackling NCDs

‘Best buys’ and other recommended interventions for the prevention and control of noncommunicable diseases

TACKLING NCDs

Manage chronic respiratory disease

‘Best buys’ and other recommended interventions

- Effective interventions with CEA $5000 per DALY averted in LMICs
- Symptom relief for patients with asthma with inhaled salbutamol
- Symptom relief for patients with chronic obstructive pulmonary disease with inhaled salbutamol
- Treatment of asthma using low-dose inhaled beclomethasone and inhaled beta agonists
- Access to improved stoves and cleaner fuels to reduce indoor air pollution
- Cost-effective interventions to prevent occupational lung diseases, for example, from exposure to silica, asbestos
- Influenza vaccination for patients with chronic obstructive pulmonary disease

An up-to-date list of WHO tools and resources for each objective can be found at http://www.who.int/nmh/ncd/tacklencds
Air pollution as part of NCD coordination at country level

Thematic Working Group on NCDs and the Environment

- Platform for UN and non-state actors to effectively collaborate on NCDs and the environment, with specific focus on Air Pollution.

- Have standard operating procedures for joint programming missions of the Task Force on air pollution and NCDs.

- Join NCD programming missions to address air pollution/environmental determinants and health.

- Mapping existing networks (NGOs, medical societies, countries, cities etc) and agreements that are working towards reducing air pollution levels in order to determine how the UN system as a whole can contribute to ongoing efforts.

- Further contribute to the development of NCD/pollution investment cases (building on NCD investment case work done to date) after completion of the interventions of catalogue
Air pollution & COVID-19
What do we know?

• The potential links between exposure to poor air quality and vulnerability to the impacts of COVID-19 are being investigated by the health and scientific community.

• Air pollution is known to have detrimental effects on the respiratory and cardiovascular systems, as well as impacts other diseases that have been shown to raise the risk of COVID-19 severity.

• It is hence crucial to consider improved air quality as an additional measure to help reduce the burden placed on people’s health as well as healthcare systems.
What can we do now?

- Define near-term and longer-term research priorities for strengthening the knowledge on the links between air pollution and COVID-19, including the impact on the lockdown and reopening measures.

- In any case, it is crucial to continue to strengthen measures, laws, and standards needed to prevent and control air pollution emissions.

- COVID-19 pandemic is an opportunity for a healthy recovery*, especially given the synergies with climate change and air pollution agendas.

*WHO Manifesto for a healthy recovery: https://www.who.int/news-room/feature-stories/detail/who-manifesto-for-a-healthy-recovery-from-covid-19
Conclusions
Health Sector is a key player in addressing air pollution

• Synthetize evidence

• Develop **evidence-based guidelines** supporting effective interventions

• Use **Health Impact Assessment (HIA) and other tools** to assess policies and their health impacts

• Guide, define and **monitor exposure and health indicators** to measure results and contribute tracking to the SDGs (7.1.2, 11.6.2, 3.9.1)

• **Advocate for actions** that prevent death and disease - raise the level of ambition

• **Act as convening power** for Ministries of Health, Energy and Environment to effectively address public health issues
Equipping health care workers to address air pollution issues

To prevent PNEUMONIA:
- Keep your home smoke free. Use a clean cookstove - such as ethanol, LPG, biogas, or clean biomass stoves.
- Change from kerosene to solar lamps if possible.
- Keep smoke out of the home. Cook in a well-ventilated place and keep children away from cookstove fire and fuels, and smoke.
- Wash hands often, feed your child nutritious food and get them all recommended vaccinations.

DANGER SIGNS
1. Fever
2. Breathing difficulty
3. Chest in-drawing
4. Unusual sleepiness/can't wake up
5. Coughing
6. Convulsions

URBAN HEALTH INITIATIVE
An enhanced global response to the adverse health effects of air pollution

Community Health Workers starting their daily routine in Cajamarca, Peru. Photo credit: PAHO Peru
KEY MESSAGES

• There is **plenty of evidence** on air pollution and health, and there is no excuse to wait for more

• Beyond monitoring, sources of air pollution need to be identified to **target key sectors** and develop healthy policies

• Tools to assess the health impacts of sectoral policies exist

• COVID-19 pandemic is an opportunity for a **healthy recovery***, especially given the **synergies with climate change** and air pollution agendas

Thank you

WHO page for the UN Clean Air Day:
https://www.who.int/news-room/events/detail/2020/09/07/default-calendar/international-day-of-clean-air-for-blue-skies

Videos on air pollution and health: