Strengthening Routine Reporting on Household Air Pollution Exposure Risk and Health Impacts

ENABLE Project Policy Brief

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Key Message

- **The Ethiopian health system routinely collects only the availability of a separate kitchen and smokeless stove, missing other key household air pollution exposure indicators.**

We recommend collecting the "types of cooking fuel and technologies" indicator and expanding the definition of the "separate kitchen indicator" by adding a detailed criterion under the Health Extension Program (HEP). The upcoming revision of the HMIS Indicators Reference Guide and e-CHIS Strategic Plan presents a great opportunity to incorporate the proposed new indicators

Problem Statement

Household air pollution is the biggest determinant of health and disease in Ethiopia, costing 39,000 lives every year and 4% of gross domestic product (GDP) [1]. This public health problem is directly relevant to the 2030 Sustainable Development Goals (SDGs), to which Ethiopia is a signatory. The SDGs include two main indicators on household air pollution: "population with primary reliance on cooking fuels and technologies by proportion, number of people, and fuel type" (indicator 7.1.2) and "household air pollution attributable death rate per 100,000 population and disability-adjusted life years (DALYs)" (indicator 3.9.1) [2]. The high burden of household air pollution highlights the urgency for robust monitoring of these indicators. Validated, disaggregated and agreed-upon indicators are essential tools used by program managers, researchers, governments and donors to measure health status and progress towards achieving the SDG goals. Without them, it is impossible to determine the magnitude of a health problem, measure its impact on the economy, assess if interventions are working, and identify which interventions are needed to address health inequalities and facilitate international comparison [3–6]. However, actual implementation falls short in the development of complete list of indicators to accurately capture complex problems. Recognizing the public health importance of household air pollution, the Ethiopian health system has been capturing a few data elements under the indicator "proportion of households with healthy housing" [7–9], which is reported quarterly from health posts. It focuses on three distinct data elements: a separate kitchen, a smokeless stove and a separate animal house. These

elements were intended to assess the risk of exposure to household air pollution and zoonotic diseases (Figure 1). While the lack of a separate kitchen and a smokeless stove can indicate exposure to household air pollution, they do have limitations in effectively revealing the types of cooking fuel being used (Box 1).

5.5. HEH_HHHH: Proportion of households with healthy housing

Definition	*Proportion of households with healthy housing disaggregated by separate animal house, smokeless stove and separate Kitchen*	
Formula	*Number of households with healthy housing*	X100
	Total number of households	
Interpretation	This indicator measures the Proportion of households with healthy housing. Healthy housing is one of the health extensions packages that is implemented at household level. The package is intended for the prevention of diseases related with indoor air pollution, zoonotic diseases. For the house to be Healthy, it should fulfill at least Separate kitchen, Smokeless stove and separate animal house. Healthy housing can be disaggregated as, a house with **Separate kitchen,** **Smokeless stove,** **separate animal house** Limitations: Health extension workers may not visit all household in one quarter. So, the indicator may not represent the actual status of the kebele quarterly.	
Dis-aggregation	Separate kitchen, Smokeless stove, separate animal house	
Source	Hygiene & Sanitation card (FF)/eCHIS, household register	
Reporting level	Heath Post	
Reporting Frequency	Quarterly	

Figure 1: Household air pollution exposure-related indicators currently collected in the Ethiopian health system (Source: HMIS Indicators Reference Guide 2022)

The limitations of the existing disaggregated data elements of the healthy housing indicator include:

- Not specific enough to adequately account for the type of structure required to consider a kitchen that is truly separated.
- Does not collect the types of “smokeless” stove the household uses.
- Does not describe the types of fuel used to consider a stove as “smokeless.”
- Does not collect information on the types of fuel used for cooking, which are the main sources of household air pollution.

Box 1: Limitations of the "proportion of households with healthy housing" indicator

Two primary causes account for of the gap in collecting these indicators. First, the indicators are not included in the routine electronic community health information system (e-CHIS) reporting format. Second, health facilities are not mandated to report these specific indicators.

The adverse effects of solid fuel burning on pregnant women, children and other population groups are well documented. It is associated with adverse pregnancy outcomes, such as low birth weight, small for gestational age, preterm birth, still birth and neonatal mortality [10]. In children less than 5 years of age, it increases the risk of pneumonia [11] and decreased lung function [12]. It is also linked with poor cognitive performance [13]. The use of improved solid biomass cooking stoves saves energy, reduces the degree of air pollution and decreases exposure. However, the level of pollutants remains above the recommended air quality guideline limit. Therefore, improving biomass cookstoves provides limited health benefits [14]; the level of household air pollution can only be reduced to below the recommended level by using clean fuels, including electricity, LPG, and biogas despite very minimal use by Ethiopian households. There are various benefits of the exclusive use of clean fuel. It reduces morbidity, mortality and adverse pregnancy outcomes due to air pollution and contributes to the reduction of outdoor air pollution [15].

Therefore, the current “healthy housing” indicator needs revision to improve its validity in measuring the risk of household air pollution exposure by incorporating information on clean fuel use. As introducing a new indicator, such as reporting the concentration of a specific household air pollutant to the existing HMIS might be costly, the best approach is to revise the existing indicator, “healthy housing”, to include “separate animal house,” “separate kitchen,” “proper ventilation” and “clean cooking fuel use (electricity, LPG/cylinder, solar power, biogas).”

Collecting these indicators will support health care providers, decision-makers and researchers in accessing data related to clean cooking fuel use for data-driven decision-making. Getting access to data would also enable estimating the real burden of disease

of air pollution using information routinely collected by the Ethiopian health system and provide actionable information for decision-makers.

Policy Recommendation

The revision of household air pollution indicators is recommended. It is cost-effective intervention, requiring no additional human resources, and can provide a better understanding of the magnitude of household air pollution exposure and related adverse health outcomes. The MOH should take the existing opportunity to incorporate new household air pollution indicators and expand the details of the existing indicators.

Policy Option

Require the Inclusion of a "Use of Clean Cooking Fuel and technologies" Indicator

Why: The type of cooking fuel and technology is the main source of household air pollution. Clean cooking fuel is the best indicator to determine household air pollution exposure, as biomass fuel use is the source of pollution. Only the use of exclusive clean fuel reduces the level of pollutants to a healthy recommended level.

Table 1: Description of the revised "healthy housing" indicator with the addition of vital household air pollution data elements

Definition	Proportion of households with healthy housing disaggregated by: ▪ **Separate animal house** ▪ **Separate kitchen** ▪ **Proper ventilation** ▪ **Clean cooking fuel use**
Formula	$\frac{Proportion\ of\ households\ with\ separate\ animal\ house\ separate\ kitchen, proper\ ventilation\ and\ clean\ cooking\ fuel}{Total\ number\ of\ households\ in\ the\ catchment\ area}$
Description	▪ A household should have at least a separate animal house, a separate kitchen, proper ventilation and use clean cooking fuel ▪ Separate kitchen: kitchen separated from the main house by a solid wall with no openings (either separated from or adjust to the main house) ▪ Proper ventilation: presence of a kitchen window and door, open

	during the cooking period ▪ Clean cooking fuel use: use of any of the electricity, LPG/cylinder, solar power, or biogas fuel energy ▪ Separated animal house: separated from the main house or kitchen by a solid wall with no openings (either separated from or adjust to the main house)
Disaggregation	Separate animal house, separate kitchen, proper ventilation and clean cooking fuel use
Data source	Family folder, e-CHIS
Reporting level	Health post
Reporting frequency	Quarterly

Description of the proposed policy implementation

Scope: Rural and urban health facilities will collect the relevant indicators. The household air pollution exposure indicators will be collected by health extension workers (HEWs) working at health posts after visiting households in their catchment area. Health and health outcome indicators will be reported by health facilities such as health centers and hospitals.

Roles and responsibilities: Gathering and reporting the indicators is the responsibility of the HEWs, HMIS officers, and Performance Monitoring Teams (PMTs) at each level of the health system.

Compliance and enforcement: Management and supervisors in the health system will ensure the required indicators are reported completely and in time. These include:

- **Health facilities PMT (heads or medical directors, CEOs, planning, monitoring and evaluation officer) and Health Extension Supervisors**
- **Woreda PMT (Health Office Head; Planning, Monitoring and Evaluation Officers; and HMIS Officers) and Health Extension Supervisor**
- **Regional PMT and Community Engagement and Health Extension Program Officers**
- **MOH PMT, WASH and Environmental Health focal person, and Community Engagement and Health Extension Program Officers.**

Reporting and documentation: Every quarter, the indicators will be recorded through the e-CHIS and DHIS2 system by HEWs, HMIS Officers, and respective officers at each level.

Resources: Finance to review the change process, updating the registration and recording formats, such as the family folder's hygiene and sanitation card, the e-CHIS and the DHIS2 system.

Timeline: The MOH plans to revise the HMIS Indicator Reference Guide including e-CHIS and DHIS2. The tentative timeline is three to 12 months.

Legal Mechanisms

The proposed enforceable mechanisms are to revise and cascade the Ethiopian Essential Health Services Package (EEHSP) (2019), Health Sector Woreda Transformation Coordination and Monitoring Plan (2023), HMIS Indicators Reference Guide (2022), and e-CHIS Implementation Manual and Strategic Plan.

The WASH and Environmental Health Desk should take the initiative to lead and work with HMIS and other departments at MOH to ensure revisions are made, and new household air pollution indicators are collected from health posts.

Expected Impacts

The collection of household air pollution exposure indicators and adverse health effects, data that can be used to measure the magnitude of household air pollution, the effectiveness of interventions, and progress in improving health.

ENABLE

This policy brief is part of the Enabling Environments for Noncommunicable Disease (NCD) Risk Reduction in Ethiopia (ENABLE) Project. It aims to reduce the burden of NCDs in Ethiopia by reducing the lifelong prevalence of major NCD risk factors among pregnant women in low- and middle-income countries through multi-level actions to promote healthy diets, physical activity and reduce air pollution in a clean and supportive urban environment.

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