Indo-Pacific Global Health Case Competition

2025

Case: Childhood Asthma in the Philippines

THE UNIVERSITY OF MELBOURNE

‘Lungs for Life: Childhood Asthma Management in the Philippines’

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Disclaimer: The characters and story described within this case are fictional and serve a purely illustrative purpose. Background information reflects real data and events from the Philippines. All teams are responsible for justifying the accuracy and validity of any data used in the case prompt and in their presentations.

Introduction

The challenge

Your multidisciplinary NGO has been invited to submit a proposal to WHO Philippines. WHO Philippines is offering USD $3 million in funding to a local NGO that can deliver a five-year intervention aimed at reducing the burden of childhood asthma in one of the Philippine's eighteen administrative regions. The winning proposal must be evidence-based, innovative, feasible in the local context, and aiming for scaling up and sustainability beyond the funding period. It must address prevention, monitoring, and management of asthma, and show measurable impact over time.

You will have two weeks to design your proposal and prepare a pitch to the funding team, led by Antonio (respiratory physician) and Jessica (public health expert in climate change and health). Your proposal should integrate medical, public health, and community-based strategies, leverage existing resources, and engage local stakeholders to ensure long-term success.

The context

Asthma is a chronic respiratory disease that, when poorly managed, can become life-threatening. In the Philippines, childhood asthma is on the rise — driven by a complex mix of indoor and outdoor air pollution, tobacco smoke exposure, emerging vaping trends among adolescents, and limited access to timely care. Without effective prevention, monitoring, and management, asthma leads to recurrent hospitalisations, missed schooling, irreversible lung damage, and diminished quality of life. The strain on the healthcare system is significant, with high admissions for preventable exacerbations.

A day in Althea's life

Althea is a 12-year-old living on a busy street in the bustling city of Metro Manila. She is surrounded by the sounds of spluttering engines and blaring horns as she steps outside to make the journey to school. Her father, a jeepney driver, will be taking her today. As they sit stuck in traffic, he puffs casually on a cigarette while Althea coughs, trying to clear her lungs of the thick, heavy air. By the time she reaches school she feels breathless, and she finds it difficult to focus on her work.

Diagnosed with asthma at age five, Althea has struggled to access ongoing care. Her father works full time, and financial pressure has forced her mother to start selling crafts at a local market. Long wait times at the nearest public hospital and her parents' work commitments make it difficult to attend appointments. The family cannot afford private medical care, so Althea often goes without an inhaler and misses school as a result.

The opportunity

Recognising these challenges, WHO Philippines has launched *Asthma Management 2030* — a call to action to improve prevention, monitoring, and management of asthma, with a particular focus on children. This commitment stems from growing concern about increasing rates of childhood asthma and the multiple contributing factors, including environmental pollution, tobacco smoking, and rising vaping use among adolescents. Access to proper medications and improving health literacy for prevention and symptom control have been identified as key priorities.

Antonio and Jessica, recently seconded to WHO Philippines, will lead the funding process. Antonio is an innovative respiratory physician, and Jessica is a public health expert with a particular interest in the impact of climate change on human health. They are seeking an NGO partner who can deliver a high-impact, locally adapted intervention, ensuring that children like Althea can breathe easier — both today and for years to come.

Your proposal

Details of the request for proposals

- Solution focus: Proposals must aim to improve the prevention, monitoring, and management of asthma in the Philippines, in alignment with WHO's global goal of reducing the burden of non-communicable diseases. Each team must identify and justify a specific, measurable metric to track progress, demonstrating both immediate and long-term impact. Solutions must be evidence-based, feasible, and reflect a deep understanding of the local context and culture.
- Innovation and Integration: The intervention should be innovative while building on existing infrastructure and initiatives. Where existing programs are leveraged, the proposal must clearly add a new and valuable component to enhance outcomes.
- Multidisciplinary Approach: Proposals should draw on perspectives from a wide range of disciplines. Demonstrated collaboration with local stakeholders will be highly regarded.
- Sustainability and Community Engagement: The proposal must show how the program will build local capacity and deliver tangible, lasting impact beyond the initial five-year period. Leveraging existing community resources and achieving community buy-in will be crucial to success.
- Social Determinants of Health (SDoH): Interventions should address the non-medical factors that influence asthma outcomes andexplain how these apply in the Philippine context.
- Financial Value: The allocated budget is USD $3 million. Additional in-kind or cash contributions may be included but must be realistic. Preference will be given to proposals that incorporate internal funding sources; however, the program's sustainability must not rely on ongoing WHO financing after the five-year intervention period.
- Targeted Intervention: Teams must design their intervention for one designated administrative region within the Philippines and provide a clear rationale for its selection. The proposal should also outline how the approach could be scaled to additional regions in the future, drawing on lessons learned and established partnerships from the initial implementation.

Case prompt: deliverables

Your proposal will be presented in a **20-minute session** to the panel of reviewers assembled by Jessica and Antonio. This session will consist of **12 minutes for your presentation** and **8 minutes for questions** from the judges. The panel will include representatives from the WHO, the Philippine Government, health and environmental experts, community leaders, and other key stakeholders.

Components of your submission

PowerPoint presentation

- Descriptive title
  - Provide a clear and concise title that encapsulates the essence of your proposed solution.
- Your team
  - Include a slide with a photo and the name and position of each member of your team.
- Project narrative
  - Describe the problem you intend to address and outline the current asthma situation in the Philippines, highlighting key challenges and statistics.
  - Justify your selection of one of the Philippine's eighteen administrative regions as the location of your intervention.
  - Explain your proposed intervention: describe the strategies and activities you plan to implement to combat childhood asthma in the Philippines.
  - Provide supporting evidence for your specific approach: include references to studies, reports, and data that support your proposed intervention. Use the APA citation style for referencing.
- Timeline
  - Provide a detailed timeline of the intervention, depicting all components of the proposed project across the five-year grant period.
  - Justify why this timeframe is appropriate for achieving the desired outcomes.
- Budget
  - Describe the year-on-year budget allocation corresponding to the intervention and timeline. Ensure the entire budget is justified, including costs for personnel and resources.
- Sustainability strategy
  - Describe how your project can build capacity in the local community so that your intervention can be sustainable beyond the grant period.
- Monitoring and Evaluation strategy
  - Describe what measures your project targets and what data you will collect.
  - Detail the metrics you will use to evaluate the project's impact on asthma prevention and reduction and how these align with your intended goals.
  - Justify why these measures are relevant and necessary for assessing the project's success.
- Appendix
  - You may include slides that provide additional information useful to answer questions the panel may ask following your 12-minute proposal. This material will not be included in your proposal.

Executive summary

Provide a concise, one-page (A4) overview of your project, including the most important elements of your PowerPoint submission and presentation. This summary should concisely outline the problem being addressed, your proposed intervention, expected outcomes, and how the program meets the competition criteria.

Background

Global and national prevalence of asthma

Asthma is a significant global public health concern. As a non-communicable disease, it affects an estimated 262 million people globally and causes approximately 455,000 deaths annually, according to the World Health Organization (WHO) (Pawankar, 2014). It remains the most common chronic condition among children, and its burden continues to grow – particularly in low- and middle-income countries (LMICs), where access to timely diagnosis and consistent treatment is often limited (Beran et al., 2015).

In the Asia-Pacific region, rapid urbanisation, environmental degradation and pollution, and increased tobacco smoke exposure have contributed to the rising prevalence of asthma (Yasaratne et al., 2023). Children living in congested, high-traffic areas are especially vulnerable to airborne irritants (Legaspi et al., 2023). One of the most significator contributors is PM2.5 – fine particulate matter less than 2.5 microns in diameter – which penetrates deep into the lungs and triggers inflammation and bronchoconstriction. Exposure to PM2.5 is strongly associated with increased asthma incidence, exacerbations, and hospital admissions (Tantengco & Guinto, 2022). These effects are further exacerbated by indoor air pollution, including from biomass cooking fuels and inadequate ventilation, which are common in low-income households (Ceballos et al., 2024).

In the Philippines, asthma affects approximately 12% of the population, yet there is no prevention program and 98% of those with asthma do not receive appropriate or consistent treatment (Legaspi et al., 2023). The 2017 National Demographic and Health Survey (NDHS) estimates that 10.7% of children aged 5 to 15 have been diagnosed with asthma ((PSA), 2017). This burden is particularly high in urban centres such as Metro Manila, Cebu, and Davao, where environmental pollution, poverty, and overcrowded living conditions intersect. According to the 2024 IQAir World Air Quality Report, Philippines ranked 74th out of 138 countries, with annual PM2.5 levels reaching 14.82 µg/m^3 - nearly three times higher than the WHO's recommended limit of 5 µg/m^3(IQAir, 2024).

The burden of asthma also imposes a substantial economic cost – with impacts ranging from lost school days and caregiver productivity to emergency department presentations and long-term respiratory disability (Lai et al., 2006). Emerging behavioural risks, particularly the growing prevalence of e-cigarette and vaping use among adolescents, represent an additional threat (Jane Ling et al., 2023). Vaping has been linked to increased respiratory symptoms and asthma exacerbations yet remains poorly regulated and widely accessible to young people (Li et al., 2022).

Asthma in the Philippines is not just a clinical issue but a health equity concern. Disadvantaged families face multiple barriers, including lower awareness, high cost of inhalers, lack of access to trained primary care providers, long wait times at public hospitals, and limited availability of school or community-based asthma education. These factors lead to underdiagnosis, poor disease control, and avoidable hospitalisations (Tantengco & Guinto, 2022).

Pathogenesis of asthma

Asthma is a chronic inflammatory lung and airway disease characterised by wheezing, breathlessness, tight chest and non-productive cough. The pathophysiological process of the disease involves airway hyperresponsiveness, chronic inflammation and reversible airflow obstruction. Asthma does not arise from one single pathogen but rather from a combination of genetic predisposition, environmental triggers like allergens and pollution, infection or cold air.

First exposure (sensitisation phase)

Exposure to an environmental allergen (i.e. pollen, dust mites, mould) for the first time initiates the sensitisation process. Antigen-presenting cells (APCs) like dendritic cells in the airway epithelium capture allergen and present this to naive T helper cells, promoting their differentiation into TH2 cells through IL-4 secretion from basophils and mast cells. Th2 cells release cytokines (IL-4, IL-5 and IL-13) which stimulate B cells to produce antigen-specific IgE antibodies. IgE antibodies bind to high-affinity FcεRI receptors on the surface of mast cells and basophils in the airways and mucosa. At this stage, symptoms are usually absent, but the immune system is primed for response upon subsequent exposure.

Early phase reaction

Upon re-exposure to the same allergen that was encountered in the sensitisation phase, there is cross-linking of IgE molecules on the surface of mast cells which results in degranulation. This leads to release of histamine, leukotrienes, prostaglandins and bradykinin. This leads to bronchoconstriction (narrowing of airways), mucus hypersecretion, vasodilation and increased vascular permeability in the airways. Responsible for the acute symptoms such of asthma such as wheezing, chest tightness and shortness of breath, this phase occurs in minutes.

Late phase reaction

Several hours following the early phase (usually between 4-12 hours after), a late phase response occurs. This is primarily due to recruitment of inflammatory cells like eosinophils, neutrophils and TH2 cells into the airway. They release inflammatory mediators and enzymes which sustains bronchoconstriction, airway inflammation and tissue remodelling (smooth muscle hypertrophy, goblet cell hyperplasia and fibrosis).

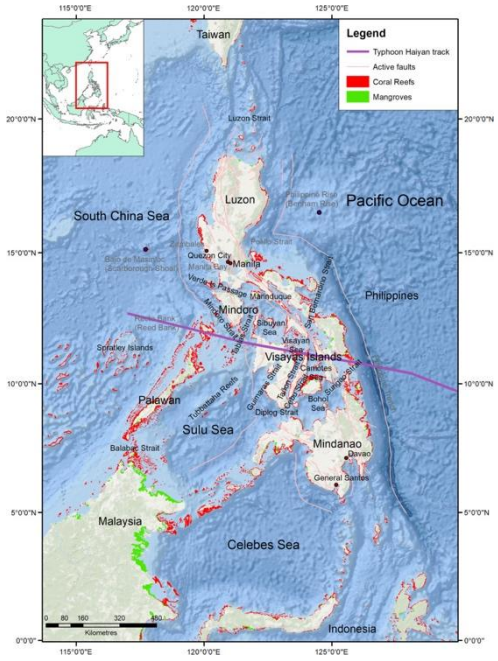
This chronic inflammation contributes to airway hyperresponsiveness and makes the lungs more sensitive to minor triggers. Without management, these reversible changes can lead to permanent structural changes in the airway (airway remodelling).

Country profile

Location and geography

The Philippines is an archipelago country located in Southeast Asia. The country is surrounded by the South China Sea in the west, the Pacific Ocean in the east, Sulu and Celebes Seas in the south, and Bashi Channel in the north (Permanent Mission of the Republic of the Philippines to the United Nations, n.d.). It expands to 300,000 square kilometres of land area within 7,641 islands grouped into three major islands: Luzon in the north, Visayas in the

middle, and Mindano in the bottom south. The capital city, Manila, is located within Luzon group of islands (Licuanan et al., 2019).



Source: Licuanan et al., 2019

The Philippines is topologically diverse with a mix of mountain ranges in its north to south, narrow coastal plains, and complex inland waters of lakes and rivers throughout. This diverse terrain contributes to making the Philippines as one of the richest biodiversity in the world and prone to natural and human-made disasters. Earthquakes and related volcanic activities, typhoon, and sea-level rise are among list of concerns to the people of the Philippines (Licuanan et al., 2019).

Demographics

As of 1 July 2024, the official government census result stipulates a total population of 112,729, 484 which includes 1,708 Filipinos in foreign missions abroad. The population lives within 18 administrative areas spanning around 2,000 of inhabitable islands. Three most polluted administrative areas are (i) Calabarzon with 16.93 million people, (ii) Manila with 14 million people, and Central Luzon with 12.99 million people. The current annual growth between 2020 - 2024 is at 0.8% (Philippine Statistics Authority, 2025).

Culture and ethnicities

People in the Philippines encompasses various ethnicities with Tagalog (26%) as the majority, followed by Bisaya/Binisaya (14.3%), and other local ethnicities and foreign ethnicities (0.2%) representing the smallest ethnic population (Central Intelligence Agency, 2025). The official language is Filipino and English which is commonly used in businesses, school, and government affairs. Tagalog is the main and most common dialect. However, due to its diversity, there are more than 150 languages being used across the archipelago (National Geographic, n.d.). The latest literacy rate is 92.6% (Permanent Mission of the Republic of the Philippines to the United Nations, n.d.).

More than 80% of the total population hold Roman Catholic belief and values (Permanent Mission of the Republic of the Philippines to the United Nations, n.d.), with the tendency of older generation being more religious (National

Geographic, n.d.). Other major religions include Islam and Protestant (Permanent Mission of the Republic of the Philippines to the United Nations, n.d.).

Political and economic state

The Philippines is a democratic nation, a presidential republic. The president acts both as the chief of state and head of the government. This executive branch stands alongside the bicameral legislative branch and judicial branch (Central Intelligence Agency, 2025). Despite this structure, the country also experiences history and issues with political dynasty and elites. Corruption is one of the persistent issues among the political elites (Ofod et al., 2025).

The economy is continuously growing, considered to be one of the fastest in the region. The GDP has grown into 5.6% in 2024 with growing forecast, on track in shifting the country's lower-middle to upper-middle income nation by 2026 (World Bank, 2025). This growth is attributable to the large and increasing productive population and urbanisation. More than 54% of the population is now living in urban areas (Philippine Statistics Authority, 2025) with an estimated urbanisation rate at 2.04% annually (Central Intelligence Agency, 2025). Despite growing rate of urbanisation, economic domination among the political elite led to significant gap between urban and rural areas. Increased urban economic activities also led to water and air pollution spread across the nation yet disproportionately affected the vulnerable and rural population the most (Ofod et al., 2025).

Health system and associated challenges

Description of health system

The health system operates under a decentralised framework. Local government units (LGUs) manage and deliver local health programs and services under the stewardship of the Department of Health (DOH), which oversees national plans and policies, technical standards, capacity building, and health regulations (Dayrit et al., 2018; Local Government Code, 1991).

It features a dual structure with public and private sectors. The former, funded through tax-based budgeting, provides a range of services from primary and secondary care at the provincial level, health promotion and basic clinical care at the municipal and city levels, and tertiary and specialised services at the national level. The latter, market-oriented and largely fragmented, includes a variety of entities, such as hospitals, insurance companies, and traditional healers. They usually charge user fees at point-of-service and fill the capacity and service gaps left by the public system (Dayrit et al., 2018).

The Philippine Health Insurance Corporation (PhilHealth), the national health Insurance program, plays a crucial role in financing healthcare. It negotiates prices and purchases services from both the public and private sectors using a mix of payment methods, including capitation, fee-for-service, and case-based systems (Dayrit et al., 2018; National Health Insurance Act, 1995).

Major health system reforms

Three major pieces of legislation have significantly shaped the landscape. First, the 1991 Local Government Code granted full autonomy to LGUs to finance and operate their health systems. Aiming to bring governance closer to people, it transformed what was once a highly centralised health system managed into a fragmented network of over a thousand autonomous local health systems (Dayrit et al., 2018; Local Government Code, 1991).

Next, the 1995 National Health Insurance Act established PhilHealth. Initially focusing on the formal sector, this was expanded in 2004 to include an indigent program and further amended in 2013 to make coverage compulsory for all

Filipinos while also increasing benefits and funding (National Health Insurance Act, 1995; National Health Insurance Act Amendment, 2004; National Health Insurance Act Amendment, 2013).

Lastly, the 2019 UHC Act automatically enrolled all Filipinos in PhilHealth and shifted the focus towards a more comprehensive approach to health. The law redirected the focus towards primary health care and health promotion, enabled local health system integration into province-wide and city-wide systems, and designated primary care providers as system gatekeepers (Universal Health Care Act, 2019).

Existing interventions for asthma

At the national policy level, the Philippine DOH and PhilHealth have issued formal guidance to standardise asthma care. PhilHealth Circular No. 2016-004 outlines comprehensive policy statements on diagnosis (via spirometry or peak expiratory flow) and management pathways for adults, ensuring claims reimbursement aligns with established clinical practices (Policy Statements on the Diagnosis and Management of Asthma in Adults, 2016).

The Philippine College of Chest Physicians (PCCP) released the 2019 Consensus Report and later clinical practice guidelines, which strongly align with Global Initiative for Asthma (GINA) and cover assessment, stepwise medication strategies, and action planning (PCCP, 2019).

On the community and facility level, the Lung Center of the Philippines runs its “Asthma Club,” bringing together patients (virtually or in-person) and trained facilitators to help members understand triggers, self-monitor symptoms, properly use inhalers, and manage emergency responses (Lung Center of the Philippines, 2025).

Public-private partnerships have bolstered these efforts: AstraZeneca’s "Juan Healthy Lung Philippines" initiative, partnering with PCCP, pharmacists, and the LCP, focuses on three pillars (awareness, physician capability, and access), with a goal to establish asthma centres nationwide and improve holistic patient care (Manila Standard, 2020).

Furthermore, a 2022 study validated a Written Asthma Action Plan translated into Filipino for children, demonstrating strong cultural relevance and reliability. This highlights a push toward empowering home-based asthma self-management (San Gabriel et al., 2022).

Barriers

Diagnostic and treatment costs

Diagnosis for asthma remains a challenge due to high out-of-pocket costs. Under the national health insurance programme (NHIP), diagnostics for expiratory airflow limitation (e.g. spirometry) are not covered (Ho et al., 2023). Instead these tests must be paid out of pocket by the patient or carer, costing between 2000 PHP (38 USD) and 8000 PHP (147 USD), roughly a week’s salary at minimum wage (Legaspi et al., 2023). These costs may rise even further if there is a requirement for other tests including COVID-19 & tuberculosis (Ho et al., 2023).

Additionally, the NHIP does not cover essential medication used in asthma management, including inhaled cortico-steroids. Whilst combination ICS-formoterol (Mortimer et al., 2022) are recommended for use, they are more costly to patients. Instead, patents opt for Short Acting Beta Agonists (SABAs) which provide symptomatic relief and are more affordable. However these SABAs are often not appropriate on their own in long term asthma managements (Fernandez et al., 2024). Hence there is a risk that their asthma may worse over time.

For comparison one budesonide-formoterol (ICS-formoterol) inhaler 160 mcg-4.5mcg 120 dose costs 792.1- PHP ($14.40), 6 times more costly than one salbutamol inhaler 100mcg 200 doses (SABA) (Ho et al., 2023).

Lack of trained healthcare professionals and diagnostic equipment

Asthma diagnosis can be challenging, especially in rural settings where there is a lack of diagnostic equipment and trained healthcare providers which can administer and interpret spirometry (Ho et al., 2023). Additionally, whilst there are local guidelines on asthma management, providing updated information to rural areas has been challenging, leading to inappropriate management (Legaspi et al., 2023). This is compounded by the fact that asthma can often be under or misdiagnosed due to the high prevalence of other diseases like tuberculosis, chronic obstructive pulmonary disease (Ho et al., 2023).

Culture and community understanding surrounding asthma

Aside from this belief, community health literacy also factors in backlog in asthma treatment. Health literacy itself is a broad term regarding the ability to access, understand, apply, and appraise health information (Tolabing et al., 2022). Minimum health literacy on asthma care prolongs the "sumpong" belief that asthma is just an acute disease due to its intermittent symptoms. Delayed, no treatment or incorrect inhalers technique has led to poor asthma control, children missing school and greater medical costs (Legaspi et al., 2023).

The smoking culture and awareness of its effects on asthma also worsened the asthma prevalence in the Philippines. Whilst tobacco usage has declined over the years (Cordero, 2024), 2019 data suggests that 18.3% of boys and 6.9% of girls aged between 13-15 years are tobacco users (Legaspi et al., 2023). Additionally, there is the potential for children to be exposed to second-hand tobacco smoke at home (Mbulo et al., 2009).

Climate change

The WHO (2023) states climate change presents a fundamental threat to health. Climate change leads to death and illness due to extreme weather events, impacts access to care and often impacts the most vulnerable and disadvantaged.

The increase in droughts, floods and wildfires has led to an increase in air pollution, pollen and mould concentration, effecting the management of childhood asthma (Goshua et al., 2023).

Conclusion

This case presents both a challenge and an opportunity. Childhood asthma in the Philippines is a pressing public health issue, deeply shaped by environmental, economic, cultural, and systemic factors. Your proposal must demonstrate a deep understanding of this complexity, balancing medical strategies with community engagement, innovation with feasibility, and immediate impact with long-term sustainability.

Your submission is an opportunity to design a program that could meaningfully change lives. We invite you to think boldly, draw on diverse expertise, and work collaboratively to produce a solution that will enable children like Althea to breathe easier today, and for years to come.

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