



**HEPATITIS ELIMINATION ALLIANCE MODEL:
COST-MINIMIZATION, STAKEHOLDER
PERSPECTIVES, AND STEPS FOR SCALING UP
IN CAMBODIA, LAOS AND BEYOND**

Executive Summary

This report comprehensively reviews costs, stakeholder perceptions and the potential scalability of the Hepatitis Elimination Alliance (HEA) model, an innovative financing approach for combating viral hepatitis in Cambodia and Laos. The core of the HEA model is to ensure access to affordable treatment and testing for hepatitis B and C, increase the availability of medications and diagnostics, and improve knowledge among healthcare providers and the public.

Background

Viral hepatitis, particularly hepatitis B and C, presents a significant public health problem in the ASEAN region, significantly impacting healthcare systems and economies. Despite the region's high hepatitis burden and commitment towards the 2030 elimination target, many gaps remain. These include limited awareness about liver disease and treatment availability, lack of clear hepatitis care management plans, high cost to patients for testing, treatment, and follow-up, and the absence of robust national surveillance systems.

Research Question

This study objective aims to investigate and analyse the perspectives and opinions of various stakeholders, including government officials, healthcare providers, patients, community members, and private partners, regarding the financing model of the Hepatitis Elimination Alliance financing model of through a public-private partnership in Laos and Cambodia. The objective is to gain insights into the benefits and challenges associated with scaling up this model and to identify potential barriers and enablers for its implementation at the national level in both countries.

Methodology

The project methodology encompasses qualitative data collection and analysis, providing a comprehensive overview of the HEA model's impact and potential scalability. through key stakeholder interviews and focus groups discussions. A key element of this methodology is the Cost Minimization Analysis (CMA), which focuses on medication costs and assumes identical health outcomes between the HEA model and traditional care models.

Results

The analysis reveals significant cost savings and increased treatment accessibility under the HEA model compared to traditional care models, highlighting its potential cost-effectiveness in both Cambodia and Laos. This is particularly evident in the cost-minimization analysis, which reported savings ranging from between 15% and 16% for Hepatitis C and between 48% and 57% for Hepatitis B for patients. Stakeholders from government, healthcare, and the community report positive impacts on treatment availability, capacity building among young professionals, and enhanced community awareness.

In Cambodia, the HEA model's benefits include increased treatment availability at lower costs and capacity-building efforts among young doctors. In Laos, the potential for viral hepatitis elimination and enhanced access to care are seen as benefits of the HEA model. In both countries, the model's alignment with national health strategies and its contribution to universal health coverage were positively received. However, challenges persist in both countries, primarily around the complexity of managing hepatitis, data management systems, potential conflicts among specialists, and concerns regarding the financial sustainability of the model.

Key considerations for the scalability of the HEA model include the readiness of healthcare infrastructure, effective data management, stakeholder collaboration, and the alignment with government priorities. The necessity of long-term sustainable funding is also emphasized, suggesting the need for innovative funding strategies such as public-private partnerships or social impact bonds.

Conclusion & Impact

The research concludes that the HEA model offers a promising framework for addressing hepatitis B and C in the ASEAN region. The insights gained provide a foundation for strategic planning and action. The emphasis is on addressing identified barriers, leveraging enablers, and continuing the dialogue among all stakeholders for a collective journey towards hepatitis elimination.

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Introduction

In this draft final report, we aim to review the HEA model cost assessment, understanding perceptions, barriers and the path to scalability within and beyond Cambodia and Laos. To bring the results within its context, we will briefly review relevant background information that will be relevant for this report since a significant part of our results and discussion.

Problem statement

Viral hepatitis, specifically hepatitis B and C, poses a significant public health challenge in the ASEAN region, impacting healthcare systems and economies severely (World Health Organisation, 2016). Cambodia and Lao PDR still struggles with enhancing diagnostic capacities and testing infrastructure. The lack of a national surveillance system and clear data management guidelines means the exact disease burden in Cambodia and Lao PDR is unclear. Estimates suggest Hepatitis B prevalence in Lao PRD to be between 2.7% and 6.3% (Miyano et al., 2022), and in Cambodia between 4.6% and 10.8% (Sreng et al., 2016). Hepatitis C prevalence in Lao PDR ranges between 0.5% and 5.3% (Miyano et al., 2022), and in Cambodia between 0.7% and 14.7% (Sreng et al., 2016).

Despite the high burden of hepatitis and the commitment towards the elimination target of 2030 of both Laos and Cambodia, massive gaps remain that hinder the progress. Those needs include:

- **Limited awareness:** Limited awareness about the burden of liver disease and the availability of treatment is a significant challenge among policy makers, the general population, and groups at risk.
- **Lack of clear hepatitis care management plans:** The challenge at hand involves the under-recognition of the problem of hepatitis, which leads to under-diagnosis, low linkage to treatment, high rates of loss to follow-up, insufficient access to viral load monitoring, and under-reporting of hepatitis and liver diseases.
- The challenge of **high cost to patients of hepatitis testing, treatment, and follow-up** is a significant barrier to addressing the burden of viral hepatitis. Many individuals, particularly those from lower-income backgrounds and in rural parts of the country, face financial constraints that hinder their access to essential healthcare services. The costs associated with hepatitis testing, treatment, and follow-up can be prohibitively expensive, making it difficult for individuals to afford the necessary care.
- Currently, both Cambodia and Laos **lack a robust and standardized national surveillance system** specifically dedicated to monitoring viral hepatitis. Without a well-established surveillance system, it becomes difficult to gather accurate and timely data on the prevalence, incidence, and trends of hepatitis B and C infections.
- The **lack of involvement of people directly affected** by hepatitis and their limited visibility and voice pose significant challenges in addressing the disease's burden. Their perspectives, experiences, and needs are often overlooked, leading to initiatives and interventions that may not fully address the challenges they face.

It is important to note that there is currently no externally funded national programme for hepatitis elimination in Cambodia or Laos (unlike TB, HIV/AIDS and Malaria). While vertical infectious disease programme played a crucial role in driving elimination efforts for certain diseases, such as malaria, it is unlikely that similar mechanisms for hepatitis will be available. The absence of a well-established public

program hinders the procurement of rapid diagnostic tests (RDTs) and access to affordable treatment options, particularly in rural areas.

Innovative Financing: HEA model

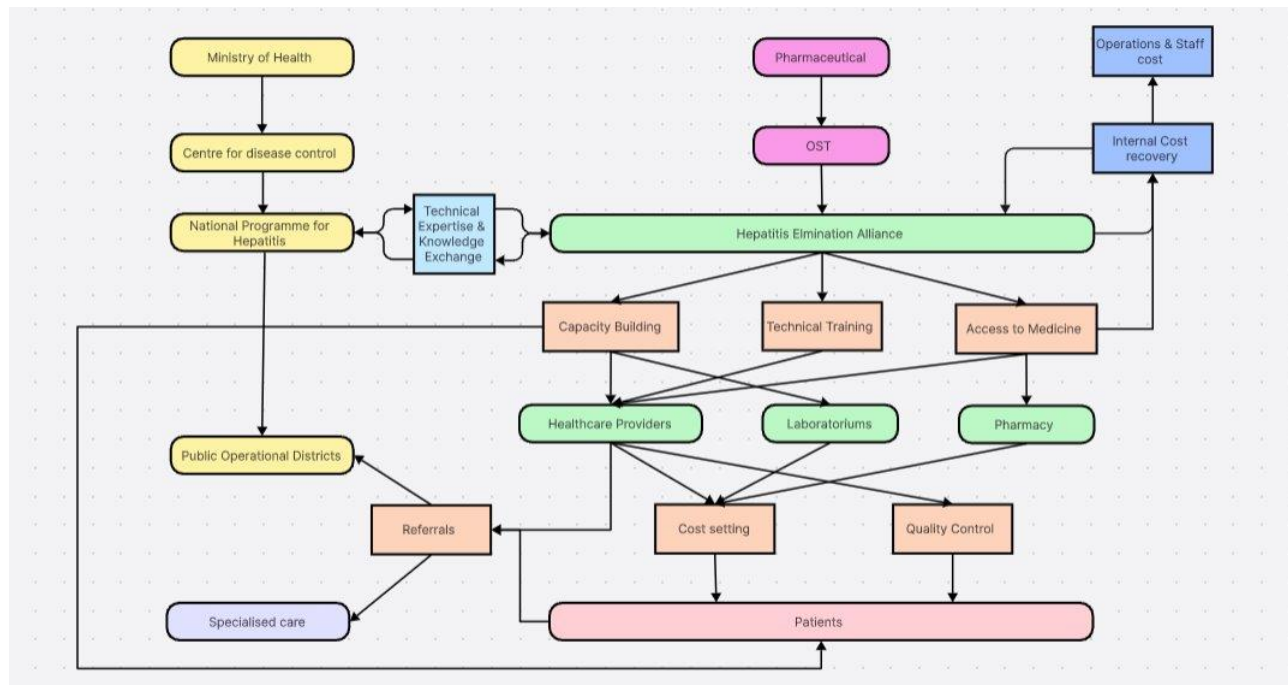
Hepatitis Elimination Alliance (HEA)¹ is a pilot platform operated by HPA in collaboration with a private company, Open Sources Technology Laos (OST, a private company operating new generic medicine in Cambodia and Laos), Department for Communicable Disease Control (DCDC) under the Ministry of Health Laos, and the hospital for communicable disease treatment in the capital city. In this pilot project, we established a collaborative platform, forging partnerships between public and private medical service providers, pharmaceutical companies, and government agencies.

HEA started the public-private partnership to address some of the key challenges within the disease management of viral hepatitis. There are three pillars within the alliance.

1. **Affordability:** Through the partnership, we leverage our partnership with OST to push the prices of generic medicines down. We are leveraging the expertise and resources of both the public and private sectors; this platform can foster competition and create a more favourable market environment for the production and distribution of generic medicines.
2. **Availability:** Through the partnership, we can further increase the availability of medications and diagnostics across the country through the network of trained healthcare professionals. In addition, healthcare professionals' part of the network (those that have received training from HEA) are requested to adhere to pricing guidelines on the provision of screening and treatment costs (like those of simplified care models) to limit out-of-pockets patients of patients.
3. **Awareness:** improving knowledge on viral hepatitis screening, testing and treating among healthcare providers to enable them to effectively identify and manage cases of viral hepatitis. In addition, the HEA also raises awareness among the public and key populations through various channels and strategies to reach a wide audience.

Under the HEA model, services are not provided for free, but are adapted to the financial capacity of patients to not drive high out-of-pocket costs through subsidization of the treatment and incentives to the medical staff in the hospital. In addition, as part of the HEA model, continuous monitoring and quality is integrated through data management systems. Referrals are highlighted in case of complicated cases with the public sector.

¹ The reference in the name towards elimination is linked to the elimination targets of 2030 to which both Cambodia and Laos as per the WHO strategy to reduce new hepatitis infections by 90% and deaths by 65% between 2016 and 2030.



The Hepatitis Elimination Alliance is the public-private partnerships (green) that integrates efforts from various stakeholders into a coordinated network of expertise and integrating efforts from various sectors. It focuses on three primary areas: capacity building, technical training, and access to medicine. These efforts are supported by inputs from the pharmaceutical sector via OST (Operational Support and Training) and financial management aspects, including internal cost recovery and operations and staff costs through the provision of medication through healthcare providers.

In addition, the Ministry of Health at the top. The Ministry of Health channels its directives to the Centre for Disease Control, which manages the National Programme for Hepatitis which directly engages with the HEA model through technical support and knowledge exchange, which includes the integration of data from the HEA model with the official government data. Other elements include regular engagement and capacity building events in which all stakeholders are present, further providing essential technical support and facilitating knowledge sharing.

Healthcare providers (private healthcare providers: Cambodia / public and private healthcare providers: Laos) are crucial within this alliance, receiving support through capacity building and technical training to enhance their service delivery. In addition, as part of the model, access to hepatitis medication is provided to them. They are then asked, as enrolled in the model, to provide care within a costing and quality bracket as agreed. They collaborate with public operational districts, which manage referrals and provide specialized care when necessary. Laboratories are also vital, receiving capacity-building and engaging in cost setting and quality control to ensure that medical services are both affordable and of high quality. The entire system is designed to serve patients effectively, placing them at the bottom of the hierarchy as the ultimate beneficiaries of the initiative. Patients receive comprehensive care through a well-coordinated network of healthcare providers, laboratories, and pharmacies, supported by a robust framework of referrals, cost management, and quality assurance.

In summary, the diagram illustrates a holistic and multi-layered approach to hepatitis elimination. Each component, from governance and technical support to healthcare delivery and patient care, plays a crucial role. The framework ensures a coordinated and effective response to hepatitis, aiming for its eradication through strategic collaboration and resource management.

The aim of the RIDA project

The study's aim remains largely unchanged, and through this report, we will bring light to its different objectives.

Objectives of the study

1. To understand the different stakeholders' opinions on the innovative financing model through public-private partnership in Laos and Cambodia

This study objective aims to investigate and analyse the perspectives and opinions of various stakeholders, including government officials, healthcare providers, patients, community members, and private partners, regarding the financing model of the Hepatitis Elimination Alliance financing model of through a public-private partnership in Laos and Cambodia. The objective is to gain insights into the benefits and challenges associated with scaling up this model and to identify potential barriers and enablers for its implementation at the national level in both countries. By exploring stakeholder perspectives, the study aims to provide valuable information for decision-making and to contribute to the evaluation of the model's efficiency, sustainability, and potential for replication in other ASEAN countries.

2. To determine the cost-minimization of the innovative model, compared to conventional funding mechanisms for hepatitis B & C testing and treatment in Cambodia and Laos.

Study Objective 2 aims to assess the cost-minimization of the innovative model for financing hepatitis B and C testing and treatment, in comparison to the models for treatment currently in use in Cambodia and Laos. This objective seeks to evaluate the efficiency of the innovative model by analyzing the costs associated with implementing and scaling up the model, as well as the outcomes achieved in terms of improved access to testing and treatment for hepatitis B and C. By comparing the costs of the innovative model to the conventional mechanisms, this objective aims to provide valuable insights for decision-making and inform potential strategies for sustainable financing of hepatitis B and C programme in both countries.

3. To determine the risks, barriers, and enablers of taking this model to the national level in both Cambodia and Laos and to other ASEAN countries.

This study objective aims to identify and analyse the risks, barriers, and enablers associated with scaling up the Hepatitis Elimination Alliance financing model for hepatitis B and C testing and treatment to the national level in Cambodia and Laos, as well as to other ASEAN countries. The objective is to assess the feasibility and potential challenges of implementing the model on a broader scale and to understand the factors that may hinder or facilitate its successful expansion. The findings from this objective will provide valuable insights for policymakers, healthcare professionals, and other stakeholders involved in the planning and implementation of hepatitis B and C programme at the national and regional levels. The identification of risks, barriers, and enablers will inform the development of strategies and interventions to address the challenges and maximize the potential impact of the innovative financing model in Cambodia, Laos, and other ASEAN countries.

4. To explore the practical steps of taking the model to other ASEAN countries

Study Objective 4 aims to explore and outline the practical steps necessary for expanding the Hepatitis Elimination Alliance model to other ASEAN countries. The objective is to identify the key considerations,

challenges, and opportunities involved in implementing the model in different contexts within the ASEAN region. By exploring the practical steps, this objective aims to provide guidance and recommendations for national programmes, healthcare professionals, and stakeholders who are interested in replicating the successful Hepatitis Elimination Alliance model. It will help identify the necessary infrastructure, resources, partnerships, and strategies needed to adapt and implement the model effectively in different ASEAN countries. The findings from this objective will contribute to the development of a roadmap for expanding the model regionally, facilitating the exchange of best practices, and ultimately accelerating the progress towards hepatitis elimination in the ASEAN region.

Study outcomes

1. Identification of possible health facility catchment areas for scaling up of the innovative financing model.

This study aims to identify suitable health facility catchment areas for the expansion and scaling up of the hepatitis elimination alliance financing model for hepatitis, as well as further address that existing within the overall model of care for viral hepatitis (e.g. lack of awareness, data management). The identification will need to consider various factors, including the availability of healthcare infrastructure, resources, and the existing burden of hepatitis in different regions. It will involve mapping out the catchment areas where the innovative financing model can be integrated into the existing healthcare system to reach many individuals in need of hepatitis services. By identifying the suitable health facility catchment areas, this study outcome will contribute to the efficient implementation and scalability of the innovative financing model for hepatitis testing, treatment, and surveillance and further scaling the work of the Hepatitis Elimination Alliance to address key gaps and challenges within the management of viral hepatitis.

2. Formative assessment report that comprehensively reviews and reflects existing proof of concept of the Hepatitis Elimination Alliance with a focus on aligning the rationale, principles, and buy-in of relevant stakeholders.

The formative assessment report is a comprehensive review that examines and analyses the existing proof of concept of the Hepatitis Elimination Alliance. It focuses on evaluating the alignment of the rationale, principles, and buy-in of relevant stakeholders with the characteristics of the health system and the viral hepatitis situation in each country. This report aims to provide a thorough understanding of the Hepatitis Elimination Alliance model's cost-minimization and feasibility in addressing the burden of viral hepatitis. It examines the alignment of the model's rationale and principles with the existing characteristics of the health system, considering factors such as healthcare infrastructure, policies, resources, and practices. The report also evaluates the level of stakeholder buy-in, assessing the support and engagement of relevant stakeholders, including government officials, healthcare providers, patients, community members, and private partners. By comprehensively reviewing and reflecting on the proof of concept of the Hepatitis Elimination Alliance, this formative assessment report provides valuable insights for decision-making and strategic planning. It identifies areas of success, potential improvements, and areas where further buy-in and alignment are needed. The report serves as a foundation for shaping and refining the implementation of the Hepatitis Elimination Alliance model, ensuring its potential effectiveness and sustainability in addressing the burden of viral hepatitis in each country.

3. Documentation of the practical steps in expanding the model which can be taken up by WHO, ASEAN and other strategic partners to the national and international scale.

Study Outcome 3 aims to document the practical steps involved in expanding the innovative financing model for hepatitis B and C testing and treatment. This documentation will include policy advocacy, logistics arrangements, and the development of a data management system. The objective is to create a comprehensive guide that can be utilized by the World Health Organization (WHO) and other strategic partners to scale up the model at the national and international levels and disseminate it to other ASEAN countries and beyond. The documentation will outline the specific steps and processes required to implement the model in different settings. This includes advocating supportive policies and regulations that facilitate model adoption and sustainability. It will also address the logistical considerations, such as resource allocation, procurement, and supply chain management, necessary for the successful implementation of the model.

Methodology

Quantitative and qualitative data collection and analysis are the overarching methodology to answer questions of the study objectives.

Cost Minimization Analysis and Financing

Cost Minimization Analysis (CMA)

CMA was chosen instead of Cost Effectiveness Analysis (CEA). The **primary reason** for opting for CMA over CEA is the assumption of identical treatment regimens leading to equivalent clinical outcomes in both the HEA model and traditional care models. CMA is the preferred method when interventions have proven to be equally effective, as it simplifies the analysis to focus solely on cost differences. CMA allows for a more **straightforward comparison** since it does not require the quantification of health outcomes in monetary terms or quality-adjusted life years (QALYs), which can be complex and subject to variability. This simplification is particularly useful when the primary interest is in identifying the most cost-efficient strategy under conditions of clinical equivalence. In settings where budget constraints are significant, and the primary concern is cost containment without compromising treatment quality, CMA provides clear insights that are **directly relevant to policy and decision-making**. It helps identify opportunities for savings that can be reallocated to other healthcare needs.

Cost-minimization analysis (CMA) and cost-effectiveness analysis (CEA) are both methods of economic evaluation used to compare health interventions. However, there are some key differences between the two.

- **Assumption of Equal Effectiveness:** CMA is used when the clinical effectiveness of the interventions being compared is assumed to be equal. The analysis focuses solely on determining which intervention is less costly. In contrast, CEA is used when the clinical effectiveness of the interventions is expected to differ. It considers both the costs and the health outcomes of the interventions to determine which one offers the best value for money. (Rai & Goyal, 2018)
- **Outcome Measures:** In CMA, the only measurement is cost. The effects of the interventions are not measured because they are assumed to be equal. In CEA, both costs and effectiveness are measured. Effectiveness can be measured in various ways, such as life-years gained, number of cases prevented, or quality-adjusted life years (QALYs).
- **Applicability:** CMA is most appropriate for comparing interventions that have the same clinical effect but different costs, such as generic and brand-name drugs. CEA is more versatile and can be used to

compare interventions with different clinical effects and costs. It is often used to inform decision-making about which health interventions to fund. (Neumann, 2009)

In addition to cost-minimization analysis (CMA) and cost-effectiveness analysis (CEA), there are two other types of economic evaluation. (Ngorsuraches, 2008)

- Cost-utility analysis (CUA): Similar to CEA, CUA compares the costs and outcomes of different interventions. However, instead of measuring outcomes in natural units (e.g., life-years gained), CUA measures outcomes in quality-adjusted life years (QALYs). QALYs combine the quantity and quality of life into a single measure, allowing for comparisons between interventions that affect both the length and quality of life.
- Cost-benefit analysis (CBA): CBA converts all costs and benefits of an intervention into monetary terms. This allows for a direct comparison of the costs and benefits of different interventions, even if they have different types of outcomes. However, it can be difficult to assign a monetary value to some health outcomes, such as pain and suffering.

Steps of CMA in this study: Cost data for relevant medications was obtained from both HEA model records and documentation on traditional market costs. For each medication regimen and facility type, we calculated total medication costs for a treatment course – 3-month duration for hepatitis C and 12-month duration for hepatitis B – under both the HEA and traditional models. We calculated the absolute cost differences between the two models for each medication and setting. We assessed percentage savings with the HEA model, calculated as $(\text{Cost Difference} / \text{Traditional Model Total Cost}) * 100$.

HEA Financing

The information on **financing** is largely derived from the interviews and discussions with the stakeholders, particularly the ministry of health personnel, UN organizations, industrial representatives, and patients.

Stakeholders' perspectives and acceptability

To understand stakeholder perspectives on scaling up the Hepatitis Elimination Alliance model, information is gathered through semi-structured interviews and focus group discussions. Stakeholder mapping was a collaborative process undertaken with the OST and HEA team. The initial set of stakeholders was identified by the teams based on their knowledge and experience with the project. Following this, a snowballing technique was employed, whereby the identified stakeholders recommended other potential stakeholders. This allowed for a comprehensive identification of individuals and groups who were directly or indirectly affected by the project. In addition to this, the HEA team utilized the online database of doctors participating in the model to set up stakeholder interviews and focus group discussions (FGDs). This database served as a valuable resource for directly engaging with the medical professionals involved in the project. During the past three months, an HEA stakeholder gathering was held which provided an ideal opportunity for bringing doctors together to conduct FGD.

Qualitative data analysis was an essential part of our study, particularly for analysing the interviews and focus group discussions. We used thematic analysis, a method that allows for the identification and analysis of patterns or themes within qualitative data. Transcriptions of the interviews and discussions were made and read multiple times to ensure familiarity with the content. The data was then coded, a process where parts of the data that are related to the research question are labelled. Initial codes were generated that captured the qualitative richness of the data. Following the coding process, themes were developed from

the codes. These themes were patterns or issues that were relevant to the research question and captured something important about the data. This process involved sorting the different codes into potential themes and collating all the relevant coded data extracts within the identified themes. Once themes were identified, they were reviewed and refined. This step involved checking if the themes work in relation to the coded extracts and the entire data set. The aim was to ensure that the themes accurately represented the meaning evident in the data set. Finally, a detailed analysis was written for each theme, further refining the specifics of each theme and the overall story they tell about the data. Each theme was analysed in relation to the research question, and clear definitions and names for each theme were generated.

Implementation, scalability, and sustainability

To understand the practical steps of implementing and potential scaling up of the HEA model and its relevance, an overview mapping of the health facilities and their catchment areas are conducted alongside the needs assessment in terms of training, human resource, equipment, and supply of commodities et cetera. Reviews of HEA proof-of-concept documents will enable the analysis of the program descriptions, rationale and principles, baseline data, stakeholder engagement plans and monitoring and evaluation reports. Relevant national health policies, strategic plans and disease management guidelines will be reviewed. Similarly to the methods in the stakeholders' perspectives and acceptability section, sections of the stakeholder interview and focus group discussions have been used to understand further contribute to the data collection under the implementation, scalability, and sustainability thematic areas.

Results

Cost Minimization and Financing

A critical assumption for CMA is that the compared interventions yield identical health outcomes. In this study, we leverage the remarks from the clinicians and public health officials to confirm that treatment regimens under the HEA model and traditional pathways produce equivalent outcomes. This CMA focuses solely on medication costs. Other relevant costs, including consultation fees, diagnostics, and facility-related overheads, are assumed to be identical between the HEA model and traditional pathways.

When analysing cost savings and efficiency within the context of the Hepatitis Elimination Alliance (HEA) model versus traditional care models, it's crucial to consider several background assumptions that significantly impact the analysis. These assumptions include the uniformity of treatment regimens, as well as the parity in costs related to consultation, diagnosis, and facility overheads across both models.

Standardised Treatment Regimens: The assumption that both the HEA model and traditional care models utilize the same treatment regimens for hepatitis B and C is central to the cost-minimization analysis. This uniformity ensures that the effectiveness and clinical outcomes of treatment are consistent across both models, thereby allowing the analysis to focus solely on the cost aspects without the confounding factor of varying treatment efficacies.

Implications: Since the treatment regimens are identical, any observed cost differences can be attributed to the operational and administrative efficiencies inherent in the HEA model. These might include streamlined procurement processes, bulk purchasing of medications through the alliances, or more efficient distribution channels that reduce the overall cost of medication under the HEA model.

Same Costs of Consultation, Diagnosis, and Facility Overheads: Another critical assumption is that the costs associated with consultation, diagnosis, and facility overheads remain constant across the HEA and traditional models. This assumption simplifies the analysis by holding these variables steady, focusing attention on the differences in medication costs and the operational efficiencies that the HEA model may introduce. By assuming these costs are equal, the analysis underscores the potential for the HEA model to achieve cost savings through operational efficiencies rather than through reductions in the quality of care or the comprehensiveness of diagnostic evaluations. Similarly, assuming equal facility overheads across models suggests that any cost savings observed are not the result of differential infrastructure or maintenance costs but rather operational efficiencies and innovative financing mechanisms within the HEA model.

Cost Minimization Analysis

The cost-minimization analysis focused on two key medications for hepatitis B (TDF and TAF)² and two for hepatitis C (SOF/DAC and SOF/VEL)³, comparing unit costs and total treatment costs of the same regimen between the HEA model and traditional care models at public and private facilities (

Table 1). The findings reveal substantial cost savings across all medications and settings under the HEA model:

- Hepatitis B Treatment
 - TDF: In public facilities, the HEA model achieved a 47.06% cost saving, with a total cost difference of \$96 per 12-month treatment course per patient. In private clinics, the savings were even more pronounced at 56.62%, translating to a \$135.60 difference.
 - TAF: Public facilities saw a 48.28% saving (\$168 cost difference), while private settings observed a 56.91% saving (\$233.16 cost difference).
- Hepatitis C Treatment:
 - SOF/DAC: Both public and private facilities reported a 16.42% saving, with a \$33.18 difference per 3-month treatment course per patient.
 - SOF/VEL: Savings of 15.63% were noted, amounting to a \$60.12 difference.

Table 1. Cost Minimization Analysis between HEA model and Traditional model

Facility	Medication	Disease	HEA Model Unit Cost	Traditional Model Unit Cost	Units per Treatment Course	HEA Model Total Cost	Traditional Model Total Cost	Cost Difference	% Savings
public	TDF	Hep B	\$9	\$17	12	\$108	\$204	\$96	47.06%
private	TDF	Hep B	\$8.66	\$19.96	12	\$103.92	\$239.52	\$135.60	56.62%
public	TAF	Hep B	\$15	\$29	12	\$180	\$348	\$168	48.28%
private	TAF	Hep B	\$14.71	\$34.14	12	\$176.52	\$409.68	\$233.16	56.91%
public & private	SOF/DAC	Hep C	\$56.26	\$67.32	3	\$168.78	\$201.96	\$33.18	16.42%

² TDF = Tenofovir Disoproxil Fumarate, TAF = Tenofovir Alafenamide

³ SOF = Sofosbuvir, DAC = Daclatasvir, VEL = Velpatasvir

public & private	SOF/VEL	Hep C	\$108.19	\$128.23	3	\$324.57	\$384.69	\$60.12	15.63%
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The observed cost savings in the HEA model—ranging from 16% to 57% across different treatments and settings—highlight the model's operational efficiencies and innovative approaches to healthcare financing. These savings are particularly significant in the context of hepatitis treatment, where the high cost of medication is the main barrier to access.

The cost-minimization analysis, grounded in the assumptions of identical treatment regimens and equal costs for consultation, diagnosis, and facility overheads, demonstrates the HEA model's potential for significant cost savings and operational efficiencies. These findings underscore the model's viability as a cost-effective approach to hepatitis management, with implications for its scalability and sustainability in diverse healthcare settings.

Financing

Financing Hepatitis B and C Care: Addressing the challenge of financing care for hepatitis B and C necessitates innovative financial strategies to ensure treatments are accessible and affordable. Stakeholders have successfully implemented such strategies, significantly reduced the cost of hepatitis medication, and made it more accessible to patients in need.

The Funding Landscape: The landscape for funding hepatitis care is characterized by innovative financing, public-private partnerships (PPPs), and the evolving role of international funding bodies. The importance of PPPs in enhancing the reach and effectiveness of hepatitis elimination efforts is widely acknowledged. These partnerships are crucial for pooling resources effectively and ensuring the strategic allocation of funds for hepatitis care. In **Cambodia**, the funding of hepatitis started with the MSF programme of 2016, which at the time was the only existing programme to treat hepatitis C at a low cost. Initially starting in one hospital of Phnom Penh, and in 2018 further expanded to Battambang province to implement a simplified care model in rural areas. The programme ended in 2021 and the remaining commodities of the programme were donated to the national government of Cambodia and were used until 2023 in 15 operational districts. In 2023, the government of the Kingdom of Cambodia committed 1 million USD to the national hepatitis programme which is utilised in those 15 districts to offer low-cost hepatitis testing and treatment services. Unfortunately, due to procurement issues, the delivery of commodities by UNDP was delayed until November 2023, halting all services in 2023. In 2024, it is not clear yet what budget will be committed to the national programme for hepatitis, however the stakeholders from the CDC highlighted that to meet the elimination target by 2030, at least 5,5 million USD per year is needed. In **Laos**, Hepatitis B and C care is largely funded by the government in terms of health facilities, healthcare providers and technical guidelines while the treatment particularly the medicine and diagnosis are largely financed directly by out-of-the-pocket payments of the patients as there is no insurances of any type that covers such costs. There is no major external aid including ODA that directly assist the care for patients with hepatitis B and C.

Institutional donors, such as the Global Fund: The Global Fund's traditional focus areas present both an opportunity and a challenge in the context of hepatitis care financing. The potential benefits of including hepatitis in the Global Fund's funding priorities are significant, potentially unlocking substantial resources for hepatitis elimination efforts. However, the challenge of securing support from the Global Fund is recognized, necessitating robust evidence of the health burden posed by hepatitis and the effectiveness of elimination programme.

Strategic Advocacy and Collaboration: Strategic advocacy and collaboration are essential in the discussions on financing hepatitis care and engaging with the Global Fund. A coordinated approach among all stakeholders, including governments, NGOs, healthcare providers, and patient advocacy groups, is crucial for effectively advocating the inclusion of hepatitis in global health funding agendas.

Stakeholders' perspectives and acceptability

Cambodia

In Cambodia, we conducted a comprehensive stakeholder engagement process. This involved interviews and Focus Group Discussions (FGDs) with various stakeholders from diverse sectors involved in the care models of hepatitis B and C. These stakeholders included representatives from the Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), the pharmaceutical industry, private doctors, Médecins Sans Frontières (MSF), and technical hepatologists. This diverse range of perspectives offered a comprehensive overview of the various aspects of the project.

The qualitative data collected reflects a strong understanding and positive perception of the HEA model among the participants. They have a clear grasp of HEA as an organization aiming to eliminate Hepatitis B and C in Cambodia by 2030. This understanding extends to the model's specific goals and objectives, including reaching more patients, providing affordable treatment, and raising awareness about the disease among doctors through capacity building and social media awareness for target populations.

“HEA has provided us training and part of HEA memberships and now we have access to low-cost medication in the agreement that we don’t charge the patients exceeding the limited price. HEA also refers patients that seek treatment via social media to us”

- Private sector doctor during focus group discussion

The strong involvement of the private sector is a big contribution to the national programme and brings much needed control to the private sector. In addition, this approach makes it easier to reach many people easily and leaves more capacity for the populations that are hardest to reach to be reached by the national programme.

- Technical expert from WHO

Thematic Area 1: Treatment availability at lower costs

Among stakeholders, there was a clear consensus that the innovative financing model and established public-private partnerships were leading to an increase of treatment of patients for a lower price. Many highlighted that after the MSF programme, this was the first model of its kind that was again re-aligning Cambodia with the 2030 targets for elimination.

“Generally, patients receive the treatment well. They are happy to access to low-cost treatment and doctors are happy that they can receive training to enhance their capacity.”

- Private Healthcare provider

All stakeholders highlighted that the model was well-received by both doctors and patients, and that the lower cost of treatment lowered the financial burden for many of the patients which increased the

accessibility for many patients. The implementation of the innovative financing model led to improved engagement on hepatitis and more awareness raised.

“It is very well received. Patients are happy to hear that they can get cheap medication from doctor who are members of HEA, which eases their financial burden. We receive more patients because some patients reached out to HEA were referred to us. I see that patients have more confidence in us because they reached out to HEA first and HEA referred them to us”

- Private sector doctor during focus group discussion

“The HEA model provides a very low price for the medication. The private doctors are following the set prices and reaching more patients. Their knowledge also continues to improve, and young doctors are very engaged.”

- MSF Technical Expert

Thematic 2: Capacity-building for doctors

In addition, among all stakeholders, the training of young doctors from the private sector was highlighted as a significant contribution to the elimination of hepatitis and the knowledge base of hepatitis in Cambodia. It was mentioned that stakeholders learned about hepatitis in theory through their education, but many missed the practical experience. The HEA trainings offered for many an opportunity to familiarise themselves with the guidelines and disease management.

“HEA is being perceived well, and young doctors are glad to be engaged and acting on good ethics. Sometimes the level of retention is challenging but the knowledge is improved”

- MSF Technical Expert

Thematic 3: Locally available treatment

The availability of treatment in the local community was mentioned by various stakeholders. Under the MSF programme there were only two locations across Cambodia with access to treatment (Phnom Penh and Battambang Province) and many patients travelled substantially to get treatment. Under the government programme, there are only 15 operational districts. Under the HEA model, due to the established partnerships, patients can receive treatment in the local community and near their place of residence. This highlights improved accessibility and a lower financial burden for travelling across the country.

“Patients can get treated a lot closer to their house and for HBV there barely has been any treatment before the model that was accessible”

- Private sector doctor during focus group discussion

Thematic 4: Complexity of Managing Hepatitis

The management of hepatitis, especially Hepatitis B, requires multifaceted approaches and comprehensive understanding of the disease which is highlighted as a challenge among all technical stakeholders. Hepatitis B is a chronic condition that often requires lifelong management and treatment which includes long-term medication but also a 6-month check-up to monitor the disease progression. For hepatitis C, each suspected diagnosis requires confirmation with a viral load test. This test is an expensive test with limited facilities available to conduct such testing.

“The challenge, however, is the treatment of hepatitis B. The price of the medicine and the diagnostic procedures... ..The main gap is from the diagnosis to the treatment. Many patients cannot afford the payment of the medicine and the diagnostic procedure. When you add complications to the mix, it gets even more expensive. The viral load test is very expensive, and some of the patients cannot afford this viral load test. They can only afford the rapid case test, and some can afford an ultrasound. The viral load test is a big barrier. This is for hepatitis C. For hepatitis B, we base it on the liver function test (fibro test). The treatment of hepatitis B is very complicated.”

National programme manager, Cambodia

Thematic 5: Aligning government priorities and referral guidelines

The HEA model aligns with the existing priorities of the government stakeholders and the national hepatitis programme. Stakeholders highlighted this was particularly evident in the model's focus on reducing the cost of treatment, improving access to care, and enhancing doctors' capacity to treat hepatitis, which are all key government objectives.

“The HEA model aligns with the existing priorities and policies of various stakeholders involved in hepatitis B and C control.”

- *Private Doctor*

The HEA model's integration with the public healthcare system is seen as beneficial for improving hepatitis services. However, it also presents certain challenges, particularly regarding capacity and funding within the public sector.

“It is good to integrate the HEA model with the existing healthcare system because in the government public healthcare services lack funding to implement the cost of the treatment. It is a good opportunity for the government to improve the healthcare services for hepatitis B and B because they do not have a lot of capacity”

- *Private Doctor*

It's suggested that the government should have a role in the coordination between the public and private sectors, supporting referrals across provinces and regions. Referral guidelines are seen as an important element of the HEA model. The need for standardization of the referral procedure is raised to ensure regular control and system management alignment with the national programme. However, the issue of high prices for specialist care remains a concern in referrals.

“There are no barriers in the HEA model, the quality of services has steadily improved since its inception, and it leaves the dependency on the public services in case of complications. For this there should be strong guidelines. The national programme should have a role in the coordination between the public and the private sector. Partners across provinces and regionals should support the referrals.

- *WHO Technical Expert*

Thematic 6: Profits and conflict of interest

Another learning was the potential for conflict among specialists due to loss of profits for foreign and high trained professionals that used to monopolize the available hepatitis services in Cambodia. The partnerships under the HEA financing models result in patients moving to physicians working under the model and

Health Poverty Action

charging significantly less for a similar treatment which some might highlight as a potential conflict among stakeholders.

“Because the low-cost medication and lab test, it affects the market price. Specialist doctors at hospitals charge a lot more and are losing patients because they are switching doctors.”

- Private Sector

Furthermore, stakeholders are concerned about the income of private sector physicians that isn't as high since their direct profits are controlled under the model and the control of such pricing that should be integrated in the monitoring and quality assurance of the HEA model. On the contrary, other stakeholders are highlighting this is bringing much needed control of the private sector.

“Some doctors are willing to be part of the HEA model, and some are not willing because of the price ceiling that they require as part of HEA. I think this is an issue because they think they earn more profit when they charge higher prices to patients”

- Private doctor

- *“The strong involvement of the private sector is a big contribution to the national programme and brings much needed control to the private sector”*

- Technical Expert from WHO

Laos

In Laos, in-depth interviews with key stakeholders such as leaders from department of healthcare and Rehabilitation, national centre for HIV/AIDS and STI, laboratories, public hospital and industrial representatives were conducted. A few more in-depth interviews, particularly with WHO, clinicians and focus group discussions with the patients, are to be finalized by the end of the first week of April. From the initial analyses of the interviews provided certain insights in the attempts to answer the research questions.

The data in the interview transcripts were coded, using qualitative coding techniques, assigning a code to each excerpt. Some codes were used more than one time. The study team has inducted a few preliminary themes from the codes, excerpts, and the conversations.

Theme 1: Multifaceted Challenges in Hepatitis Management

Stakeholders across the board underscore the complexity of managing hepatitis, from diagnosis to treatment. *“The biggest challenge would be getting the accessibility of, not only the drugs... it's very important for a person to first, get diagnosed,”* highlights the critical need for improved access and early diagnosis. Financial constraints further complicate the landscape, with one stakeholder noting, *“[...] because I have seen the price of the medicine. OST [supplied medicines] is very cheap compared to the normal selling price in the market.”* and *“But nowadays, as you know, the government budget is very limited. Tax is the very good income and a big key income for the government.”*, emphasizing the affordability and cost challenges in the healthcare system.

Theme 2: The Critical Role of Government and Policy

The necessity of government involvement and supportive policies is a central theme, indicating that successful hepatitis management requires comprehensive intervention beyond medical treatment. *“It will*

be very important... if in case they want to actually eliminate hepatitis by 2030," underscores the need for government initiatives and policy support. However, gaps in health insurance coverage for hepatitis B, C, and HIV/AIDS present significant barriers to treatment accessibility and affordability.

Theme 3: Clarity of Roles and Responsibilities

The clarity of roles and responsibilities among stakeholders is crucial for the success of the HEA model. For instance, one interviewee from the Center of HIV/AIDS and STI highlighted the collaborative project design process: *"CHAS' role is not only implementing agency, but also participate in project design with OST to identify the project goal, objectives, and activities of project in first phase"* (Interview with Ministry of Health official). This quote underscores the importance of clear delineation of roles in project design and implementation phases.

Another aspect of clarity in roles is seen in the operational dynamics between OST, HPA, and CDC. An interviewer explained, *"OST plus HPA is equal to HEA. That is the theoretical kind of formula to say. But in terms of operations, we have independent operations"* (Interview with industry person). This indicates a structured yet flexible operational model where entities maintain their independence while contributing to a common goal.

Theme 4: Strength of Partnership Framework

The strength of partnership frameworks emerges as a critical factor in the HEA model's effectiveness. The document reveals innovative partnerships and coordination among various stakeholders, including government bodies, NGOs, and private sector entities. For instance, an interviewee discussed the coordination dynamics, stating, *"It's mainly through government. For example, in the last five-six years since 2016 or 2017, we have been piloting, this HEA model in one particular hospital which is a public one"* (Interview with industry person). This quote highlights the collaborative efforts and strategic partnerships necessary for piloting and scaling health initiatives.

A government official's perspective on the OST project underlines the importance of strong partnerships for resource optimization: *"OST will support the medicine in the hospital"*. This quote illustrates the practical benefits of partnerships in enhancing access to essential medicines.

Moreover, the role of partnerships in advocacy and policy influence is evident. An interviewee discussed the involvement in *"informing and requesting for the approval and signing MoU for implementation"* (Interview with Ministry of Health official), which showcases how strategic partnerships can facilitate official endorsements and project execution.

Implementation, scalability and sustainability

Needs Assessment

Through a literature review, complimented with the stakeholder interviews, we have determined the needs that are to be fulfilled to adequately and equitably respond to disease burden in Cambodia. It is important to note that needs assessment not only reflects the specific requirements for scaling up the HEA model but also highlights broader challenges within the Cambodian and Laotian health system and the national hepatitis programme with its allocated resources.

1. Human Resources: The shortage of trained healthcare professionals is a significant challenge in the Hepatitis program. This deficiency not only affects the diagnosis and treatment capacities, but it also

contributes to the lack of knowledge amongst young doctors about Hepatitis management and guidelines. The effect of this is exacerbated in rural areas, where resources are already limited. These areas often face a dual problem of having fewer healthcare professionals and fewer facilities, which makes it even more difficult to effectively manage and treat hepatitis.

2. **Specialised services:** There is a limited availability of specialised services, particularly to respond to complex disease presentations and/or complications. Even when such services are available, they often come at a high cost, which creates a financial barrier for many patients. The high prices charged by some specialists exclude a significant proportion of patients from receiving the necessary treatment.
3. **Procurement and commodities:** In the year 2023, the national government committed 1 million USD towards procurement of commodities and service delivery in 15 operational districts in Cambodia. It is unclear how many patients were treated through the national programme due to the lack of a data management system. A total of 5,5-6 million dollars' worth of commodities is needed to respond effectively to the hepatitis burden.
4. **Data management system:** There is no active data management system that is well-maintained as part of the national programme. HEA holds a database of members and their respective treatment efforts. 120 members are supplying data to the system.
5. **Integrated models of care:** Hepatitis, especially HBV, is complicated to manage and often will require lifelong follow-up and treatment. It needs more supportive care in the form of counselling and should be integrated into the model of care.

For scalability and sustainability, all stakeholders commented on the progress made by the HEA model in providing access to affordable treatment for hepatitis. In addition, 5 thematic areas were highlighted to be paramount for further scale-up and sustainability of the HEA model.

Cambodia

Overview Mapping & Geographical Scope

The geographical coverage of hepatitis cases is distributed unevenly across Cambodia, and there are many parts of the country still left behind, especially those living in rural areas of the country with limited proximity to larger urban areas.

“In Cambodia, there is a lot of patients that aren’t reached yet. The expansion outside of the city would be good for the province. The problem is that there are so little specialists in the province”

- OST Stakeholder

As part of the data review, we have created a comparison between the coverage of the HEA model, as well as the 15 operational districts (red) covered through the national programme.

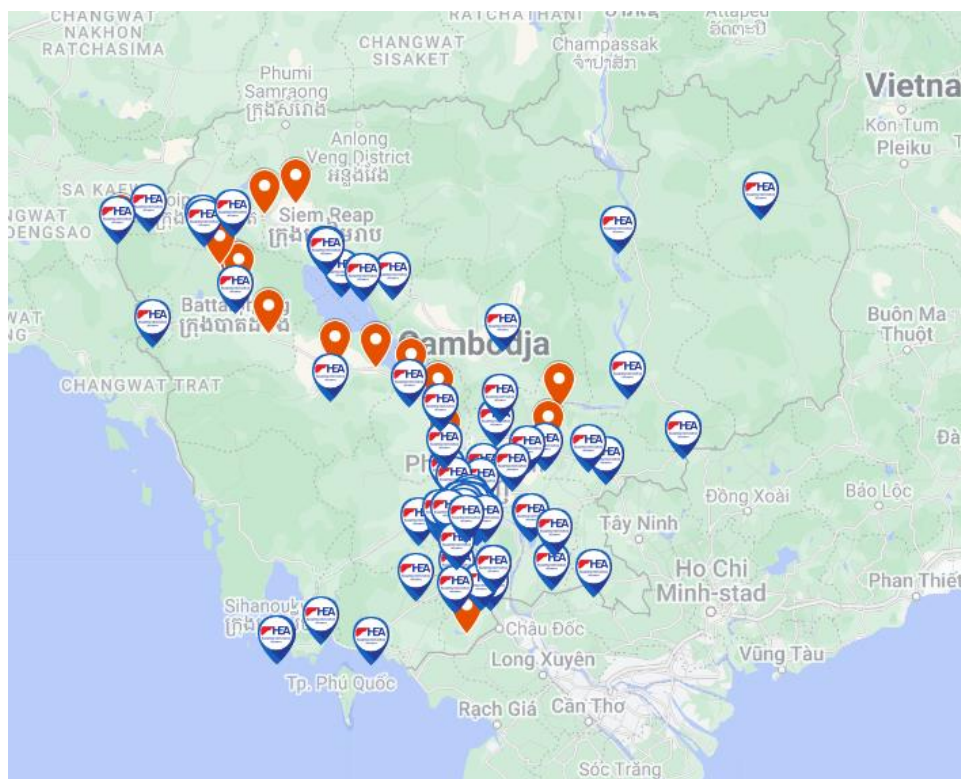


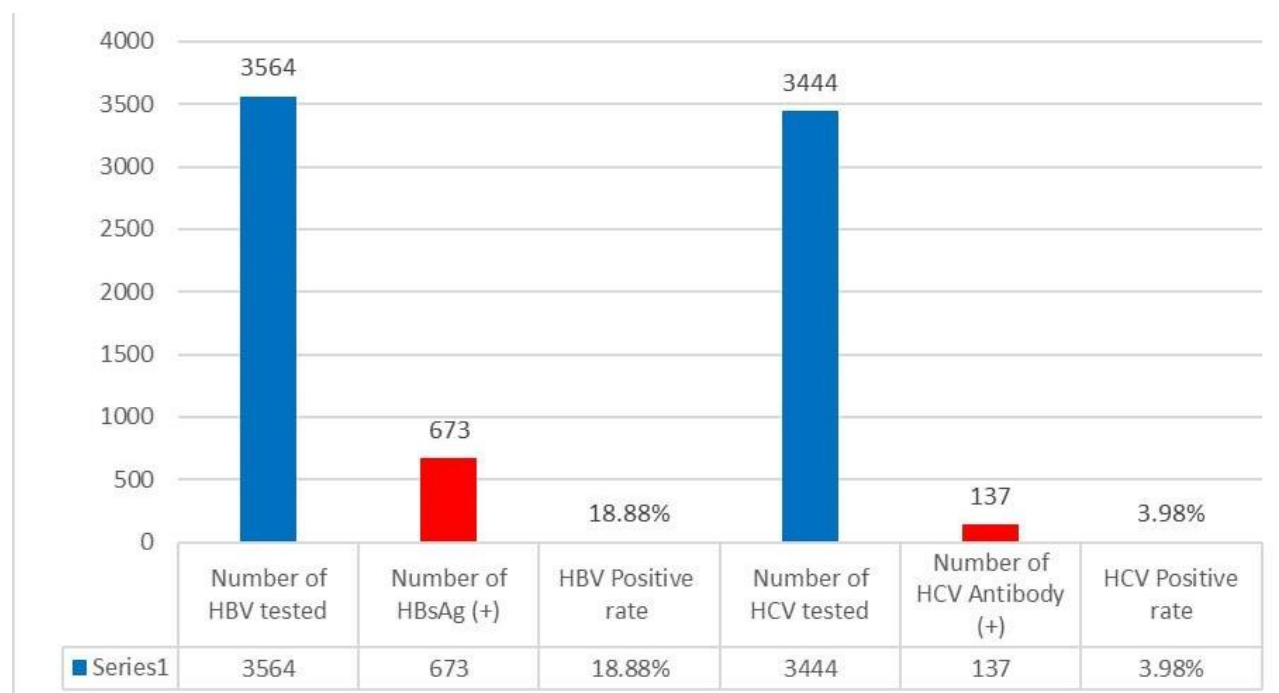
Figure 1: Collaborating physicians with the HEA model and the coverage of the national programme (Red)

The total of 120 HEA members that are active in Cambodia are spread across the country, with more activity in urban centers such as Phnom Penh and Siem Reap, but also provinces such as Kandal and Kampong Speu have a higher density. It is also clear that those 120 trained doctors are enabled to provide treatment to patients that wouldn't otherwise be reached by the operational districts under the national programme. From the figure, it becomes clear that many areas (especially the rural areas), have no coverage at all and patient groups are still left behind.

“Doctors from the rural area lack access to the opportunity. HEA training programme should encourage more doctors or seek training in the rural area so they could have the capacity to treat hepatitis”

- Private sector doctor during focus group discussion

In the past 6 months, HEA delivered 3564 tests for HBV, and treated 673 HBV patients as part of the model. For HCV, 3444 tests were conducted with 137 patients treated under the model. Please also note that the respective positivity rates are 18,88% for HBV and 3,98% for HCV.



Thematic 1: Long-term sustainable funding

One of the key priorities identified for the implementation and scalability of the HEA model is the need for long-term sustainable funding. The model's dependence on external funding was raised as a concern by various stakeholders. The fear is that once this external funding ceases or is reduced, the strides made in making Hepatitis treatment accessible and affordable could potentially be reversed, leaving a significant gap in care. This concern is not unfounded, as evidenced by the sudden disappearance of a previous MSF model in Cambodia, which resulted in a large gap in care.

“My main concern is financial sustainability, and that is also problematic for the patients because they need proper following care. Think about hepatitis B patients, they can be on the treatment for their whole life. If the model disappears a massive gap for the existing patients falls. This happened with the MSF model in Cambodia, it was a great initiative but when they disappear, the burden is there.”

- Technical Expert on Hepatitis

Aligned with the need to find long-term sustainability, recommendations were made to explore opportunities for diversification of funding needs and optimising costs by ensuring effective and efficient use of resources. Including further negotiations with pharmaceutical companies and advocating for lower taxes and import costs.

“Diversification of resources and funding, having several models that are working on hepatitis at the same time. In addition, negotiations with pharmaceutical sectors and removing taxes and import costs could help.”

- Technical Expert on Hepatitis

Thematic 2: Increased community awareness and engagement

Further building upon the geographical scope, expanding to the more rural communities requires more awareness raising among community members and training the existing community structures for engagement and relationship building.

“HEA should not only train the doctors from the private sector but also train the local community focal point because this is the key person is sharing the information to the people about the symptoms of hepatitis B and C and where they should get treatment”

In addition, recommendations were suggested to strengthen community engagement through collaborating with the existing networks and CSOs that have long-standing experience with communities. One stakeholder suggested that the village health workers network should be considered as a key partner.

“If HEA wants to expand their activity; they should be working with other NGO and local CSOs that are working on health. Especially village health workings and those that work in the grassroot communities are essential for that work. They work with key populations and often spread information.”

- Technical Expert on Hepatitis

Thematic 3: Exploring and maintaining partnerships

The high associated cost for diagnostics is highlighted by a lot of stakeholders. Recommendations were made among stakeholders, to different type of members into the partnership model that would bring different services and expertise to the model, allowing to further reduce the financial burden of the entire model of care for hepatitis B and C. Especially those for viral load tests, linked with the limited availability of institutions. Data highlighted that partnerships with laboratories would be beneficial to further reduce the cost and financial burden for patients. I

“ We also want to establish new partnerships with laboratories to set the benchmark for the cost of the viral load testing and other diagnostic tests”

- HEA Programme Manager

Thematic 4: Data management and quality control

Within project implementation and further upscale, data management and quality assurance were highlighted as key aspects to ensure the HEA model. Information systems are accurately collected, processed and utilised to make informed decisions. A key aspect of data management is the ability to monitor and evaluate the success of the HEA model, and stakeholders have expressed the importance of ensuring that all HEA members fill in the data correctly.

“I think the HEA model should make sure that the HEA medical system to monitor and evaluate the success and make sure all the HEA members fill in the data correctly.”

Quality assurance is another crucial component. Several stakeholders emphasized the need for ongoing training for HEA members to comply with data requirements.

“The monitoring of the HEA model is good, the telegram group for questions is a great opportunity. But more training for HEA members is remaining to comply with the data requirement. Quality insurance remains important.”

- Hepatitis Technical Expert

However, there are areas of data management and quality assurance that may require further attention in the future. Two examples were mentioned, firstly the integration of patient feedback in the existing M&E system.

“We should integrate the patient feedback from into the monitoring and evaluation”

- HEA Programme Manager

Secondly, the standardization of referral guidelines was mentioned as a need to ensure regular control and system management alignment with the national program. This standardization can help improve data consistency and reliability, contributing to more accurate analysis and interpretation.

Thematic 5: Training and integrated models of care

The HEA model's success depends heavily on the proficiency of the knowledge of the doctors providing the care. Therefore, many of the stakeholders agreed on the need for more training of the HEA members to continue to enhance their capacity.

"HEA should provide with their member by providing more training such a refresher course."

- HEA Member during FGD

In addition, training shouldn't only focus on the medical aspects of hepatitis but also integrate counselling approaches into the treatment model. Counselling plays a significant role in addressing the stigma and discrimination often encountered by hepatitis patients. It was recommended to be integrated with the medical treatment as it can also positively affect patient engagement and awareness. into the social and psychological aspects of patient care.

"HEA doctors also should improve their quality of care with the integration of counselling into the treatment models. Sometimes we still hear about stigma against patients."

- HEA Programme Manager

Laos

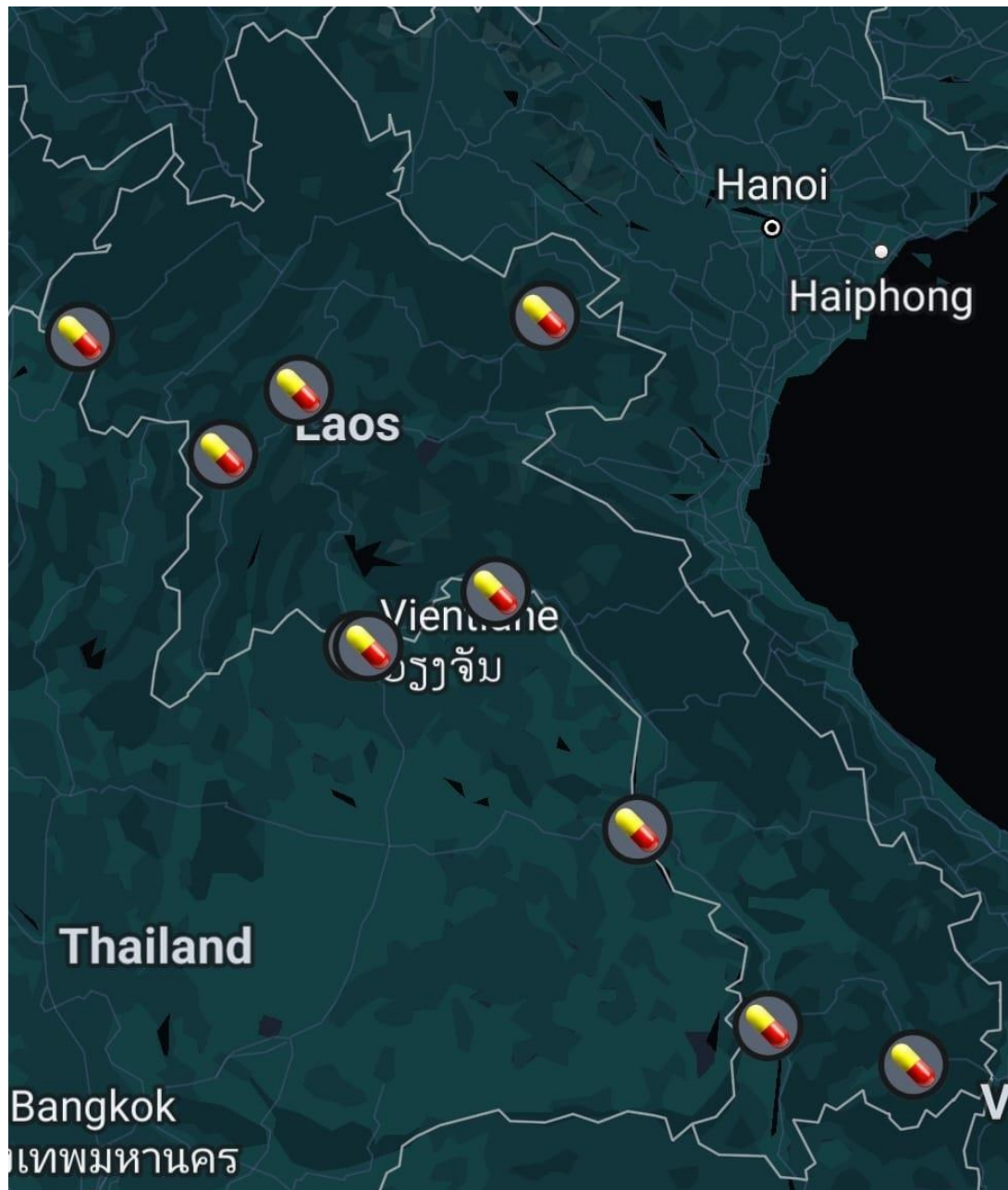
Overview Mapping & Geographical Scope

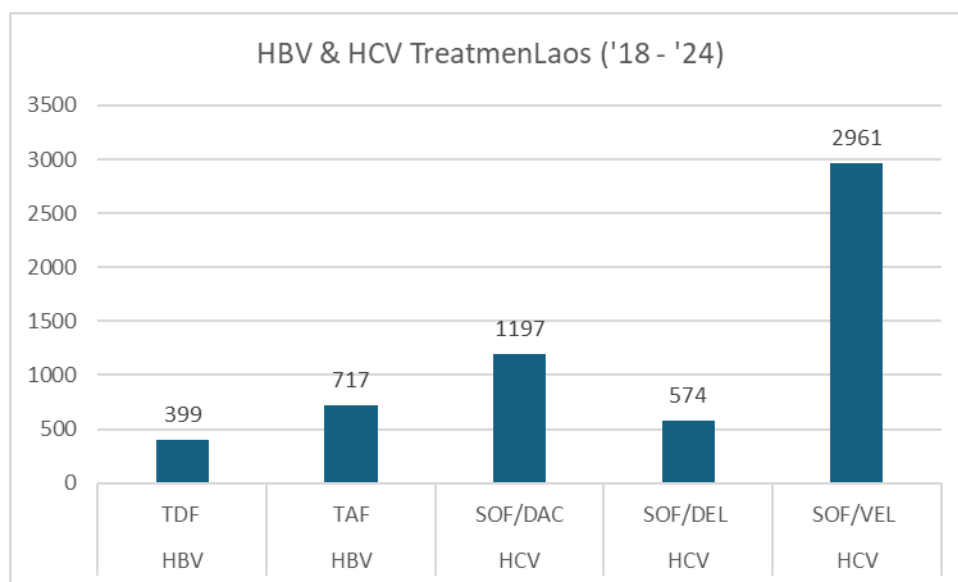
Figure 2: Collaborating physicians with the HEA model across Laos.

Within Laos, there are 20 clinics – mostly from the public sector – that are engaged with the HEA model. Many of them are based within the capital city of Vientiane (12). The remoteness and distances across Laos, make for a more challenging roll-out across the country. Through the model, provincial capital cities in the country are also covered, including Savannakhet, Pakse, and Attapeu.



Figure 3: Collaborating physicians with the HEA model in Vientiane

Since the inception of the model in August 2018, through the model, 5848 people have been treated for hepatitis, of which 3535 for hepatitis C and 2313 for Hepatitis B.



Theme 5: Importance of Public-Private Partnerships (PPP)

The consensus on the value of PPPs in enhancing the reach and effectiveness of hepatitis elimination efforts is evident. *"It's kind of a public-private partnership between all of us and that's how this alliance was formed,"*

reflects the collaborative effort required for the model's success. The role of industrial stakeholders is highlighted as essential for scaling up the model, with one participant stating, *"We plan to scale up to all the provinces... through OST company,"* indicating the strategic importance of partnerships in expanding the model's reach.

Theme 6: Evolving Treatment and Pricing Strategies

The evolution of treatment options and pricing strategies is a key focus, reflecting on the progress made and the ongoing challenges in making treatments accessible and affordable. *"There's probably a 50% reduction already in terms of the price at which the product is now accessible to the patient,"* showcases the milestones made in cost optimization. Yet, the need for differential pricing to further optimize costs remains, especially in large scale procurements.

Theme 7: The Need for Comprehensive Health Information Systems

A fascinating insight is the critical role of health management information systems in supporting disease elimination efforts. *"The entire health information system in these part of the country... is completely missing,"* points to a significant gap in infrastructure, underscoring the need for robust data collection and reporting mechanisms to support effective disease surveillance and management. While acknowledging such challenge, a decision maker from the Ministry of Health confidently said, *"If we have network, then they can report. We set up the form, then they can report to the DHIS 2."*, highlighting the commitment in addressing this gap.

Theme 8: Training and Capacity Building

The importance of training healthcare professionals and building capacity emerges as a cornerstone of effective hepatitis management and elimination strategies. *"Training and upgrading knowledge are very important. If they don't know, they will not get good results,"* emphasizes the need for continuous professional development to ensure healthcare providers are equipped with the latest knowledge and skills in hepatitis care.

World Hepatitis Summit

The World Hepatitis Summit (WHS) was a valuable opportunity for learning, networking, and gaining exposure to the latest research, strategies, and initiatives in hepatitis treatment and prevention, and more importantly offered new intereactions with key stakeholders active within the disease management of Hepatitis bot nationally, regionally and globally.

During the World Hepatitis Summit, there were ample opportunities to discuss the findings and insights from the RIDA project with various hepatitis stakeholders. These engagements were not limited to formal presentations but took place in a variety of settings. In the workshops, I was able to contribute to the discussions by sharing experiences and learnings from the RIDA project. These contributions not only provided contextual examples but also highlighted the practical implications of our research findings in Cambodia and Laos. A connection was made between the Vietnamese national programme for HIV, who are also responsible for the implementation of the hepatitis programme and HPA that is being followed up with discussions around piloting the model in Vletnam in the future. In addition, a new link was made between CHAI and HPA for both Cambodia and Myanmar. CHAI had implemented a similar programme prior to COVID-19 and the military coup in Myanmar. HPA has since then met CHAI Cambodia to closer integrate the programmes among the active stakeholders in Cambodia and will be facilitating learning sessions with CHAI Myanmar.

Another learning during the World Hepatitis Summit was regarding the funding landscape of hepatitis, and the long-standing challenges for civil society, NGO's and governments to secure funding dedicated towards the management of hepatitis as an integral part of health systems. Since hepatitis is not part and only limited integrated as part of the major vertical disease programmes (e.g. those by the Global Fund against HIV, TB and malaria), the health system strengthening that is undertaken as part of those disease programmes is not represented for hepatitis. It also seemed that there was the consensus that this funding landscape was unlikely to change, urging country teams to make investment cases for the management of hepatitis as well as pilot alternative funding models.

Furthermore, networking sessions proved to be a valuable platform for engaging with other professionals in the field. These informal interactions allowed for more personal conversations about the RIDA project. Through these discussions, I was able to share our work and learn from others' experiences. I was able to connect with a Khmer-Australian advocate for hepatitis B. She shared some of her learnings as well as some valuable IEC/BCC materials in reaching Khmer populations. We will be facilitating a learning exchange between her and the HEA team. Moreover, I gained more insights in the integrated model of care, and the importance of piloting counselling through United for Global Health and their resources on integrating mental health in models of care.

Overall, The World Hepatitis Summit offered valuable insights into the latest strategies, and initiatives in hepatitis treatment and prevention, highlighting the need for increased integration, collaboration, and funding in this field. The conference also served as an effective platform to promote the work of the RIDA project and the HEA model, fostering new connections and partnerships. Moving forward, these experiences and learnings will be instrumental in shaping our approach to hepatitis treatment and prevention, reinforcing our commitment to the global hepatitis community.

Discussion

Significance of the result

Our findings underscore the potential of the HEA model to significantly impact hepatitis B and C management through innovative financing, public-private partnerships and a focus on data management and quality control. The cost minimization analysis reveals that the HEA model not only makes the hepatitis B and C care more affordable but also highlights the importance of leveraging partnerships to reduce the costs further. However, the sustainability of these efforts hinges on addressing several critical areas such as addressing stakeholders concerns and conflicts, enhancing data-management for informed decision-making, and cultural and contextual adaptability.

The HEA model represents a potential paradigm shift in the management of hepatitis B and C, leveraging innovative financing mechanisms and public-private partnerships to enhance accessibility and affordability of care. The model's emphasis on cost minimization and quality assurance has demonstrated potential for scalability, making it a viable option for potential replication across the ASEAN region particularly in the countries with similar income level. The strategic partnerships with pharmaceutical companies have been instrumental in reducing the costs of medications, which are often prohibitive barriers to care. This collaborative approach not only improves patient outcomes but also fosters a competitive market environment that benefits all stakeholders.

Cost-minimization analysis

The Hepatitis Elimination Alliance (HEA) model has demonstrated a significant cost-saving compared to the traditional care models for financing hepatitis B and C testing and treatment in both Cambodia and Laos. This is particularly evident in the cost-minimization analysis, which reported **savings ranging from between 15% and 16% for Hepatitis C and between 48% and 57% for Hepatitis B for patients**. The discrepancy in the cost of treatment regimens for Hepatitis B and C is tied to the type of treatment required for each condition and is also linked to previous market shaping efforts. For instance, the DAA⁴ regimen for Hepatitis C treatment (SOF/DAC or SOF/VEL) has been on the market for a longer period, and organizations like MSF have played a significant role in making this treatment accessible by driving down the price with pharmaceutical companies. Conversely, for Hepatitis B, there have been barely any organized initiatives to reduce the price or increase treatment availability within both Laos and Cambodia. The cost efficiencies in the HEA model are primarily due to operational efficiencies and innovative healthcare financing strategies, highlighting its potential as a scalable and sustainable approach to hepatitis management.

Key Components of Cost Reduction in the HEA Model

The interviews and the desktop reviews of the financial documents of the HEA model enabled the study to describe the key components of HEA model attributable to the cost reduction compared to the traditional model. How the cost reduction was made possible at the practical level and to which extent such approach would be scalable across Southeast Asia region is discussed.

1. **Differential Pricing from the Industry:** The HEA model negotiates reduced prices for hepatitis medications directly with pharmaceutical companies. This differential pricing strategy is made possible by the model's non-profit nature and the collective bargaining power of its partners, leading to direct cost savings on medication purchases.
 - **Practical Implementation:** By securing agreements for lower medication prices, the HEA model can offer treatments at significantly reduced costs to patients. For instance, the model achieves a saving of approximately 24 dollars per patient per year for TDF treatments through negotiated price reductions.
 - **Scalability:** This approach is highly scalable, provided there is regional collaboration among countries or organizations to negotiate with pharmaceutical companies. The success hinges on presenting a unified front to leverage larger volume purchases for better pricing.
2. **Operational Efficiencies and Non-profit Nature:** The model operates on a non-profit basis, with any returns from sales reinvested into covering operational costs. This minimizes profit margins and focuses on affordability. Operational efficiencies are achieved through streamlined processes, bulk purchasing, and strategic partnerships.
 - **Practical Implementation:** The model's operational efficiencies and non-profit nature contribute to a lean operational structure that minimizes costs without compromising the quality of care. For example, the cost-minimization analysis showed savings of up to 56.62% for hepatitis B treatment in private clinics under the HEA model compared to traditional care models.

⁴ DAA = Direct Acting Antiviral

- Scalability: The non-profit approach and focus on operational efficiencies are scalable with regional cooperation to adopt similar models. The challenge lies in securing consistent funding and support to maintain the non-profit model and its activities.
3. **Strategic Partnerships and Broader User-Base:** The HEA model's success is partly due to its partnerships with various stakeholders, including the pharmaceutical industry, clinicians, and diagnostic laboratories. These partnerships enable bulk purchasing, which further reduces costs.
- Practical Implementation: The inclusion of a broader user-base and partnerships contributes to market shaping, driving consistently lower prices for medications and diagnostics. This approach not only benefits patients by reducing out-of-pocket expenses but also encourages a competitive market environment.
 - Scalability: Expanding the HEA model to other countries in the Southeast Asia region would require establishing similar partnerships and ensuring a broad user-base to maintain bargaining power. The model's scalability will depend on the ability to replicate these partnerships and the willingness of new regions to adopt the HEA's operational framework.

Financial Viability and Attracting Investment

Despite operating with no profit, the HEA model's financial sustainability can be enhanced by showcasing its impact and cost-minimization, improving operational efficiencies, diversifying revenue streams, and expanding strategic partnerships. These strategies can attract potential investors by highlighting the model's long-term potential for public health impact and its innovative approach to reducing hepatitis treatment costs.

It's however pertinent that there are limited opportunities and potential sources of investment for scaling up the HEA model. Domestically allocated funding is insufficient to reach the needs of countries national programme. The evolving role of international funding bodies, such as the Global Fund, have some institutional funding allocated to hepatitis, but often linked to testing and treatment for key vulnerable populations such as people who use drugs or living with HIV. It would require strong advocacy and robust evidence of the health burden posed by hepatitis and the effectiveness of elimination programme. Therefore, a coordinated approach among all stakeholders, including governments, NGOs, healthcare providers, and patient advocacy groups, will be crucial for effectively advocating the inclusion of hepatitis in global health funding agendas and exploring innovative financing mechanisms and partnerships.

However, the HEA model as a true Public-Private-Partnership which mobilised all possible resources, including for example, the traveling cost of private doctors coming to trainings, reduces the total cost of hepatitis programme for both national government and international donors.

Cambodia

The HEA model benefits were acknowledged by all stakeholders. The perceived benefits included increased viral hepatitis awareness and treatment availability at lower costs made possible through innovative financing models and public-private partnerships. The model's capacity-building efforts, especially among young doctors, are seen as a significant contribution to the elimination of hepatitis. The locally accessible treatment provided by the model is viewed as a major advantage as it reduces the travel burdens on patients. Furthermore, the alignment of the HEA model with government priorities, such as reducing treatment costs, improving access to care, and enhancing doctors' capacity to treat hepatitis, is positively perceived.

However, challenges persist, such as the complexity of managing hepatitis, particularly Hepatitis B, which requires a comprehensive understanding, is seen as a significant hurdle. While the integration of the HEA model with the public healthcare system is beneficial, it does present challenges in terms of capacity and funding. There is potential for conflict among specialists due to loss of profits, as the HEA financing models have led to patients moving to less expensive physicians. Additionally, there are concerns regarding the income of private sector physicians since their direct profits are controlled under the model. These diverse perspectives highlight the multifaceted implications of the Hepatitis Elimination Alliance model.

The research presented above reveals key considerations for the scalability of the Hepatitis Elimination Alliance (HEA) model in Cambodia. Long-term sustainable funding emerges as a crucial aspect of scalability. The HEA model's future success hinges on the availability of robust financial resources over time. Diversification of funding sources and optimization of costs are recommended strategies to achieve this sustainability. This approach could prevent the potential gap in care that occurred with the sudden withdrawal of the MSF model in Cambodia.

The HEA model has made strides in improving the accessibility and affordability of hepatitis B and C care. Stakeholders also remarked that the inclusion of partners from the diagnostics industry could further enhance the model's effectiveness in other stages of the care life cycle from diagnosis to treatment and rehabilitation. Diagnostics are the critical component of hepatitis management, enabling early detection, prompt treatment and monitoring of the disease. By forging partnership

with diagnostics company, HEA model could negotiate the lower prices for essential tests such as rapid diagnostics and viral load assessments and ensure wider availability of these tests across the country.

The lack of a comprehensive data management system in Cambodia limits the ability to monitor the HEA model's effectiveness accurately at the government level. Future iterations should prioritize establishing standardized data collection and reporting protocols, enabling informed decision-making and continuous improvement of the model.

The HEA model's contribution to UHC is significant, with access to affordable treatment is a significant contribution at the country level. 3,597 tests provided through the model in the past 6 months by 120 doctors, and 283 people being treated underpins that further. Many of these patients did not previously have access to testing and treatment services due to the financial barriers and the lack of treatment options in the community. In addition, in terms of practical scale-up and further contribution to UHC, suggestions are being made to further roll-out the HEA model into the rural areas of Cambodia as well as engage with the existing community structures to further provide access to care and link key populations with affordable and accessible treatment.

Laos

The perceived benefits of the HEA model, as shared by stakeholders, include not only enhanced access to care but also the potential for viral hepatitis elimination. However, challenges such as the lack of insurance coverage for hepatitis treatment underscore systemic issues that need urgent attention. These challenges highlight the importance of stakeholder perspectives in identifying both barriers and enablers to the model's implementation. Financial sustainability and the readiness of healthcare infrastructure have been identified as significant barriers, while strong government support and stakeholder collaboration emerge as critical enablers.

Practical considerations for the HEA model's success in Laos involve its alignment with existing health systems. The strategic integration of the model into national health strategies is essential for scalability, ensuring that the approach aligns with government priorities and policy. This alignment is crucial for the model's sustainability and its ability to contribute to universal health coverage, making hepatitis treatment more widely available.

Risks such as maintaining the quality of healthcare delivery during rapid scaling have been identified, with mitigation strategies focusing on strengthening PPPs and ensuring community engagement. These strategies are vital for the model's capacity-building efforts, ensuring that healthcare providers are adequately trained in managing hepatitis and that the community is engaged in the process.

The HEA model's contribution to universal health coverage (UHC) in Laos is deemed significant, with the potential to expand access to diagnostics and treatment. This contribution is aligned with ASEAN priorities, emphasizing the importance of innovative financing, stakeholder engagement, and policy advocacy in addressing public health challenges. The model's focus on cost minimization and quality assurance further underscores its potential for scalability, not only within Laos but across ASEAN countries, offering a replicable approach to hepatitis management.

The challenges of limited healthcare infrastructure and insurance mechanisms for hepatitis treatment underscore the need for improved access to detecting disease and care. Partnership with the diagnostics industry would play a crucial role in overcoming these challenges. By integrated accessible diagnostic services into the HEA model, Laos could improve early detection and treatment outcomes of hepatitis B and C. Collaboration could focus on making diagnostic tests more affordable and accessible, particularly in the rural underserved areas. Additionally, diagnostics partners could support capacity-building efforts, training healthcare professionals in the use of diagnostics tools and interpreting the results. This would not only enhance the quality of care but also strengthen the overall health system's capability to manage hepatitis efficiently.

Decision makers in Laos expressed that they were limited by the lack of accurate epidemiological and patient data on hepatitis B and C. The health system's ability to receive and report hepatitis B and C in the national health management information system DHIS2 would be crucial in the success of the intended scaling up of the hepatitis B and C treatment throughout the country along with the HEA model.

Implications / reflections of the result to the wider, sector-relevant innovation and development in Southeast Asia region

The findings derived from the scaling up of the HEA model in Cambodia and Laos have profound implications for the broader sector of innovation and development in the Southeast Asia region. The key considerations disclosed in this research can serve as a blueprint for other public health initiatives in the region.

The necessity of long-term sustainable funding underscores the importance of financial sustainability in health interventions. It suggests the need for innovative funding strategies that go beyond reliance on external donors. This could involve public-private partnerships, social impact bonds, or other forms of innovative financing.

The emphasis on increasing community awareness and engagement suggests that health interventions should not be top-down, but rather rooted in the communities they serve. This means engaging local

populations in the design, implementation, and evaluation of health programme, which can result in more culturally sensitive and effective interventions.

The insight on exploring and maintaining partnerships indicates the power of collaboration in health care. Partnerships between different sectors, such as healthcare, academia, and the private sector, can leverage diverse resources and expertise to improve health outcomes.

The importance of effective data management and quality control highlights the role of digital health in improving health care delivery. This can inform investments in health information systems and technologies, which can enhance data collection, monitoring, and evaluation.

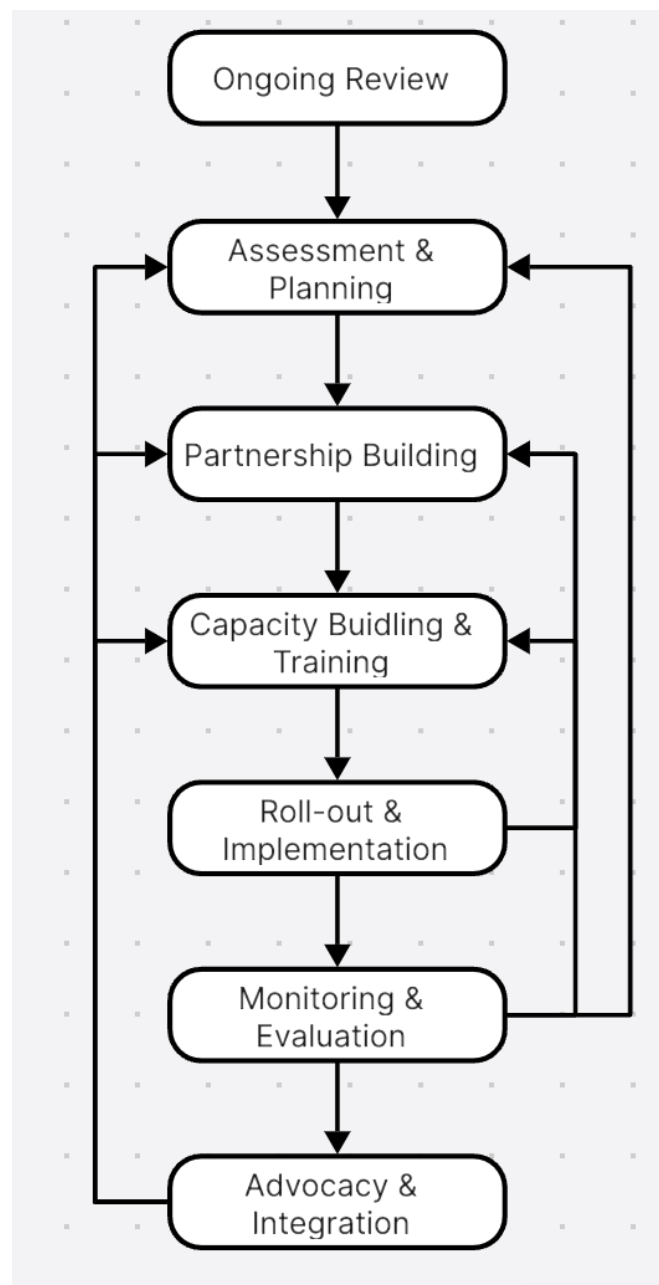
Lastly, the focus on training and integrated models of care reinforces the need for capacity building and holistic healthcare. This suggests that professional development programme for healthcare providers and interventions that address social determinants of health are crucial for improving health outcomes.

Scalability of innovation at ASEAN level

Policy Implication: The findings might have significant implications for policy development, particularly in the areas of healthcare financing, public-private collaboration, and hepatitis management. Policymakers should consider the HEA model's innovative financing mechanisms as a viable option for expanding access to hepatitis treatment. Additionally, developing policies that support data sharing and collaboration across sectors can facilitate the model's implementation and scalability.

Roadmap to scale up the HEA model:

The following roadmap provides a strategic outline for the scaling up of the Hepatitis Elimination Alliance (HEA) model. This model, which has shown great potential in tackling hepatitis B and C in Cambodia and Laos, is based on innovative financing, public-private partnerships, and a strong focus on quality control and data management.



Phase 1: Ongoing review of existing model

The first – ongoing – preparation phase consists of reviewing its current operations and implementation, with the relevant strengths and weaknesses, as done through this assessment. The insights captured from this pre-assessment phase will provide a solid foundation for the subsequent phases of the roadmap. Through the understanding of the challenges and successes of the HEA model in its current implementation areas, informed decisions can be made about how to adapt and improve the model for new regions.

Phase 2: Assessment & Planning for Expansion

This phase involves an in-depth understanding of local context in which the HEA model will be implemented (e.g. Vietnam). It starts with a comprehensive review of the existing health system and potentially the national programme for hepatitis (if any) to understand the current strategies, activities, and challenges of the health system and the disease management of hepatitis. This review provides valuable insights into the hepatitis burden, healthcare infrastructure, and existing interventions, setting the stage for the HEA model's integration. Additionally, it needs to be assessed what the existing role of the private sector is within the health system, as it would serve as a potential partner in delivering hepatitis care. Evaluating the private sector capacity, their level of knowledge and expertise in the management of

hepatitis and their willingness to respond allows the framework for the HEA model to be built.

Phase 3: Building Partnerships

In this phase, strategic partnerships are established with key stakeholders such as governments, healthcare providers, pharmaceutical companies, diagnostics industries, non-profit organizations, and patient groups. These partnerships are critical for the successful implementation of the HEA model, as they bring together diverse resources, expertise, and perspectives. They also ensure the model's alignment with national health strategies and policies, strengthening its acceptability and sustainability. Furthermore, these partnerships facilitate the integration of the HEA model into existing healthcare systems, ensuring its accessibility to a broader population.

Phase 4: Capacity building and training

This phase is dedicated to enhancing the skills and knowledge of healthcare providers who will be involved in the implementation of the HEA model. It involves organizing training sessions and workshops to equip them with the latest guidelines and best practices in hepatitis B and C management. The training also covers the use of diagnostic tools, interpretation of test results, and patient counseling techniques. Additionally, the training sessions provide an opportunity to familiarize the healthcare providers with the HEA model's operational aspects, such as the financing mechanisms, data reporting protocols, and quality control measures. Capacity building goes beyond training sessions. It also involves continuous support and mentorship, ensuring that healthcare providers can confidently and effectively deliver hepatitis care under the HEA model. This support could come from experienced clinicians within the HEA network or international experts.

This phase is crucial for the successful implementation of the HEA model. It ensures that the healthcare providers are not only clinically competent but also fully understand and support the HEA model's goals and strategies. This buy-in from healthcare providers is key to the model's acceptance and sustainability.

Phase 5: Roll-out of the model & further implementation

The roll-out phase involves the actual introduction of the HEA model into the new regions. This phase is guided by the strategic planning done in the previous phases and is facilitated by the partnerships established. To begin, a launch event can be organized to formally introduce the HEA model to the local community. This event should include representatives from all the key stakeholder groups, including government officials, healthcare providers, patient advocacy groups, and community members. The launch event serves as an opportunity to generate excitement about the HEA model and to publicly commit to its implementation.

Following the launch, the model's practice begins with identification and onboarding of local healthcare providers into the HEA network. These providers are then trained on the HEA model's methods and protocols, ensuring they are equipped to deliver hepatitis care under it. The onboarding process also involves setting up the necessary infrastructure for data reporting and financing mechanisms. Next, patients are introduced to the model. This can be done through public awareness campaigns and community outreach initiatives. Patients are educated about the HEA model and how it can help them access affordable and high-quality hepatitis care. Throughout the roll-out phase, regular communication with all stakeholders is maintained to address any concerns or issues that arise. This constant dialogue helps to ensure that the implementation of the HEA model is responsive to the local context and needs.

The implementation phase, which follows the roll-out, involves the routine operation of the HEA model in the new regions. During this phase, the model is regularly monitored and evaluated to ensure its effectiveness and to make any necessary adjustments. Regular feedback from patients and healthcare providers is sought and used to continuously improve the model.

Phase 6: Monitoring & Evaluation

This phase involves systematic tracking and assessment of the implementation and effectiveness of the HEA model. Monitoring and evaluation are integral to ensure that the model is achieving its desired outcomes, identifying areas for improvement, and guiding future decision-making.

During this phase, data is collected on a range of indicators such as the number of patients treated, cost savings achieved, and improvements in healthcare provider skills and knowledge. Evaluation involves analyzing this data to determine the model's effectiveness and impact. This includes assessing whether the model is meeting its objectives, such as reducing treatment costs, increasing access to hepatitis care, and improving the capacity of healthcare providers. Within this phase, it is important to implement feedback mechanisms that can readjust the model to further improve its roll out through partnerships and capacity building.

Phase 7: Advocacy & Integration

This phase of the roadmap is dedicated to advocating for the HEA model and planning for its further expansion. After successful implementation and evaluation, the next step is to leverage the model's success to gain support from stakeholders, policymakers, and other potential partners. This involves sharing the model's achievements, benefits, and learnings at various local, national, and international forums. Advocacy is crucial to gain buy-in from a wider audience, which can lead to more resources and support for the model's expansion.

Health Security: The findings from many stakeholders were heavily focussed on the concerns for the sustainability of funding. This echoes concerns from previous lack of sustainability from large-scale programmes, including those of MSF. This concern should be reflected in the vertical approach to disease programmes commonly seen in the ASEAN region. Those include big donors including the Global Fund, PEPFAR, etc, and have made remarkable contributions towards the elimination of HIV, TB, and Malaria. However, we are seeing a shifting global health agenda toward universal health coverage and questions around long-term sustainability of disease programmes. Vertical disease programmes deliver excellent results within the silo that they operate, as the global health agenda becomes more complex, including elements such as NCD and pandemic preparedness, ongoing policy dialogues should be pushed towards different models of funding (including public-private partnerships) and overall health system strengthening.

Limitations

The limitations of the study per se are a) the reliance on stakeholder interviews and focus group discussions that may introduce bias and b) the absence of longitudinal data limits our ability to assess the long-term outcomes. Future research should aim to collect and analyze outcome data over extended periods to better understand the model's impact on hepatitis B and C management. Moreover, exploring alternative funding mechanisms and models of care that could complement or enhance the HEA model would be beneficial. Investigating the role of digital health technologies in expanding access to care and improving treatment adherence could also offer new avenues for enhancing the model's effectiveness.

Potential next steps

Beyond the RIDA project

Enhance Financial Sustainability: To secure the long-term sustainability of the HEA model, it is essential to develop diverse yet balanced resourcing streams. This strategy could include exploring innovative financing models, such as social impact bonds, and actively advocating for increased government investment in hepatitis elimination. A critical recommendation is to advocate for tax exemptions on pharmaceutical

products and diagnostic equipment, considering that import duty and VAT can constitute up to 20% of the value of these essential healthcare items. This measure could significantly reduce operational costs and enhance the model's financial sustainability. Additionally, while engaging with international donors and organizations is crucial for securing financial support and enhancing global visibility, it is equally important to emphasize strategies that prevent dependency. Building a model that encourages self-sufficiency and resilience is vital, ensuring that the HEA model remains sustainable even as external funding landscapes change.

Establish and Strengthen Partnerships with Diagnostics industry including laboratories: High diagnostic costs are a significant barrier to early hepatitis detection and treatment. To mitigate this, establishing or strengthening partnerships with diagnostics industry partners, including manufacturers and laboratories, is paramount. Through these partnerships, negotiating lower prices for essential tests and ensuring their wider availability across the region can substantially improve early detection and treatment outcomes. These efforts will not only enhance the operational efficiency of the HEA model but also contribute to its scalability and sustainability, making hepatitis elimination a more achievable goal across the region.

Clarify Roles and Responsibly Craft Partnership Frameworks: To enhance the operational efficiency and collaborative spirit within the HEA model, it is crucial to clearly define the roles and responsibilities of all HEA members. This endeavour should be balanced with the development of a partnership framework that is both legally sound and operationally flexible. While this framework should outline operational guidelines, accountability mechanisms, and conflict resolution procedures, care must be taken to avoid overly rigid structures that could lead to bureaucratic inefficiencies. The goal is to foster a framework that supports agility and adaptability, allowing for swift responses to emerging challenges without being hindered by procedural delays. By thoughtfully crafting the frameworks as such, the HEA model aims to strengthen its foundation, ensuring robust collaboration among partners while remaining vigilant against the pitfalls of dysfunctional bureaucracy. This approach will safeguard the model's potential effectiveness and its mission to contribute significantly to the elimination of hepatitis B and C, ensuring that the focus remains on impactful outcomes rather than procedural hurdles.

Foster Regional Collaboration and Knowledge Sharing: Encourage collaboration and knowledge sharing among ASEAN countries to leverage collective experiences and best practices in hepatitis elimination. Establishing a regional platform for exchange can facilitate the replication of successful strategies and foster a unified approach to tackling hepatitis.

Conclusion

The Hepatitis Elimination Alliance (HEA) model represents a significant stride towards addressing the challenges of eliminating hepatitis B and C in the ASEAN region, with a particular focus on Cambodia and Laos. Through innovative financing, public-private partnerships (PPPs), and a mixed-methods approach to research, this study has illuminated the potential pathways and hurdles in scaling up and sustaining hepatitis elimination efforts.

Our preliminary findings underscore the critical role of innovative financing and PPPs in making hepatitis treatment more accessible and affordable. The cost minimization analysis revealed substantial savings in treatment costs under the HEA model compared to traditional care models, highlighting the model's efficiency and potential for broader application. However, the sustainability of these efforts hinges on

securing long-term funding and overcoming systemic barriers such as insurance coverage gaps and the readiness of healthcare infrastructure.

Stakeholder perspectives have been instrumental in identifying the enablers and barriers to the HEA model's scalability. The engagement of government support, stakeholder collaboration, and the integration of the model into national health strategies emerged as pivotal factors for success. Conversely, challenges such as financial sustainability, quality assurance in data management, and the need for increased community awareness and engagement were identified as areas requiring further attention.

The practical steps outlined for expanding the HEA model to other ASEAN countries provide a roadmap for leveraging the successes and lessons learned from Cambodia and Laos. These include advocating for supportive policies, optimizing logistics arrangements, and developing a robust data management system. Moreover, the emphasis on training and capacity building, as well as the establishment of partnerships with laboratories and pharmaceutical companies, points to a comprehensive approach to hepatitis elimination.

In conclusion, the HEA model offers a promising framework for addressing hepatitis B and C in the ASEAN region. While the journey towards elimination is complex, the insights gained from this study provide a foundation for strategic planning and action. By addressing the identified barriers and leveraging the enablers, there is a clear path forward for expanding the model and making significant strides towards universal health coverage and the goal of hepatitis elimination.

As we move forward, it is imperative to continue the dialogue among all stakeholders, fostering a collaborative environment that encourages innovation and shared learning. The journey towards hepatitis elimination is a collective one, requiring the commitment and cooperation of governments, healthcare providers, communities, and international partners. Together, we can overcome the challenges and achieve a future free of hepatitis in the ASEAN region and beyond.

Annexures

<u><i>Cambodia</i></u>	
Stakeholders	Key Perspectives <i>(Please note that each interview lasted between 45 min and 1.15 minutes and only key perspectives are highlighted below)</i>
Government Officials – Centre of Disease Control (1)	- The gap within the hepatitis disease management is substantial due to the lack of funding. - The HEA model is received well and fills a gap where the public capacity is lacking - Quality control and supply chain management are important mechanisms for operational management. - Sustainability of the model is important.
Technical Expertise - WHO (1)	- The involvement of the private sector is a substantial contribution to the hepatitis national programme. - Case management can be further scaled up and integrated
Technical Expertise - MSF (1)	- The HEA model is well-received and increases the capacity of the national hepatitis programme. - Close integration and collaboration between HEA and CDC. - The MSF programme was a huge financial undertaking for MSF, HEA model brings different opportunities of funding. - The monitoring of the HEA model is good. - Continuous training offers an opportunity for doctors to improve their skills and capacity. - Integration of the different stakeholders in hepatitis is important.
Technical Expertise - Centre of Hope (1)	- The implementation of the current HEA project is good, and the expansion would be welcomed. - Operating several hepatitis models at a similar time will diversify the funding for hepatitis and increase accessibility and availability. The current funding available from the national hepatitis programme is not enough to meet the needs of the country. - Viral load testing is a high expense that is challenging to overcome. - Hepatitis management can be very complex in complicated cases and requires specialist care. Integration of referrals is therefore important. - Training of private doctors is important; we have seen a clear improvement in their knowledge through the training. - Expert hepatologists can play a gatekeeping role to improve access to care.
Healthcare Providers - Private Sector (3)	- Since I joined the HEA model, there are more patients received in the clinics. - Patients are pleased with the access to low-cost treatment costs. - Doctors are pleased with the opportunities that enhance their skills and capacity. - Some doctors have concerns regarding the ceiling on the asking price as it is a limitation of profits. - HEA monitoring is an important component for quality assurance. - More awareness-raising on the burden of the disease with the community would be good to improve the capacity and knowledge of the community

Laboratorium - Private Sector (1)	- The limitation of the MSF programme was the lack of availability of services close to the local community. - The HEA model is well received by the community since it makes low-cost treatment available. As a laboratory partners, we aim to support that goal by lowering the price of diagnostics - HEA should have a strong monitoring system to ensure compliance and quality assurance.
Pharmaceutical Sector – OST (1)	- Integration with the government services might be challenges due to their lack of capacity and incentives. - The biggest benefit of the HEA model is the access to low-cost treatment options for patients. - The availability of services closer to the communities is a clear advantage compared to previous programmes. - It is good that the HEA doesn't provide services for free, but instead the contribution of the patients which leads to better agency at the patient level and sustainability of the model. - The HEA model sets the price ceiling for private clinics and doctors, adhering to the agreed price is important and should be checked regularly. - Data quality and monitoring is an important element of quality assurance for the HEA model
Hepatitis Elimination Alliance - Programme Manager (1)	- Social media awareness raising reaches the community and we receive a lot of questions about disease and management. - The doctors provide patients with low-cost treatment opportunities, but the viral load testing is very expensive. - Doctors are receptive to this model due to their improved capacity. - Patients can get treated closer to their house, as the model is locally availability. - Hepatologists charge very high prices since they were previously the only stakeholder in the field. - Close integration with the public sector is necessary, especially for the referrals of complicated cases. - Integration of counselling into the model of care could be good to address stigma and discrimination.
Healthcare Providers - FGD (2 times with 5 members)	- The HEA model is well received as patients are happy to access treatment at a lower cost. Private doctors receive more patients since we are part of the model. Viral load testing remains a burden. - Lack of knowledge and awareness about hepatitis is lacking among community members - The HEA model aligns with the existing priorities and policies on hepatitis - Integration with the public is good since the government services are lacking some capacity; more patients can be treated. - Continuous funding to secure the operation of the model in the long term are important to consider
<u>Laos</u>	
Stakeholders	Key Perspectives
Government official - Department of	- Critical role of government support and strategic partnerships in the successful implementation of the OST project for hepatitis treatment.

Healthcare and Rehabilitation - MoH	- Interviewee emphasizes the importance of clear roles and responsibilities, highlighting the government's commitment to enhancing healthcare access through the OST model. This includes the negotiation of drug prices to make hepatitis treatment more affordable and accessible to the population. - The discussion also touches on the challenges of funding and resource allocation, underscoring the government's struggle with limited budgets and the necessity of external support and innovative funding strategies to sustain healthcare initiatives. - The representative points out the potential for the OST model to be integrated into the national health system, suggesting a future where government-led efforts continue to play a pivotal role in healthcare delivery. - The perspective in a nutshell underscores the importance of collaboration between government bodies, NGOs, and private sectors in addressing public health challenges, particularly in the context of infectious diseases like hepatitis.
Industry persons (Entity cannot be disclosed for confidentiality.)	- Highlighted the pharmaceutical industry's role in supporting hepatitis elimination efforts through the HEA model. - The industry representatives underscore their commitment to making hepatitis treatment accessible and affordable, particularly in low- and middle-income countries. - They highlight the significant strides made in reducing drug prices over the years, attributing this success to economies of scale achieved through large-scale procurements and partnerships with institutional funders and governments. - The conversation also delves into the challenges of drug registration and the importance of fast-tracking regulatory processes to ensure timely access to essential medicines. - The industry persons express a strong sense of mission towards improving public health outcomes and emphasize their willingness to collaborate with various stakeholders, including governments and non-profit organizations, to achieve hepatitis elimination goals. - In summary, the perspectives stress the pharmaceutical industry's critical role in global health initiatives, highlighting the balance between business objectives and social responsibility in addressing infectious diseases.
Laboratory personnel (Entity cannot be disclosed for confidentiality.)	- The key perspective, which features an interview with a laboratory person, centers on the crucial role of diagnostic capabilities and laboratory infrastructure in the fight against hepatitis B and C. - The laboratory representative emphasizes the importance of accurate and accessible diagnostic services as foundational to effective treatment and management of hepatitis. - They discuss the challenges of maintaining high-quality laboratory services, including the need for sustainable funding, the importance of skilled personnel, and the integration of advanced technologies for testing and diagnosis. - The conversation also highlights innovative approaches to cost reduction and optimization of laboratory operations, such as negotiating with suppliers for better pricing on diagnostic equipment and reagents.

	- The representative points out the significance of partnerships with government agencies, international organizations, and the private sector in enhancing laboratory capacities and ensuring that diagnostic services are available to those in need, especially in resource-limited settings. - This perspective underscores the critical role that laboratories play in the broader public health ecosystem, serving as the gateway to detection, treatment, and management of infectious diseases like hepatitis B and C.
Government official – centre of HIV/AIDS and STI	- The key perspective from the interview note with a representative from the Center of HIV/AIDS and STI (CHAS) focuses on the collaborative efforts and challenges in implementing the Hepatitis Elimination Alliance (HEA) model, particularly in the context of a pilot project. - The CHAS representative highlights the integral role of their organization not only as an implementing agency but also as a key player in the project design phase, working closely with the Department of Healthcare and Rehabilitation (DHR) and other stakeholders to define project goals, objectives, and activities. - This collaborative approach underscores the importance of multi-stakeholder engagement in addressing public health challenges. - However, the representative also points out the difficulties encountered during the pilot phase, particularly the impact of the COVID-19 pandemic on project implementation and service utilization. The pandemic introduced unforeseen challenges, such as reduced patient access to services due to social distancing measures, highlighting the need for flexibility and adaptability in project execution. - This perspective sheds light on the complexities of implementing health initiatives in real-world settings, where external factors can significantly impact project outcomes. - It also emphasizes the importance of clear objectives, stakeholder collaboration, and the ability to navigate challenges for the success of public health projects.
Director of hospital Setthathira (Clinical/Administrati on)	- The key perspective from the interview note with the in-charge at Setthathira hospital delves into the critical role of specialized healthcare facilities and leadership in the successful implementation of the Hepatitis Elimination Alliance (HEA) model. - The in-charge, with extensive experience in HIV and Hepatitis treatment, underscores the importance of comprehensive training, national guideline development, and direct patient care in combating hepatitis B and C. - Their long-standing commitment to combat HIV, being closely related to hepatitis, showcases the depth of expertise brought to the project. - The note also touches on the challenges of raising awareness and encouraging health check-ups among the Lao population, a crucial step for early detection and treatment. - The in-charge's involvement in international conferences and efforts to keep abreast of global best practices in hepatitis treatment reflects a proactive approach to healthcare delivery. - This perspective emphasizes the significance of leadership, specialized training, and international collaboration in enhancing the capacity of healthcare institutions to address infectious diseases effectively. It also points to the need for increased public awareness and engagement as critical components of a successful health intervention strategy.

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