



# Healthcare policies: Proactively advancing care delivery and accelerating technology developments with policy innovation framework

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# Healthcare policies: Proactively advancing care delivery and accelerating technology developments with policy innovation framework

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## Abstract

Health systems worldwide are overly complex and fragmented. They face challenges like inequitable access to care, catastrophic health expenditures, emerging diseases, and staff burnout that have a substantial impact on provision of quality care, as well as population health and well-being. This necessitates the proactive development and implementation of evidence-based healthcare policies, which can aid to achieve a significant transformation in healthcare operations, public health, and patient treatment.

Innovation Think Tank (ITT), part of Siemens Healthineers, aims to foster innovation in the policy lifecycle by leveraging its global infrastructure. Trends, challenges, policy processes and healthcare initiatives in several countries were analyzed by using the ITT Healthcare System Framework (HSF). Consequently, a blueprint for innovation in health policy was developed. It consists of three phases (i) plan/define: for scope definition, (ii) develop: for policy formulation, and (iii) implement: strategizing the translation of policy decisions into action.

Setting up health policy innovation labs, conducting capacity building programs, and policy simulations can positively impact policies and their related processes, leading to enhanced care delivery and driving sustainable improvements in healthcare systems. Designing innovation strategies to further shape and adapt these policies to improve health outcomes can pave a way for adoption of new technologies, novel care delivery models, and policy reforms.

In this paper, we first introduce global health challenges and then discuss governance for health,

the need for health policy, its process and impact on care delivery. Due to an increasing reliance on technologies, we also emphasize the interrelationship between health policy and technology. Later, we give an overview of the process behind creation of the innovation framework for health policy, and finally describe the framework.

**Keywords:** Healthcare policy, public health, prevention, technology development, innovation, implementation, policy framework, health governance

## Introduction

### Global health challenges

The global burden of disease is increasing and has a detrimental effect on society. In 2020, the World Health Organization (WHO) published a list of global health issues for the next decade including the climate crisis, access to quality care, emerging infectious diseases, preparedness for global health emergencies, under-investment in healthcare workforce and harnessing new technologies. These challenges not only reflect the fragility of our health systems, but also the non-health sectors like infrastructure, education, or agriculture [1]. Although not easy to solve, these problems are within reach, and demand a proactive response from the health sector as well as the engagement of other sectors in integrated health governance, policy and action [1, 2]. Amidst these challenges, it's important to acknowledge that by committing to healthcare investments now, we not only ensure future lives and financial savings, but also make a pivotal political decision, as public health transforms into a

communal responsibility. In the end, public health is a political choice [1].

### Governance for health

As the nature of problems confronted in this century is altering and health systems across the world encounter new social, economic, political, and organizational challenges, novel methods for governance are required [3, 4]. Governance for health is defined as the attempts of governments or other actors to steer communities, countries or groups of countries in the pursuit of health as integral to wellbeing [4, 5]. The transition in governance to a more collaborative (including the State, health service providers, citizens) and multi-level (global, national, regional, local) approach would enable implementation of whole-of-government and whole-of-society approaches for health [4]. Strategic policy frameworks must exist and be supported by efficient oversight, coalition-building, regulation, system-design considerations, and accountability, for leadership and governance to be effective [6].

### Health policy

Health policy refers to the decisions, plans and actions undertaken at the national, state, or local level, to achieve specific health care goals within a society, or advance public health [7]. National Health Policies, Strategies and Plans are vital in outlining the vision of a country, policy orientations, and strategies to safeguard the health of its citizens. It provides a framework to tackle a wide range of health problems to improve health outcomes, including those related to the Sustainable Development Goals (SDGs) and non-communicable diseases (NCDs) [8].

Many governmental and non-governmental organizations (NGOs) including the WHO, Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA) have a significant influence on framing and implementing public health policies, funding for which can be from budgets allocated by the government, international organizations like the WHO and World Bank, private foundations like the Bill & Melinda Gates Foundation, or public grants.

Timely, reliable, and detailed data and forecasts of emerging health issues aid in guiding evidence-based development of effective health policies, informed decision making, and program implementation [9]. The policy process involves the following major steps [5]:

1. **Agenda setting:** Identification and characterization of issues that require immediate attention from the government. For example, COVID-19 was high on the agenda of policymakers due to its impact on human lives and economy.
2. **Policy formulation:** Developing potential policy options or alternative courses of action to address the problem. These policy options can use regulatory, financial, information based or direct provision instruments. For instance, policy options to implement lockdowns or mask mandates in light of the COVID-19 pandemic.
3. **Adoption:** The government decides on the ultimate course of action, which can be affirmative, negative, or result in no action being taken. If the decision is positive, a specific policy option is adopted, which is then enacted into a law. An example would include integrating vaccine passports or taking no action.
4. **Implementation:** Refers to the translation of policy decisions into action. The responsible organizations execute, deliver, and enforce the approved policies. During COVID-19, the implementation of mandates and level of enforcement differed by the legislation of individual countries.
5. **Evaluation:** The impact and effectiveness of implemented policies is evaluated to identify "what works." It helps policymakers decide if alterations, improvements, or termination of the policy are necessary. For example, evaluation of health and economic impact of the policies implemented during COVID-19 and decision to continue or revoke them accordingly.

Insights derived from evaluations are seamlessly integrated back into the policy cycle, influencing agenda setting or other steps. This cyclical nature of

the process reinforces its pivotal role in refining and advancing policies.

Effective policy execution encompasses various success factors including policy design with clarity of objective and feasibility, stakeholder engagement, organizational needs, and implementation strategy. However, the policy making process faces several obstacles, including conceptual, methodological, and resource challenges in terms of time, funding and expertise [10]. By recognizing and mitigating these barriers, health policies can be effectively translated into actions that lead to improved health outcomes and equitable healthcare delivery.

### **Health policies impacting care delivery and technology development**

Healthcare is evolving from a reactive approach to a proactive one by emphasizing more on disease prevention instead of intervention to improve health and well-being [11]. Although recommendations exist for end-users to make informed decisions on indication, timing, and process for diagnostic tests and clinical interventions, it is imperative to proactively formulate, implement and evaluate policies that target the risk factors of diseases and enhance preventive strategies such as vaccine development and deployment for primary prevention, and screening for secondary prevention, to achieve the best possible individual or collective health outcomes [12].

Comprehensive, evidence-based policies have a noteworthy influence on prevention efforts as they establish standards and regulations such as food and water safety, aid in organization of public health campaigns, promote research, enable access to care by facilitating insurance coverage, guide execution of immunization and screening programs. Likewise, policies for diagnosis and treatment help ensure access to these services, quality assurance, patient-centered care, boost research and innovation, and promote continuous education and training.

These policies not only require technology for their implementation but also drive technology development. Healthcare is on the verge of a transformative shift as digital technologies reshape the doctor-patient relationship and patients become

active partners in their care [13]. This is evident from the COVID-19 pandemic which highlighted the importance of health and healthcare, besides accelerating the widespread adoption of telehealth and other communication technologies.

Healthcare industry has long recognized the potential of emerging technologies and foresees upcoming innovations in therapies, digitalization, and vaccines. Regulators and policymakers hold the responsibility of aligning stakeholders and leveraging technology's potential while avoiding dystopian outcomes. It is important for policymakers and healthcare professionals to understand how future technological advancements will impact the healthcare system, in order to make informed decisions and ensure effective healthcare policies, while striking a balance between safety and innovation. For example, in remote places, better healthcare technology policies can improve access to medical care [14].

However, certain fundamental difficulties exist in fostering innovation within medical technologies: (1) securing the requisite resources (including know-how, research and product development capacity, clinical trial expertise, regulatory infrastructure, background and platform technologies, research tools, investment of public and private capital), and (2) applying these innovation resources most effectively towards addressing unmet public health needs.

Tackling these challenges means navigating complex policy intersections, incentivizing research and development, developing infrastructure, and nurturing skilled professionals. Therefore, it is vital to develop an integrated policy framework that reconciles the distinct goals of health and innovation policies to better articulate the supply of innovation to the demand of health system [15].

### **Innovation Think Tank (ITT)**

With over 90 activity locations, ITT meets the growing need for self-sustaining innovation infrastructure among healthcare providers, medical device manufacturers, researchers, and numerous key stakeholders worldwide [16]. Leveraging this to understand the health and policy challenges in

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different regions and sharing best practices in policy process could be a major advantage.

Material and methods

ITT teams globally analyzed the trends and challenges in healthcare in over 15 countries using the ITT Healthcare System Framework (HSF), a customizable tool used for capturing and validating trends, understanding needs, and defining solution requirements for the future of healthcare [17].

After obtaining an understanding of the healthcare system and relevant stakeholders, the policy making process as well as 40+ healthcare initiatives in

several countries globally were analyzed based on the geography, demographic data, healthcare system, and feasibility [Table 1]. Deep dives were made into the challenges faced during the development and implementation of policies. Additionally, best practices and trends with respect to health policies in these countries were identified.

The data was collected from the ITT knowledge database, literature review from November 2022 to June 2023, as well as conversations with experts from the field of public policy and health economics. Finally, by utilizing these inputs and the ITT methodology [16], a framework was developed by ITT to address challenges and foster innovation in the policy process.

Category	Stakeholders	Content analyzed	KPIs (# = number of)
Healthcare system	Government, hospitals, patients, physicians, diagnostic centers, rehabilitation centers, insurance agencies, pharmacies, pharmaceutical companies, regulatory agencies	Patient journey, total healthcare expenditure, reimbursement model, healthcare policies, current trends, pandemic management	#Patients, #Interactions, #Hospitals, #Medical errors, Healthcare budget, Return on investment (ROI), Bed occupancy
Health policy	Ministry of Health, governing bodies, policymakers, healthcare providers, regulatory agencies, research institutes, pharmaceutical companies, medical device companies, consultancies, insurance agencies, patients, advocacy groups, society	Policy making process, best practices, trends, challenges, healthcare initiatives	Access to care, Patient outcomes, Return on investment (ROI), Immunization rates, Screening rates, Technology adoption rate e.g., electronic health records, telemedicine

Table 1: Example of content analyzed for identifying the global trends and challenges in healthcare and health policy. The categories were created through deep dives into the healthcare systems of 15+ locations, and health policy process of several countries.

Results

Comparative analysis

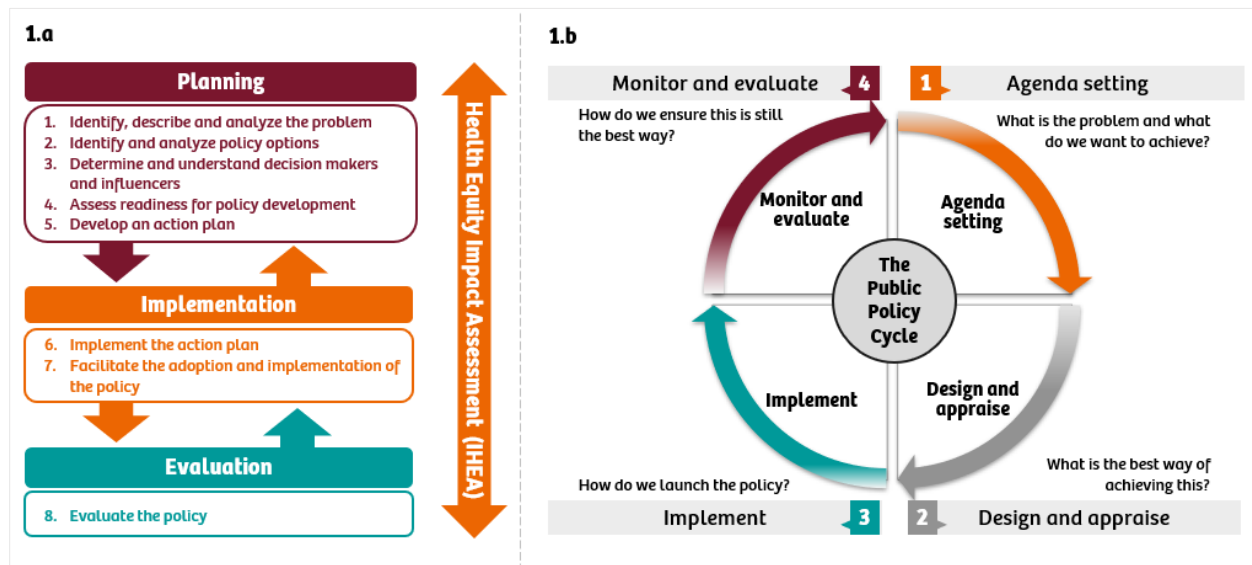
Based on the analysis conducted, it can be determined that the core areas for health policy in most countries are similar. Aging population, climate change, geographic distribution of healthcare professionals, public health financing, service and program inconsistencies across and within the provinces and territories, digital health, mental health, access to safe health products, universal

pharma care legislation and drug cost control measures are a few key areas in Canada, whereas aged care, mental health, remote health services, health equity, private and public healthcare funding are some examples from Australia. Most of these topics are of utmost importance in Germany, Saudi Arabia, Tanzania, India as well as other global countries, in addition to obesity, other NCDs, shortage of healthcare workforce, self-care practices, integrated health care systems, and digital innovation.

Numerous health initiatives have been launched globally to address public health issues. Examples include Healthy China 2030 [18], Vision 2030 in Kingdom of Saudi Arabia [19], National Preventive Health Strategy 2021-2030 in Australia [20], and Digital Transformation in health and social care in the United Kingdom [21].

Although the policy making process in many countries follows an analogous overall idea, there

are minor distinctions in the structure and number of steps. For example, Public Health Ontario (PHO) in 2018 published a three-phase, eight-step policy making process which is aligned with the Core Competencies for Public Health in Canada and Pan-Canadian Health Promoter Competencies [Figure 1.a] [22]. In contrast, the public policy framework in Abu Dhabi, UAE comprises of four steps [Figure 1.b] [23].



**Figure 1:** Public policy process. 1.a. Three-phase, eight-step policy making process for building healthy public policies in Canada 1.b. Public policy framework in Abu Dhabi, UAE

The policy process is not without challenges. For example, in Tanzania and UAE, there is limited civil participation and transparency in the decision-making process. Likewise, some issues recognized with respect to policy process in Canada are lack of community engagement in public policy creation, inadequate foundational data platforms for the public health systems that is vital for evidence-based decision making and policy formulation, unclear accountability in the public health governance system, insufficient investment in innovation, and gap in the coordination between policymakers, researchers, and practice in the public health system [24].

### Framework for innovation in health policy

To foster innovation across the policy lifecycle, ITT curated a framework for health policy innovation labs [Figure 2].

The framework comprises of three major elements:

1. **Plan/ Define:** Identification of the health policy challenges and scope definition.

Our approach here is to implement the ITT public policy launch pad which aims to give a robust kickstart to the public policy process based on evidence and fact-based strategic foresights derived through big picture analysis and capacity building [16]. Big picture analysis for scope definition or agenda setting is where all stakeholders including policymakers, researchers, healthcare professionals, and patients come together to identify and

comprehend the challenges and gaps in the healthcare system, which may be driven by crises situations, social problems, conflicts, or research. The types of problems that get on the agenda depend on the novelty, impact and scope, complexity or simplicity, and whether the problems are solvable, manageable, and implementable [5]. Capacity building programs can be conducted to develop innovation expertise for policy formulation and evaluation of policy proposals. Involving diverse stakeholders in such co-creation programs can help address strategic targets by considering the perspectives of all relevant stakeholders for agenda setting, followed by development of policy proposals.

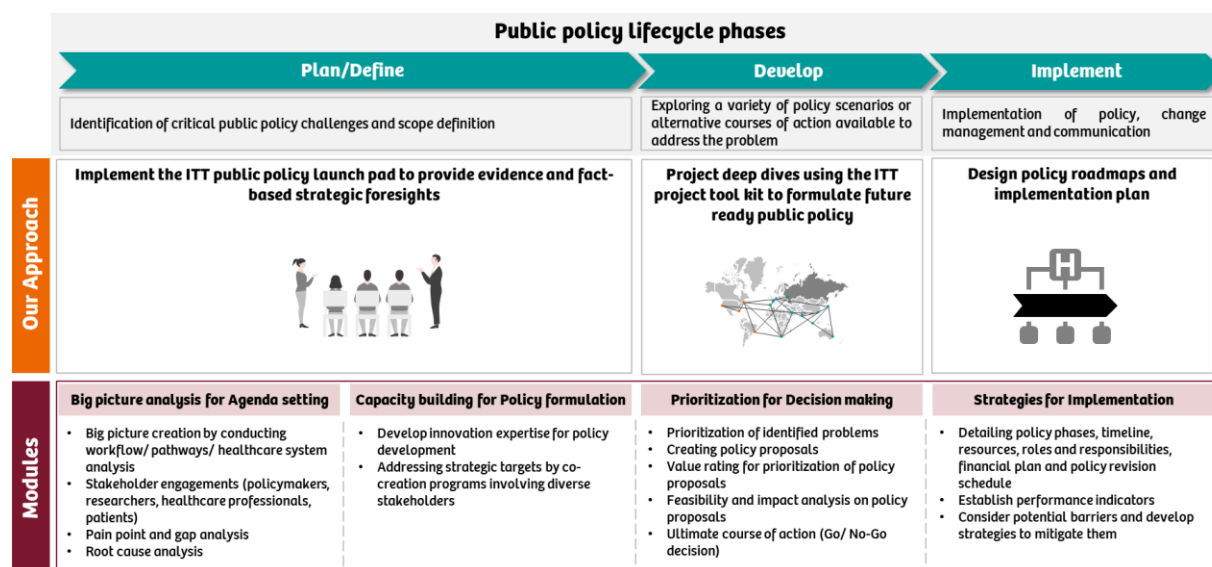
2. **Develop:** Exploring a variety of policy scenarios or alternative courses of action available to address the problem.

Our approach here is to deep dive into the project using the ITT tool kit [Figure 3] to formulate future ready public policies. After ranking of the identified problems, policy proposals can be created with an

aim to tackle the identified challenges by effectively applying the innovation expertise acquired from the capacity building programs for policy formulation conducted during the planning phase. These proposals can then be prioritized via a value rating matrix to decide on policy adoption and subsequent enactment. Feasibility and impact analysis for such policy proposals can further support in the ultimate course of action i.e., go/ no-go decision.

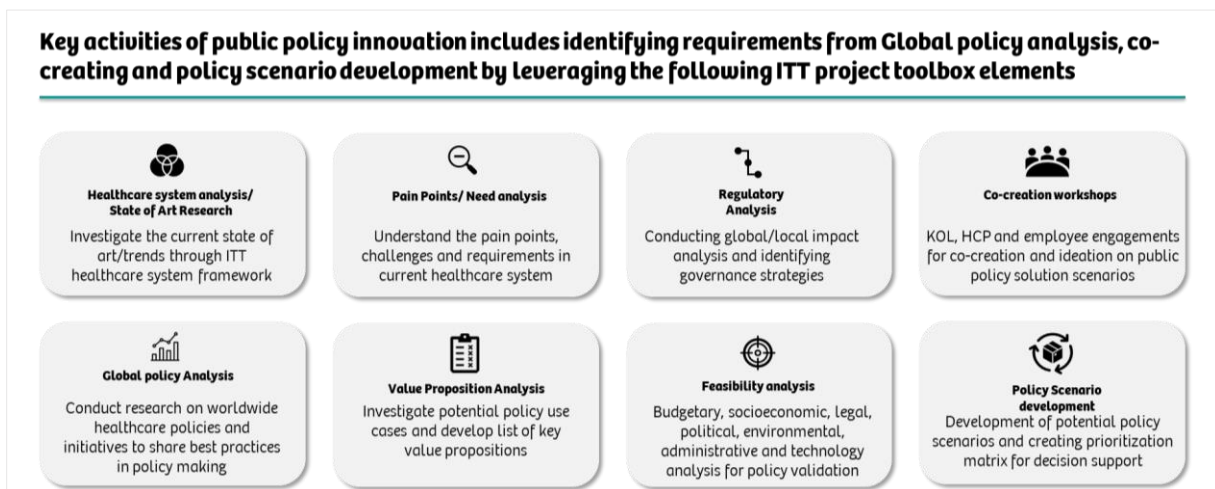
3. **Implement:** Implementation of policy, change management and communication

Our approach here is to design policy roadmaps and implementation plan by elaborating strategies for implementation. Executing policies requires strategic detailing of policy phases, timeline, revision schedule, roles and responsibilities of various stakeholders, resource allocation, and financial plan to ensure effectiveness. Further, performance indicators can be established, and tactics developed to mitigate any pre-identified policy risks and barriers.



**Figure 2:** Innovation Think Tank framework for health policy innovation labs to enable innovation across public policy lifecycle. (Source: authors' own representation)





**Figure 3:** ITT project toolkit for public policy innovation shaping policy roadmaps. It consists of healthcare system, global policy, pain point, and regulatory analysis, co-creation, policy scenario development, value proposition and feasibility analysis. A similar tool box has been utilized for several projects at ITT for state of the art analysis, disease pathway creation, workflow analysis, capacity building, customer validation, etc., facilitating in requirements definition and decision proposition. (Source: authors' own representation)

## Discussion

Policy innovation labs play a crucial role in promoting collaborations between academia, industry, and healthcare institutions to drive research and innovation in healthcare technology by establishing funding programs and innovation hubs. With a focus on health promotion, prevention, early detection, and intervention, they also address patient challenges and leverage innovative solutions to enhance care delivery. By employing methods that tackle complex social problems, they generate valuable insights and ideas for future policy interventions [25].

The comprehensive framework for health policy innovation presented here aims to foster global collaboration and enhance the development of effective health policies. Through ITT global infrastructure, the framework enables knowledge sharing, exchange of best practices, and visualization of the public policy lifecycle to identify areas for innovation. By enabling big picture analysis, scenario exploration, prioritization, and implementation planning, it supports evidence-based decision-making and innovative policy formulation. Combining inputs from ITT disease pathways and ITT prototyping framework can further facilitate problem identification and solution creation space

within policy process [26, 27]. The framework also promotes design thinking and co-development, revolutionizing policy design, innovative prevention strategies and facilitating transdisciplinary collaboration [25].

Involving various stakeholders, including governing bodies, healthcare providers, patients, and NGOs, is pivotal in developing policies that address their specific unmet needs and requirements. Incorporating diverse perspectives, although challenging, is essential for effective implementation. One crucial factor is building and maintaining trust among the stakeholders. ITT addresses this by its sustainable global footprint and continuous engagement with stakeholders through ITT co-creation activities.

The collaboration between ITT and its partner institutes globally demonstrates a commitment to drive innovation and address local healthcare challenges. These partnerships contribute to the development of a knowledge economy, optimize patient experience, and improve disease management. Trusted partnerships with government health agencies, such as the Ministry of Health, and ITT's unique positioning for SHS contribute to shaping regional healthcare systems and building



local capacity through various project and program engagements.

ITT's policy innovation framework also acknowledges unique challenges and needs of different policy areas and regional healthcare systems by utilizing the ITT HSF [17]. By offering customizable modules and capturing healthcare challenges and trends, the framework can be tailored to address specific topics and location-specific requirements. It allows for comparative analysis and enables collaborative policy proposal development by interdisciplinary teams. For instance, in one of the ITT capacity building programs focusing on aging population, participants collected several trends and challenges in the healthcare system and developed solution proposals to facilitate healthy aging and tackle the identified issues [28]. Inputs from such programs can further support in informed decision making for policymakers and defining focus areas.

However, it is important to balance this focus on innovative strategic aspects with sociopolitical considerations, including beliefs, political feasibility, and ethical concerns. Overall, such a framework provides a platform for systematic problem-solving, co-creative approaches, capacity building, and policy innovation, contributing to effective, inclusive, and sustainable policymaking [25].

## Conclusion

The ITT policy innovation framework employs a systematic approach to foster innovation throughout the policy lifecycle by addressing challenges and fostering collaboration among stakeholders. By establishing health policy innovation labs, and conducting capacity building programs, ITT can provide a platform for diverse stakeholders to understand policy challenges, explore solutions, design innovative policies, and conduct policy simulations to address these problems. Development and implementation of such innovative health policy frameworks can drive optimization in healthcare systems, improve health outcomes, and promote equitable healthcare delivery.

## Author contributions

SH has established and confirmed the paper's framework as well as guided and initiated the paper's context. MS has provided crucial insights and inspirations for the healthcare policies context. AG, JV, and MA collected the data, analyzed the results, and added content to the whitepaper. All authors contributed to the paper's drafting and approved the final version. The authors do not state any competing interests.

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## Disclaimer

The information shared in this paper is not an all-inclusive or comprehensive picture of healthcare policies and is a result of data collection through research and key opinion leader interactions. The Innovation Think Tank framework for health policy innovation labs is authors' own representation and is not intended to be taken as a recommendation for the readers. Large language models were utilized for paraphrasing purposes only.

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