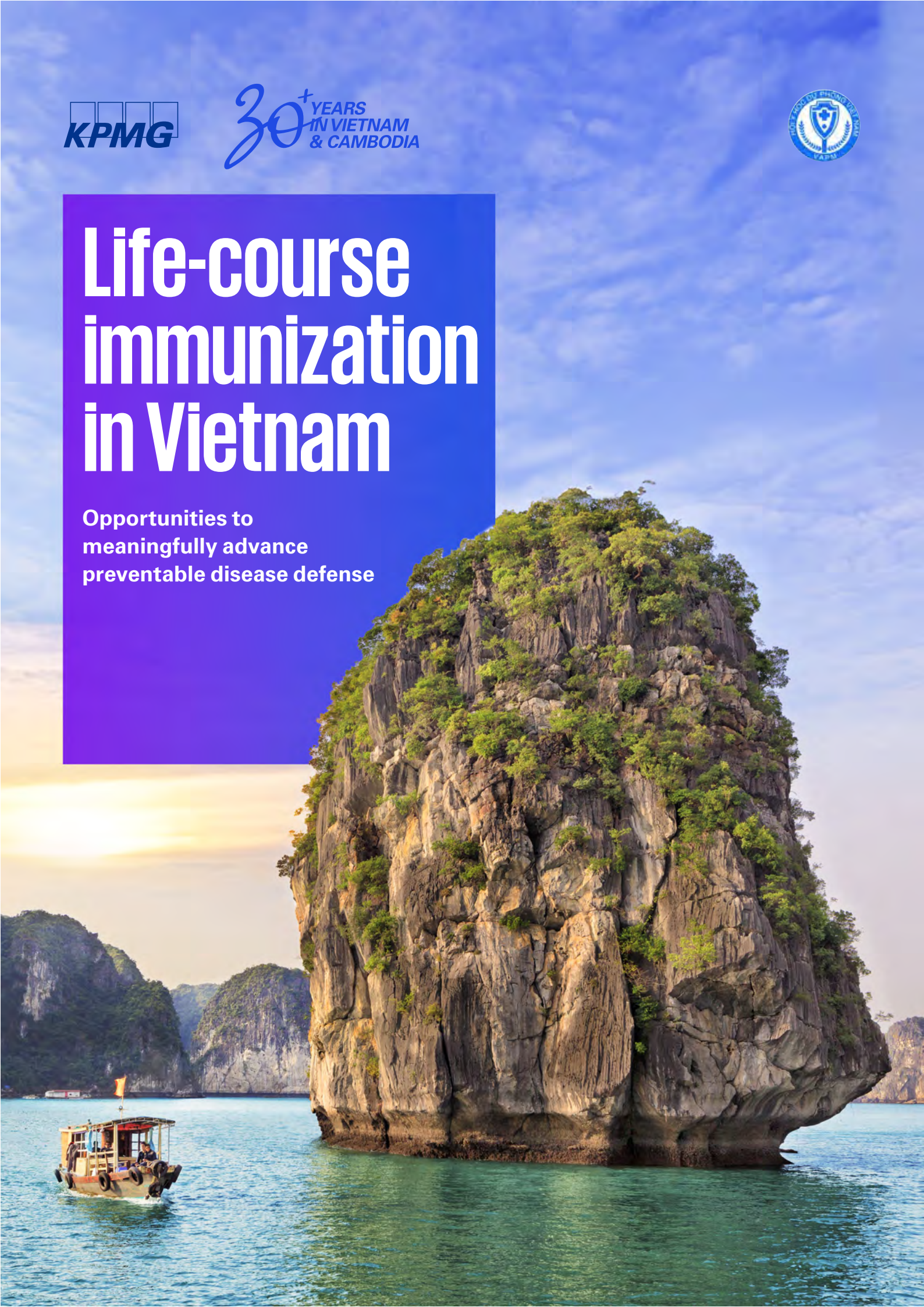
KPMG

30+ YEARS IN VIETNAM & CAMBODIA

Life-course immunization in Vietnam

Opportunities to meaningfully advance preventable disease defense



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Glossary

AAP	**The American Academy of Pediatrics**
AI	**Artificial Intelligence**
bn	**billion**
BRFSS	**Behavioral Risk Factor Surveillance System**
CAGR	**Compound annual growth rate**
CDC	**Center for Disease Control and Prevention**
CRC	**Clinical research center**
DAVAC	**Vaccine Company Limited of Dalat Pasteur**
DOH	**Department of Health**
DPT	**Diphtheria – Tetanus – Pertussis**
EIR	**Electronic Immunization Registry**
EPI	**Expanded Program on Immunization**
GAVI	**Global Alliance for Vaccines and Immunization**
GDP	**Gross Domestic Product**
GSO	**General Statistics Office**
HCDC	**Ho Chi Minh City Center for Disease Control**
HCIS	**Health-care Information System**
HCMC	**Ho Chi Minh City**
IGO	**Inter-governmental organization**
IIS	**Immunization information system**
IPC	**Infection prevention and control**
IPS	**Indonesian Pediatric Society**
IVAC	**Institute of Vaccines and Medical Biologicals**
JICA	**Japan International Cooperation Agency**
JPY	**Japanese Yen**
KCDC	**Korean Centre for Disease Control**
MAC	**Membrane Attack Complex**
MOET	**Ministry of Education and Training**
MOH	**Ministry of Health**
MOU	**Memorandum of understanding**
NCD	**Non-communicable disease**
NGO	**Non-governmental organization**
NIIS	**National Immunization Information System**
NNDSS	**National Notifiable Diseases Surveillance System**
NVF	**National Vaccine Fund**
OOP	**Out-of-pocket**
PATH	**Program for Appropriate Technology in Health**
PIVI	**The Partnership for International Vaccine Initiatives**
POLYVAC	**Center for research and production of vaccine and biologicals**
PPP	**Public – Private Partnership**
SHI	**Social Health Insurance**
SMS	**Short Message Services**
UN	**United Nations**
UNICEF	**United Nations Children's Fund**
USA	**The United States of America**
USCDC	**United States Centers for Disease Control and Prevention**
USD	**United States Dollar**
VABIOTECH	**Company for Vaccines and Biological Production No.1**
VAPM	**Vietnam Association of Preventive Medicine**
VND	**Vietnamese Dong**
WHO	**World Health Organization**

1. Foreword

The burden of vaccine-preventable diseases weighs on the Vietnamese healthcare system. A key to reducing this burden is the implementation of life-course immunization, which provides and promotes vaccines to citizens throughout all stages of life. Vietnam began its Universal Healthcare (UHC) journey in 1992 and has subsequently risen to the top of Asia's coverage ratios. In 2023, the ratio of UHC coverage increased to 92.04%. Furthermore, the government aims to increase this coverage ratio to 95.15% by 2025 while simultaneously striving to meet sustainable health financing targets[1].

Since Vietnam began its immunization efforts in the late 1970s, we have seen laudable public health achievements such as the eradication of smallpox, polio, and the dramatic reduction or elimination of many other conditions such as diphtheria, pertussis, and neonatal tetanus. Despite these successes, adult immunization rates are low, posing risks to public health. To reduce the social and economic cost of vaccine-preventable diseases, Vietnam can take a proactive approach to vaccinating demographics beyond childhood.

Although the battle against communicable diseases is not over, it is not one that the Vietnamese government needs to fight alone. Global pharmaceutical companies are eager to collaborate to maximize health and prosperity in the country. Partnerships between the public and private sectors will see wins for the government in terms of reduced public health budgetary pressure, wins for the industry as Vietnam becomes a preferred destination for healthcare and life sciences investment, and most importantly, wins for the public in the reduction of preventable diseases.

Report structure

This document outlines the value that life-course immunization programs can bring to Vietnam, and details the steps needed to see its success. We provide an overview of Vietnam's current healthcare and vaccine landscape. This is followed by an identification of the current stakeholders, both public and private, who contribute to Vietnam's vaccine market. The implementation of life-course immunization in Vietnam is driven by several key trends and also faces significant barriers; these are analyzed in detail. Finally, the report concludes with a series of recommendations for the successful implementation of life-course immunization. These recommendations are informed by benchmarking with comparative markets, and an extensive survey of industry experts conducted by KPMG and the Vietnam Association of Preventive Medicine (VAPM). Enjoy the read!

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1. Ministry of Health. (2023). Bao phu BHYT dat 92.04%} Chinh sach an sinh nhan van, y nghia ngay cang duoc nhan len. Ministry of Health. https://moh.gov.vn/tin-lien-quan/-/asset_publisher/vjYyM7Qd3aVnX/content/bao-phu-bhyt-at-92-04-chinh-sach-an-sinh-nhan-van-y-nghia-ngay-cang-duoc-nhan-len

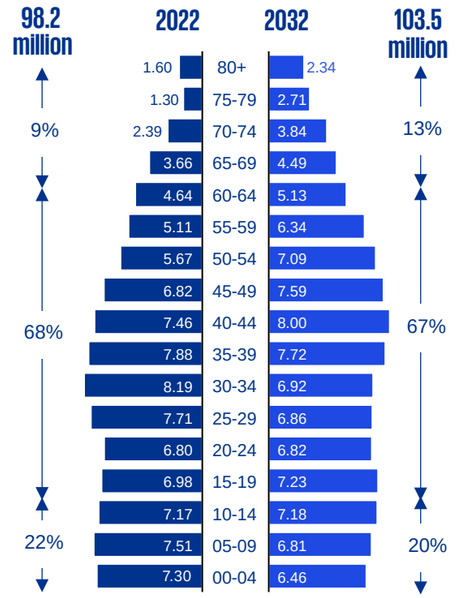
2. Overview of Healthcare in Vietnam

The last two decades have seen significant development in the overall healthcare infrastructure in key areas such as accessible care, specialty treatment, and public health insurance. Vietnam's response to the COVID-19 pandemic demonstrated its ability to successfully execute large-scale health initiatives to build awareness of health threats, utilize digital solutions, and provide vaccinations for the entire population.

Despite Vietnam's laudable efforts to expand the scope and capacity of the healthcare system, current healthcare demands are growing faster than the government's budget for healthcare. Urban areas suffer from overcrowded hospitals despite a disproportionate concentration of healthcare professionals. Rural areas have staffing shortages, contributing to significant regional inequity in access to healthcare services. Compounding these challenges is a transformative shift from a communicable disease market to a non-communicable disease (NCD) market.

Vietnam is currently in a "demographic golden structure", where nearly 70% of the population falls within the working-age range (15-65 years old). However, the country is facing the challenge of an aging population, which is projected to increase by 2% by 2025, with the median age rising rapidly at 1.2% compared to regional peers[2]. Healthcare system pressures, an evolving disease landscape, and an aging demographic indicate the need for strategic interventions to ensure the effective and equitable provision of healthcare services across the nation.

Age demographics in Vietnam, 2022 and 2032

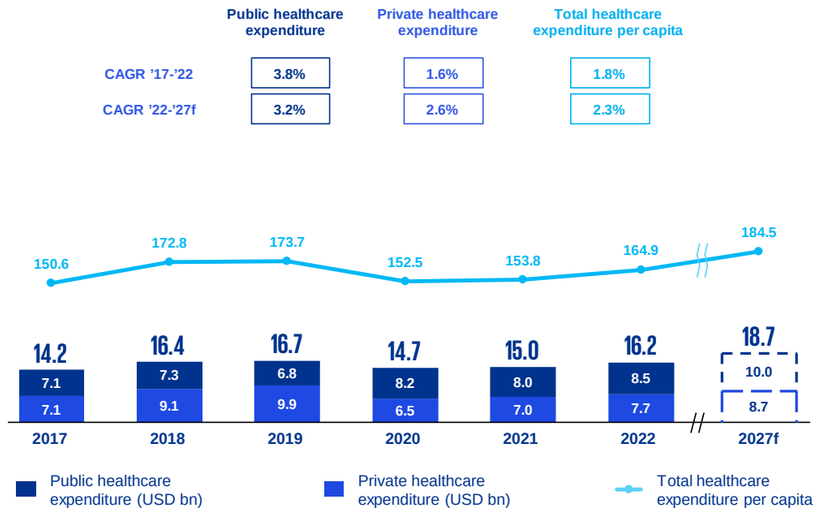


Source: Data on population structure from 2022 to 2032 extracted from BMI Fitch Solutions as of July 2022.

2. Data on population structure from 2022 to 2032 extracted from BMI Fitch Solutions as of July 2022.

Healthcare expenditure in Vietnam is expected to continue to grow at a compound annual growth rate (CAGR) of 2.9% from 2022 to 2027. While this growth is indicative of a developing healthcare sector, 43.2% of healthcare expenses (2020) are borne by individual patients through out-of-pocket (OOP) payments, which is considerably higher than in peer markets.

Current and forecasted healthcare expenditure in Vietnam, 2017 – 2027



Source: Data on healthcare expenditure from 2017 to 2027 extracted from BMI Fitch Solutions as of July 2022.

To maintain growth and expand access to healthcare services, Vietnam must invest in equipment, training resources for staff, and participation in research and development programs. To achieve long-term healthcare objectives, the industry will need to come together in a multidisciplinary effort between the private sector and the public sector to advance patient care.

3. Current Vaccine Market Landscape

Vietnam's national-scale immunization programs began in the late 1970s, with early successes such as the eradication of smallpox in 1979 and polio in 2000. This effort became part of the Expanded Program on Immunization (EPI) in 1981, an initiative that has grown to become a cornerstone of Vietnam's immunization response. More recently, consumers are now as well able to access vaccines through the private market. These two channels comprise Vietnam's dual-system approach to vaccine distribution.

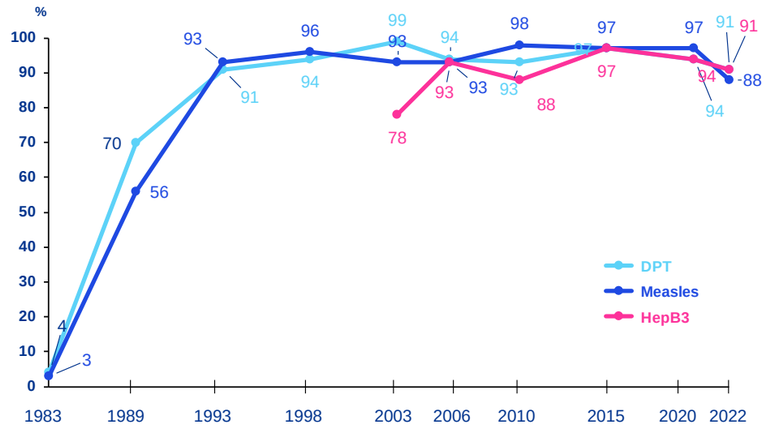
3.1. EPI

The EPI has provided free childhood vaccination for 12 common infectious diseases since 1981

The EPI is widely acknowledged as one of Vietnam's most effective and successful public health initiatives. The Ministry of Health (MOH) initiated the EPI with support from the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). By 1986, it evolved into one of the nation's six targeted health programs. Originally, the program aimed to provide free vaccinations to children under 1 year old, safeguarding them against six prevalent infectious diseases.

Under EPI, in 2022, 1.2 million children under one year attained full primary vaccination coverage, marking a success rate of 87.6%. Furthermore, 1.1 million women received tetanus vaccination, achieving a coverage of 88.4%[3]. Notably, the program achieved significant milestones, such as the eradication of Polio in 2000, and neonatal tetanus in 2005. Other infectious diseases such as diphtheria, pertussis, Japanese encephalitis, and measles have seen dramatic reductions in prevalence compared with pre-EPI times. The government of Vietnam has outlined plans for expanding the EPI vaccine portfolio from 2021 to 2030. In 2023, Rotavirus vaccines were rolled out in several cities and provinces. Vaccines against pneumococcal disease, cervical cancer, and seasonal flu will be introduced from 2025, 2026 and 2030, respectively.

Rate of immunization for Diphtheria (DPT)[4], Measles[5], and Hepatitis B[6] (% of children aged 12-23 months), 1983 – 2022



Source: Data on the immunization rate for Diphtheria, Measles, and Hepatitis B from 1983 to 2022 extracted from The World Bank as of March 2024.

3. Ministry of Health and National Institute of Hygiene and Epidemiology. (2023). Expanded Program Immunization summary report 2022. Ministry of Health.
4. Databank. (2024). Immunization, DPT (%children ages 12-23 months). The World Bank. https://databank.worldbank.org/source/world-development-indicators/Series/SH.IMM.IDPT
5. Databank. (2024). Immunization, measles (% of children ages 12-23 months). The World Bank. https://databank.worldbank.org/reports.aspx?source=2&series=SH.IMM.MEAS&country=VNM
6. Databank. (2024). Immunization, HepB3 (% of one-year-old children). The World Bank. https://data.worldbank.org/indicator/SH.IMM.HEPB?locations=VN.

3.2. Private vaccine market

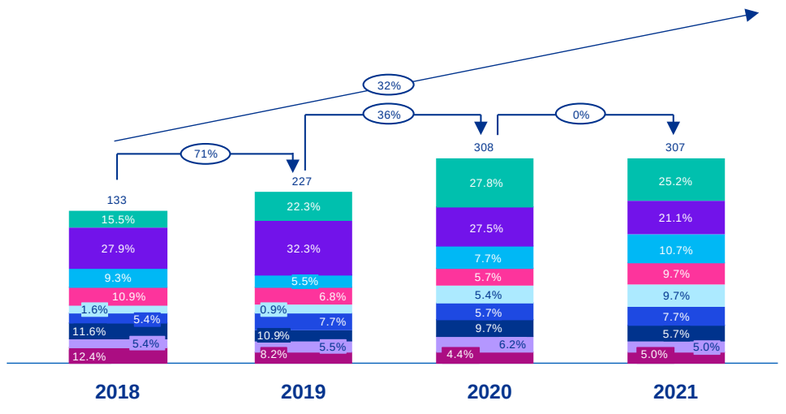
Since 2008, the demand for privately distributed vaccinations has experienced substantial growth, fueled by increasing household incomes and heightened healthcare awareness

Private vaccination services offer consumers the option of paying out-of-pocket for vaccinations. This opens options for consumers to receive vaccines that are not covered by the EPI, and to access alternative times and locations that may be more convenient. In 2022, there were approximately 2,660 private immunization sites, far fewer than the 14,076 public immunization sites that provide immunization services for the EPI program[7]. Private vaccination services must adhere to the same National EPI standards and guidelines regarding storage, management, and operation to ensure equivalent high quality. Private vaccination services are supervised by the provincial health departments and required to report to the provincial Centers for Disease Control and Prevention (CDC).

The private system has experienced significant growth over the last two decades, particularly after various government initiatives, policies aimed at fostering the participation of private sectors in the vaccine market and enhancing mechanisms for vaccine activities. These included the issuance of Decision No. 23/2008/QD-BYT by the MOH in 2008, which served as the foundation for opening up the vaccination market to the private sector. On 1 June 2014, the Decision No. 23/2008/QD-BYT expired and was replaced by Circular No. 12/2014/TT-BYT which then expired on 1 January 2019. Subsequently, Decree No. 104/2016/ND-CP coupled with Circular No. 34/2018/TT-BYT, which replaced Circular No. 12/2014/TT-BYT, established safety norms for vaccination and set out provisions for compensation for vaccination incidents. This growth was also attributed to the recent increase in disposable income and improvement in living standards in Vietnam. As Vietnamese people achieve higher per capita income, they are willing to spend more in the private sector for convenience, high-quality service, and access to vaccines that are not covered by the EPI.

Total vaccines sales out (million USD), 2018 – 2021

	Pneumococcal	Combined Pertussis	HPV	Varicella	Menigococcal	All other Viral Vaccines	Rotavirus	Influenza	Others
2018-21 CAGR (%)	55.4	20.5	38.7	27.5	143.8	48.7	4.3	28.9	-2.1



Source: Data on total vaccines sales of Vietnam from 2018 to 2021 extracted from IQVIA as of May 2022.

Annual private vaccine sales in Vietnam currently surpass USD300 million, and are growing quickly. Pneumococcal and combined pertussis vaccines are particularly influential, having seen annual growth rates of 45% from 2018 to 2021. The sales of Meningococcal, Pneumococcal, and HPV vaccines are also seeing comparable rapid growth rates. Uptake of Japanese encephalitis, rotavirus and influenza vaccines continues to increase as well, albeit at much lower rates.

7. Ministry of Health and National Institute of Hygiene and Epidemiology. (2023). Expanded Program Immunization summary report 2022. Ministry of Health.

3.3. Comparison of EPI and private system

The EPI and non-EPI immunization models offer different vaccines and immunization schedules. At the end of 2023, there were 12 vaccines being offered under the EPI, with access restricted to mainly children and pregnant women. The addition of the Rotavirus vaccine to the EPI has been planned, as stated in Circular No. 10/2024/TT – BYT, which will take effect from 1st August 2024[8]. This will increase the total number of EPI vaccines to 13 compared to 22 vaccines offered by the private system for all life stages.

Vaccine portfolio for the EPI and private system[9] [10]

No.	Vaccine-preventable diseases	EPI	Private System
1	Diphtheria	✓	✓
2	Hepatitis B	✓	✓
3	Japanese encephalitis	✓	✓
4	Measles	✓	✓
5	HiB	✓	✓
6	Pertussis	✓	✓
7	Polio	✓	✓
8	Rubella	✓	✓
9	Tetanus	✓	✓
10	Rotavirus	✓	✓
11	Tuberculosis	✓	✓
12	Typhoid*	✓	✓
13	Cholera*	✓	✓
14	Cervical cancer		✓
15	Hepatitis A		✓
16	Influenza		✓
17	Mumps		✓
18	Meningitis Meningococcal		✓
19	Pneumonia		✓
20	Rabies		✓
21	Varicella		✓
22	Yellow fever		✓

Note: While COVID-19 vaccines are not officially provided as part of the EPI, most of the population was vaccinated for free during the height of the pandemic.
(*): Typhoid and Cholera are included in EPI, but only apply in high-risk areas.

8. Ministry of Health. (2024). Circular No. 10/2024/TT-BYT. Ministry of Health. https://thuvienphapluat.vn/van-ban/The-thao-Y-te/Thong-tu-10-2024-TT-BYT-benh-truyen-nhiem-pham-vi-phai-su-dung-sinh-pham-y-te-bat-buoc-613510.aspx
9. HCDC. (2022). 4 vaccines are included in the Expanded Program on Immunization. HCDC. https://www.hcdc.vn/4-loai-vac-xin-duoc-dua-vao-chuong-trinh-tiem-chung-mo-rong-8af73f2d7b6b7e7f92166548a5631efc.html
10. Ministry of Health. (2024). Circular No. 10/2024/TT-BYT. Ministry of Health. https://thuvienphapluat.vn/van-ban/The-thao-Y-te/Thong-tu-10-2024-TT-BYT-benh-truyen-nhiem-pham-vi-phai-su-dung-sinh-pham-y-te-bat-buoc-613510.aspx

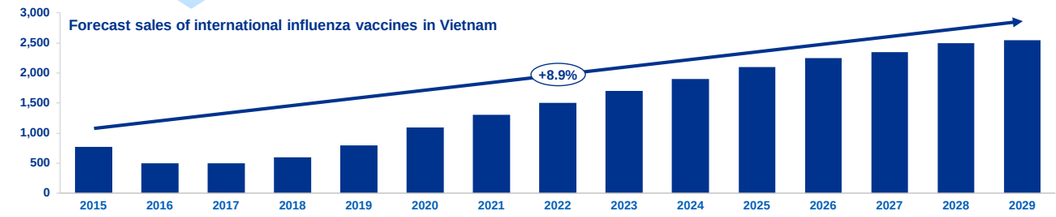
Together, the EPI and private markets offer a wide range of vaccine options for citizens. However, a large portion of the adult population is unable to benefit from this dual system approach as they have aged out of EPI eligibility and may be unable to afford out-of-pocket private expenses. This gap demonstrates the need for greater awareness and financing for initiatives aimed at adults, to ensure that all demographics are served by the Vietnamese vaccine system.

3.4. Immunization coverage rate in comparison to regional peers

Most ASEAN countries still have relatively low adult influenza vaccination rates, indicating a lag in life-course immunization compared to the global average. In 2015, the WHO reported low vaccination willingness and low household out-of-pocket spending on vaccines in Vietnam. However, in 2018, a domestically produced influenza vaccine was licensed with the aim of lowering costs and boosting uptake. This local manufacturing effort was part of a broader strategy to increase vaccination rates. By 2020, there was a steady rise in vaccine sales, attributed to the accumulation of vaccine policies and government media advocacy. These played a pivotal role in enhancing public perception and engagement with vaccination programs.

Forecast sales of international influenza vaccines in Vietnam from 2015 to 2029, and government reimbursement versus selected other countries in 2022

	Developing countries					Developed countries					
	Vietnam	Malaysia	Philippines	Thailand	Indonesia	Taiwan	Singapore	Korea	Australia	Italy	USA
Government Reimbursement for adult Influenza vaccines	None	None	Full	Full	None	Full	Partial	Full	Full	Full	Partial
Influenza vaccination coverage rate (% of adult population)	1%	3%	N/A	34%	1%	25%	66%	64%	75%	55%	48%



Source: Data on sales of international influenza vaccine in Vietnam from 2015 to 2029 extracted from IQVIA as of May 2022.
Data on government reimbursement for adult influenza vaccines and influenza vaccination coverage rate in selected countries in 2022 were researched and consolidated by KPMG.

International influenza vaccine sales in Vietnam are projected to increase by 8.9%. However, there are still challenges to overcome. Government reimbursement for adult influenza vaccines remains nonexistent, and the influenza vaccination coverage rate for the adult population is only 1%. The projected increase in international influenza vaccine sales suggests a growing awareness and willingness to combat influenza through vaccination. Addressing the lack of government reimbursement for adult vaccines may become a priority in encouraging higher rates of uptake.

3.5. Public awareness

Increased public awareness has played a significant role in this recent growth of vaccine uptake. Despite ongoing challenges to physical accessibility, most Vietnamese now have access to information about vaccines, understand their role in epidemic prevention, and appreciate the burden-reducing impact on society. This heightened awareness has grown, especially since the onset of the COVID-19 pandemic, when health issues and disease prevention gained prominence. With state and stakeholder investment, vaccine quality has also improved, bolstering confidence in vaccines and their necessity.

Nonetheless, some shortcomings in awareness still necessitate action. Vaccine campaigns mainly focus on childhood immunization, and many adults lack awareness of the importance of booster shots and repeated seasonal vaccinations. Disparities in vaccination awareness also persist between urban and rural populations, and households in remote areas tend to face obstacles such as limited education, a preference for traditional medicine, and a concern about adverse effects.

4. Stakeholder policies and initiatives

4.1. Overview of stakeholders

A range of public and private stakeholders shape Vietnam's vaccination market

Summary of key stakeholder contributions to Vietnam's vaccination market

GOVERNMENT AUTHORITIES	ACADEMIA	MANUFACTURERS	PRIVATE INSURERS/ BROKERS	VACCINATION SERVICE PROVIDERS	IGOs and NGOs
Ministry of Health General Department of Preventive Medicine National Institute Of Hygiene and Epidemiology Institute Pasteur in Ho Chi Minh City Tay Nguyen Institute of Hygiene and Epidemiology Pasteur Institute in Nha Trang Hanoi Center for Disease Control Ho Chi Minh Center for Disease Control Danang Center for Disease Control	Oxford University Clinical Research Unit Clinical Research Center, Pasteur Institute in Ho Chi Minh City Hanoi Medical University	**Private** Sanofi GSK MSD Pfizer Abbott Nanogen **Public** Vabiotech Polyvac Ivac DAVAC	Bao Viet Insurance PTI Insurance Aon	Vietnam Vaccine JSC (VNVC) Vaccination center in public hospital/private hospitals Independent vaccination centers	WHO UNICEF USCDC GAVI PATH
The Ministry of Health develops an overall strategy for vaccine use in Vietnam, allocates funding for the annual EPI program, and manages the vaccination program (including EPI and fee – based vaccination).	International scientific associations contribute to the national immunization program through research funding and the continuous development of new vaccines for emerging viruses or virus strains.	Vietnamese citizens can access various non-EPI vaccines produced by global leading manufacturers. Vaccine manufacturers also collaborate to enhance vaccine uptake in Vietnam through public education programs.	Private insurers offer newborn baby insurance and healthcare insurance with vaccination coverage, however, vaccination coverage is still limited.	In 2022, Vietnam recorded 16,736 vaccination sites nationwide (2,660 private vaccination sites and 14,076 public vaccination sites as part of the EPI), which enabled greater accessibility to vaccines.	International organizations have been supporting Vietnam to develop both EPI and non-EPI vaccine programs. The main objectives of this aid are to strengthen the vaccination network through training, improved monitoring, and financial support, as well as upscale local vaccine production capacities.

Note: Key stakeholders only
Source: KPMG Research and Analysis

4.2. Government policies and initiatives

The development of Vietnam's vaccine system/market has been marked by key policy decisions. Notable milestones are summarized below:

2014

Policy
Provide management guidance on vaccine usage (Circular No. 12/2014/TT-BYT)

(Expired on January 1, 2019)

Relevance to immunization policy

This circular outlined the standards and requirements that vaccination centers and vaccine usage must meet. Additionally, it detailed procedures for identifying vaccine side effects and incidents, and provided guidelines for their management and treatment.

Impact

This circular enforced regulation and standardization of requirements for vaccination centers and vaccine usage, enhancing patient safety and optimizing the management of post-vaccine side effects.

2016

Policy
Regulations for safety of vaccination and provision of compensation for vaccination incidents

(Decree No. 104/2016/ND-CP)

Relevance to immunization policy

This decree outlined regulations pertaining to the safety and management of vaccinations. Additionally, it set out the requirements for establishing vaccination sites and provided guidance for the provision of compensation for vaccination incidents.

Impact

This decree presented definitive instructions for setting up new vaccination sites and managing vaccination activities, in addition to encouraging the participation of the private sector in vaccination efforts. It enabled an increase in the number of vaccination locations across the country and boosted public confidence in the vaccine system.

2017

Policy
Regulation on management and use of the National Immunization Information System (NIIS)

(Decision No. 3421/QD-BYT)

Relevance to immunization policy

This decision laid out guidelines for managing and operating the NIIS while defining the duties and powers of units and individuals using the system.

Impact

This decision was anticipated to support the development of an immunization database that would assist healthcare professionals in monitoring immunization records, as well as managing vaccine stocks and distribution, thus ensuring the quality and availability of vaccines. However, the implementation of the NIIS in practice faced many difficulties due to the lack of synchronization in the system and it has been not widely used yet at all vaccination sites.

2018

Policy
Elaboration on some articles of Decree No. 104/2016/ND – CP on vaccination activities

(Circular No. 34/2018/TT – BYT)

Relevance to immunization policy

This circular provided guidelines for the receiving, transporting, and storing of vaccines. It also specified procedures for organizing vaccinations, supervising and investigating serious vaccine-related incidents, and outlined regulations for reporting and managing vaccination documentation.

Impact

This circular enhanced the processes of vaccine transport and storage and established procedures to handle serious vaccine incidents. By improving safety measures and fostering trust, it potentially drove a higher uptake of vaccines.

2021

Policy
Implement the tasks under the Health — Population Target Program as frequent expenditure tasks

(Documentary No. 1810/BYT – KH – TC 2023)

Relevance to immunization policy

According to this documentary, The Ministry of Finance did not allocate a central budget to the MOH for the procurement of vaccines for the EPI. Instead, it advised proceeding in accordance with budget decentralization regulations. The MOH, on the other hand, urged the People's Committees of cities and provinces to allocate local budgets and mobilize other sources to facilitate the procurement and supply of medications and vaccines.

Impact

This documentary provided local provinces and cities with greater authority and adaptability over their healthcare budgets, thus fostering a more efficient process for procuring and distributing vaccines for local utilization.

2022

Policy
Roadmap for EPI

(Resolution No. 104/NQ-CP)

Relevance to immunization policy

The government issued a roadmap to increase the variety of vaccines funded under the EPI for the period 2021-2030. The roadmap included the introduction of the Rotavirus vaccine in 2022, pneumococcal vaccine in 2025, cervical cancer vaccine in 2026, and the seasonal flu vaccine by 2030.

Impact

This roadmap expanded access to free vaccines for children and pregnant women, decreasing reliance on costly private channels.

2024

Policy
Amendment to Decree No. 104/2016/ND-CP includes added provisions regarding the funding source for vaccination activities

(Decree No. 13/2024/ND-CP)

Relevance to immunization policy

This decree mandates that vaccination centers are responsible for developing annual vaccine demand forecasts to be submitted to district management agencies and the Department of Health. These are consolidated and sent to the MOH for the purpose of creating an annual vaccine supply plan. Additionally, the decree clarifies that the central budget is allocated in the regular expenditure budget of the MOH to ensure funding for activities within the EPI.

Impact

The decree ensures a consistent vaccine supply by requiring vaccination centers to submit annual demand forecasts, promoting better national planning. It also centralizes funding from the national budget, enabling equitable access to resources for all regions across the country, officially removing the budget decentralization plan earlier.

Source: Thu Vien Phap Luat

4.3. Key stakeholders' initiatives

Funding

Global Alliance for Vaccines and Immunization GAVI:

Has contributed USD196 million to the EPI since 2000. Their sponsorship has allowed the introduction of several new vaccines, including DPT-HBV-Hib, MR, and IPV. GAVI has also contributed to fortifying the cold chain vaccine transport system, ensuring the quality of vaccines. During the COVID-19 pandemic, GAVI extended support to Vietnam through the COVAX initiative to supply vaccines and vaccination supplies. This assistance was instrumental in helping Vietnam effectively manage the epidemic and expedite the return to normalcy.

Training

United States Centers for Disease Control and Prevention (USCDC):

Since 2005, the USCDC has collaborated closely with the Vietnamese government to strengthen the country's laboratory infrastructure and workforce capabilities. This partnership has led to the establishment of two National Influenza Centers, equipped to rapidly detect novel or recurring influenza viruses. They also conducted virtual training sessions for the organizations and individuals leading Vietnam's COVID-19 response, with a specific focus on three pivotal areas of infectious disease control: infection prevention and control (IPC), laboratory quality control, and epidemiologic analysis.

Technology

Program for Appropriate Technology in Health (PATH) & Viettel:

Coordinating with the MOH with assistance in building a national immunization information management system from Viettel, the collaboration aimed to help the transition to a completely paperless vaccination system. This initiative has launched several digital vaccination databases such as the NIIS, National Electronic Immunization Registry (EIR), Immures, and VaxTrak. These databases track immunization records, vaccine stocks and distribution to support the EPI. However, the practical application of the NIIS has encountered numerous challenges owing to a lack of system-wide synchronization and its limited usage across all vaccination locations.

Supply and distribution

United Nations (UN):

In 2014, Vietnam initiated its most extensive measles-rubella immunization campaign, bolstered by support from the UN. The campaign contributed to the Measles-Rubella Initiative: a global partnership committed to eliminating these diseases. Within six months, 20 million doses had been administered, and all districts achieved over 95% immunization coverage of the population aged 1-14[11].

Partnership for International Vaccine Initiatives (PIVI) & USCDC:

With financial and technical supports from PIVI (since 2017) and the USCDC (since 1998), the MOH successfully implemented annual influenza vaccination programs across Vietnam. Between 2017 and March 2023, about 384,000 healthcare workers across 30 provinces were vaccinated[12,13]. Additionally, PIVI contributed to the capacity of the vaccine programs by purchasing influenza vaccines from IVAC (Vietnam's largest vaccine manufacturer) and donating them to the MOH.

Pharmaceutical companies:

Firms engaged in vaccine production and research collaborate with the MOH in the immunization and preventive healthcare procedures, particularly in the stages of supply and distribution.

Production

WHO:

On 23 February 2022, Vietnam was selected to receive a mRNA vaccine technology transfer from a WHO-established global biomanufacturing training hub in South Africa. This support is expected to enable Vietnam to scale up the production of mRNA vaccines, not only to meet domestic demands but also to extend assistance to other countries.

Japan International Cooperation Agency (JICA):

Since 1990, JICA has connected Vietnam with Japanese manufacturers to aid in vaccine production. Among other contributions to the EPI, JICA has supplied over 50 million doses of polio vaccine, 20 million doses of measles vaccine, and 20 million self-locking syringes[14]. In 2021, JICA provided the MOH with 1,600 sets of cold boxes equipped with temperature monitoring devices, valued at approximately 100 million JPY (~VND20 billion)[15]. This assistance has significantly improved Vietnam's vaccine supply chain and storage facilities.

Source: GAVI, WHO, USCDC, PATH, JICA, UN, PVI, KPMG Research and Analysis

11. Expanded Program on Immunization. (n.d). Nhung dieu dang ghi nhan tu chien dich tiem vac xin soi-rubella tren ca nuoc. Expanded Program on Immunization. https://tiemchungmorong.vn/vi/content/nhung-dieu-dang-ghi-nhan-tu-chien-dich-tiem-vac-xin-soi-rubella-tren-ca-nuoc.html
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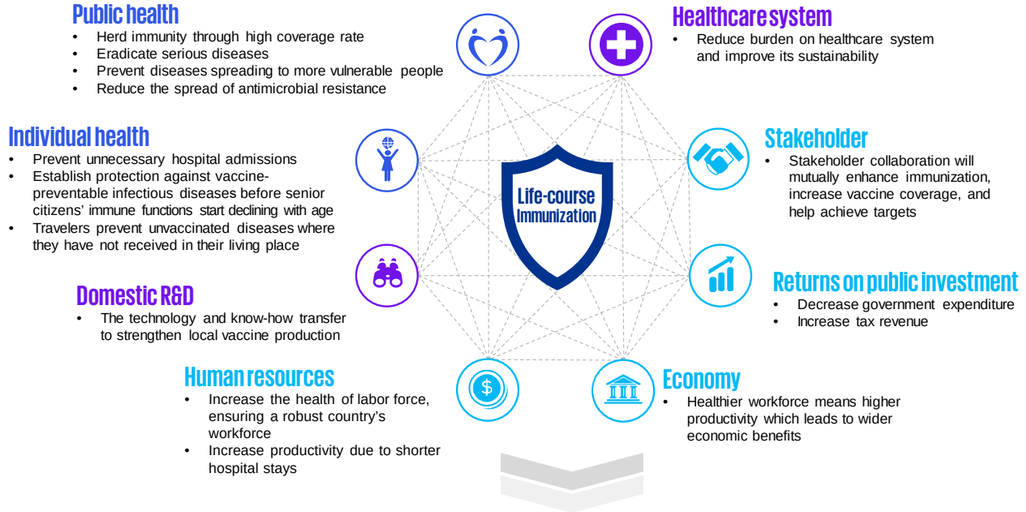
5. Opportunities for Vietnam

Life-course immunization is a key to advancing Vietnam's healthcare system. An effective immunization program targeted towards adults would supplement current government public health initiatives, increase patient access to care, and allow industry access to an attractive market. Collaborative efforts between public and private entities are likely to have a significant impact due to the current absence of specific policies or programs in place to facilitate vaccination beyond childhood.

5.1. Potential value of life-course immunization

Implementing life-course immunization in Vietnam will bring significant value to the health sector and economy, providing opportunities to capitalize on expanding market potential.

Potential value of life-course immunization in Vietnam



1 POPULATION

- Enable people to increase life expectancy and live productive lives
- Reduce the risk of severe disease, hospital admissions and mortality

2 ECONOMY

- Cost-effectiveness of outbreak response
- Healthier and productive population contributes more to the national development and prosperity

3 HEALTHCARE SYSTEM

- Support the long-term sustainability of health systems
- Reduce healthcare costs
- Support equity and universal access to primary care

5.2. Drivers of life-course immunization

Vietnam is currently undergoing a shift from low to middle income economy, accompanied by several key macroeconomic shifts. The trends described below drive the need for life-course immunization and indicate the likely success of initiatives in this space.

Overview of life-course immunization drivers

Growing urbanization rate

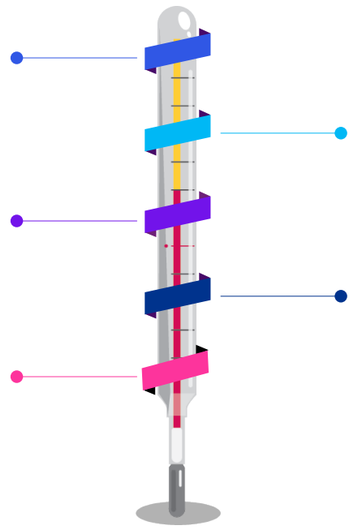
Rapid urbanization is expected to increase access to vaccination

Improved life quality in Vietnam

The growth of vaccination uptake is expected to be driven by the improvement in disposable income and living standard

Post pandemic workforce resilience

Vaccination is the most effective way to protect the workforce from future pandemics



Aging population

Vietnam's aging population will increase the demand for adult vaccines such as influenza and pneumococcal vaccines

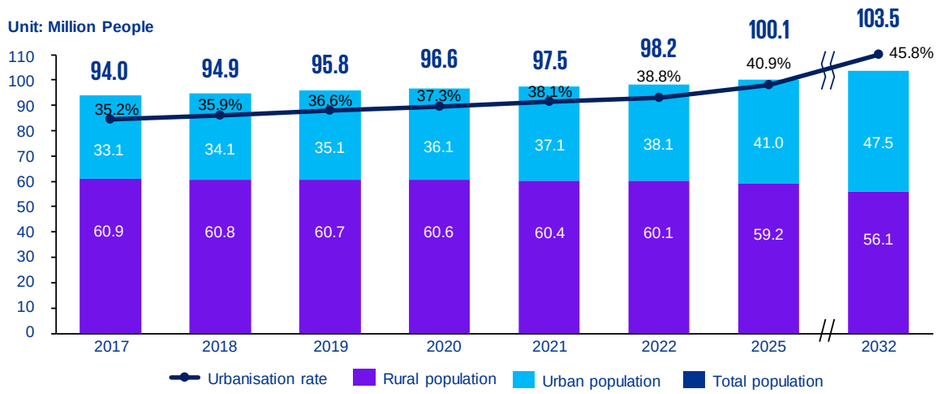
Rising healthcare expenditure

Vietnam's government leads its peer markets in healthcare spending. Its declared intent to broaden basic public health services will necessitate the exploration of alternative, sustainable healthcare financing sources to ensure adequate funding for this initiative

Increasing urbanization rate

By 2032, a forecasted 47.5 million people (45.8% of the population) are expected to inhabit urban centers, with an increasing growth rate. Urbanization corresponds to a rise in population density and greater interaction among people in urban settings, amplifying the outbreak and spread of communicable diseases. Life-course immunization is necessary to ensure that individuals of all ages are adequately protected against diseases, and to mitigate the risk of overburdening healthcare services due to the escalating demands associated with urbanization.

Urbanization rate in Vietnam, 2017 – 2032

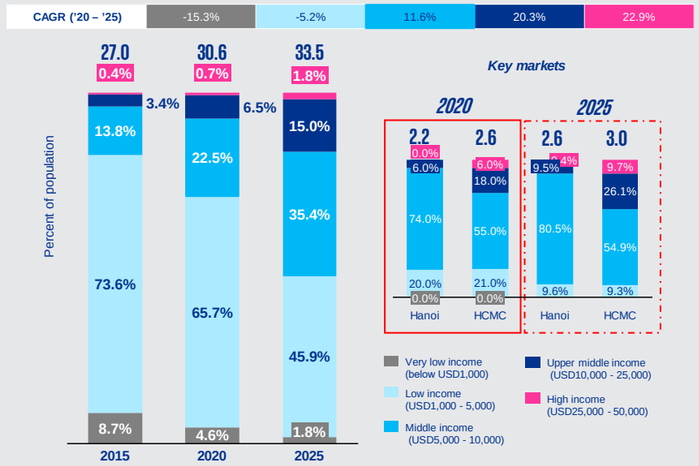


Source: Data on urbanization and population from 2017 to 2032 extracted from BMI Fitch Solutions as of July 2022.

Improved quality of life

Vietnam's transition from a low to middle-income country is reflected in the rapid expansion of the middle-income and high-income classes (respective CAGRs of 20.3% and 22.9%). This growth is especially explosive in urban centers of Ho Chi Minh City and Hanoi. The rise in income levels has translated into an improved quality of life, allowing individuals the time and resources to develop increased awareness of healthcare and vaccination. Individuals are more likely to prioritize preventive healthcare measures, including vaccination. This positive correlation between improved socio-economic conditions and health-conscious behaviors are expected to drive a surge in demand for life-course immunization.

Household disposable income classification in Vietnam, 2015 – 2025

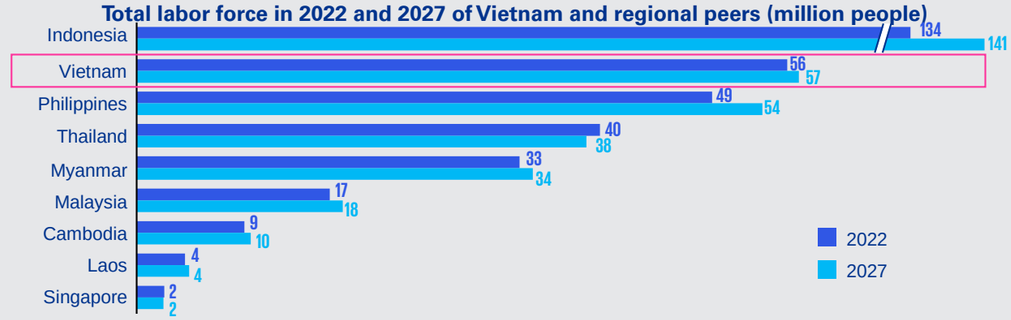


Source: Data on household disposable income in Vietnam from 2015 to 2025 extracted from Euromonitor, Nielsen Pocket Book as of July 2022.

Post-pandemic workforce resilience

The COVID-19 pandemic spotlighted the importance of a resilient workforce. Vietnam has one of the largest workforces in Southeast Asia, comprising nearly 56 million people in 2022 and is forecasted to increase slightly by 2027. Vaccination is now recognized as essential in fortifying this substantial workforce against current and future diseases.

Total labor force in 2022 and 2027 of Vietnam and regional peers (million people)



Source: Data on labour force in Vietnam and selected Southeast Asia countries from 2022 to 2027 extracted from Euromonitor, GSO as of July 2022.

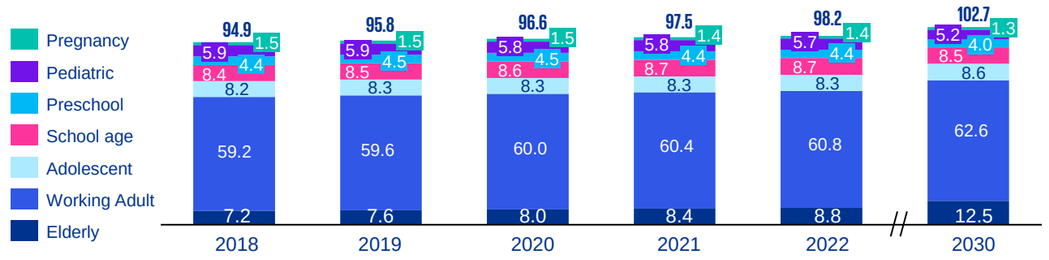
As workplace benefits increase in Vietnam, and employers realize this need, workplace-supported health benefits will likely include immunization programs for seasonal flu and other vaccines. Crucially, many members of the current workforce were born before the start of the EPI and thus missed out on key vaccines during their youth. Life-course immunization is required to address these vaccination gaps and boost overall immunity status in workplaces.

Aging population dynamics

Vietnam's as-described golden structure is entering an ageing trend, characterized by a decrease in the pregnant demographic and an increase in the elderly.

Vietnam's population by life stages (million people), 2018 – 2030

	Pregnancy	Pediatric	Preschool	School age	Adolescent	Working adult	Elderly
2018-22 CAGR (%)	-1.08	-0.76	-0.08	1.01	0.17	0.61	5.04
2022-30 CAGR (%)	-1.23	-1.27	-1.09	-0.30	0.48	0.37	4.42



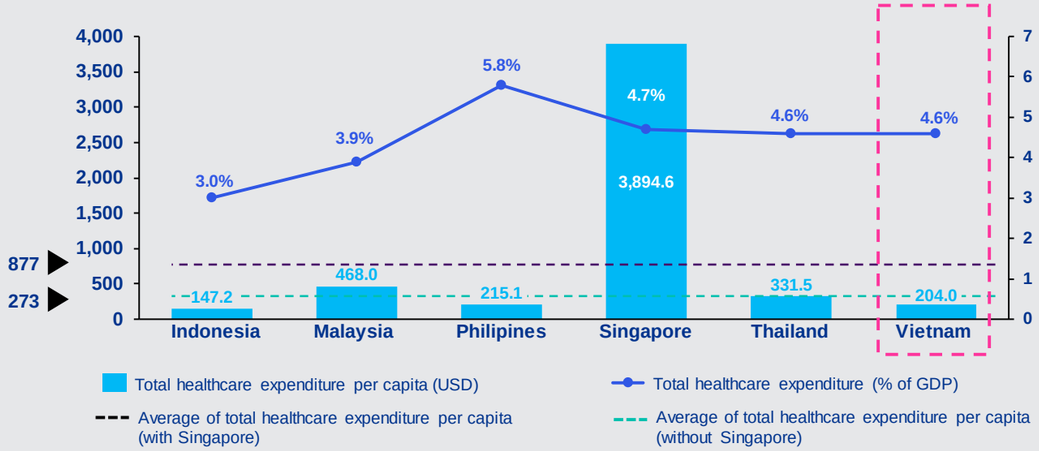
Source: Data on population structure by life stages from 2018 to 2030 extracted from Euromonitor, BMI Fitch Solutions as of July 2022.

The elderly population is projected to increase by 4.4% from 2022 to 2030, alongside an anticipated 1.2% decrease in pregnancy cases during the same period. In the 2018-2022 period, the school-age and adolescent populations grew in density by 1.01% and 0.17%, respectively. However, only the adolescent population is expected to sustain this growth trajectory from 2022 to 2030. The remaining population segments, including those in the pediatric, preschool, school-age, and working adult life stages, are projected to exhibit either slower growth rates or a decline in the number of citizens. As Vietnam experiences a shift towards a larger and more vulnerable elderly population with fewer working adults to support them, the demand for healthcare services is likely to grow. The implementation of a life-course immunization program becomes critical to reduce the burden on communities, safeguard the health of individuals across all life stages, and develop public resilience against disease outbreaks.

High healthcare expenditure

As a share of GDP, Vietnam spends more on healthcare than peer markets, indicating a relatively expensive system. Life-course immunization is a key strategy to lower the costs of the healthcare system: according to the USCDC, the return on investment from immunization programs in low- and middle-income countries is USD52 saved per USD1 spent[16]. Increasing Vietnam's low rates of adult vaccination is an outstanding opportunity to safeguard against rising healthcare costs and to keep expenditure on par with peer markets.

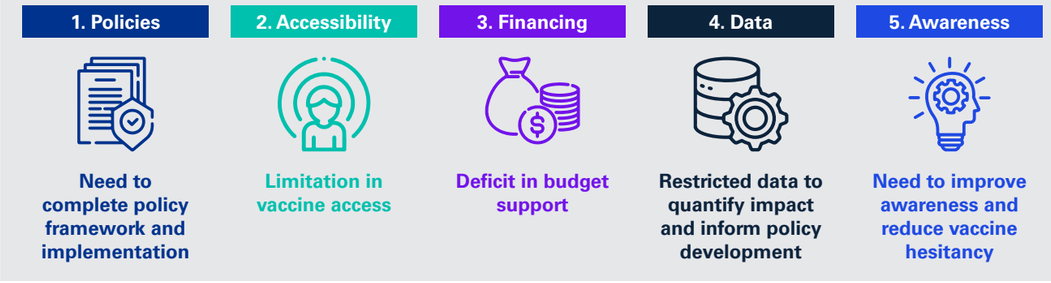
2023 healthcare expenditure of Vietnam and regional peers



Source: Data on healthcare expenditure of selected Southeast Asia countries in 2023 extracted from BMI Fitch Solutions as of April 2024.

16 Sim, S. Y., Watts, E., Constenla, D., Brenzel, L., & Patenaude, B. N. (2020). Return on Investment From Immunization Against 10 Pathogens in 94 Low- And Middle-Income Countries, 2011–30. Health Affairs, 39(8), 1343–1353. https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.00103

5.3. Barriers to life-course immunization



There are five main barriers to the uptake of life-course immunization in Vietnam

KPMG and VAPM collaborated to survey 62 leading experts and organizations in the field of vaccination between July and September in 2023. Respondents included representatives from healthcare government bodies, NIHE, Pasteur Institute, public and private hospitals, international organizations, and vaccine manufacturers and suppliers. From this investigation, we discerned five primary barriers to the implementation of life-course immunization in Vietnam.

Policy: 72% (n=50) of respondents identified the lack of a comprehensive policy framework and effective implementation as an important barrier to life-course immunization.

Vietnam has developed a legal framework on immunization with a priority for infants, yet the immunization policies for other cohorts are still not completed (for example, free influenza vaccines are widely implemented in advanced countries). The National Action Program on Older People 2021-2030 does not specifically highlight the importance of adult immunization. The EPI was established in 1981, however there is no catch-up immunization schedule for adults aged 50+ who missed childhood vaccinations. This incomplete targeted policy leaves adults at a higher risk of remaining unvaccinated compared to the younger generations. Therefore, any life-course immunization initiatives will have to address a large demographic without the ability to take advantage of existing frameworks.

Accessibility: 76% (n=49) of respondents believed limitations in vaccine accessibility within Vietnam to be an important barrier.

Compounding the restricted portfolio of the EPI and the high cost of private channels is a significant geographical limitation to vaccine access. Healthcare infrastructure is disproportionately concentrated in urban centers, and deficient in rural, mountainous, and remote areas. Innovative strategies such as mobile healthcare units, community health workers, and technology-driven solutions are essential to bridge these geographical gaps. The financial barriers associated with vaccination costs also necessitate interventions, such as negotiations for cost-effective pricing with manufacturers, targeted subsidies, and integration into health insurance schemes.

Financing: 71% (n=49) of respondents noted that a deficit in budgetary support hinders vaccination initiatives.

Vietnam's transition to a middle-income country has resulted in a decline in funding from international organizations for vaccination efforts. Consequently, the limited state budget will result in limited vaccines and cohorts being covered in the EPI in comparison to peer countries. Furthermore, public health insurance (Social Health Insurance, SHI) does not cover preventive measures such as vaccines. This monetary insecurity necessitates collaboration between the public and private sectors to produce a financially viable life-course immunization initiative.

Data: 67% (n=45) of respondents emphasized that restricted data poses a challenge for informed policy development.

The NIIS does not encompass the entire population, introducing gaps in the understanding of the immunization status of certain demographic groups. Inconsistencies in data input from different vaccination points may compromise the reliability of the information collected and pose challenges in tracking the vaccination history of individuals across different points of care. These limitations make it challenging to devise targeted, evidence-based vaccination strategies. Addressing these issues would require a concerted effort to expand the coverage of the NIIS, to standardize data collection practices across vaccination points, and to introduce methods to ensure data validity and completeness.

Awareness: 74% (n=50) of respondents expressed concerns about the barriers arising from insufficient awareness and vaccine hesitancy.

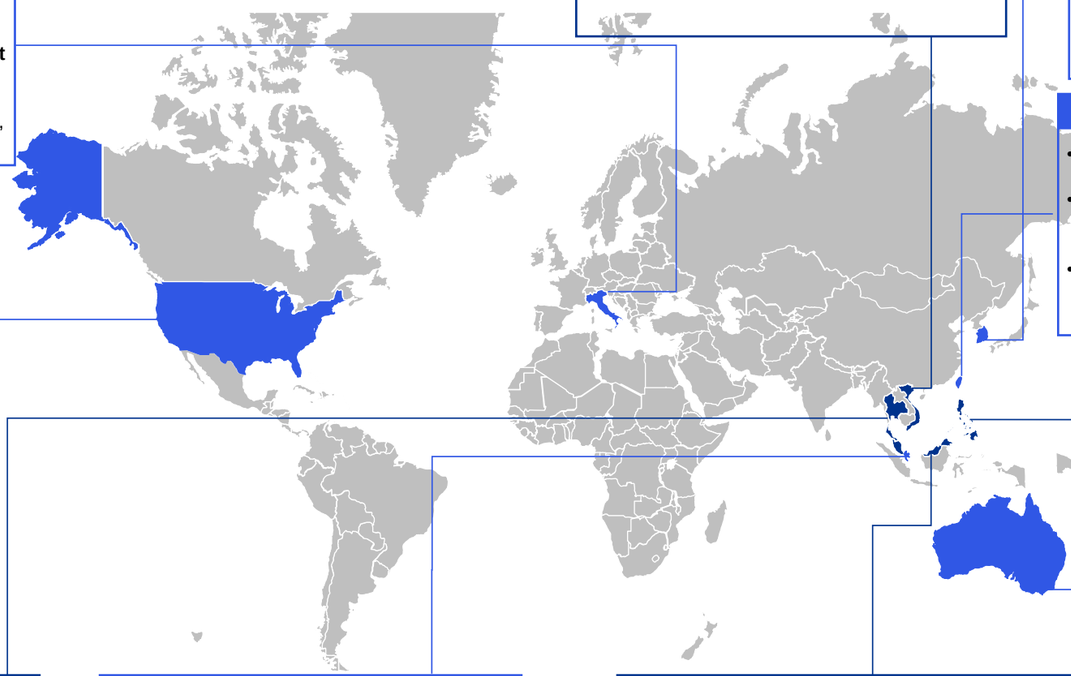
The acknowledgment of life-course immunization beyond pediatric stages has been lacking in policy discourse and among the adult population due to the lack of relevant communications strategy. This lack of information contributes significantly to lower vaccination rates among adults, especially in remote and disadvantaged areas with limited access to media coverage. The implementation of a life-course immunization program would require a robust communication strategy and channels for adults to receive reliable information. Additionally, targeted efforts must be directed towards remote and underserved regions to bridge existing gaps in awareness and accessibility.

6. Lessons from other economies

6.1. Overview of life-course immunization for benchmarked countries

Numerous other countries have recognized the value of life-course immunization in securing community well-being and workforce resilience. Vietnam can benefit from the insights gained through country benchmarking, identifying exemplary systems that serve as sources of inspiration for the implementation of life-course immunization programs. Vietnam can gain valuable lessons on program design, infrastructure development, and the integration of life-course immunization initiatives into existing healthcare frameworks.

Overview of life-course immunization development in other economies



Italy

- **Offers Influenza, Pneumococcal, and Herpes Zoster vaccines to senior citizens (65+)** under NIP.
- MoH has launched initiatives to promote the population's demand for vaccines including, **websites, hotline, and mailboxes dedicated to vaccination enquiries, using celebrities to combat vaccine hesitancy**
- The immunization program **is funded by the MoH** with annual budget ranging from €7 to €23 per capita, accounting for 0.44% of total healthcare spend

USA

- **Pneumococcal vaccines are offered free or under subsidization to senior citizen (65+).** **Influenza and Zoster** vaccines are also provided free of cost. Furthermore, eligible children (<18) receive their vaccine free of charge under **Vaccines for Children Program (VFC)**
- **Monoclonal antibodies (mAbs)** is also covered under the **Vaccines for Children Program (VFC)**
- **Educational resources, awareness program and mandatory immunization** are implemented by advocacy groups and federal policymakers to increase access to immunization services
- **Funding for immunization** occurs primarily through **federal and state funding, insurance, and private funding**

Vietnam

- EPI is **currently limited to only children**.
- The EPI is primarily funded through **central government budget and international funds**

South Korea

- **Older citizen (65+) and pregnant women received free-of-charge influenza vaccines**
- The government has launched initiatives to promote the vaccination including, **comprehensive immunization schedule, SMS reminder, focusing on localization of vaccine manufacturing**
- The national immunization program is politically prioritized, **receiving strong financial support from the government – general taxes**

Taiwan

- **Offers vaccinations for priority groups including senior citizen (50+) with high-risk comorbidities**
- The CDC operates **a 24-hour consultation** and **engages the younger population through social media**
- The national vaccine fund is supplied by various sources such as **tobacco and alcohol tax**, in which **tobacco surcharge accounts for 35% total NVF budget**

Philippines

- Offers **pneumonia and influenza vaccines to all senior citizens (60+)**
- Vaccination campaigns are frequent in Philippines, as **some days in week are designed to be immunization day for children**
- The life-course immunization receives funding from **both central and local government budgets,** in which **sin taxes contributing heavily to the immunization funding**

Australia

- The **first country offers HPV vaccines for adolescent boys**
- Offers **Pneumococcal, Influenza, Zosters, and Shingles vaccines for senior citizens**.
- The government has launched initiatives to promote the population's demand for vaccines including, **free catch-up vaccination, online awareness campaigns, diversified immunization program for different demographics**
- Funding of many vaccines for adult under the National Immunization Program is covered by both of the government and out-of-pocket expenditure

Thailand

- **Offers influenza and zoster vaccines to all senior citizens (65+)** in the UHC Program
- The government uses **official public platforms** and **social networks** to spread knowledge and promote the population's demand for vaccines
- The immunization program is **funded by the NHSO** through **capitation payments** to primary care facilities. **Sin taxes** to be used for immunization funding is currently **in early stages of discussion**

Singapore

- The government introduces heavily **subsidies on vaccination for senior citizen (65+)**
- **School children** receive **free-of-charge health screening & immunization services**. The Health Promotion Board fully **subsidized HPV vaccinations to female school childre**n of secondary 1 and 2 at several schools
- Singapore has adopted a '**co-pay system'**

Malaysia

- Offers **Pneumococcal, Meningococcal, Hepatitis A&B, Varicella, Influenza for senior citizens**
- The government executed a "**Immunisasi" program** to **address the vaccine hesitancy issue** in the community and to strengthen the NIP
- Adult immunization programs are **entirely funded through OOP expenditure** whereas **children vaccination** programs are **funded by the MoH**

Developed countries **Developing countries**

:Not yet developed :In development :Developed :Well-developed

6.2. Policy initiatives

Many countries, both developed and developing, have initiated policies to encourage life-course immunization. These policies largely work to reduce the financial burden of vaccination on individuals through subsidies and incentives. Vietnam's vaccination policies do not extend beyond pregnant mothers.

Case study

Philippines

In the Philippines, senior citizens aged 60 and above are eligible for free influenza and pneumococcal vaccines under the expanded pneumococcal immunization program and the Health and Wellness Program for Senior Citizen[17]. Citizens receive an initial pneumococcal shot at age 60, and a booster at age 65, strengthening the senior population against pneumonia (a leading cause of death in the Philippines). Individuals aged 60 and above also receive discounts between 20 - 60% for influenza and pneumococcal vaccines through the Expanded Senior Citizens Act and the nationwide PhilHealth public insurance scheme[18,19]. While these vaccination efforts do not cover a comprehensive variety of vaccines, they provide an example of systems like Vietnam's EPI that target individuals in later life.

Benchmarked policy initiatives aimed at different age groups

		Pregnancy	Pediatric: 0-24m	Pre-school: 2-4	School: 4-12	Adolescent: 13-19	Working adult: 20-65	Elderly: 65+	OVERALL
Developing countries	Vietnam	Children and pregnant women are encouraged to get vaccination for infectious diseases under the EPI							
	Malaysia	The government provides tax credits for vaccination expenses for pneumococcal, influenza, and COVID-19 for individual	Measles eradication campaigns		The government provides tax credits for vaccination expenses for pneumococcal, influenza, and COVID-19 vaccines for children	HPV vaccination programs targeted among women and girls at 13 years old	The government provides tax credits for vaccination expenses for pneumococcal, influenza, and COVID-19 vaccines for individuals, their spouses, and children		
	Philippines		Mandatory immunization			Catch-up vaccination program		Pneumonia and influenza vaccines offered under the Health and Wellness Program for Senior Citizens	
	Thailand	Free of cost mandatory vaccination			Vaccination campaign for children against 6 different vaccines and HPV vaccination for 11-year-old girls as part of the immunization routine.			Free of cost mandatory vaccination	
Developed countries	Taiwan	Mass hepatitis vaccination program	Vaccination including influenza, measles-mumps-rubella, and others	Free-of-charge vaccines to children younger than 5 years	School mass vaccination program	Free-of-charge routine immunization in both public and private healthcare facilities	Vaccinations offered to priority groups including >50 years old with high-risk comorbidities	Pneumococcal vaccines are subsidized and provided	
	Singapore	Eligible for 75% subsidy for vaccines listed under NAIS	Free of cost mandatory vaccination		Free student screening services and immunization, including HPV to female students	Catch-up vaccination program	Eligible for 75% subsidy for vaccines listed under NAIS		
	Korea	Free-of-charge vaccines are provided under the National Immunization Program					Anti-hepatitis plan for mothers with high viremia	Adults ≥65 years have received influenza vaccinations free of charge and since 2019	
	Australia	Free-of-charge vaccination program	Mandatory and subsidized vaccination program	No Jab, No Pay' policy introduced in 2016 to increase immunization in children		Free catch-up vaccinations for persons < 20 and refugees if they were missed	Free-of-charge vaccines for refugees and humanitarian entrants	Shingles, pneumococcal, influenza vaccines are funded and recommended	
	Italy	Adult vaccines are free of charge for pregnant women	Mandatory vaccination program (10 vaccines)	Vaccine compulsion in schools	Financial sanctions for whose children have incomplete compulsory immunization	Catch-up immunization campaigns, free for children under 16 years old	Adult vaccines are free of charge for high risk individuals <65 years old	Influenza coverage is targeted at 75% of the total population >64 years old	
	USA	Mandatory immunization through public and private health insurance plans	Mandatory public immunization through and private health insurance plans			Mandatory immunization through public and private health insurance plans	Influenza vaccines are subsidized or provided free of charge to adults <50 years old	Pneumonia vaccines are subsidized or provided free of charge to adults >65 years old	

:Not yet developed :In development :Developed :Well-developed

17. The Manila Times. (2020). DOH wellness program protects elderly Filipinos from third killer. The Manila Times. https://www.manilatimes.net/2020/02/19/life-times/health-wellness/doh-wellness-program-protects-elderly-filipinos-from-third-killer/688376
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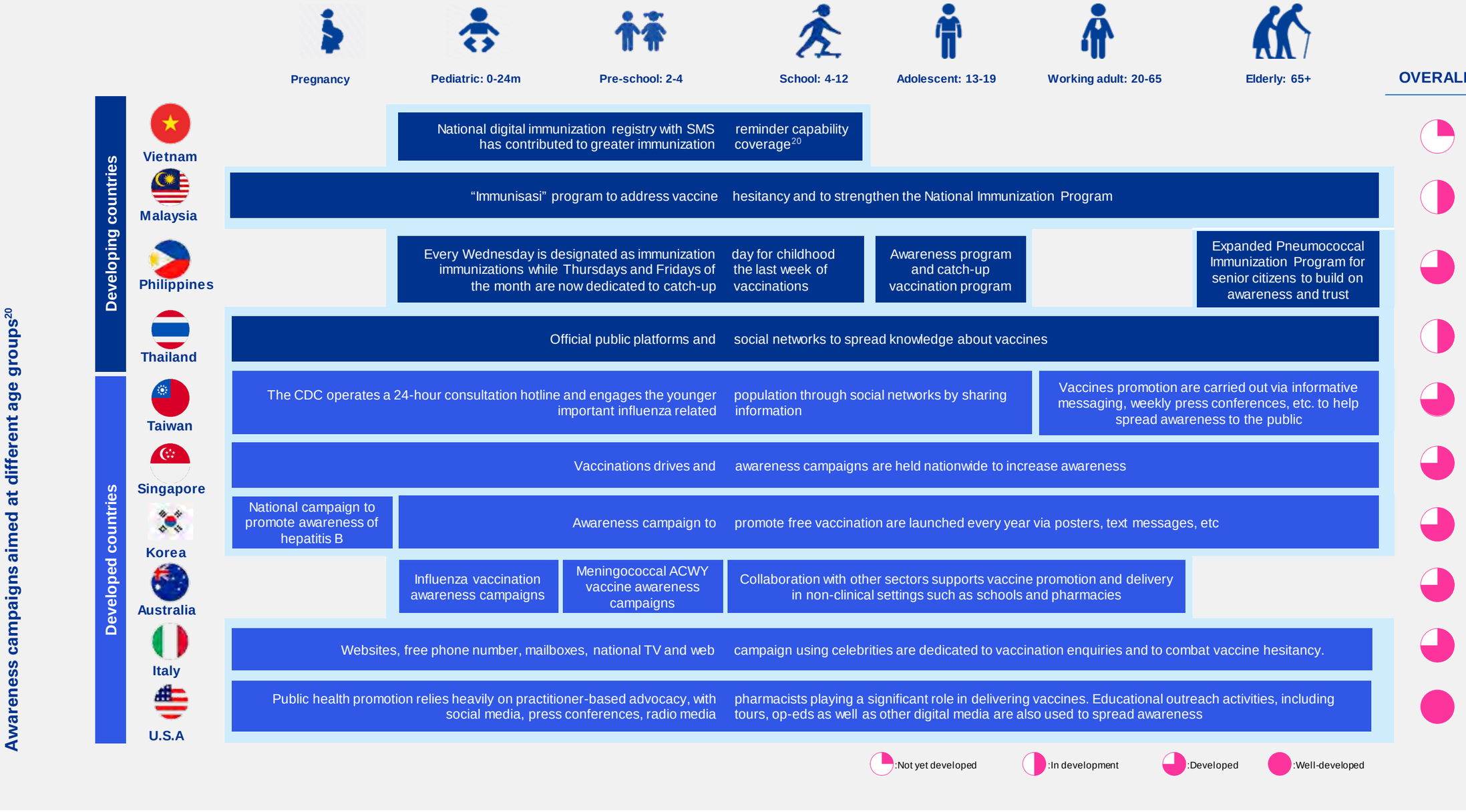
19. PhilHealth. (2012). Improving PhilHealth Benefits for our Elders. https://www.philhealth.gov.ph/news/2012/elders_benefits.html

6.3. Awareness campaigns

In Vietnam, promotional campaigns predominantly focus on children. In contrast, many developed countries adopt a more comprehensive approach, promoting vaccine uptake across all age groups through various platforms and channels.



20. PATH. (2017). Improving Timely Immunization Rates in Vietnam with a Digital Immunization Registry ImmReg. PATH. https://www.path.org/our-impact/resources/improving-timely-immunization-rates-in-vietnam-with-a-digital-immunization-registryimmreg/

6.4. Financing

Many countries face similar financial struggles to Vietnam, in that they struggle to accumulate the funds to implement a comprehensive immunization program. This challenge has led many countries to develop innovative funding schemes to deliver to their populations. Exploring specific case studies provides valuable insights for shaping an immunization financing roadmap in Vietnam.

Overview of the current state of immunization financing around the world

Country	Current funding mechanism					
Vietnam	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Malaysia	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Philippines	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Thailand	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Taiwan	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Singapore	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
South Korea	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Australia	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Italia	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
USA	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
China	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
India	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants
Indonesia	Co-payment	Earmarked sin tax	Public-private partnership (PPP)	Decentralized governance	Centralized governance	Grants

These vaccination financing methods are employed by the corresponding countries

Case studies of alternative financing models

Co-payment system

Singapore employs the MediSave co-payment system, where the government subsidizes a portion of medical expenses (including vaccines). Employee contributions, ranging from 7-9% of wages, taxes and insurance premiums, contribute to the state resources which are then utilized in the form of subsidies, reimbursements, and national budget allocations[21]. This co-payment system provides a mechanism for balancing public health priorities with budget constraints. As individual contributions are proportional to income, this increases accessibility for lower-income households who may otherwise struggle to purchase vaccines privately.

Public-Private Partnership (PPP)

PPPs decrease reliance on national funds while fostering private engagement and community involvement. Indonesia's MOH has pursued non-infrastructural PPPs to encourage collaboration with the private sector. A notable partnership involves the American Academy of Pediatrics (AAP) and the Indonesian Pediatric Society (IPS), supported by the USCDC. This initiative aims to commence a multiyear project to enhance the capacity of IPS and other child health clinicians.

The development of the rotavirus vaccine ROTAVAC was the result of a PPP between the Government of India, Bharat Biotech, and sixteen other international organizations (the largest non-COVID social innovation project for public health). While preventive care in India traditionally falls within the public domain, the role of private stakeholders is rapidly expanding, fueled by the principles of shared objectives and shared risks. These examples demonstrate the ability of PPPs to expedite vaccine initiatives that would not be feasible with only government funds. Private stakeholders benefit from an increased share of the vaccine market and subsequent profitability.

Earmarked sin taxes

Earmarked sin taxes, specifically those imposed on tobacco and alcohol for general healthcare purposes, can play a pivotal role in financing national immunization programs. In Taiwan, citizens benefit from a publicly funded immunization program facilitated through the National Vaccine Fund (NVF), distinct from the social health insurance system. The NVF draws revenue from various sources, including government subsidies, philanthropic donations, and sin taxes on tobacco and alcohol. Sin taxes contributed to 60% of the fund in 2016[22].

Similarly, the Philippines implemented sin taxes on tobacco and alcohol in 2012. Within four years, sin taxes comprised 57% of the total budget in 2016[23]. The tax per pack of cigarettes increased to USD0.8 in 2020, with a planned increase to USD1.2 by 2023 and an escalation at a rate of 5% per annum thereafter[24]. Earmarked sin taxes have enabled the Philippines to fully subsidize health insurance for the poorest 40% of the population while also supporting the immunization program[25].

Decentralized governance

A decentralized system of governance has proven useful in addressing local-level challenges efficiently when aligned with national priorities and the objectives of public programs. South Korea and China epitomize the successful implementation of a decentralized approach, enhancing vaccine coverage, budget allocation, data protection, and process management within their immunization programs.

In South Korea, provinces take the lead in budget allocation and funding for vaccines and related initiatives. This system has seen consistently high vaccination coverage, from 96 to 98% across the country's provinces, excluding the HPV vaccine[25]. 35% of local government funding for vaccines is allocated to districts and 15% to provinces[26]. Provinces also handle vaccine procurement and reimbursement.

China adopted a decentralized approach using blockchain technology and distributed storage systems. This shift not only ensured the integrity of vaccination data but also facilitated efficient tracking and management of vaccine deployment on a national scale. The decentralized model in China incorporates automated data collection and supervision at all stages, simplifying verification processes and supporting the efficient administration of COVID-19 vaccines.

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6.5. Databases

Utilizing electronic databases is essential for all players in the implementation of life-course immunization programs. These databases streamline data access and support data-driven decision-making, fostering adaptability to emerging health trends. The case studies below are examples of comprehensive and effective vaccine databases that have proven efficacy in improving health outcomes.

Case studies of database models

USA

Despite catering to a large and dispersed population, the national Immunization Information System (IIS) effectively allows administrators access to consolidated real-time immunization histories. The IIS also provides vaccine surveillance data and information related to vaccine procurement and supply management. In addition to the IIS, the National Notifiable Diseases Surveillance System (NNDSS) monitors both infectious and noninfectious diseases, through a network of about 3,000 public health departments[27]. Vaccination status is also collected via the Behavioral Risk Factor Surveillance System (BRFSS), an annual telephone survey of over 400,000 adults[28], making it the largest continuously conducted health survey system in the world. BRFSS asks questions about an individual's influenza, tetanus, and pneumococcal vaccination status.

South Korea

Immunizations are tracked through the Korean Centre for Disease Control's (KCDC) web-based national immunization registry, which collects individual immunization information, manages vaccination records and is a communication channel for health promotion. Citizens that are registered in the system receive Short Message Services (SMS) reminders of when to have the influenza vaccine and can also check their immunization history online.

27. CDC. (n.d.). What is Case Surveillance? CDC. https://www.cdc.gov/nndss/about/index.html
28. CMS. (n.d.). Behavioral Risk Factor Surveillance System. CMS. https://www.cms.gov/about-cms/agency-inrmation/omh/resource-center/hcps-and-researchers/data-tools/sgm-clearinghouse/brfss

7. The way forward

There are five key categories of recommendations to implement life-course immunization in Vietnam: policy, accessibility, financing, data, and awareness[29]. This section recognizes that the key to achieving sustained impact is to align the goals of public health and pharmaceutical stakeholders. These recommendations aim to provide both groups with recommendations to expedite the implementation of life-course immunization.

7.1. Policy

Expanding age groups served by immunization policy

The foundational element of adult immunization strategies lies in robust policy infrastructure. Countries with well-established vaccination programs, such as Australia, the USA, and Thailand, incorporate various adult cohorts, including seniors and pregnant women, into their national immunization schedules. Even countries with limited resources, such as the Philippines, extend financial support to adults over 60.

- **Select one or more cohorts based on age or vulnerability** (for example, immunocompromised individuals over 50 years of age). Adding these cohorts to the EPI could substantially decrease treatment costs for these selected groups. For instance, in Australia, Pneumococcal, Influenza, and Shingles vaccines are offered to senior citizens (> 70 years old) free of charge.
- **Incorporate immunization into the National Action Plan for Older People.**
- **Cooperate with companies and businesses to encourage employee incentives for vaccination** (for example, paid time off to get vaccinated).
- **Identify specific metrics tied to the success of these initiatives** and ensure that they are monitored by central bodies.

> **To enhance vaccination policies and costs-effectiveness, we need to focus more on prevention, including public communication, financial investment, and prioritizing diseases and vaccines for interventions.**
>
> Government agencies

29. These recommendations are drawn from:

- The analysis of barriers to life-course immunization;
- Experiences of benchmark countries;
- Survey of immunization industry experts, conducted by KPMG and VAPM (July-September 2023);
- 'Understanding the Value of Vaccination' webinar, hosted by KPMG to gain expertise on LCI in Vietnam (August 2022).

7.2. Accessibility

Enhancing vaccine availability and access

While making vaccines available is essential, ensuring low-barrier access in community settings is equally critical for successful program implementation. Benchmark countries like Singapore, Taiwan, and the Philippines employ creative and cost-effective methods, including vaccine drives, to reach communities effectively.

- **The vaccine registration process, being complex and time-consuming,** tends to prolong the go-to-market time for vaccine products. A shortened registration process would help enhance vaccine accessibility to individuals.
- **The emerging trend involves not only vaccines but also preventive biological products – using monoclonal antibodies for disease prevention.** Making these innovative preventive solutions available at existing vaccination sites could further enhance accessibility for individuals.
- **The complexity of the vaccine procurement and tender process presents a limitation.** This extends the time for vaccine products to reach the market and hampers vaccine accessibility for end users. A simplified procurement and tender process would help to improve vaccine accessibility to individuals.
- **Further diversify the list of vaccines in the EPI program** to address the demand of customers.
- **Expand the type and number of locations that can administer vaccines.** Begin with a small number of chain pharmacies and other appropriate healthcare facilities.
- **Introduce win – win solutions to adjust private vaccine prices,** ensuring that they are financially viable for lower-income communities.
- **Enhance technology transfer to increase local vaccine production capacity,** thereby improving access to affordable and high-quality vaccines.
- **Utilize mobile vaccination clinics** that can travel around rural and underserved areas.
- **Provide free or discounted travel to vaccine clinics** and collaborate with public transport networks to ensure convenient routes to these locations.
- **Utilize telehealth services** for vaccine consultations and pre-screening, making it easier for individuals to access information and guidance remotely.

> **The supply of vaccines is occasionally disrupted, particularly for imported vaccines. Difficulties in the procurement process and financing for immunization services at public health facilities can lead to vaccine shortages or halt immunization implementation.**
>
> Vaccination specialist

7.3. Financing

Creating sustainable funding for life-course immunization

The allocation of funds, particularly for subsidies or free vaccines, significantly influences vaccine adoption among citizens. For Vietnam, exploring alternative funding options like co-payment and the utilization of sin taxes could potentially boost vaccine adoption.

- **Collaborate with relevant sectors to initiate payment initiatives** and create more opportunities. For instance, partnerships with banks could provide additional vaccine payment options for consumers, such as post payment, payment in instalments, etc.
- **Continue revising health insurance law to increase cooperation between public and private insurers.** Vietnam can explore the possibility of partnering with private insurers to provide insurance coverage exclusively for vaccination. This may result in decreased insurance claims for insurers, thus delivering mutual benefits.
- **Explore innovative funding measures** such as outcome-based contracting to distribute risks among public and private players, or incentives to encourage employers to incorporate vaccination into their employees' annual health check-ups.
- **Improve the effectiveness and utility of the current financing options through taxation.** Despite being a primary source of funding, taxation has not been fully maximized for healthcare resources allocation. Vietnam can learn from Taiwan and Philippines where sin taxes are earmarked and allocated towards operating a national life-course immunization program.
- **Cost-effectiveness from preventive biological products:** Preventive medicine can lead to significant economic benefits. Preventive care can reduce treatment costs, decrease hospitalizations, and enable more efficient allocation of resources. This can lessen the burden on healthcare systems and contribute to a sustainable model for healthcare delivery.
- **Gather data to drive cost-benefit analysis.** Examples of data collection schemes may include:
  - Collaboration between private companies and provinces to develop data-gathering programs to assist the government in prioritizing different financial needs of different provinces and population groups.
  - The sharing of resources and data between multiple agencies such as MOH and Ministry of Education and Training (MOET) to ensure efficient coordination and to visualize the bigger picture.
  - The use of digital platforms and tools to obtain new data sources in addition to existing ones.

> **The limited local budget resources, when being used for immunization activities, may not be as effective and may not cover all targeted groups broadly. This could potentially slow down the progress of the country's immunization development.**
>
> Government agencies

7.4. Data

Establishing evidence-based decision-making

Successful life-course immunization programs hinge on evidence-based immunization recommendations, obtained from strong databases. This allows a quantification of the burden of disease and the success of vaccine initiatives.

- **Integrate artificial intelligence (AI) to boost the management of the immunization database.** AI significantly enhances data handling for vaccination tracking, disease prevalence monitoring, and expedites disease surveillance for prompt outbreak detection.
- **Robust immunization surveillance systems deliver real-time vaccination tracking, shape vaccine policies, and manage supplies.** These systems will play a strategic role in managing immunization programs and guiding targeted health interventions. The IIS implemented by the USCDC has proved successful, streamlining real-time immunization histories, vaccine surveillance data, and managing vaccine procurement and supply information.
- **Enhance the role of the government in database management.** Centralized data management ensures consistency, accuracy, and accessibility of information, allowing for a comprehensive understanding of immunization coverage and trends.
- **Adopt the usage of e-cards for citizens** to keep track of their immunization records and any upcoming vaccination schedules. Patients can also assist in monitoring the data input of their vaccination and ensuring that it is up to date and accurate.
- **Provide training on data gathering and data usage** to ensure the accuracy and usefulness of immunization data. It is essential to raise awareness of the significance of accurate and timely vaccination statistics within government officials and private stakeholders.

> **There is a lack of data around vaccine-preventable diseases, therefore there is not enough evidence for insurance companies to have immunization products/policies.**
>
> International health organization

7.5. Awareness

Comprehensive campaigns for public education

Improving adult vaccine coverage necessitates multifaceted education and awareness campaigns. Successful strategies employed by benchmark countries, including Australia and Italy, involve the use of posters, social media campaigns, and press releases to reach citizens. Awareness campaigns provide the opportunity for a series of 'quick wins' on the road to implementing life-course immunization, as there are many channels through which communication can be broadcast.

- **The MOH should provide more precise guidelines and directions for local authorities to carry out vaccination awareness-raising activities.** For example, instructions from the MOH or relevant associations outlining the procedures and advantages of implementing specific life-course immunization could enhance the effectiveness of these awareness initiatives.
- **Raising awareness about preventive medicine,** including not only vaccines but also other alternative preventive solutions such as monoclonal antibodies, can have a positive impact on the market. People become more informed about the benefits of these antibodies such as their ability to provide the rapid and direct protection by neutralization, prevention of infectivity upon antibody binding without involvement of any other components of the innate or adaptive immune system, uptake of antibody-antigen complexes or antibody-coated cells by phagocytic cells, activation of the classical complement pathway by binding of antibodies bound to target cells, which leads to Membrane Attack Complex (MAC) formation and lysis of target cells. This could lead to greater investment in research and development, potentially driving innovation and growth in the healthcare sector. Furthermore, it could also lead to a broader acceptance and utilization of these preventive measures, contributing to improved public health outcomes.
- **Develop official websites for specialists to access trusted sources of immunization information** and instruct patients/clients with accurate and consistent advice.
- **Target rural, mountainous, and underdeveloped areas,** likely in the form of physical communication or pamphlets rather than online communication due to the disparities in internet access.
- **Recruit those with social power** to provide communication about life-course immunization. In benchmarked countries, engaging healthcare workers as allies in education and service delivery proved to be particularly successful.
- **Liaise with community groups,** such as the Vietnam Association of the Elderly, to create communication channels and events to promote life-course immunization. Peer participation is likely to empower vulnerable communities to get vaccinated together.
- **Establish national or regional vaccination events,** temporarily improving regional access with mobile vaccination units and subsidies on healthcare and extending vaccination campaigns in the area in the days leading up to the event.

> **Utilize the value of healthy old age through collaboration with grassroots organizations like the Women's Union, Youth Union, and the Vietnam Association of the Elderly. Additionally, it is crucial to ensure that the elderly are empowered and actively engaged in various activities.**
>
> Understanding the Value of Vaccination Webinar

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