

White Paper

Call to Action: A strategic response to the impending health crisis of atherosclerotic Cardiovascular Diseases in SEA

In Collaboration with Novartis and EU-ASEAN Business Council

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Executive summary

Cardiovascular disease (CVD) is a group of diseases that includes coronary heart diseases such as ischaemic heart disease and stroke. CVD is the leading cause of mortality and disability globally, with over 75% of CVD deaths occurring in low- and middle-income countries.¹ The major economies of Southeast Asia (SEA) – Singapore, Malaysia, Thailand, Indonesia, and Vietnam — are not excluded from this public health crisis.

Atherosclerotic cardiovascular diseases (ASCVD), such as myocardial infarction and stroke, contribute to most of the CVD burden.² ASCVDs and their associated diseases, such as diabetes, hypertension, and hyperlipidaemia, share a range of common risk factors, which are mostly modifiable. However, if left unaddressed, these risk factors can compound each other and significantly increase the disease burden on individual patients and their countries. Conversely, coordinated action to address these risk factors can result in cumulative gains in the quality of life for individuals and cost savings for society. Therefore, governments and health policymakers could greatly benefit from mobilising resources to prevent and address ASCVDs.

This White Paper is meant to reinforce the priorities identified by the WHO Independent High-Level Commission on Noncommunicable Diseases (NCDs),³ highlight the unmet needs and explore the potential solutions through a regional viewpoint.

Based on the situational analysis of the efforts made by each country to address ASCVD, this paper recommends the following imperatives to bridge the current gaps:



Establishing **national CVD policy with ASCVD-specific targets** supported by action-oriented implementation strategies



Equitable **attention towards all major ASCVD risk factors**, including hyperlipidemia



Targeted ASCVD management based on patient risk profiles



Improved **evidence-based care** through health data analytics

Potential solutions could and should involve public-private partnerships between governments with industry and academic stakeholders to explore innovative, impactful and sustainable outcomes to address the impending ASCVD crisis.

Coordinated action to address these risk factors can result in cumulative gains in the quality of life for individuals and cost savings for society.

Foreword



MR. CHRIS HUMPHREY,
Executive Director, EU-ASEAN
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Cardiovascular Diseases (CVD), particularly Atherosclerotic Cardiovascular Diseases (ASCVD), are increasingly becoming a global health challenge. Southeast Asia is no exception. In this part of the world, nearly 30 million individuals grapple with CVD, with notable prevalence in Thailand (7.7%), Singapore (7.3%), Malaysia (6.1%), Vietnam (5.5%), and Indonesia (5.3%).

ASCVD consistently ranks as the leading cause of death, with detrimental effects not only on lifespan but also on health span, leading to diminished productivity and quality of life. Not forgetting its impact on exacting unsustainable economic strain on nations across the region.

At a glance, the economic burden of ASCVD is astonishing. In Thailand, CVD costs reached US\$0.6 billion in 2019, equivalent to 3.2% of total healthcare expenditure. Similarly, Malaysia expends over US\$1 billion annually on CVD treatment, representing more than 7.3% of healthcare expenditure, with additional indirect costs exceeding US\$0.9 billion in lost productivity. As countries in the region progress economically, the financial strain imposed by ASCVD escalates, with Singapore shouldering an annual cost of US\$3.2 billion, nearly 19% of total healthcare spending in 2019. The estimated indirect costs due to ASCVD-related absenteeism and early retirement underline its substantial impact on economic growth.

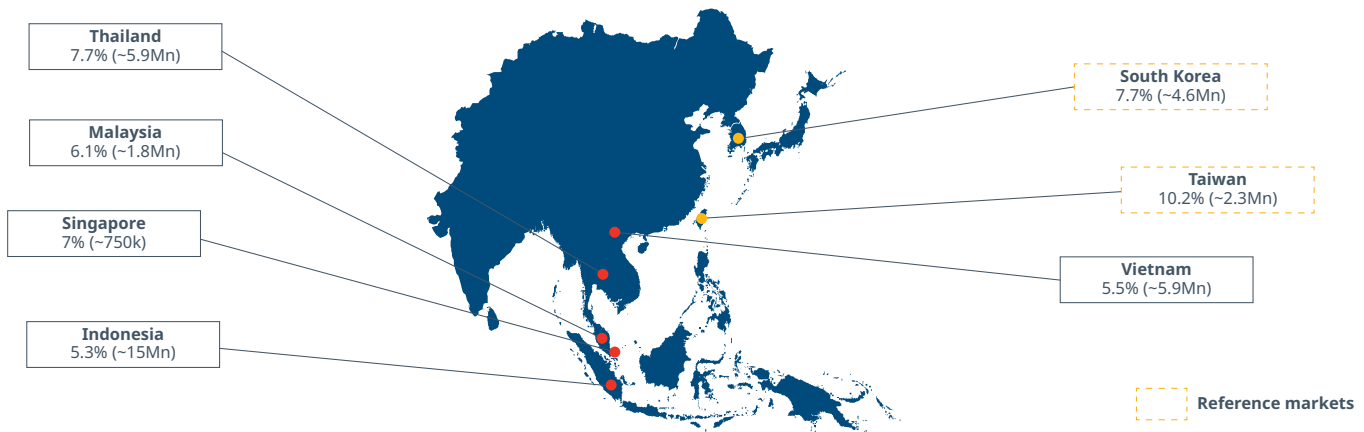
ASCVD in Southeast Asia is also reported to manifest at a younger age, affecting 64% of patients under 65 years old. For a region that is on the trajectory towards an ageing population, this trend of ASCVD affecting younger citizens poses an imminent threat to the productivity of the working population, vital for sustaining economic development.

ASEAN health cluster goals underscore the imperative of promoting healthy lifestyles (Health Cluster 1), strengthening healthcare systems (Health Cluster 2), and enhancing access to care (Health Cluster 3). Emphasis on early detection, treatment, and continuity of care for ASCVD within primary healthcare settings is paramount to minimising its societal burden, and in addressing the multifaceted challenge brought about by ASCVD.

This report underscores the urgency for coordinated action across ASEAN member states to elevate awareness, the implementation of widespread screening, and optimisation of treatment pathways for ASCVD. I trust that the recommendations outlined herein will serve as a compass for policymakers, guiding efforts to mitigate the impact of ASCVD and safeguard the health and prosperity of our communities.

Through collaborative efforts aligned with ASEAN's vision, we can forge a healthier future for Southeast Asia. The work of organisations such as the EU-ASEAN Business Council, especially in promoting the building of resilient healthcare systems and emphasising preventive measures alongside curative care, will be instrumental in advancing these critical healthcare initiatives.

Figure 1: CVD prevalence rate, CAGR and percentage of ASCVD by country



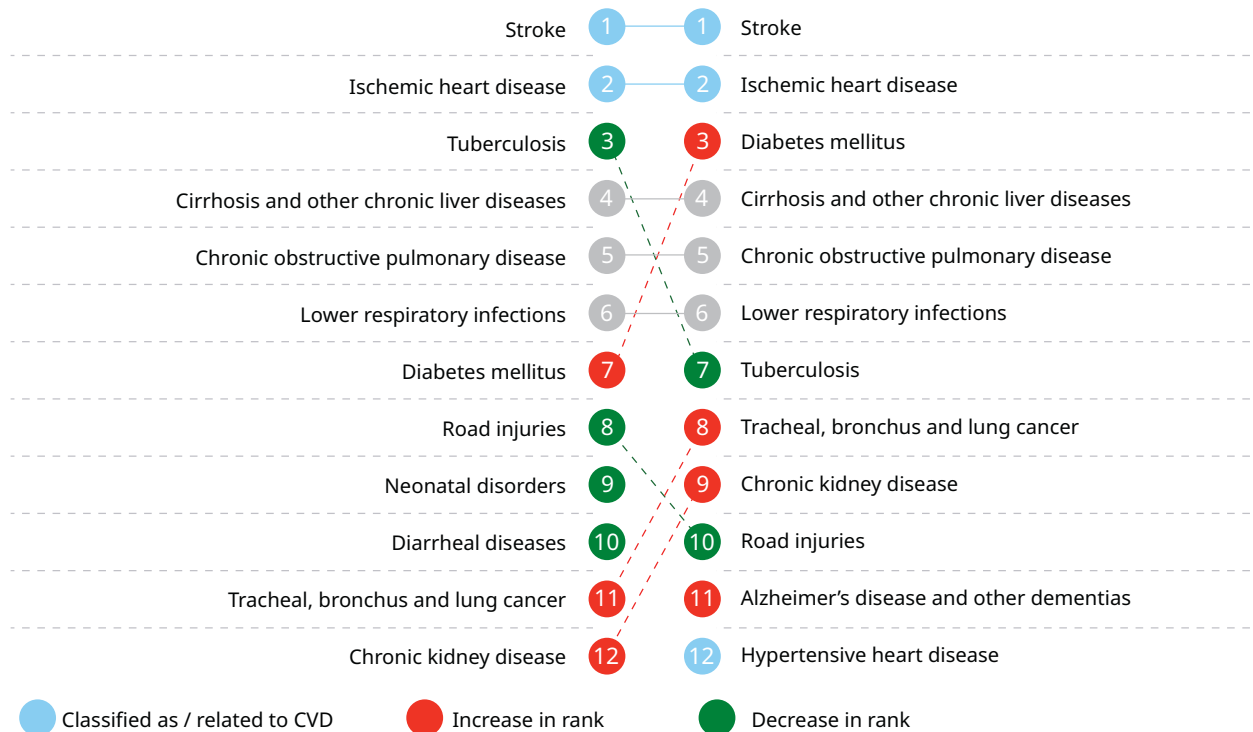
Source: Institute of Health Metrics and Evaluation (Accessed Nov 2022)

Current state of the disease

As one of the four major noncommunicable diseases, cardiovascular diseases (CVD) pose one of the biggest health threats globally, and Southeast Asia is no exception to the global trend. Currently, close to 30 million people

in the region suffer from CVD, with the largest prevalence observed in Thailand (7.7%), followed closely by Singapore (7.3%), Malaysia (6.1%), Vietnam (5.5%) and Indonesia (5.3%). In absolute numbers, Indonesia has the largest CVD population of 15 million, more than the combined numbers of the other 4 countries. (Figure 1).

Figure 2: Top causes of death in SEA (2009 vs. 2019)



Source: Institute of Health Metrics and Evaluation (Accessed Nov 2022)

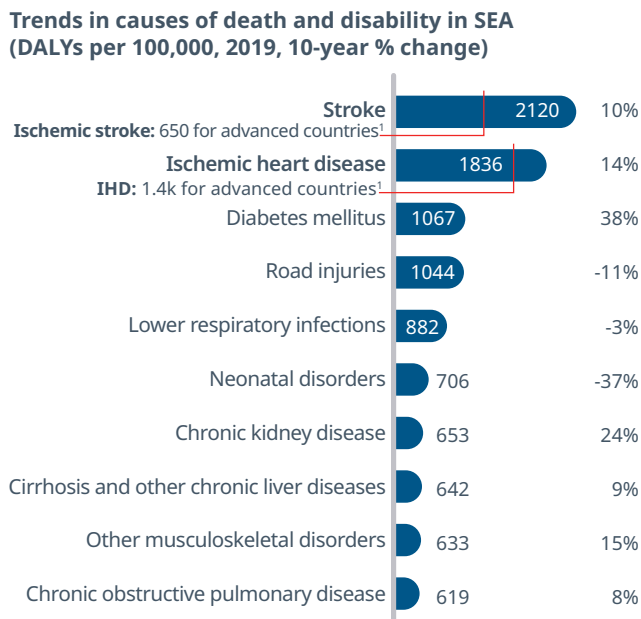
The prevalence of CVD in the region has rapidly grown over the past 10 years, mostly driven by atherosclerotic CVD (ASCVD), which constitutes over 60-70% of total CVD cases. ASCVD refers to ischemic heart diseases (IHD), such as myocardial infarction (commonly known as heart attack) and stroke, leading causes of death and disability worldwide.

The burden from ASCVD in the region is significant. ASCVD has consistently been the leading cause of death, with stroke and ischemic heart disease remaining the top 2 causes of death over the past 10 years² (Figure 2).

ASCVD is also associated with significant disability in the region, with stroke and IHD recording the highest disability-adjusted life years (DALYs) of 2,120 and 1,836 DALYs per 100,000 individuals, respectively.

These figures are significantly higher than advanced economies (650 DALYs for stroke and 1,400 DALYs for IHD) and have also increased rapidly (Figure 3). This finding is notable as CVD prevalence is relatively higher in advanced economics, implying a considerable gap in disease management in SEA with a higher impact of CVD on death and disability.

Figure 3: Trends in causes of death and disability in SEA



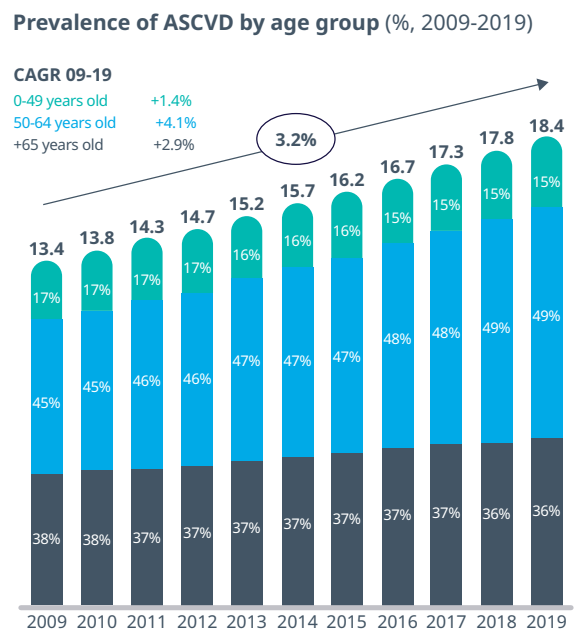
Note: ¹ Advanced countries used for benchmark include UK, Japan, Korea, Taiwan, Australia, Singapore
 Source: Institute of Health Metrics and Evaluation (Accessed Nov 2022)

This disproportionate impact of CVD in SEA puts an unsustainable economic burden on the nations. For example, it is estimated that CVD costs US\$0.6 billion in Thailand, which is comparable to 3.2% of the total healthcare expenditure in 2019.⁴ Similarly, treating CVD costs around US\$1 billion in Malaysia annually, comparable to more than 7.3% of total healthcare expenditure in 2018, with an additional indirect cost of US\$0.9 billion in annual productivity losses.⁵

As a country continues to develop, the cost of CVD would be further magnified due to the higher healthcare expenditure and the larger impact of the loss of productivity. For example, in Singapore, CVD costs US\$3.2 billion annually, equivalent to about 18.8% of the total healthcare expenditure in 2019.⁶ In addition, the estimated indirect cost of US\$4.6 billion due to absenteeism, early retirement and tax losses highlights the significant disease burden that CVD poses to the economic growth in the region.⁴

Furthermore, this region stands out because ASCVD occurs at a younger age, with 64% of patients under 65 years old compared to 39% in South Korea² (Figure 4). This situation highlights the risk that ASCVD poses to the productivity of the working population, which is key to the economic growth in these countries.

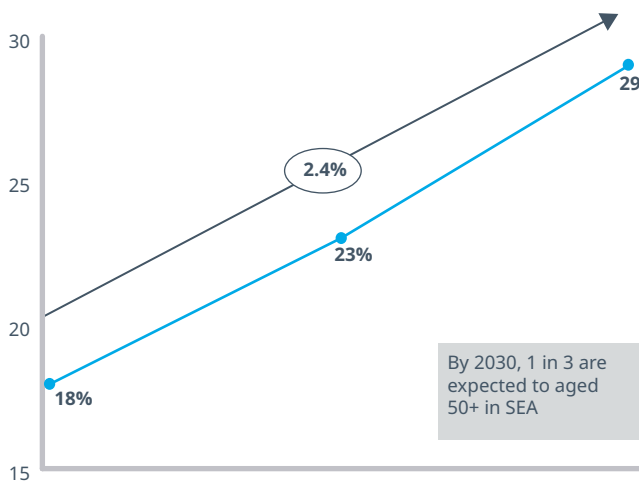
Figure 4: Prevalence of ASCVD by age group within SEA



Source: Institute of Health Metrics and Evaluation (Accessed Nov 2022)

This CVD burden is expected to worsen in the future, compounded by the ageing population in the region. By 2030, it is projected that 29% of the region's population – roughly every 1 in 3 people – will be 50 years and older (Figure 5). In other words, nations could expect to depend on a young and sick population supporting a sicker elderly population.

Figure 5: Forecast of the population 50 years old and above



Source: World Bank

Driven by this demographic change and the earlier onset of ASCVD in the region, the economic, health and social ramifications are expected to increase exponentially unless these trends are effectively reversed.

Risk factors and ASCVD management

ASCVD is inherently linked with various risk factors, including harmful lifestyle habits such as smoking and chronic conditions such as hyperlipidaemia, diabetes, hypertension, and obesity (Figure 6). It is widely established that these risk factors contribute greatly to CVD risk and death, and as they also affect one another, it leads to a compounding cycle of cause and effect.⁷

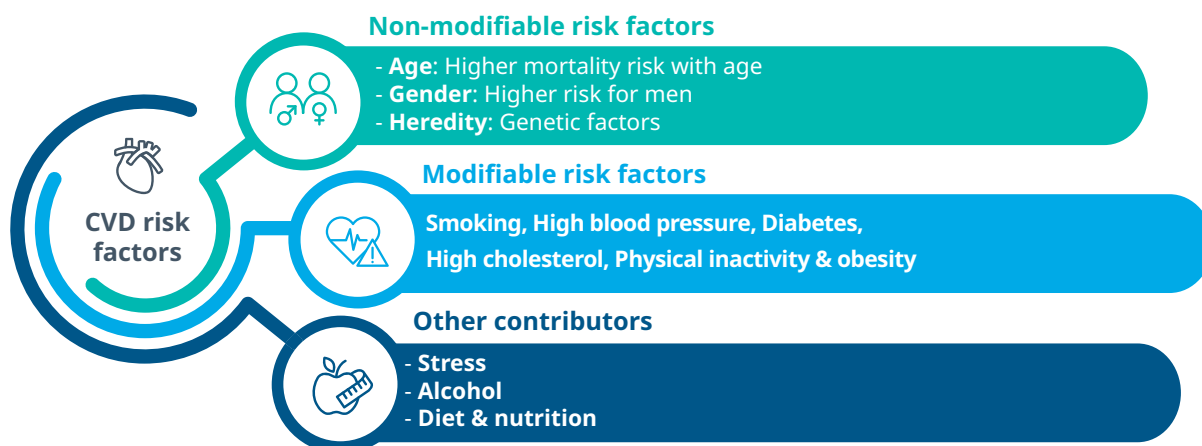
Diabetes affects the heart and kidney hemodynamics and is associated with a twofold increased risk of CVD-related death.⁸

Hyperlipidaemia due to elevated cholesterol levels leads to ASCVD by blocking the blood vessels. Every 1-mmol/l increase in total cholesterol is associated with a 35% increased risk of coronary death and a 25% increased risk of stroke.⁸

High blood pressure leads to direct mechanical and oxidative damage to the blood vessels. The effect of increased blood pressure is consistent and exponential, where each 20 mmHg increase in systolic blood pressure doubles the risk of a cardiovascular event.⁹

Fortunately, the major risk factors of ASCVD are modifiable. For example, reducing low-density cholesterol (LDL-C) by 1.0 mmol/L causes a corresponding 20–25% risk reduction in CVD complications.¹⁰ Similarly, every 10 mmHg lower blood pressure resulted in up to 54% lower stroke risk and 46% lower IHD risk.⁸

Figure 6: List of CVD risk factors



Source: IQVIA Analysis



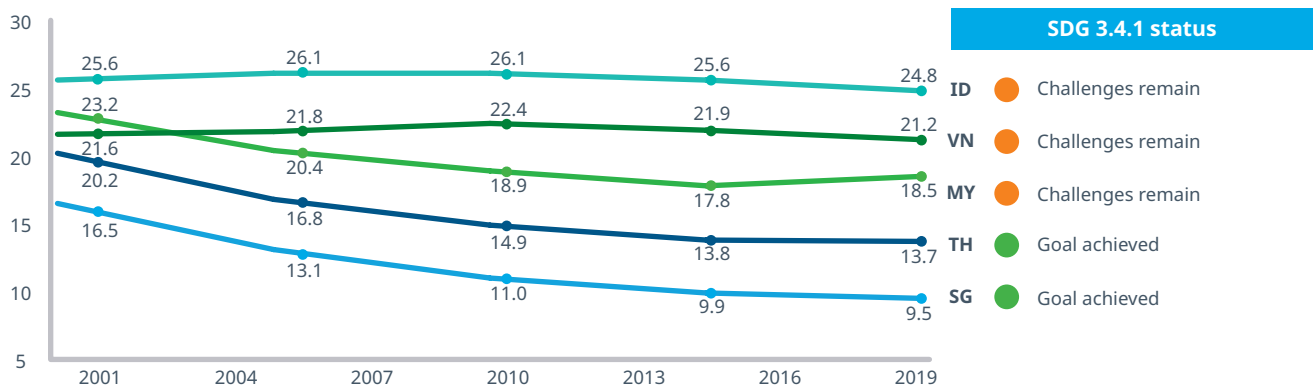
The complexity of ASCVD and its risk factors requires more than siloed interventions to address. Governments need to accept primary responsibility for taking action, along with other actors, to address the social and economic determinants at each stage of the ASCVD journey – increasing awareness and prevention, improving screening and early diagnosis, optimising treatment and ensuring continuity of care.

Current CVD efforts and challenges

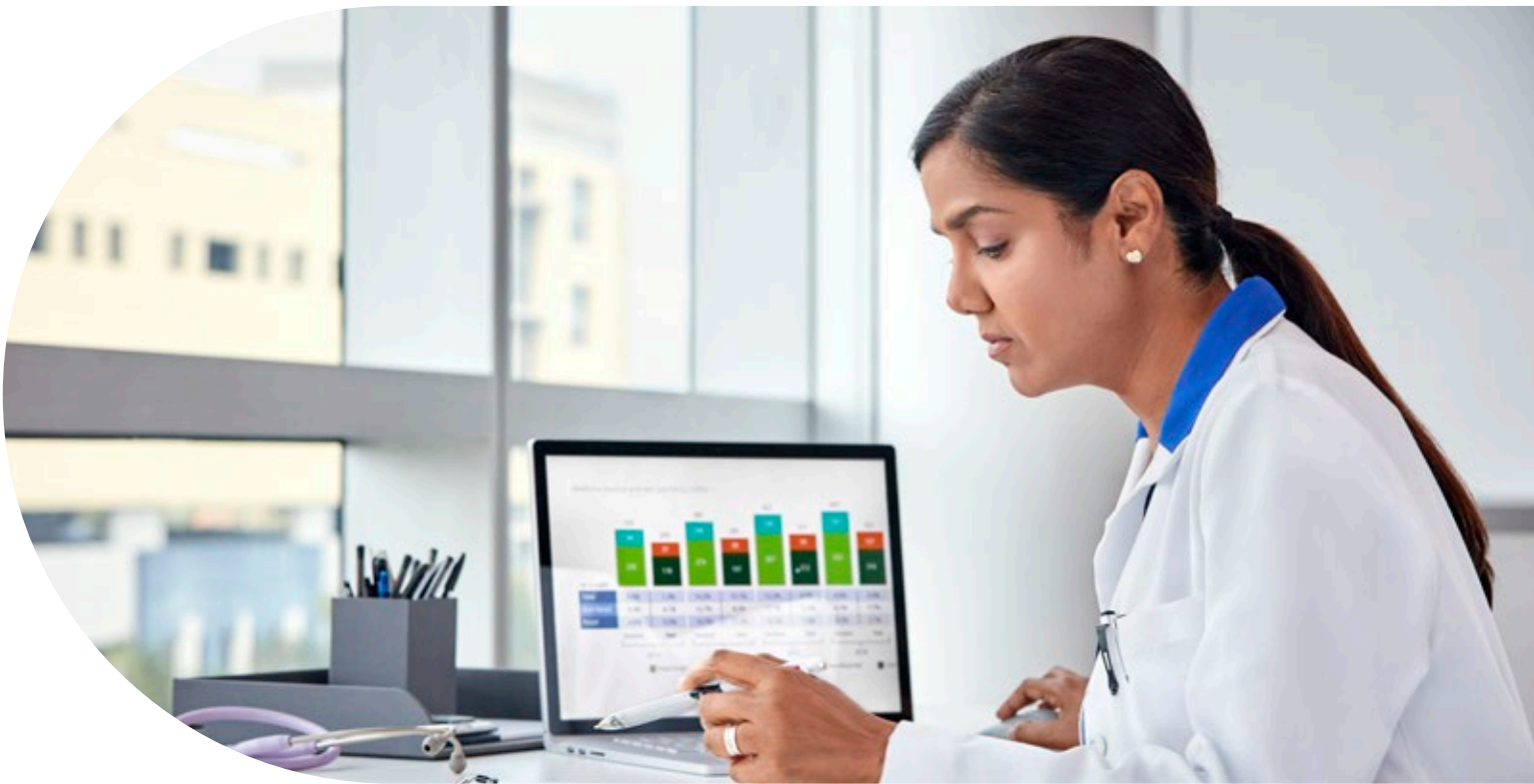
There has been growing awareness of the global noncommunicable disease (NCD) crisis, namely cardiovascular disease, cancer, diabetes and chronic respiratory diseases, with the UN and WHO calling for action among its Member States. In 2015, countries agreed to the UN Sustainable Development Goals (SDGs),

Figure 7: SDG 3.4.1 status in the region

Pre-mature mortality rate due to 4 NCDs in adults aged 30-70 years (% , 2000-2019)



Source: Sustainable Development Goals Report (United Nations)



with a specific NCD target SDG 3.4 –“reduce by one-third premature mortality from noncommunicable diseases through prevention and treatment by 2030”.¹¹ Unfortunately, progress towards fulfilling this target has been slow, and commitments that have been made have not been translated into sustainable measures to address NCD consistently across countries.³

Within SEA, only Singapore and Thailand have achieved SDG 3.4.1 (Figure 7). Significant challenges remain in Indonesia, Vietnam and Malaysia in meeting the target, with the death rate stagnating (ID, VN) or increasing (MY) in recent years.¹¹

Despite the gains made by Singapore and Thailand, CVD remains a major contributor to NCD deaths within all five countries ranging from 34% in Thailand to 55% in Indonesia (Table 1). These data highlight the urgency of applying a whole-of-society approach in addressing CVD to achieve and, more importantly, sustain the SDG targets.







Table 1: Contribution of death from CVD to total NCD deaths between ages 30 and 70

	CVD	% OF TOTAL NCD ¹ DEATHS
SINGAPORE	666	40%
THAILAND	912	34%
MALAYSIA	2184	54%
VIETNAM	2277	49%
INDONESIA	3149	55%

Source: Institute of Health Metrics and Evaluation (Accessed Nov 2022)

Furthermore, the wide-ranging cause and consequences of CVD on individuals and society have an impact beyond SDG 3. Tackling CVD is critical to other key SDGs, including SDG 1 (ending poverty), SDG 2 (ending all forms of malnutrition), SDG 8 (decent work), SDG 10 (reducing inequality), and SDG 12 (ensuring sustainable consumption and production patterns).³

Figure 8: Comparison of National NCD Plans by country¹²⁻¹⁷

NATIONAL POLICY		 SG	 TH	 MY	 VN	 ID	 KR/TW
AVAILABILITY OF NCD / CVD PLANS		NCD plan only • Healthy Living plan • Healthier SG	NCD plan only • 5-year National NCD Action plan 2017-2021	NCD plan only • National Strategic Plan for NCD 2017-2025	NCD plan only • National Strategy for Prevention and Control of NCD 2015	NCD plan only • Strategic Actions for Prevention and Control of NCD 2017	CVD plan • National CVD roadmap 2018-2023
1 CLEAR OUTLINE OF OBJECTIVES & KPIS	Awareness	<ul style="list-style-type: none"> ✓ Awareness campaigns and public communication plans for healthy living and NCD risk factors ✗ No specific plans or campaigns for CVD 					<ul style="list-style-type: none"> ✓ Long-term publicity plan for CVD
	Screening	<ul style="list-style-type: none"> ✓ National / community-based screening initiatives and expansion plans ✗ CVD risk assessment not incorporated into screening initiatives 					<ul style="list-style-type: none"> ✓ National screening programs with CVD risk assessment
	Treatment	<ul style="list-style-type: none"> ✓ Subsidies for chronic disease treatment ✓ Empower primary care 	<ul style="list-style-type: none"> ✓ Plans to ensure access to CVD drugs ✓ Empower primary care 	<ul style="list-style-type: none"> ✓ Empower primary care ✗ No specific plans to improve drug access 	<ul style="list-style-type: none"> ✓ Objectives to ensure availability and adequate access to drug therapy for NCD/ CVD ✓ Empower primary care 	<ul style="list-style-type: none"> ✓ Personalized care to manage risk factors through primary care 	
	Surveillance	<ul style="list-style-type: none"> ✓ Plans to improve health data governance 	<ul style="list-style-type: none"> ✓ Plans to develop national registries /database for NCD and risk factors 			<ul style="list-style-type: none"> ✓ Plans to build National CVD registry 	
2 DETAILED ACTION PLAN & SOLUTIONS		<ul style="list-style-type: none"> ✓ Action-oriented plans: <ul style="list-style-type: none"> • Subsidy roll-out, co-pay waiver • National primary care program 	<ul style="list-style-type: none"> ✓ Detailed action plan for each objective ✓ Defined milestones by year and roles and responsibilities 	<ul style="list-style-type: none"> ✗ Limited implementation plan and lack of clear action plan to achieve defined objectives 		<ul style="list-style-type: none"> ✓ Detailed action plan for each objective ✓ Defined milestones by year and roles and responsibilities 	

Source: Healthier SG (Singapore), 5-Year National NCD Plan 2017-2021 (Thailand), NSPNCD 2016-2025 (Malaysia), National Strategy for the Prevention and Control of NCD 2015-2025 (Vietnam), Strategic Actions for Prevention and Control of NCD 2015 (Indonesia)

As part of the efforts to achieve SDG 3.4, all five countries have established national plans to address NCD (Figure 8).







These plans share the same overall goal of addressing NCDs. However, there are notable differences in the specific targets of each plan, alluding to the unique challenges faced by each country. For example, Thailand, Indonesia and Vietnam have specific targets to provide essential NCD treatments and secondary preventive medicine for ASCVD in their plans, highlighting that access to optimal treatment remains a challenge for a subset of these countries' populations.

On the other hand, Singapore's plan stood out as it specified targets to reduce premature mortality for IHD and stroke, compared to other countries, which only had general NCD targets. These targets provide the essential focus for ASCVD, which requires an individual approach

and is in line with the national plans of other developed countries, such as South Korea,¹⁸ Japan¹⁹ and the US.²⁰ Nevertheless, there is a notable inequality in target setting, with most countries neglecting hyperlipidaemia, a major ASCVD risk factor (Figure 8).

Singapore's updated plan, the Healthier SG, can be viewed as a proactive response by the government to better cope with the evolving challenges of NCDs. The new plan builds on the 2014 plan through healthcare reforms to improve the prevention and management of NCDs, including ASCVD. This reform outlined comprehensive initiatives, which include primary care mobilisation, individualised health screening, and setting up IT and financing enablers, among others.¹³ While the impact of Singapore's new plan remains to be seen, the scale of its reforms has underscored the urgent need for decision-makers in the region to close the policy gaps in optimising treatment and ensuring continuity of care.

Figure 9: Comparison of the national NCD targets by country

NATIONAL TARGET		 SG	 TH	 MY	 VN	 ID	 KR/TW
DISEASE BURDEN	NCD mortality	●	●	●	●	●	●
	CVD mortality (LHD, Stroke)	●	●	●	●	●	●
RISK FACTOR -LIFESTYLE	Smoking	●	●	●	●	●	●
	Obesity	●	●	●	●	●	●
	Alcohol use	●	●	●	●	●	●
	Sodium intake	●	●	●	●	●	●
RISK FACTOR -CHRONIC DISEASE	Diabetes	●	●	●	●	●	●
	Hypertension	●	●	●	●	●	●
	Hyperlipidaemia	●	●	●	●	●	●
ACCESS	Access to CVD treatment	●	●	●	●	●	●

● National target present ● No national target assigned

Source: IQVIA Analysis

Although each country has made some progress, there is still room for improvement in the implementation roadmap to achieve the outlined targets. Overall, general NCDs awareness and screening interventions constitute the bulk of the focus across the five countries. Notably, there is a gap in initiatives addressing the treatment and continuity of care for ASCVD within the national plans. The unmet needs for ASCVD will be discussed further in three categories based on the stages of the patient journey.

Awareness and prevention

There are relatively comprehensive lifestyle modification plans to promote awareness of CVD risk factors in individual national plans. However, these general NCD initiatives have yet to demonstrate effectiveness in addressing CVD compared to countries like South Korea²¹ and Australia,²² where specific, CVD-focused policies exist.

For example, the awareness of CVD risk factors in Vietnam remains low, with a 2018 study revealing that more than one-third of hypertensive patients in Vietnam are unaware of their condition, despite various health awareness campaigns.²³ Similarly, less than 1 in

5 patients diagnosed with hyperlipidaemia in Malaysia were aware of their cholesterol status.²⁴ Even in Singapore, where access to medical care is considerably better, only 11% of respondents in a study of patients who had undergone health screening knew their cholesterol levels.

These findings highlight the gap in the knowledge of CVD and associated risk factors among the general population, which remains a key barrier to effective disease detection. Furthermore, the untargeted approach of general NCDs awareness programs limits their impact and sustainability.

Screening and diagnosis

Notably, there is an underwhelming effort to address hyperlipidaemia, with most countries lacking disease surveillance programs and none setting a national prevalence target (*Figure 9*). Furthermore, the lack of national targets for hyperlipidaemia may result in the public perceiving cholesterol control as less important than other risk factors.

Figure 10: Comparison of major CVD risk factors policies and plans

		DIABETES					HYPERTENSION					HYPERLIPIDAEMIA				
		SG	TH	MY	VN	ID	SG	TH	MY	VN	ID	SG	TH	MY	VN	ID
Lifestyle	Dietary/lifestyle regulations												×	×	×	×
	Annual national morbidity survey					×					×				×	×
	National disease prevalence target					×						×	×	×	×	×
Medical	Enhanced primary care plan				×	×									×	×
	National clinical practice guideline				×	×										×
	National disease surveillance							×	×				×	×	×	×

Source: IQVIA Analysis

For example, in Thailand, the diagnosis rate of hyperlipidaemia remained low (37.5%) compared with other risk factors like diabetes (69.4%) and hypertension (51.2%).²⁵ Evidence shows that universal screening programmes have effectively improved CVD risk factors diagnosis rates. For example, South Korea’s pre-set hyperlipidaemia target diagnosis rate was successfully met by 2018 owing to their national screening program that provides regular cholesterol screening.²⁶ The low diagnosis rate for hyperlipidaemia can be attributed to the lack of set prevalence and diagnosis targets and a disease screening or surveillance system.⁶

Treatment and continuity of care

The gap in CVD risk factor management remains after diagnosis, and there is disparity across different risk factors. For example, a study on patients with high CVD risk in Indonesia revealed that only 1% were on cholesterol treatment compared to 10% on high blood pressure medications.²⁷ Similarly, in Thailand, hyperlipidaemia has the lowest treatment initiation rate (31.9%) vs. diabetes (55.5%) and hypertension (47.6%).²⁵

Following up with optimal treatment after diagnosing CVD risk factors is vital to reduce the CVD burden.

The impact of overlooking hyperlipidaemia on the continuity of care is apparent. The preventive effect of CVD treatments can only be expected if patients adhere to the regimen for all their CVD risk factors. However, more than 50% of patients were reported to discontinue treatment of hyperlipidaemia with statins within 1 year.²⁷ More alarmingly, a study in Singapore reported that one-third of respondents believed that herbal medicine is healthier than Western, and around 50% believed that using statins is harmful with potential association with liver disease, kidney damage or even cancer.²⁸ Another challenge healthcare providers face in the region is that the existing statin therapy has sub-optimal efficacy in lowering LDL-C levels among high-risk groups. In addition, an extensive drug approval and reimbursement process that favours local generic drugs further complicates the accessibility of innovative drugs in Indonesia.

Living with ASCVD

Data referencing mortality rates and DALYs highlight the impact of ASCVD on the population at a macro level. However, it is easy to overlook that these statistics are contributed by individuals with their own stories, challenges, and hopes.

In this section, stories from three individuals from diverse backgrounds and countries illustrate the impact of ASCVD on their lives and what could change their trajectories.



HAFEZ, 45 years old, Male, Malaysia

Hafez has just turned 45, and every piece of his life was how it should be: He is happily married with three beautiful children and is at the peak of his career

in one of the largest trading companies in Kuala Lumpur. Yet, between working full-time and raising a young family, he never seems to have a minute for himself. Smoking provides him with some respite from his hectic daily schedule, and he enjoys meeting his friends on weekends for 'a heavy meal or two'. He knows his lifestyle is unhealthy but believes his body is still 'young enough to enjoy life.'

Over the recent years, Hafez has frequently felt tired and suffered headaches. He attributed everything to his work stress, but an episode of chest pain triggered him to visit the emergency. Unfortunately, Hafez was diagnosed with a heart attack due to his undiagnosed hypertension and type II diabetes. His doctor told him that his delayed presentation had resulted in heart failure.

Hafez is a very successful man. However, an unhealthy lifestyle had put his body under stress, and the delay in seeking medical treatment had worsened his condition. As a result, he will now be burdened with a lifetime of high treatment costs. Moreover, his productivity will inevitably be affected due to the complications from his heart failure. Fortunately, his employer has been supportive, but he often worries when his luck will run out. As the sole breadwinner, he now fears for the future of his three children.

Hafez is one of the many patients who could have averted this unfortunate outcome had a robust ASCVD preventive and screening policy been available in his country. The following initiatives could have helped Hafez if they were in place:

- A proactive outreach program that leverages Electronic Health Records would be able to identify Hafez as a high-risk candidate for ASCVD.
- A structured coaching program can help Hafez to guide and sustain his lifestyle modifications, including smoking cessation.
- A basic universal screening program would be able to detect early signs of hypertension and diabetes and recommend the necessary treatment for Hafez.
- As a high-risk candidate for ASCVD, Hafez could then be offered a yearly comprehensive ASCVD screening and managed under the primary care system.

This is an illustrative case that highlights the common ASCVD patient journey and any resemblance to a specific individual is purely coincidental.



SAMANTHA, 53 years old, Female, Singapore

Samantha was not surprised when she was diagnosed with hyperlipidemia during a routine

health check at 40. All her siblings have high cholesterol, and she has never been one to eat healthily. Her doctor prescribed statins for her hyperlipidemia, but as a busy career woman and a single mother to two daughters, Samantha finds it difficult to adhere to the medication. More importantly, she 'could not feel any positive effect of the medication' and has stopped multiple times.

She was 50 when she suffered a stroke while cooking at home. Samantha vividly remembers it was one of her rare free Sundays, and she was looking forward to spending quality time with her daughters. She was trying to cook when her right arm suddenly felt weak. Samantha



tried resting on a chair but soon found herself lying on the floor. She recalled hearing her eldest daughter calling her name and her youngest crying. Her family called for an ambulance, but much time was wasted as she was redirected multiple times before reaching the hospital 'equipped to manage her condition'.

Samantha is currently in her third year of rehabilitation, and her recovery has been slow. She kept struggling with what had happened and lamented that she felt like a burden to her family. "I used to dream of retiring and spending time with my girls. Never had I expected my retirement would be so sudden and in such a helpless condition you wouldn't wish upon anyone," says Samantha.

"I used to dream of retiring and spending time with my girls. Never had I expected my retirement would be so sudden and in such a helpless condition you wouldn't wish upon anyone," says Samantha.

Samantha did not benefit from the early diagnosis of her ASCVD risk factor due to the gaps in treatment and continuity of care in her country. The following initiatives could have helped Samantha if they were in place:

- Integrated care, such as a lipid clinic for high-risk patients, could improve Samantha's understanding of her condition and optimise her treatment adherence.
- The availability of innovative treatments that are more effective and convenient for high-risk patients like Samantha could change the outcome of her disease.
- Improved out-of-hospital response to ASCVD emergencies could give Samantha a greater chance of avoiding long-term brain damage.
- A highly-integrated, online-based cardiac registry covering the entire patient journey could better track and support Samantha with evidence-based disease management.

This is an illustrative case that highlights the common ASCVD patient journey and any resemblance to a specific individual is purely coincidental.



THAO, 35 years old, Female, Vietnam

Thao's father survived a heart attack three years ago and has since required frequent hospital visits. As the eldest daughter, it falls on Thao

to take up the role of her father's primary caregiver.

The first few years were still bearable as they only had to make a 2-hour journey to a district hospital near their village in Lâm Đồng. However, a second heart attack early this year prompted a referral to a cardiologist in the capital, which is 5-hours away. On top of the regular 3-monthly appointment, he would sometimes need to be admitted for heart failure, a complication of his heart attacks. "Every time my father is admitted, I usually sleep in the car to avoid paying for the hotel. We pay all the money for gasoline to come here, and no one asks us where we get this money from," says Thao.

"We don't earn much from our farm, and my father had to sell one of our lands recently to pay for his medical bills. My brothers chip in some money each month for our living expenses, but it is not much as they are still young," she explains. Growing up, she dreamed of leaving her village for a job in the big cities, getting married and having her own family. Now, she is helplessly stuck helping at her family's coffee farm, and her recent marriage prospect just fell through as she had no time or money for a relationship.

"I love my father. He has always been a good father to my brothers and me. However, his heart disease has changed him, and I feel tired of accommodating his condition. As the doctors rarely explain, I don't understand what's happening to him and how to take care of him. I sometimes wake up in the morning and wish all of this would end." Thao laments.

ASCVD events exact a cost that extends beyond the initial treatment and may indirectly affect the family members and society. The following initiatives could have helped Thao if they were in place:

- Enhanced primary health care could improve access to high-quality care for ASCVD survivors in rural areas, like Thao's father, and reduce the indirect cost of centralised health systems.
- A social insurance scheme could provide a safety net for Thao's family by reducing out-of-pocket medical expenses.
- A community-based rehabilitation program that supports ASCVD patients and their family members could help Thao to understand and better care for her father's condition. But, more importantly, a better understanding of ASCVD could help Thao and her brothers prevent the same disease trajectory.

This is an illustrative case that highlights the common ASCVD patient journey and any resemblance to a specific individual is purely coincidental.

"I love my father. He has always been a good father to my brothers and me. However, his heart disease has changed him, and I feel tired of accommodating his condition. As the doctors rarely explain, I don't understand what's happening to him and how to take care of him. I sometimes wake up in the morning and wish all of this would end." Thao laments.

Success stories: What can be done now?

We recognise that a great deal of work has already been carried out, and each country has unique challenges in addressing CVD. In this section, we will recap the shared challenges and unmet needs in the region at each stage of the ASCVD treatment journey and present a series of public health interventions that have positively contributed to addressing CVD.

The case studies provided in this White Paper are meant to illustrate the wide spectrum of CVD initiatives worldwide to inform on existing efforts and are not intended to be an exhaustive list.

Improving awareness and prevention

Shared challenges and key unmet needs:

- Lack of awareness of primary and secondary prevention of CVD and its risk factors among the general population
- Untargeted approach of general NCDs awareness programs limiting their impact and sustainability

Success Story 1: CHAP, Canada



SUMMARY

CHAP is a low-cost, patient-centred, family physician-led CVD awareness program targeted at older adults at risk of CVD events²⁹



MECHANISM

- Active referral of patients (over 65) to awareness sessions by community-based family physicians
- Free CVD risk education sessions in community pharmacies
- Sessions include CVD risk assessment and trends to inform them about their risk profiles
- Educates patients on the importance of reducing lifestyle CVD risk factors and provides access to community resources



OUTCOMES

- Improvement in average blood pressure for high-risk groups over the 18 months of the program
- 9% relative reduction in hospital admissions for ischemic heart disease and heart failure post-exposure to CHAP



KEY TAKEAWAY

- A similar program could be implemented to spread the importance of risk factor management among the high-risk group with lower health literacy



Increasing screening and early diagnosis

Shared challenges and key unmet needs:

- The disparity in screening CVD risk factors, particularly hyperlipidaemia, contributes to the low diagnosis rate
- Lack of disease surveillance programs and no national prevalence target set for hyperlipidaemia

Success Story 2: Millions Hearts, US³⁰



SUMMARY

A CVD intervention program launched in 2012 prioritises early CVD risk factor detection to prevent CVD events and consists of a network of more than 300 private partners, 50 states and 20 federal agencies



MECHANISM

- Leverage Electronic Health Records to screen and identify high-risk groups
- Conduct proactive outreach to patients with undiagnosed high blood pressure or cholesterol
- Focus on early detection and minimisation of CVD risks
- Train patients and their families in home monitoring



OUTCOMES

- 27,000 cases of undiagnosed hypertension picked up in this program
- ~135,000 heart attacks, strokes and related acute CVD events prevented
- ~USD 5.6 Bn indirect medical costs saved through early CVD prevention



KEY TAKEAWAY

- A proactive outreach program that leverages Electronic Health Records can be an efficient method to offer targeted health screening



Success Story 3: National Screening Program, South Korea³¹



SUMMARY

The National Health Screening Program (NHSP) in South Korea is the world's largest health screening program. NHSP began in the 1950s with workers and gradually expanded its target population to now include all citizens aged 20 and above



MECHANISM

- Provide screening for CVD and its risk factors, including diabetes, hypertension, and hyperlipidemia, every 2 years
- The National Health Insurance Service reimburses the cost of screening
- Includes confirmatory tests and subsequent care where copayment for medical visits and tests is waived.



OUTCOMES

- Around 70% of the target population participated in the program
- Treatment rates for hypertension and diabetes increased from 60.7% to 65.4% and 63.9% to 66.2%, respectively
- Mortality from IHD and stroke disease decreased from 27.1 to 26.7, and 50.7 to 42.7, respectively, per 100,000 person-years



KEY TAKEAWAY

- A universal health screening program can be achieved by gradually building upon a targeted health screening program.
- Countries should expand their health systems' technical, operational and financial capacities in line with their economic growth





Optimising treatment and ensuring continuity of care

Shared challenges and key unmet needs:

- Gaps in referral and follow-up resulting in low adherence to secondary prevention of ASCVD risk factors
- Lack of integrated care for ASCVD at the primary care level that provides holistic management
- Limited access to innovative and more effective treatments for risk factor management
- Lack of an integrated cardiac registry to track cases and support evidence-based disease management

Success Story 4: Quality of Outcome Framework, UK³²



SUMMARY

Comprehensive national primary care pay-for-performance and intervention scheme introduced in 2004 that incentivises primary care GPs to deliver interventions and achieve patient outcomes



MECHANISM

- Clinical indicators cover over 20 chronic conditions, including primary and secondary prevention of CVD
- Points are awarded financial incentives to each practice based on their target achievements



OUTCOMES

- Largest primary care empowerment program with targeted indicators for primary and secondary prevention
- Highly effective in CVD prevention with an estimated saving of 11 lives per 100,000 per year



KEY TAKEAWAY

- Enhanced primary health care with integrated care for ASCVD would optimise treatment and continuity of care.
- Consider adopting targeted indicators within primary care programs to incentivise better outcomes



Success Story 5: Innovative drug fund, Italy³³



SUMMARY

Italian Medicines Agency (AIFA) allocates 1 billion euros every year to improve access to innovative drugs for both oncology and non-oncology drugs



MECHANISM

- Innovativeness status is given to drugs that address unmet therapeutic needs, add therapeutic value, and are backed by high-quality evidence
- “Innovative” status is retained for 36 months, during which drugs are given immediate entry into regional formularies



OUTCOMES

- Allows faster access and improved funding of innovative drugs addressing large unmet need
- Not limited to oncology and rare disease drugs, chronic diseases are also covered



KEY TAKEAWAY

- Similar funding concepts and criteria can be adopted to improve access to innovative drugs for chronic conditions



Success Story 6: SWEDEHEART, Sweden³⁴



SUMMARY

A highly-integrated cardiac registry that covers all hospitals managing patients with acute coronary syndrome or undergoing coronary angiography or heart surgery



MECHANISM

- Patient information collected includes risk factors, medication pre-admission, interventions, and discharge diagnoses
- Integrated with other national registries for population, hospital admissions, diagnosis, and deaths
- Personal identification number used for patient tracking, allowing long-term follow-up and recurrence monitoring



OUTCOMES

- Reports outcomes of every patient hospitalised
- Provides continuous information on care needs and treatment outcomes to support research and therapy improvements



KEY TAKEAWAY

- A similar registry can be implemented to track recurring cases and support evidence-based disease management

Call to action: What is next?

Governments and policymakers should take urgent action to address the significant clinical and economic burden of ASCVD in Singapore, Thailand, Malaysia, Vietnam and Indonesia. There are considerable gaps in the current efforts to address CVD, and if no immediate steps are taken to address these challenges, there is a risk of a future public health crisis in the region.

While there are varying capacities for each country to take action against CVD, what is certain is that a battle plan against the CVD crisis needs to be outlined now, and they need to be implemented with the utmost urgency. The scope of the actions should be tailored to the needs and capabilities of each country. To ensure Countries with adequate financial and operational capacities can employ comprehensive solutions with multiple interventions at each stage of the disease journey. On the other hand, targeted solutions should be prioritised as the first step for countries with resource limitations.

Imperatives to addressing current ASCVD challenges in Southeast Asia may include:

- **Establishing national CVD policy with ASCVD-specific targets supported by action-oriented implementation strategies**
Given its contribution to the region's NCD burden, individualised attention to CVD is paramount. A focused approach can be accomplished by developing a national CVD plan, which outlines ASCVD-specific targets (for IHD and stroke) and is supported by a clear implementation roadmap to achieve the outcomes.
- **Equitable attention towards all major ASCVD risk factors, including hyperlipidemia**
Across the national plans, there is a notable lack of attention to hyperlipidaemia, one of the major risk factors. Plans should equally address all ASCVD risk factors to ensure a positive impact on the ASCVD burden.

- **Targeted ASCVD management based on patient risk profiles**
Targeted management based on ASCVD risk profiles would ensure that the optimal treatment reaches the population at the highest risk. For example, patients identified as high-risk in a routine screening program would gain access to the best available treatments, including optimal drugs, to effectively reduce the risk of ASCVD progression and mortality and lower the long-term cost of caring for these patients.
- **Improved evidence-based care through health data analytics**
Meaningful policy discussions and decision-making can only be achieved with robust local data on epidemiology and real-world health outcomes. Continued focus on developing an integrated data registry on ASCVD is vital to monitor outcomes and assess the effectiveness of interventions.

Government leaders and decision-makers should explore public-private partnerships to co-create innovative solutions that can positively impact ASCVD. For example, industry and academia stakeholders could empower patient health ownership to raise ASCVD awareness and support healthcare providers through knowledge transfer to improve diagnosis and treatment. Furthermore, partnerships could also involve co-creating funding mechanisms to improve access to optimal treatment and leveraging health analytics to support evidence-based ASCVD care in the region.

Nevertheless, any potential partnerships must be guided by strong leadership, supported by a clear partnership framework and operate at scale to create impactful and sustainable outcomes to address the impending ASCVD crisis.

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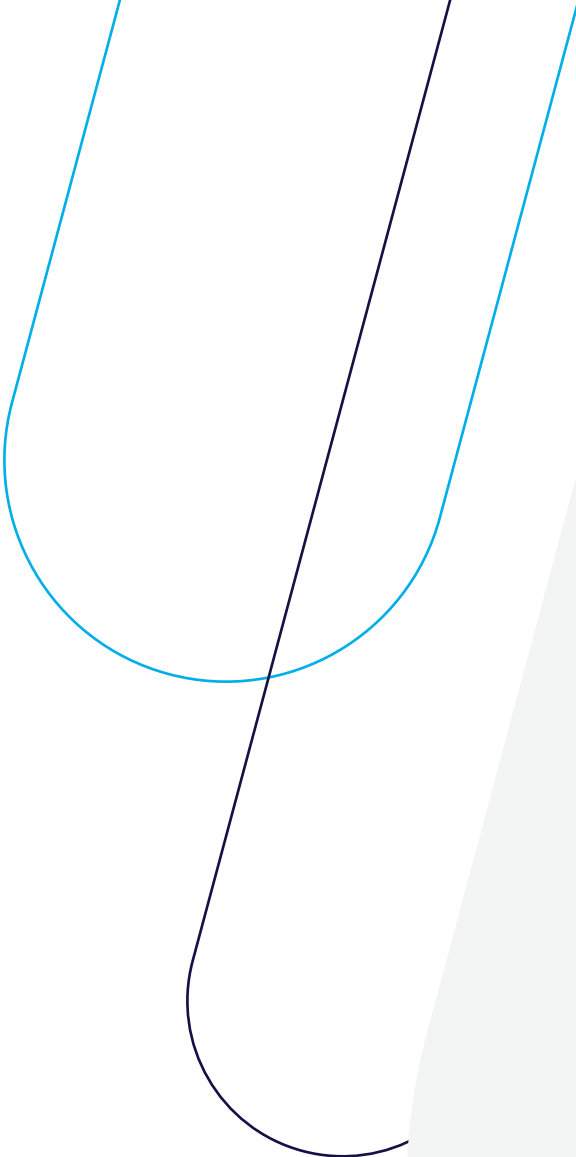
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