White Paper

Shaping the Cardiovascular Disease Access Policy Landscape

Thailand

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Table of contents

Introduction

In Thailand, cardiovascular disease (CVD) has been the leading cause of mortality and disability over the past 10 years, with atherosclerotic CVD (ASCVD), including stroke and ischaemic heart disease (IHD), contributing most to the CVD burden.[1] Along with this large disease burden, Thailand's public healthcare expenditure, which stood at US$19 billion in 2019, allocated the highest budget to CVD prevention and treatment.[2] While healthcare spending per capita in Thailand was higher than those of its Southeast Asia (SEA) counterparts (276 in Thailand vs 152 in Vietnam and 112 in Indonesia in 2018), it was still considerably lower than that of advanced Asia Pacific (APAC) economies such as Japan and South Korea.[3] Similarly, spending per disability-adjusted life-years (DALYs) lost to CVD in 2019 was highest in Thailand (US$109) compared to other SEA countries; yet, it is still not on par with other advanced economies (US$491 in Australia, Japan, South Korea and Taiwan).[4] CVD-related expenditure in Thailand may also face threats from growths in oncology spending in the near future, mirroring a similar trend in advanced Asian economies.[3]

Although policymakers in Thailand have reacted to the growing disease burden by implementing many initiatives to reduce the risk of CVD,[5] gaps still exist in government policies and plans for managing CVD risk factors. This is particularly important for hyperlipidaemia, which has shown one of the fastest increases in prevalence of all major risk factors in recent years.[6]

Unless immediate action is taken, the burden of CVD is only expected to increase, with Thailand being one of the fastest ageing societies in the SEA region.[7] This white paper will explore the unmet needs associated with the growing burden of CVD in Thailand and potential strategies to address these challenges, such as CVD-specific programmes, improved treatment management and access to innovative, long-acting drugs.

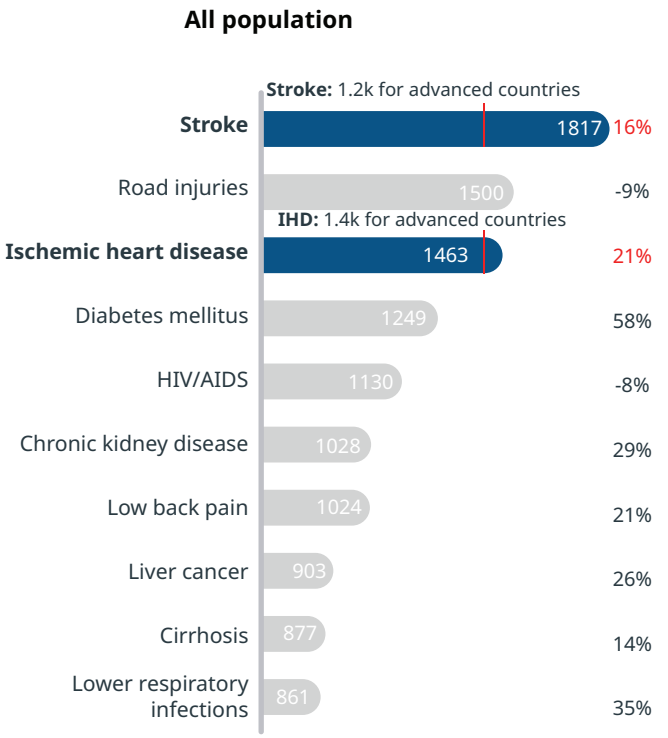
The government will need to act with urgency, as the clinical and economic burden of CVD will soon reach alarmingly high rates in Thailand.

What is the current state of disease?

CVD is a group of diseases that includes coronary heart disease such as IHD, and cerebrovascular disease such as stroke. Thailand has seen a growing population of patients with CVD over the past 10 years, driven by ASCVD which constitutes 62% of CVD cases.[1] With a CVD prevalence of 8.4%, Thailand has a larger CVD patient pool than its SEA counterparts (prevalence of 7.3% in Singapore and 6.5% in Malaysia).[1]

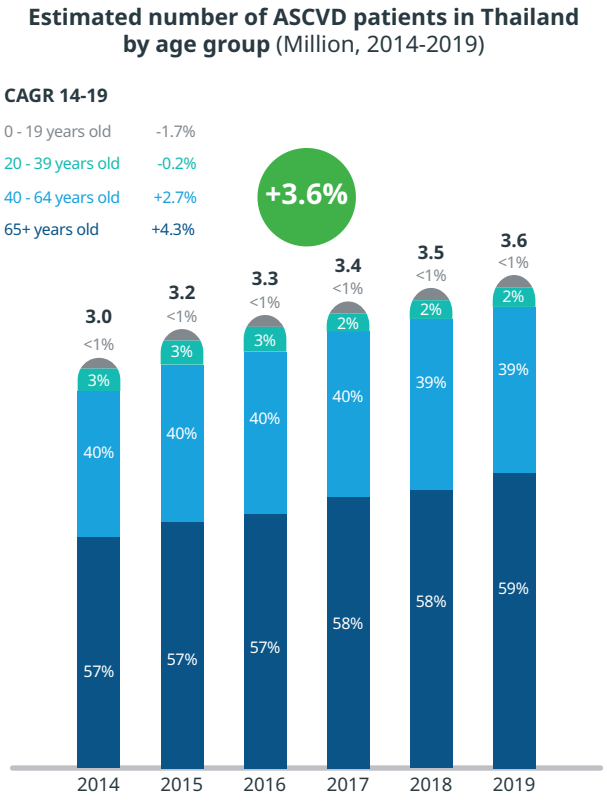
Stroke and IHD have remained the leading causes of mortality and disability over the last 10 years. In 2019, ischemic stroke and IHD accounted for 1,463 and 1,817 DALYs per 100,000 individuals, respectively (*Figure 1*).[1] The considerable burden of CVD also comes with a high price: it is estimated that hospitalizations for CVD (IHD, stroke and others) cost Thai patients US$215 million annually.[8]

Figure 1. CVD is associated with significant mortality and disability in Thailand



HIV/AIDS, human immunodeficiency virus/acquired immunodeficiency syndrome.
Source: Institute for Health Metrics and Evaluation – Thailand. Available from: http://www.healthdata.org/thailand

Figure 2. The ASCVD burden is highest in the elderly population in Thailand



CAGR, compound annual growth rate.
Source: Institute for Health Metrics and Evaluation – Thailand. Available from: http://www.healthdata.org/thailand

What stands out is that the majority of ASCVD patients in Thailand are >65 years of age (*Figure 2*), with 3 out of 5 patients belonging to this age group.[1] ASCVD is also the leading cause of DALYs in the Thai elderly population. In 2019, stroke and IHD were the top two leading causes of death and disability in the >65 years age group, accounting for 11,040 and 10,179 DALYs per 100,000 individuals, respectively, which are higher than in some advanced APAC economies such as South Korea and Taiwan.[1] Thailand has one of the fastest ageing societies in the region[7] and by 2040, it is projected that 17 million Thai people – more than a quarter of the population – will be aged 65 years and older.[9] Driven by this demographic change, the proportion of elderly ASCVD patients and the subsequent disease burden will thus increase dramatically.

The data highlights the significant disease burden that ASCVD poses in Thailand, which is fuelled by an ageing population. Immediate and more comprehensive action from the government is needed to better understand the challenges associated with ASCVD, and to generate targeted solutions to tackle the growing disease burden.

ASCVD is the leading health threat in Thailand and is associated with high DALYs in the elderly population. With Thailand being the fastest ageing society in APAC, this disease burden will only increase unless immediate action is taken.

What are the key unmet needs?

The Thai government has set a target to reduce the risk of premature deaths from four major non-communicable diseases (NCDs) – CVD, cancer, diabetes and chronic respiratory disease – by 25% by 2025.1 However, the risk of premature deaths due to CVD still continues to rise.[1] Most CVD is the result of many modifiable risk factors, such as hyperlipidaemia, hypertension and diabetes mellitus.[10] Seeing that these risk factors are the primary driver for the first cardiovascular (CV) event, risk factor modification should be a significant consideration for the reduction of CV deaths.[10]

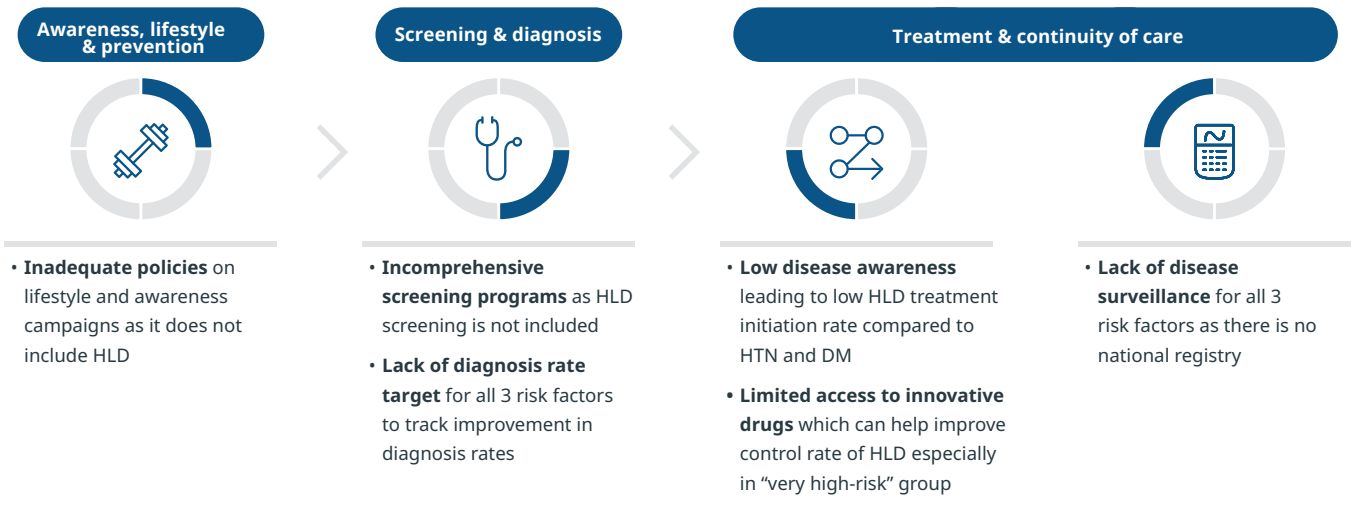
There is room for improvement in managing CVD risk factors across the patient journey in Thailand, and this is particularly important for hyperlipidaemia, which has shown an increase in prevalence from 16.4% to 23.5% in recent years.[6] Thailand's Ministry of Public Health has set a 20-year National Strategic Plan for Public Health (2017–2036) and a 5-year National NCDs Prevention and Control Plan (2017–2021), which focus on creating participation from various sectors, enhancing cooperation and optimizing productivity to reduce the avoidable burden of NCDs.[11] Despite CVD being mentioned in the 5x4x5 model, these plans are still mainly focused on hypertension and diabetes management at the implementation stage.[5]

The key unmet needs discussed here can be grouped into three categories: awareness, lifestyle and prevention; screening and diagnosis; and treatment and continuity of care (*Figure 3*).

AWARENESS, LIFESTYLE AND PREVENTION Secondary prevention of CVD aims at preventing a second CV event in someone who has a heart attack or stroke by adherence to medicines, smoking cessation, exercise, lifestyle modification, while primary prevention refers to steps taken to keep an individual with CV risk factors, such as hypercholesterolaemia, from having a first CV event. Primary prevention focuses on controlling CV risk factors through lifestyle management and, if needed, taking medications.[12]

There are a multitude of policies set up in Thailand for the prevention and control of CV risk factors, including imposing excise tax on sugar-sweetened beverages, alcohol and cigarettes, and improving disease awareness and lifestyle modification initiatives, in order to reduce alcohol, salt and sugar intake.[5] More recently, Thai authorities have enforced a ban on artificial trans-fat, a substance that has been implicated in stroke and IHD, becoming the first country in the SEA region to do so. This ban prohibits the production, import and sale of partially hydrogenated oils, as well as any food that contains them.[13] Despite these endeavours, there remains a stark lack of focus on hyperlipidaemia in these national health campaigns, in which there are limited dedicated public awareness initiatives and lifestyle modification plans for hyperlipidaemia control.

Figure 3. Summary of key unmet needs in Thailand



HLD, hyperlipidaemia. HTN, hypertension. DM, diabetes

SCREENING AND DIAGNOSIS

The relatively comprehensive lifestyle modification initiatives and programmes to promote healthy living and awareness of CV risk factors in Thailand has led to improvements in the diagnosis rates of modifiable CV risk factors (hypertension and hyperlipidaemia) in 2014 compared with 2004.[6] Despite this, the diagnosis rate of hyperlipidaemia remains low (37.5%) compared to other countries in the region (Figure 4),14-16 and compared with other risk factors like diabetes (69.4%) and hypertension (51.2%). 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] Furthermore, the paucity of targeted programmes for hyperlipidaemia may result in the public perceiving cholesterol or low-density lipoprotein cholesterol (LDL-C) control as less important than controlling blood pressure (BP) or blood glucose levels.

"The main unmet need within the CVD space is in diagnosis, as disease awareness in the general public is low."

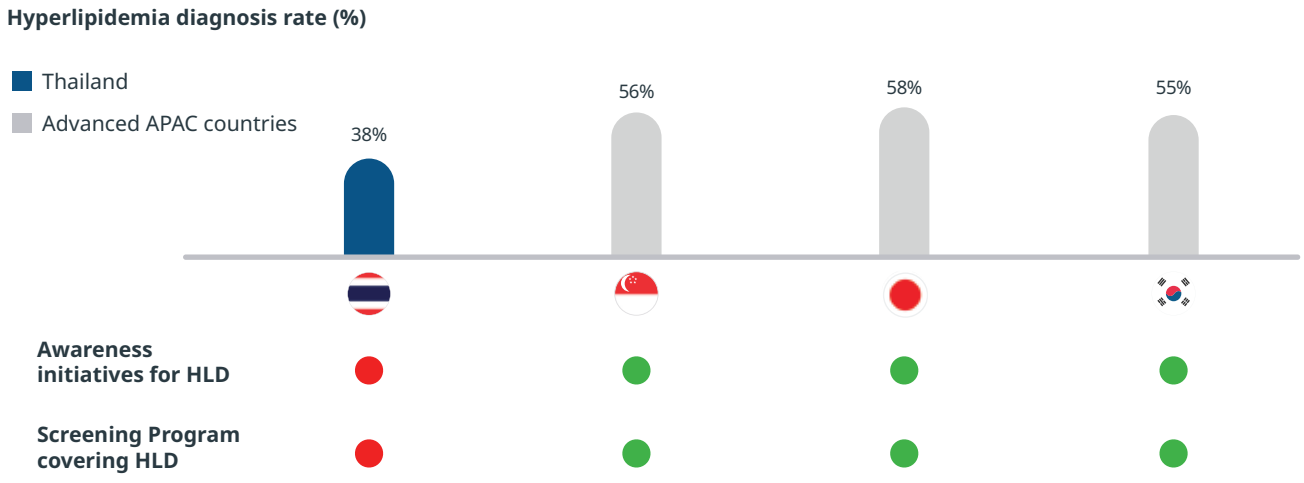
– Industry expert in pharmaceutical company in Thailand

TREATMENT AND CONTINUITY OF CARE

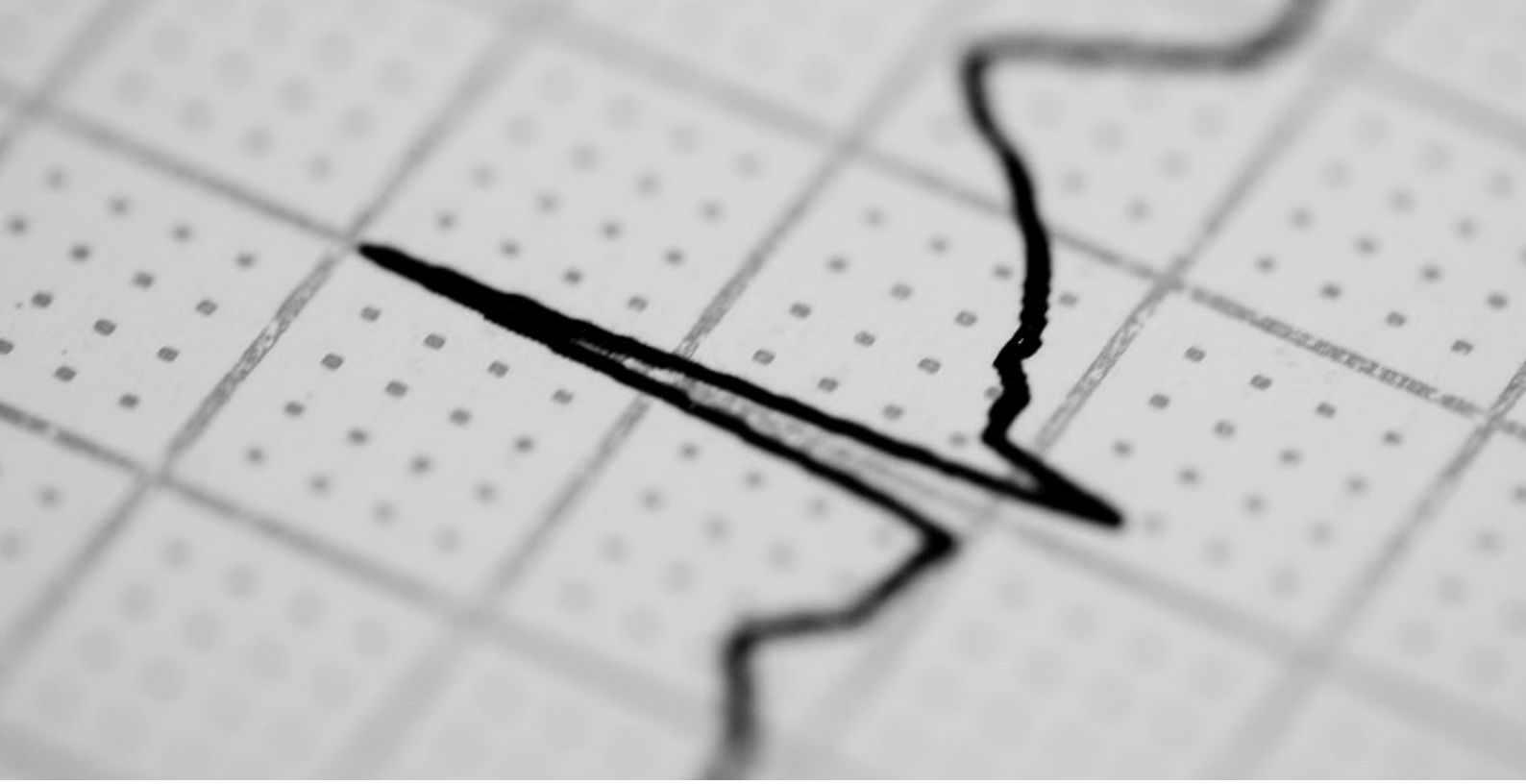
The disparity between CV risk factors remains after diagnosis. According to the 6th National Health Examination Survey (NHES), hyperlipidaemia has the lowest treatment initiation rate (31.9%) vs diabetes (55.5%) and hypertension (47.6%).[6] Treatment initiation rates are similar across three national health insurance schemes in Thailand: Civil Servant Medical Benefit Scheme (CSMBS), Universal Coverage Scheme (UCS) and the Society Security Scheme (SSS).[6] According to data from 25 centres in Thailand, even though most patients with established ASCVD or multiple ASCVD risk factors received recommended treatments according to established guidelines, the rate of undertreatment of ASCVD risk factors remains high, at 35.8%, 45.3% and 59.0% for hypertension, diabetes mellitus and hyperlipidaemia, respectively.[17]

Several potential factors may contribute to sub-optimal CV risk factor control in Thailand. The failure to recognize hyperlipidaemia as a severe disease has led to a high diagnostic threshold and healthcare professional (HCP) inertia to prescribe treatment or adjust treatment plans. Lack of awareness of the severity of high lipid levels, low perceived benefits of treatment, particularly among patients without established CV symptoms, fear of medication adverse effects, low treatment adherence, and lack of knowledge about the results of undertreatment may also contribute to sub-optimal CV risk factor control.[17]

Figure 4. High diagnosis rate of CVD risk factors in countries with hyperlipidaemia-focused awareness and screening programmes



CVD, cardiovascular disease. HLD, hyperlipidaemia. APAC, asia pacific.
Source: Man REK et al. Popul Health Metrics 2019;17, Opoku S et al. Sci Rep 2021;11:10056, Korea National Health Survey.



"Patients generally are reluctant to start treatment as they view hyperlipidaemia as less of a risk than diabetes and hypertension, possibly due to a lack of awareness. Also, hyperlipidaemia is more difficult to track than diabetes and hypertension."

– Key opinion leader at leading hospital in Thailand

Although Thailand has had universal health coverage for almost 20 years, a recent national survey showed that only 26.5% of patients with hyperlipidaemia (total cholesterol ≥240 mg/dL) achieved lipid goals.[6,18] Low control rates for hyperlipidaemia in high-risk patients may be attributed to hesitancy among HCPs to revise or increase dosage to lower LDL-C levels, and poor treatment compliance as well as patient reluctance to start treatment. Physicians' discretion to use low-potency medications as first-line treatment, as well as adherence to older guidelines are some of the factors.[17]

"Although cardiologists and endocrinologists were reluctant to use high-intensity statins in the past, there is now growing acceptance and use of high-intensity statins to achieve LDL-C goals. However, the rate of hyperlipidaemia control in the high-risk group is still relatively low in Thailand."

– Key opinion leader at leading hospital in Thailand

Another major factor contributing to poor LDL-C control is restricted access to novel, innovative treatments for the high-risk CV population. The Royal College of Physicians of Thailand Dyslipidaemia Guideline, which was published in 2016, is outdated. The guideline does not include innovative drugs to manage LDL-C levels in patients with clinical ASCVD, which is a new staple option in international guideline recommendations.[19,20] This gap in recommendations may explain the low rates of LDL-C goal attainment in high-risk CV patients as HCPs are less inclined

to explore treatments beyond the National List of Essential Medicines (NLEM), which primarily includes statins.

"If patients are unable to control their lipid levels with statins, HCPs do not have alternatives outside of the NLEM to prescribe innovative medicines, as they are not reimbursed for most patients."

– Industry expert in pharmaceutical company in Thailand

Furthermore, the strict reimbursement criteria for innovative drugs hinders their uptake in the Thai market. These drugs can only be reimbursed under CSMBS, which covers only 5–10% of the Thai population. This compels most patients to pay out-of-pocket for optimal and effective hyperlipidaemia treatment, resulting in high financial burden for patients.[21] Compounding this issue is the fact that pharmaceutical spending in Thailand, while relatively higher than in SEA counterparts, is currently more focused on conditions such as diabetes and hypertension than on hyperlipidaemia.[21] It is thus imperative that spending for hyperlipidaemia be reconciled to better reflect the disease burden, as well as to improve treatment efficacy for high-risk CV patients.

Where continuity of care is concerned, high-risk CV patients with hyperlipidaemia, particularly those living in urban areas, have relatively good treatment adherence and persistence rates (70–80%). However, the absence of a national registry for the major ASCVD risk factors means that a surveillance system for follow-up care is lacking in Thailand.[22] This highlights the need to raise disease awareness, especially among those living in rural areas, and to emphasize the importance of follow-up visits for risk factor management and the use of long-acting drugs to improve outcomes.

"Treatment adherence and persistence rates are fairly similar across the three major risk factors, but higher for very-high-risk patients with hyperlipidaemia as they are more aware of the importance of managing their disease. However, the rates may be lower outside of Bangkok due to patient literacy issues."

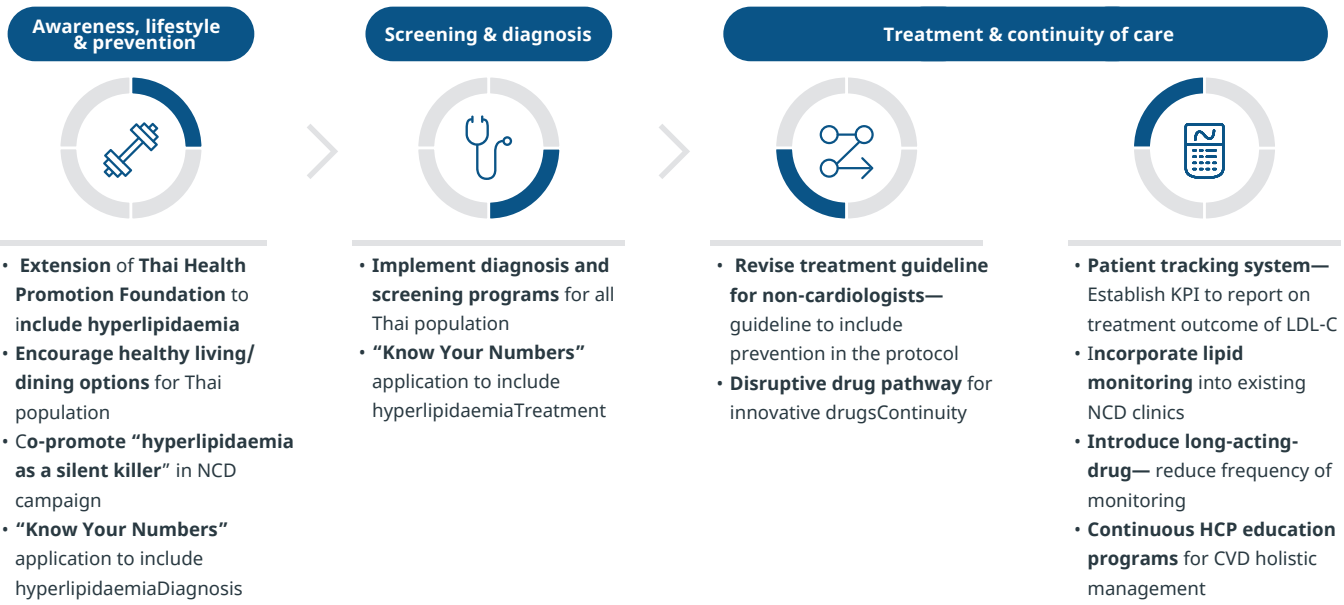
– Cardiologist at leading hospital in Thailand

What has been done so far?

Besides some of the initiatives that have been mentioned earlier, the Thai authorities have taken multiple steps to improve the rates of early CVD diagnosis and to increase the proportion of patients achieving CV health goals. In 2020 and 2021, the Department of Disease Control, Ministry of Public Health launched the 'Know your numbers, know your risks' educational tool to promote self-learning of one's own risks of diabetes, stroke and IHD using the Thai CV Risk Score. This programme also provides reference values for body mass index, waist circumference, BP, glycaemic and lipid goals. The Royal College of Physicians of Thailand has also developed
a 'Healthy Workplace Policy' to implement workplace health and wellbeing initiatives that encompass physical activity and nutrition.

This year, the government has launched several new approaches for CVD monitoring and evaluation, which includes the 'ThaiSook' app that tracks patients' CV health indicators and assigns patients to coaches for lifestyle counselling; a train-the-trainer programme for workplace health leaders; as well as a weight management initiative planned for country-wide implementation in 2023.

Figure 5. Summary of potential solutions and CVD plan recommendations



KPI, key performance indicator. HLD, hyperlipidaemia. HTN, hypertension. DM, diabetes mellitus.

What are the other potential solutions?

Despite efforts by the Thai authorities in reducing the burden of ASCVD, there remains an urgent need for more comprehensive strategies to tackle ASCVD challenges and unmet needs along the patient journey, particularly for hyperlipidaemia. The solutions discussed below could further enhance disease management and continuity of care, ultimately improving outcomes for

AWARENESS, LIFESTYLE AND PREVENTION

To increase urgency, public interest and awareness of hyperlipidaemia, the government can consider targeted awareness programmes to incentivize patients to modify their lifestyle early (*case study 1*), with the goal of preventing or delaying the onset of CVD and improving disease management in the long-term. The government can also look into public–private partnerships in other countries (*case study 2*) and consider the adaptation of similar initiatives, contextualized to Thailand's CVD landscape.

Case study 1: Healthy Community of Nation Builders in Malaysia (KOSPEN)[23]

KOSPEN is an NCD-intervention programme by the Malaysian government to empower Malaysians to adopt and practice a healthy lifestyle to reduce NCD prevalence. The initiative focuses on hypertension, diabetes and weight management, as well as screening and referral for early disease detection. Activities within the programme encourage a healthy diet (through reduction of salt and sugar intake), active living and smoking cessation, with health education and screening for BP, blood glucose and body mass index incorporated.

To date, more than 6,000 localities have been set up with 40,000 trained volunteers recruited. In a recent evaluation of the programme, 66% of the population was aware of KOSPEN, and 750,000 high-risk adults have been screened and referred for further diagnosis.

SCREENING AND DIAGNOSIS

Missed opportunities for lipid screening within Thailand's current NCD policy need to be recognized and addressed. The government can consider implementing a community screening programme, similar to the one implemented for hypertension (*case study 3*). Moreover, the government also needs to consider expansion of screening programmes to include hyperlipidaemia for high-risk groups (*case study 4*) and the younger working population (*case study 5*), which will improve CVD diagnosis rates going forward. Policy-led solutions that support the early screening of risk factors with specified CVD diagnosis targets (*case study 6*) are equally essential.

Case study 2: The Singapore Healthier Dining Programme[24]

The Healthier Dining Programme is an initiative by the Health Promotion Board to encourage healthier food and beverage intake in Singapore, by collaborating with private sector food and beverage (F&B) companies to provide healthier meals for customers. To facilitate this, the Singapore government offers grants of up to SG $3,000 (~US$2,195) for the marketing and publicity costs as an incentive for F&B outlets to join the programme, while F&B outlets have to offer at least 1 healthier food and beverage option to qualify for the programme.

The programme's initial target was to increase the number of healthier eat-out meals consumed to 180 million annually, and to 20% of all eat-out meals by 2020. Between 2014 and 2017, there was a 300% increase in healthier meals sold via the programme, and more than 2,000 partners have joined the programme since its inception.

Case study 3: Annual community-based screening for hypertension[25]

Every year in Thailand, a nationwide community-based hypertension screening is organized for all adults aged ≥35 years in the subdistrict or village population who are not already diagnosed with hypertension. The scope of the programme, besides screening for hypertension, includes health education and healthy lifestyle promotion, referral for disease diagnosis for high-risk individuals, and follow-up activities.

As a result, in 2019, a total 17 million adults were reported to have been screened for hypertension, representing 88% of the eligible target population. 74% were found to be normotensive (BP <130/80 mmHg), 22% to be pre-hypertensive, and 4% hypertensive. All those with a BP of ≥130/80 mmHg were referred for further monitoring and confirmation of the diagnosis at a health centre or district hospital.

Case study 4: Million Hearts in the US[26]

Million Hearts is a screening programme in the US with specific approaches and targets for community CVD screening, to prioritize early risk factor detection and prevent CVD events, particularly among high-risk groups (e.g. smokers, adults with a family history of CVD events, hypertension and hyperlipidaemia, etc). It leverages electronic health records to screen and identify high-risk patients and conducts proactive outreach to patients with undiagnosed high BP or hyperlipidaemia. The programme taps into a national network of more than 300 private partners and 20 federal agencies across 50 states to implement the different screening activities. The programme also provides support and training for patients and their family members for home monitoring of their BP and cholesterol levels.

Since its launch in 2012, 27,000 cases of undiagnosed hypertension have been picked up by this programme, and approximately 135,000 heart attacks, strokes and related acute CVD events have been prevented, saving an estimated US$5.6 billion in indirect medical costs through early CVD prevention and risk factor detection.

Case study 5: South Korea's national screening programme for hyperlipidaemia, diabetes and hypertension[27]

South Korea has developed a free national screening programme for chronic diseases for all South Koreans aged ≥20 years. This screening programme covers hyperlipidaemia (every 4 years), hypertension (every 2 years) and diabetes (every 2 years). The initial programme was only available to those subscribed to the country's National Health Insurance scheme – meaning 3% of South Koreans covered under the Medical Aid (Medicaid) programme were not eligible. In 2007, the initial target population was expanded and increased access to the programme was granted via the National Screening Program for Transitional Ages. Since then, 66% of the target population has joined the screening programme. High-risk diabetes patients have also reported improved adherence and compliance to their diabetes medications as a result of being enrolled in the programme.

Case study 6: UK's CVD prevention policy[28]

The UK's National Health Service (NHS) Long-Term Plan (2019–2028) recognizes CVD as a clinical priority and aims to prevent CV events throughout the whole patient journey. The goal of this plan is for the NHS to work together with Public Health England and local health authorities to prevent over 150,000 heart attacks and strokes over the next 10 years. To achieve this, the effectiveness of NHS health checks will be improved through targeted interventions that optimizes care, maximizes diagnosis and treatment, and minimizes the impact of both individual and population-level risk factors with timely follow-up and referral processes.

Activities within the policy framework include improving risk factor awareness, early detection and community support for CVD prevention, increasing access to health checks and testing (particularly for familial hypercholesterolaemia), identifying patients whose treatment and CVD risk management could be improved via primary care touchpoints, and improving cardiac rehabilitation.

Case study 7: Multidisciplinary lipid clinic in the US[29]

The purpose of the multidisciplinary lipid clinic (MDLC) is to facilitate the translation of evidence-based guidelines to the management of high-risk lipid conditions. Established in 2019, the MDLC provides care via a centralized clinic location within the healthcare system. Patients referred are currently unable to meet cholesterol and triglyceride treatment goals in primary care or cardiology clinics. The MDLC is staffed with a cardiologist specialized in lipidology, while the genetic counsellor and pharmacist both have specialized training in managing lipid conditions. This clinic meets bimonthly at one clinic location within the healthcare system.

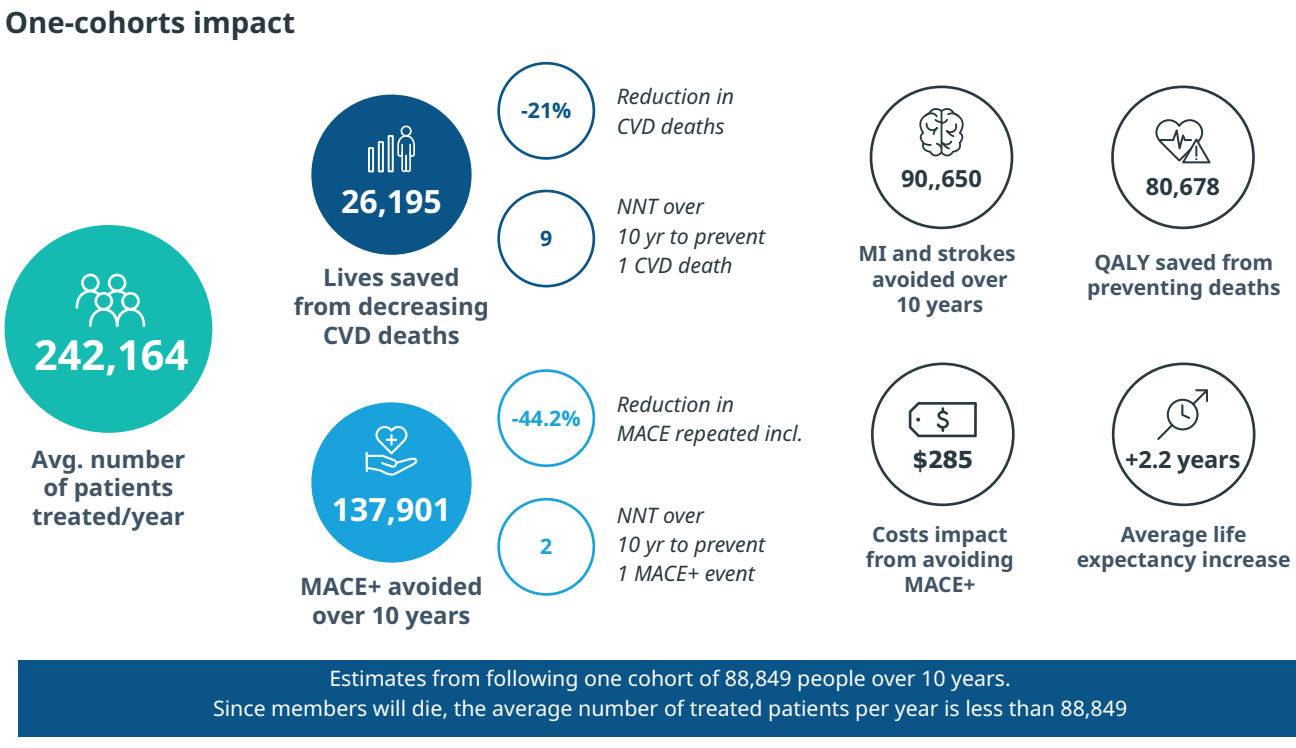
To date, 420 referrals have been made to the MDLC each year, with 83 patients receiving lipid management in the MDLC. This initiative not only improved diagnosis rates/accuracy and improved treatment adherence, but also improved treatment efficacy: LDL-C control rates improved from 15% in 2019 to 70% in 2020.

TREATMENT AND CONTINUITY OF CARE

To improve treatment initiation rates, the government can explore targeted hyperlipidaemia management programmes to diagnose and better manage high-risk patients with poorly controlled hyperlipidaemia (*case study 7*).

Innovative, long-acting drugs with improved efficacy are essential to achieve better treatment adherence and outcomes for CVD in Thailand. Based on a cost-impact model by Novartis, the introduction of innovative drugs to control LDL-C levels in high-risk patients, or in patients where combination therapy is not effective, can result in cost savings amounting to US $285 million, and save approximately 80,678 quality-adjusted life-years (QALYs) over 10 years (*Figure 6*).[30]

Figure 6. Impact model output (calculated over a 10-year period)



MACE, major adverse cardiovascular event; MI, myocardial infarction; NNT, number needed to treat. QALY, quality - adjusted life year
Source: Novartis Internal Impact Model

Case study 8: Introduction of a long-acting drug with fewer side effects[33]

A long-acting drug for the treatment of CVD risk factors such as hyperlipidaemia could potentially reduce treatment follow-up and monitoring frequency and may improve adherence.

Insulin degludec is an ultra-long-acting insulin analogue for diabetes, which has been available in Thailand since October 2016. Studies suggested that the effectiveness of insulin degludec was consistent with the results seen in clinical trials, with reduced risk of patients-reported hypoglycaemia and significant improvements in glycaemic control. Patients also reported improved treatment satisfaction.

Even though the rates of treatment adherence and persistence are high among patients with established ASCVD in Thailand, there is room to increase disease awareness, especially among those living in rural areas. The government can also consider implementing community-, policy- and/or drug-based solutions to improve the continuity of care. The COACH Program in Australia[31] and the UK NHS' Long-Term Plan for CVD[32] are examples of long-term CVD intervention programmes aimed at optimizing outcomes through the care continuum: maximizing diagnosis, treatment and follow-ups.

Treatment adherence and persistence rates can be improved with the use of long-acting drugs. One caveat is that responses to these long-acting lipid-lowering drugs may be varied in different ethnic groups in Thailand. The use of insulin degludec (*case study 8*) is an example of the effectiveness of a long-acting, injectable therapy in improving patient outcomes.[33]

Call to action: what can be done now?

CVD poses a significant clinical and economic burden in Thailand. With a rapidly ageing population, this burden will only continue to increase steeply as long as gaps still exist in current CVD policies. The government and stakeholders in CV health will need to act immediately and share the sense of urgency for change.

The worrisome trends in CVD burden in Thailand represents an urgent need for collaborative and proactive efforts between the government, policymakers, and other stakeholders. Underpinning all of these efforts will be the development of local treatment guidelines, establishment of a national database to identify and monitor patients, implementation of lifestyle initiatives and hyperlipidaemia-specific screening programmes, more efficient care processes, and expedited access pathways for innovative medicines. These solutions to overcome the unmet needs associated with CVD and ASCVD must be comprehensive, targeted and inclusive of the general public as well as high-risk groups. Steps taken now could drastically reduce the burden of CVD and its associated mortality in the years to come.

Thailand's government and policymakers should act immediately to address the growing clinical and economic burden of CVD and ASCVD. Actions that can be taken include the inclusion of hyperlipidaemia screening programmes, improving treatment management, and the introduction of innovative, long-acting drugs for effective LDL-C control. Initiatives implemented today could result in savings of 80,678 QALYs and US$285 million over the next 10 years.[30]

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