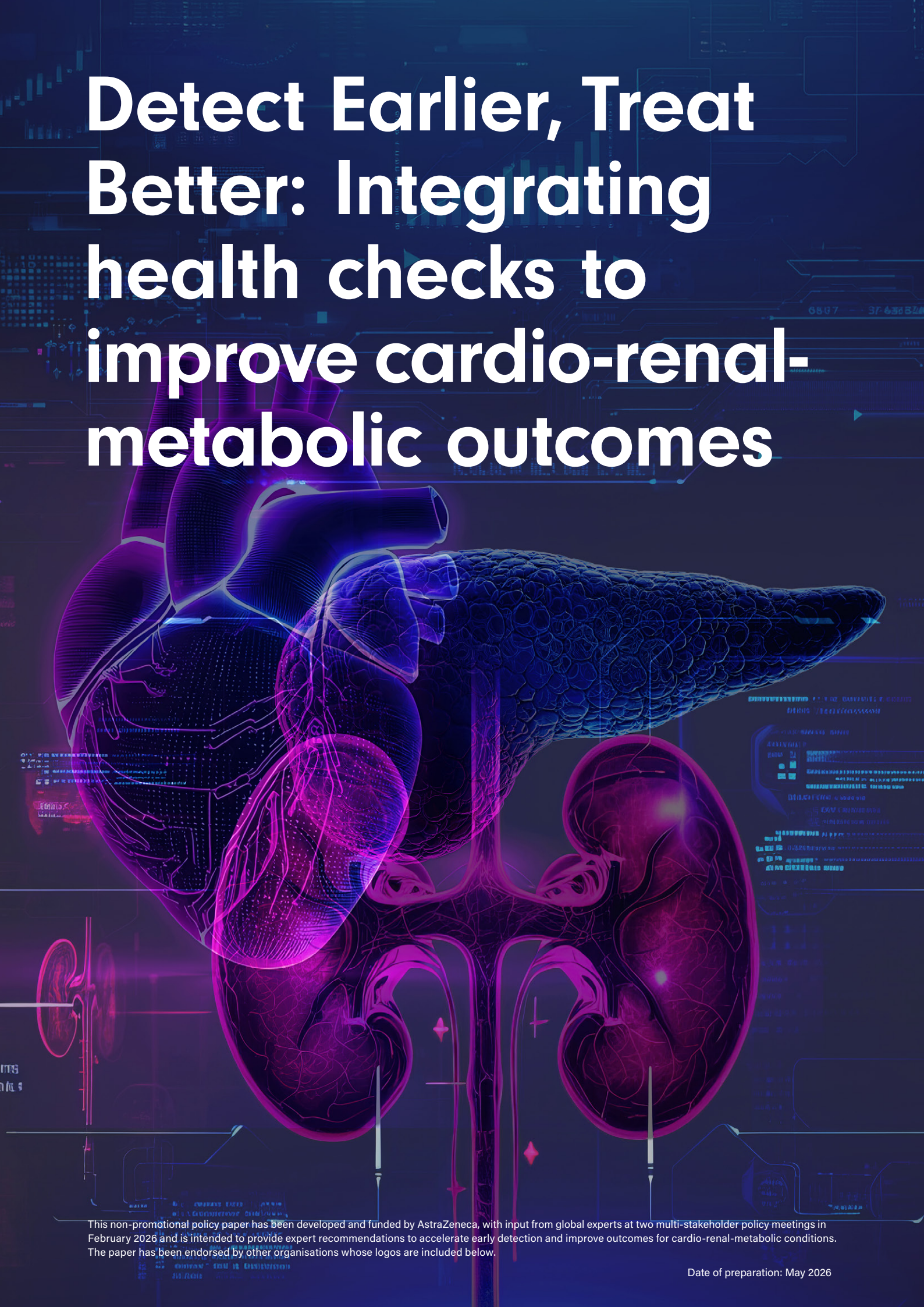
Detect Earlier, Treat Better: Integrating health checks to improve cardio-renal-metabolic outcomes



This non-promotional policy paper has been developed and funded by AstraZeneca, with input from global experts at two multi-stakeholder policy meetings in February 2026 and is intended to provide expert recommendations to accelerate early detection and improve outcomes for cardio-renal-metabolic conditions. The paper has been endorsed by other organisations whose logos are included below.

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Executive summary

Cardio-renal-metabolic conditions are among the most significant and rapidly growing threats to global health and economic sustainability.[1,2] Despite major advances in diagnostics, management and medicine, millions of people continue to be diagnosed too late, when disease has already progressed and opportunities for prevention[i] and early intervention have been missed. This results in poorer clinical outcomes and rising costs for healthcare systems and wider society.[3]

Cardiovascular diseases (CVDs) account for around 32% of all deaths globally each year.[4] Chronic kidney disease (CKD) affects an estimated 850 million people worldwide[5] and often progresses silently with few or no symptoms until advanced stages,[6] while 589 million adults are currently living with diabetes – a number projected to rise to 853 million by 2050.[7] Furthermore, over 64 million people have advanced heart failure worldwide.[8] Together, these interconnected conditions are increasing pressure on health systems, widening health inequalities and driving rising healthcare costs across many countries.[9]

However, this trajectory is avoidable. Earlier identification of risk, combined with prevention initiatives, timely diagnosis of diseases and optimal care, can significantly reduce complications, prevent disease progression and improve long-term outcomes.[10]

To support prevention and earlier detection, some countries have introduced health check programmes. However, these initiatives are often narrow in scope and focused on identifying a single condition. As a result, individuals diagnosed with one condition may continue to live with undetected co-morbidities. Looking forward, integrated health checks – using a coordinated, life course approach to assessing cardio renal metabolic risks across whole populations, regardless of whether individuals have a diagnosed condition – offer a powerful opportunity to transform how these diseases are detected and managed.[10]

By identifying risk earlier and linking detection directly to follow-up care and treatment optimisation, health systems can shift from reactive care to prevention and early intervention, supporting better long-term outcomes.[10] The benefits extend beyond health systems alone. Socioeconomic modelling of four countries (Australia, France, Germany and the UK) suggests that, by 20 years cardio-renal-metabolic health screening programmes could generate USD $3.6bn in additional productivity gains compared with current approaches.[11]

While the urgency of action is increasingly recognised, progress remains uneven.[10] In countries where strong political leadership has prioritised early detection and sustained treatment pathways, health systems are beginning to realise the preventative and economic benefits. However, many countries continue to rely on fragmented detection pathways and siloed care models,[10] limiting their ability to improve outcomes and reduce long-term system burden. Even when disease is identified early, it is too often poorly managed or left untreated, undermining the potential benefits of early detection.[12]

[i] Throughout this paper, unless specified, the term prevention encompasses primary and secondary prevention initiatives, given the scope of the recommendations.

This paper sets out a practical policy agenda for change. It argues that countries can accelerate progress by adopting integrated approaches to cardio-renal-metabolic detection and care, supported by action across three key pillars:

1 Pillar 1: Embed integrated detection, treatment and care in policy frameworks

1. Make integrated cardio-renal-metabolic risk assessment a health entitlement
Ensure consistent and equitable access to risk assessments and key biomarkers are embedded within routine care and national health benefit packages, acknowledging that underserved populations are at higher risk of poorer health outcomes.

2. Link detection to timely referral, sustained treatment optimisation, care coordination and patient[ii] navigation
Ensure individuals identified at risk are consistently connected to optimised prevention initiatives, timely diagnosis, treatment and ongoing management.

3. Align health and macroeconomic strategies to support long-term prevention goals
Integrate early detection and prevention into national economic and health planning, linking investment in cardio-renal-metabolic care to broader priorities such as health workforce resilience, supporting people to stay in work for longer and healthy ageing.

2 Pillar 2: Expand access to, and uptake of, integrated health checks

4. Expand delivery of integrated health checks across accessible settings
Provide access to health checks through primary care, pharmacies, workplaces and community settings to improve reach and equity.

5. Strengthen proactive outreach, recall and public engagement
Use targeted communications, digital recall systems and community partnerships to increase uptake, particularly among high-risk populations.

6. Co-design services with patients and communities
Ensure programmes reflect local needs, improve trust and reduce barriers to participation.

3 Pillar 3: Ensure robust enablers are in place to strengthen integrated care

7. Establish clear national standards for health checks, referral and follow-up
Define minimum service standards, referral pathways and timeframes to ensure early detection leads to timely, optimal care.

8. Build interoperable digital infrastructure to support optimal care delivery
Enable seamless data sharing across providers, with standardised coding, risk stratification and patient-held records.

9. Align financing models to support the full care pathway
Adopt payment models that incentivise prevention, early detection, treatment initiation and long-term risk factor control, rather than health check-related activity alone.

By strengthening these three areas and adapting them to national contexts, countries can accelerate earlier detection and improve outcomes for people living with cardio-renal-metabolic conditions, while helping health systems and wider society sustainably manage the long-term burden of these diseases.

[ii] The term 'patients' is used to include people with lived experience and those with cardio-renal-metabolic conditions

Global progress against rising burden

Cardio-renal-metabolic conditions – including cardiovascular disease (CVD), heart failure (HF), chronic kidney disease (CKD), hypertension (HTN), dyslipidaemia, type 2 diabetes (T2D) and obesity – are highly interconnected and often coexist, accelerating one another's progression when risks are not detected and managed early.[13] As a result, these conditions represent a growing threat to global health and economic sustainability.[14] When left undetected or poorly managed, they drive substantial morbidity and mortality, with their combined economic burden projected to reach approximately USD $28 trillion globally by 2030.[14]

Cardiovascular Disease

Around **523 million people** globally live with CVD,[4] accounting for **32% of all deaths worldwide**.[15] Hypertension, a risk factor for CVD, is a major cause of premature death globally, affecting 1.4 billion adults aged 30–79 years worldwide, with 44% of those unaware that they have the condition.[16] **64 million people** live with HF, the end stage of CVD.[17]

Metabolic Diseases

Around 589 million adults worldwide have diabetes,[7] and at least **890 million live with obesity.**[18] Among children and adolescents (ages 5–19), overweight and obesity rates have risen sharply – from 8% in 1990 to 20% in 2022.[18] These conditions are closely linked: in the US alone, obesity contributes to up to half of new diabetes cases.[19]

Globally, an estimated **3–5% of people have metabolic dysfunction-associated steatohepatitis (MASH)**, an advanced form of fatty liver disease. **Early-stage liver disease is expected to nearly triple**, while severe cases are projected to more than triple.[20]

Chronic Kidney Disease

CKD is projected to become the world's **5th leading cause of death by 2040**.[21] Around 850 million people are affected globally.[5] In advanced economies, fewer than 0.5% of the population live with end-stage kidney disease but this accounts for **2-3% of total healthcare spending**, reflecting the disproportionate cost of late-stage intervention. CKD often represents the final common pathway of prolonged, poorly controlled metabolic and cardiovascular risk – most notably hypertension, diabetes and obesity – making it a powerful indicator of cumulative disease burden across the cardio-renal-metabolic spectrum.[22,23]

Despite the scale of the challenge, progress in reducing non-communicable disease (NCD) mortality remains uneven.[11] Cardio-renal-metabolic conditions are among the largest contributors to global NCD deaths, and with less than five years remaining to achieve the United Nations (UN) Sustainable Development Goal (SDG) target 3.4 – reducing premature mortality from NCDs by one-third – many countries remain significantly off track.[24]

In response to the growing burden of NCDs – and the central role that cardio-renal-metabolic conditions play in driving it – governments and international organisations are increasingly recognising the need to strengthen prevention, early detection and optimal care[iii].[25]

In 2025, at the 78th World Health Assembly, Member States adopted the first-ever resolution on kidney disease.[26] The resolution recognises the socioeconomic impact of kidney disease and its links with cardio-metabolic co-morbidities and commits Member States to strengthening prevention, early detection and integrated care for kidney disease.[27] Integrated cardio-renal-metabolic health checks provide a practical mechanism to operationalise these commitments at the national level. At the UN General Assembly High-level Meeting in 2025 on the prevention of NCDs, countries also reaffirmed the urgency of accelerating progress towards SDG target 3.4 and expanding access to essential NCD services across the life course.[26]

[iii]Optimal care, in this context, refers to the coordinated and timely management of disease, adhering to guideline-directed treatment protocols where appropriate.

Regional initiatives are also beginning to emerge. In Europe, the European Union funded the *Joint Action on Cardiovascular Diseases and Diabetes (JACARDI)* programme. *JACARDI* supports Member States in reducing the burden of cardiovascular disease and diabetes at both individual and health system levels, including through a dedicated work package on screening.[28] Building on *JACARDI*, the European Commission launched the *Safe Hearts Plan* – this marks the first continent-wide initiative focused on reducing the burden of cardio-renal-metabolic conditions. It also aims to strengthen prevention through more systematic early detection and integrated health checks across Member States.[29] These efforts are rightly being informed by experts from across the cardio-renal-metabolic community who are contributing technical proposals to support the *Protocol on Health Checks*.[30]

Similarly, in the Americas, the Pan American Health Organization-backed *HEARTS in the Americas* initiative is being implemented across 34 countries and more than 10,950 health centres. It is scaling integrated, primary care-based cardiovascular risk management to reach approximately 50 million people, with the ambition of becoming the regional standard by 2027.[31]

Despite the growing political recognition and emerging policy initiatives, progress in prevention, early detection and intervention remains uneven. In many countries, at times due to a lack of political momentum and competing priorities, health systems still rely on fragmented approaches to identifying and managing cardio-renal-metabolic risk, limiting opportunities for prevention and early intervention.[11] Experts consulted for this report highlighted several persistent barriers:

- **Siloed cardio-renal-metabolic care models:** Major risk factors – including high blood pressure, elevated cholesterol, abnormal glucose levels and early signs of kidney dysfunction – are often detected late or managed separately rather than through coordinated, proactive care, increasing the risk of avoidable disease progression and complications.[11]

- **Fragmented screening, diagnosis and treatment pathways:** Screening initiatives and health checks are not always integrated within coherent care pathways. Individuals may be screened in one setting but face unclear or delayed referral routes to secure a diagnosis.[32] Early identification of risk and diagnosis are only worthwhile if patients then receive consistent guideline-recommended treatment and care throughout the life course, which today is too often not the case. Fragmented digital systems can also prevent health check data from being integrated into electronic medical records, further delaying access to optimal care.[11]

- **Limited patient navigation and continuity of care:** Patients often move between primary care, specialist services and community settings without clear information or coordination, making it harder for people to navigate care pathways and sustain engagement with care plans and treatment or lifestyle interventions.[33]

- **Lack of sustainable funding and reimbursement:** Preventive services are often under-prioritised in healthcare financing structures. This can restrict the implementation and scale-up of prevention and early detection programmes, even where they deliver long-term health and economic benefits.[34]

- **Wider determinants of health:** Social and structural determinants continue to shape access to preventive care. Health literacy challenges, socioeconomic disadvantage, gender and sexuality, rurality, and wider social and structural determinants can limit access to, and participation in, screening, early detection and follow-up services.[35]

As a result, many countries struggle to achieve early and effective control of cardio-renal-metabolic risk factors, limiting prevention efforts, widening health inequalities and reducing potential health and economic gains.

Unlocking the potential of integrated health checks

The growing burden of cardio-renal-metabolic conditions is not inevitable. Much of the associated illness, complications and healthcare costs can be avoided through earlier identification of risk, prevention programmes and more coordinated management across the care pathway to ensure optimal care.[36]

More integrated approaches to early detection and care deliver significant benefits for patients, health systems and society, including:[37,38,11,39]

Better patient outcomes through earlier identification of interlinked risks and more coordinated treatment that slows disease progression, ultimately improving patient experience

Greater health system and economic productivity by potentially reducing duplicative care processes and preventing costly complications such as heart attacks, strokes or kidney failure

Improved equity by simplifying care navigation and expanding access for those with elevated risk, who may be less likely to engage with the health system

A growing body of evidence demonstrates that structured health checks can play a critical role in improving prevention, early detection and management of cardio-renal-metabolic conditions, particularly when implemented as part of optimal care pathways.

Health checks can **increase detection of previously undiagnosed conditions** compared with routine care. For example, participants in structured programmes like the NHS Health Check were found to be more likely to receive new diagnoses of diabetes (odds ratio 1.30), hypertension (1.50) and chronic kidney disease (1.83) compared with non-attendees.[40] Similarly, in the Dutch INTEGRATE trial, individuals undergoing structured health check assessments were nearly three times more likely to be diagnosed with cardiometabolic disease, with hypertension detected twice as frequently and hypercholesterolaemia three times more frequently than in usual care.[41]

Health checks can also **translate detection into earlier treatment.** In England's NHS Health Check programme, 20.3% of individuals identified as having elevated cardiovascular risk initiated statin therapy, and participants were 40% more likely to be prescribed statins than non-participants.[40] Whilst this leaves substantial room for improvement in ensuring all patients are receiving guideline-directed therapy, it does demonstrate that health checks can be a powerful driver for access to treatment.

Over the longer term, evidence shows that sustained, integrated prevention programmes incorporating health checks can **reduce cardiovascular events and mortality**. The Finnish North Karelia programme, which combined systematic risk factor identification with population-based primary prevention programmes, contributed to over 80% reductions in coronary heart disease mortality over four decades.[42]

From a system perspective, **early detection also improves efficiency.** Although health checks increase healthcare activity in the short-term, real-world evidence shows downstream reductions in costly care. For example, Ireland's Chronic Disease Management Programme reported 30% fewer emergency visits, 26% fewer hospital admissions and 33% fewer out-of-hours GP visits within four years of implementation.[43]

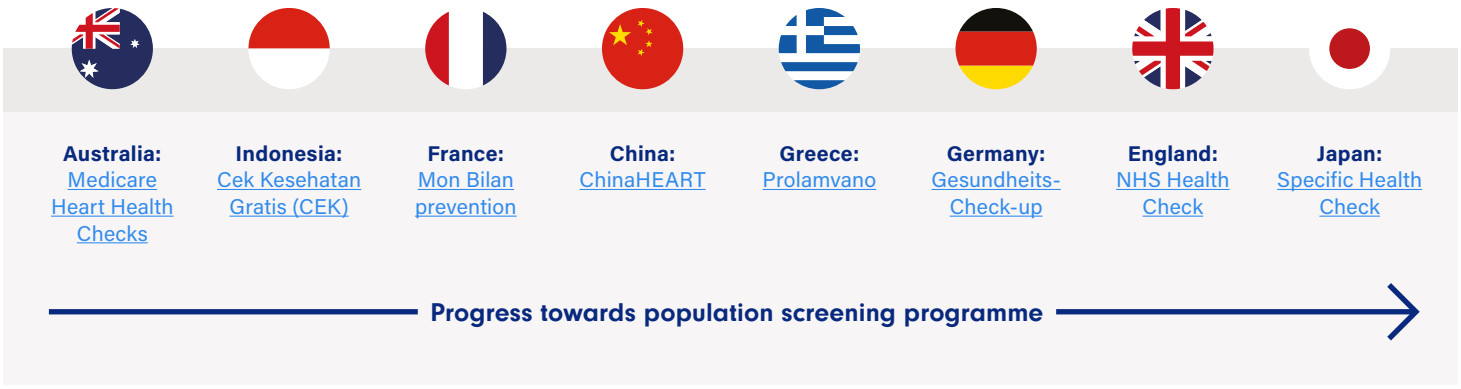
The evidence also highlights that **impact depends on programme design and integration.** Screening programmes fail to deliver value when not linked to referral pathways and sustained financing or when not designed with the targeted populations in mind. Studies show how participation remains uneven – ranging from as low as 15.7% (Poland) to 70% (Spain) across comparable screening programmes – particularly among disadvantaged populations.[11]

Crucially, many patients identified as **high-risk**[iv] **do not receive optimal, guideline-directed treatment or achieve control of key risk factors**, limiting the full benefit of early detection. In the UK, modelling shows that millions of people with conditions such as hypertension, dyslipidaemia and diabetes are not receiving or achieving optimal treatment, despite the availability of highly effective NICE-recommended therapies.[44] Improving treatment and risk factor control – including behavioural assessments such as tobacco use, diet, physical activity and mental health – could prevent tens of thousands of cardiovascular events and deliver substantial healthcare and economic benefits, illustrating the scale of missed opportunity across the wider cardio-renal-metabolic pathway.[44]

Learning from global approaches to early detection

Countries take very different approaches to early detection and prevention. Some have established national health checks or screening programmes,[45] while others rely primarily on opportunistic detection within routine care or have less developed detection systems.[46]

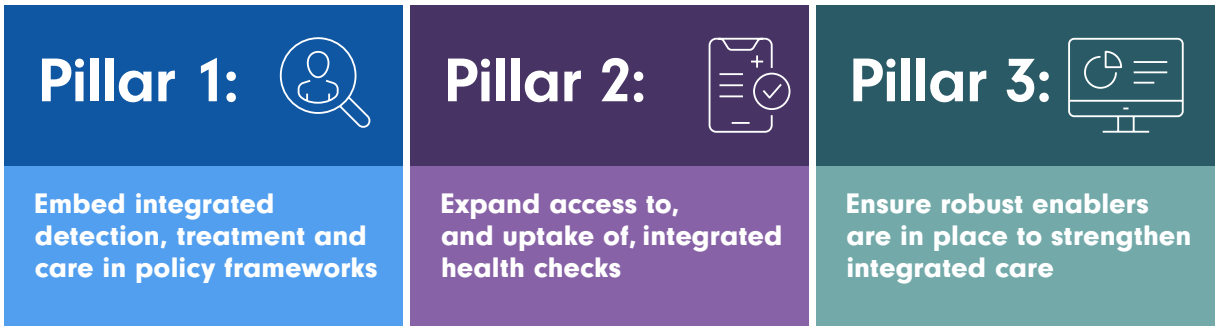
When implemented effectively, screening for cardio-renal-metabolic conditions can provide a structured and repeatable mechanism to identify multiple risk factors simultaneously and trigger coordinated diagnosis and follow-up care.[47] However, differences in national policy frameworks, financing models, populations and service delivery mean that the design, coverage and reach of these programmes vary significantly across countries. The figure below is an illustration of different countries' progress to a population level screening programme for cardio-renal-metabolic conditions:



[iv] High-risk groups include, but are not limited to, women (particularly during and after pregnancy), older people, underserved communities and individuals living with comorbidities.

Policy recommendations to strengthen integrated detection and care

Delivering earlier detection and better outcomes requires targeted action across core health system levers. The following recommendations outline where policy change can most effectively drive integration, scale and impact for people living with cardio-renal-metabolic conditions across three interconnected pillars for change:[48]



Each recommendation is underpinned by foundational and integrated steps enabling countries to identify actions that fit their local context while drawing on international experience to strengthen and integrate cardio-renal-metabolic risk identification, diagnosis and care:

- **"Foundational steps":** actions that countries without established screening programmes can take to build foundational risk assessment, prevention, detection, treatment and care processes.
- **"Integrated steps":** actions that countries with more developed systems can adopt to strengthen integrated prevention, improve early detection and optimise treatment outcomes.

1 Pillar 1: Embed integrated detection, treatment and care in policy frameworks

Sustained improvements in cardio-renal-metabolic outcomes requires clear national policy direction. Embedding integrated prevention and risk assessment linked to optimised follow-up care within policy frameworks ensures early detection becomes routine practice and that individuals are consistently supported from identification of risk through to diagnosis, treatment and long-term management.[48]

Recommendation 1. Make integrated cardio-renal-metabolic risk assessment a health entitlement.

- **Foundational step:** Require basic and consistent cardio-renal-metabolic risk assessments – including blood pressure, lipid profile (or total cholesterol), blood glucose testing (fasting glucose or HbA1c where feasible), kidney function assessment (serum creatinine and estimated glomerular filtration rate [eGFR], with urine albumin-to-creatinine ratio [uACR] – which is commonly under-utilised – where feasible), body mass index (BMI) and waist circumference – to be offered through structured, funded, primary care visits, pharmacy or community outreach programmes, with defined referral pathways for abnormal results.
- **Integrated step:** Include enhanced and more personalised risk assessment approaches within national benefit packages or universal health coverage schemes for at-risk people. These should include a cardiac risk prediction equation, expanded biomarker testing – HbA1c, uACR and NT-proBNP (to support detection of heart failure), as well as lipid subfractions where appropriate – alongside risk-stratified kidney function assessment, combined with proactive outreach to at-risk populations, mandated follow-up pathways and funding to ensure equitable access to coordinated, guideline-directed care. Frequency of testing and adaptation to specific cohorts of these programmes should be guided by national and regional contexts, thus working to address broad determinants of health.

Recommendation 2. Link detection to timely referral, sustained treatment optimisation, care coordination and patient navigation.

- **Foundational step:** Define national referral pathways and maximum follow-up timeframes for individuals identified at elevated cardio-renal-metabolic risk, supported by upskilling of the primary care workforce, basic tracking systems to ensure referrals are completed, and linking back to primary care systems to ensure optimal continuity of, and quality of, care.
- **Integrated steps:**
  - Embed timely referral workflows within digital platforms so that increased risk results trigger referral alerts, care coordination tasks, patient navigation support and follow-up appointment tracking.
  - Adopt shared digital care plans that allow providers across primary care, pharmacy and specialist services to monitor treatment initiation, optimisation and engagement.

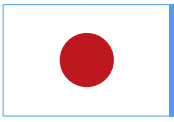
Recommendation 3. Align health and macroeconomic strategies to support long-term prevention goals.

- **Foundational step:** Incorporate early detection of cardio-renal-metabolic conditions within national health and economic strategies to strengthen the case for sustained investment in prevention. For example, in chronic kidney disease where preventing progression to kidney failure can avert high-cost dialysis and deliver substantial long-term fiscal gains.
- **Integrated step:** Develop financing mechanisms that support optimal care across health system settings, including equitable access to integrated health checks, and link prevention investment to broader economic priorities, such as workforce resilience, productivity and healthy ageing.

Case study: Greece's publicly funded screening programme[49]

In 2025, Greece launched 'Prolamvano', a national cardiovascular screening programme targeting 5.5 million adults. The programme offers a free GP visit and blood tests for key risk biomarkers including cholesterol, blood glucose and lipoprotein(a). Testing is delivered through hospitals, university hospitals and private providers. Results are used to generate a cardiovascular risk score and guide follow-up care.

More than 3 million people have already been screened, identifying thousands at elevated risk. The success of the programme has led to an expansion to include kidney function testing.[50] The programme is also helping to shift public and political attention towards prevention by introducing large numbers of people to cardiovascular risk assessment for the first time.



Case study: Japan's insurer-based health checks[51]

Japan mandates a nationally standardised health check, the Specific Health Check, for adults aged 40-74, delivered through insurers. In practice, uptake varies by insurer type. Nearly 60% of eligible adults participated in 2023, but this overall figure masks a pronounced equity gap.[52]

Overall national participation is 53%, and uptake reaches around 77% for those covered by health insurance unions but falls to 37%, on average, among those enrolled in municipality-based National Health Insurance – the self-employed, part-time workers, and the unemployed who lack the workplace infrastructure that drives participation elsewhere.[53] This highlights the importance of complementary screening routes beyond the workplace in insurer-led systems.

2 Pillar 2: Expand access to, and uptake of, integrated health checks

Improving outcomes depends not only on availability of health checks, but on who they reach. When health checks are difficult to access or poorly understood, participation can remain low even when services are fully funded. For example, Germany's cardiovascular screening programme reaches only around 24% of the eligible population annually despite universal insurance coverage.[11] Barriers such as time constraints, limited health literacy, trust and perceived relevance can reduce participation.[11] Expanding delivery across accessible settings and strengthening outreach, engagement and co-design can increase participation across the life course, particularly among high-risk, underserved and vulnerable populations. This ensures more equitable access to early detection and helps to reduce access-related health inequalities.

Recommendation 4. Expand delivery of integrated health checks across accessible settings.

- **Foundational step:** Introduce opportunistic health checks in accessible settings such as pharmacies, workplaces, faith organisations, mobile clinics and community centres. These services can offer the core biomarker assessments defined in the foundational step of Recommendation 1, digital risk assessment tools and should have clear referral pathways to primary care (such as general practice) for abnormal results, ensuring continuity of care.
- **Integrated step:** Deliver integrated cardio-renal-metabolic health checks based on the expanded biomarker sets defined in the integrated step of Recommendation 1, alongside wider risk factors, across multiple settings – including primary care, pharmacies, employers and trusted community venues – aligned with national screening standards and referral pathways. Digital booking systems and community outreach initiatives can support easier access and targeted engagement of underserved populations.

Recommendation 5. Strengthen proactive outreach, recall and public engagement.

- **Foundational step:** Deploy simple communication tools – such as local awareness campaigns, flyers and SMS reminders – to inform the public about the benefits of health checks and how to access them as well as clearly communicating cardio-renal-metabolic risk where identified. Ensure language and methods of dissemination used are tailored to the targeted communities' needs.
- **Integrated step:** Implement automated invitation and recall systems using electronic health records, digital platforms or employer systems. These systems can identify eligible individuals, send invitations and reminders, and prioritise outreach to high-risk populations through targeted dissemination.

Recommendation 6. Co-design services with patients and communities.

- **Foundational step:** Partner with patient organisations and community groups to co-design service delivery models, ensuring services reflect local cultural contexts, health literacy needs and barriers to access.
- **Integrated step:** Embed systematic co-design approaches within national and local service planning, working with patient groups, community leaders and civil society organisations to shape how cardio-renal-metabolic health checks and follow-up care are delivered. This should include adapting service models, pathways and user experience – embedding routine collection of patient-reported outcome measures (PROMs) to generate evidence on the impact of integrated care on accessibility, trust and sustained engagement.

Case study: Indonesia's community health centre health checks

In Indonesia, two integrated reforms are offering systematic screening for citizens: 1) ILP or integrated life course care through Puskesmas (Community Health Centres), and a more recent national health check campaign, Cek Kesehatan Gratis (CKG) offered through Puskesmas and private primary care clinics.[54] These services are comprehensive and bring together preventative, curative and promotional care across the life course, supported by the national health insurance system, and SATUSEHAT national digital health platform. However, many communities face barriers to accessing these services due to limited digital and health literacy.[54]

To address this, a community-based, in-person outreach initiative was introduced to raise awareness of the health check programme and provide knowledge on how to use the SATUSEHAT app.[55] This approach demonstrates how bringing services closer to communities can strengthen trust, increase participation and support the use of digital prevention tools.

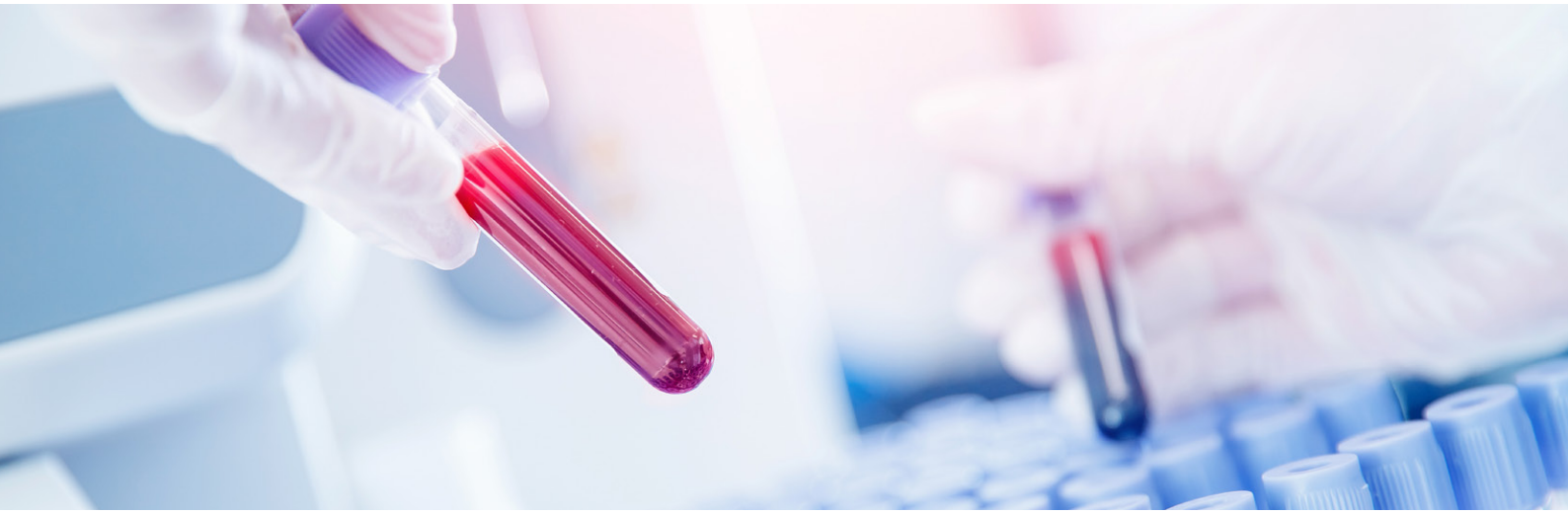
Case study: Vietnam's Communities for Healthy Hearts programme[56]

Vietnam's Communities for Healthy Hearts programme combines community blood pressure screening with digital patient tracking and SMS reminders to support ongoing hypertension management.

Screening checkpoints are established in local markets and community spaces, while the eHTN.Tracker digital system allows health workers to monitor patients and follow up with those at risk.

To date, the programme has screened more than 135,000 adults aged 40+, identified over 44,000 people with high blood pressure and connected many to diagnosis and treatment.

This initiative demonstrates how community-based screening combined with digital follow-up systems can improve detection and long-term management of cardiovascular risk.



Case study: Using SMS recall messages to drive uptake of Heart Health Checks in Australia

Despite the availability of Medicare-funded Heart Health Checks, uptake remains suboptimal, with many eligible adults not attending routine cardiovascular risk assessments. This highlights a persistent gap between eligibility and engagement in preventive care.[57]

To address this, two real-world randomised controlled trials in Australia evaluated the impact of simple SMS recall messages to prompt attendance for Heart Health Checks in general practice. Eligible patients received a targeted invitation and reminder text messages encouraging them to book an appointment with their GP.

The results showed a significant increase in uptake among those who received SMS recalls, with Phase 2 demonstrating a particularly strong 14-fold increase in uptake of heart health checks.[58] The intervention led not only to higher attendance, but also to increased identification and assessment of CVD risk factors.

These findings demonstrate that low-cost, scalable digital interventions can effectively improve participation in preventive health checks, even within well-funded health systems. SMS recall messages provide a practical and replicable approach to strengthening early detection of cardiovascular risk and improving population-level prevention outcomes.[59]

3 Pillar 3: Ensure robust enablers are in place to strengthen integrated care

Integrated detection and care pathways require strong system foundations to function effectively. Clear standards, interoperable data systems and aligned financing models are essential to ensure that early identification of risk leads to timely follow-up, optimal care and sustained management of cardio-renal-metabolic risk.

Recommendation 7. Establish clear national standards for health checks, referral and follow-up.

- **Foundational step:** Develop national service standards or clinical guidelines for cardio-renal-metabolic health checks or integrate cardio-renal-metabolic indicators into national NCD frameworks. This should include the core biomarker set defined in the foundational step of Recommendation 1, alongside referral criteria and follow-up timeframes, to ensure early detection consistently leads to timely care.
- **Integrated step:** Implement standardised, system-wide protocols for multi-risk stratification, referral and follow-up across care settings and multidisciplinary teams, supported by shared care plans, clear time-bound pathways and defined performance expectations. These should be informed by the expanded biomarker set defined in the integrated step of Recommendation 1, enabling more precise risk stratification and coordinated management.

Recommendation 8: Build interoperable digital infrastructure to support optimal care delivery.

- **Foundational step:** Introduce simple registries – including paper-based or mobile-enabled systems – to record cardio-renal-metabolic risk assessment and track follow-up for individuals identified as higher risk.
- **Integrated steps:**
  - Implement interoperable electronic health record systems that allow real-time sharing of test results, referrals and care plans across providers and settings.
  - Adopt standardised coding frameworks and risk stratification tools to support population health management and proactive identification of individuals requiring follow-up or treatment optimisation.
  - Enable patient-held digital records or portals so individuals can access their data, track referrals and follow-up, and engage more actively in their care.

Recommendation 9. Align financing models to support the full care pathway from early detection to optimised treatment.

- **Foundational step:** Reimburse basic cardio-renal-metabolic risk assessments – including blood pressure, BMI, kidney function and cholesterol testing – delivered through primary care, pharmacies or community settings. Payment should be linked to processes that result in meaningful outcomes such as confirmed referral or follow-up for individuals identified with elevated risk that results in optimal prevention and treatment.
- **Integrated step:** Adopt payment models that support the full care pathway, such as bundled payments, capitation models, incentives or outcome-linked reimbursement. Services should be incentivised to improve meaningful outcomes through guideline-directed treatment and care, not just to deliver prevention activity. These can include:
  - **Clinical outcomes and treatment optimisation**
    - Pay-for-performance bonuses tied to control of key risk factors (e.g. blood pressure, HbA1c, LDL, eGFR, uACR)
    - Incentives for guideline-recommended treatment and care (e.g. proportion of diagnosed patients optimally treated)
    - Incentives that support ongoing engagement in care and address barriers to care continuity
    - Outcome-based payments tied to long-term endpoints (e.g. reduced CVD events, CKD progression or patients undergoing dialysis)
  - **System efficiency and prevention**
    - Incentives for early identification of risk and cardio-renal-metabolic patients at early stages of disease
    - Shared savings models linked to reductions in hospitalisations and complications
    - Step-change incentives to reward delivering significant rather than incremental improvements
    - Digital and remote monitoring reimbursement (e.g. for blood pressure, glucose and kidney function tracking)
  - **Equity and population impact**
    - Equity-adjusted payments to reward reaching underserved or high-risk populations, including through targeted screening programmes that result in meaningful outcomes, for example improved early detection, higher engagement with health checks among underserved groups, or higher rates of optimised treatment

Case study: Netherlands' digital cardiovascular risk assessment

The Netherlands introduced a digital cardiovascular risk assessment tool to identify adults at higher risk of heart disease across the general population.[60] Participants complete an online questionnaire on health and lifestyle. Those identified as higher risk are invited to order an at-home testing kit or attend a clinical appointment for measurements such as blood pressure, glucose and cholesterol.[61] These results are then used to calculate a 10-year cardiovascular risk score and generate a personalised action plan.[61]

The programme has successfully identified individuals at elevated risk and supported lifestyle changes such as increased physical activity and healthier diets, although no meaningful mortality benefit has been shown. In workplace settings, participants identified as high-risk reduced their cardiovascular risk by an average of 18% after follow-up, largely due to improvements in blood pressure and cholesterol due to access to effective treatment.[60]

Case study: England's NHS Digital Health Check[62]

The NHS Health Check programme in England has traditionally relied on GP appointments, which has limited participation due to access barriers. In response, the NHS launched pilots in 2025 allowing eligible individuals to complete a digital health check via mobile phone, tablet or computer. Participants complete an online questionnaire and input key measurements such as height, weight and blood pressure alongside blood test results.

The system generates personalised advice on reducing cardiovascular risk – including smoking cessation and management of obesity – and refers individuals to a GP only where further investigation or treatment is needed.

By shifting initial screening online, the programme aims to reduce pressure on GP services while expanding access. If scaled nationally, digital health checks could enable an additional one million screenings over four years while saving an estimated 20 minutes of NHS clinician time per check. However, in the longer term it may result in more patients appropriately accessing care, which may have additional resource implications.

Case study: the CAREME Vietnam Program[63]

The CAREME MRF (Multiple Risk Factors) is a nationwide, multi-stakeholder programme, working to advance holistic cardio-renal-metabolic care in Vietnam by embedding routine health checks and digital risk tools into everyday services. Between March 2023 and September 2025, nearly 274,000 risk assessments were completed, with initial results showing 71% of individuals flagged as high/very high-risk, enabling rapid prioritisation for intervention.

Through community-based screening and education deployed via kiosks, CAREME is helping to standardise care pathways and generate population-level data to inform health system planning in Vietnam. Digital tools support data collection and risk stratification, with alignment to broader national efforts to expand electronic health records.

Conclusion: A shared opportunity to strengthen early and coordinated cardio-renal-metabolic care

Countries face a pivotal moment. The rising burden of cardio-renal-metabolic conditions is exposing gaps in early detection, prevention and follow-up care, leading to avoidable complications, widening inequalities and increasing pressure on health systems and economies.

At the same time, global momentum is building. Commitments through the World Health Assembly, universal health coverage strategies and regional initiatives such as the EU JACARDI and the Safe Hearts Plan are creating a window of opportunity to strengthen prevention and accelerate more coordinated action.[29] Governments are also reminded that their role is to allow their citizens to live longer and live better while being prudent with their taxpayers' money.

This paper identifies three priority areas for change: embedding integrated detection and care in policy frameworks, expanding access to integrated health checks, and ensuring the system enablers needed to support optimal care are in place. Acting across these areas can shift health systems from fragmented detection to integrated pathways that identify risk earlier, prevent disease progression and support optimal treatment. These programmes should improve quality of life, reduce hospitalisations and improve cardiovascular-related mortality.

The task now is to translate commitment into sustainable action. By implementing these priorities in ways tailored to national contexts, governments and health system leaders can improve outcomes, reduce long-term burden on patients, caregivers and society, and help people live longer, healthier lives.

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