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The forgotten killer: Cardiovascular disease

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In his days as an Australian Rules footballer, Nicky Winmar had felt plenty of pain and discomfort. But none of it compared to the chest pain that sent the 46-year-old retired athlete reeling early one morning in August 2012. The intense, crushing pain left him bewildered and pounding his breast to try to get relief.¹

Fortunately, an ambulance rushed the famed athlete to Royal Perth Hospital in time for physicians to diagnose a heart attack and insert a stent into a clogged artery. Winmar survived but faced a long recovery which even required him to learn to walk again. The following year, he told a reporter from the (Victoria) Herald Sun, “I’ve lost jobs since my heart attack. I have to see my cardiologist every two to three months. Sometimes the medication gets you in a state where you get angry for no reason and you don’t know why. Why did it happen to me? Why did I have a heart attack?”²

Why indeed? Why would a fit middle-aged man suffer a heart attack? Why are indigenous Australians like Winmar twice as likely to die of heart disease as their nonindigenous neighbours? And why are global deaths from cardiovascular disease (CVD) continuing to rise around the world? The answers to those questions could go a long way toward reducing suffering from this killer, which we believe is often overlooked due to complacency and a preoccupation with emergent conditions that dominate headlines.^{3, 4}

CVD defined

Although the term *CVD* is often used in the singular, it actually encompasses an array of diseases affecting the heart and blood vessels. According to the World Health Organization, these diseases claim 17.7 million lives per year — that’s about 48,500 deaths per day — accounting for an astonishing 31 percent of all deaths. Four in five of these deaths are due to coronary heart disease (42 percent of CVD deaths) or stroke (38 percent); the rest are caused by conditions ranging from peripheral artery disease to pulmonary embolism.⁵ (Specific diseases are described in the section “A catalogue of killers” below.)

Given those statistics, it’s no surprise that CVD is a problem in every country and culture. In fact, few families are immune. Heart Research Australia reports that two of three families in Australia are affected by CVD, while another estimate from Penn Medicine, one of the world’s leading academic medical centres, shows that 70 percent of Americans will either experience CVD themselves or lose a family member to CVD.^{6, 7}

1 <https://thewest.com.au/news/australia/winmar-warning-after-death-knocked-ng-ya-298614>

2 <http://www.heraldsun.com.au/sport/afl/nicky-winmar-returns-to-victoria-park-20-years-after-his-famous-stand-following-racial-abus/news-story/da299c8ee83c55bd70affff19cb94a30>

3 <http://www.theage.com.au/afl/afl-news/nicky-winmar-and-the-moment-he-got-his-second-chance-20170525-gwd8g4.html>,

4 <http://www.nejm.org/doi/pdf/10.1056/NEJMoa1406656>

5 <http://www.who.int/mediacentre/factsheets/fs317/en/>

6 https://www.heartresearch.com.au/assets/files/Heart_Research_Australia_Fact_Sheet_Sept_2012.pdf

7 <https://www.pennmedicine.org/news/news-blog/2017/february/tackling-heart-disease-on-a-global-scale>

Not surprisingly, CVD is a growing problem among Aetna International members, although the incidence varies from region to region and by age band, as shown in figures 1 and 2. The prevalence of CVD among expatriates living in the Americas increased between 2014 and 2015, but has since stabilised. However, the expatriate population in the Americas has almost double the prevalence of CVD of expatriate members residing in other regions, which we believe could be due to higher incidence of awareness, diagnosis and treatment in the region.⁸

The prevalence of CVD among Aetna International members continues to increase globally, year on year. Outside of the Americas, expatriates in the Middle East and Africa region showed the highest prevalence of CVD in 2016 (9.9 percent), compared with expats in Asia Pacific (4.43 percent) and in Europe (5.35 percent). When you take into account age standardisation, we believe these figures could indicate that CVD is underdiagnosed in the Asia Pacific and Europe regions and that expatriate populations in those regions are healthier.

Prevalence by region over time

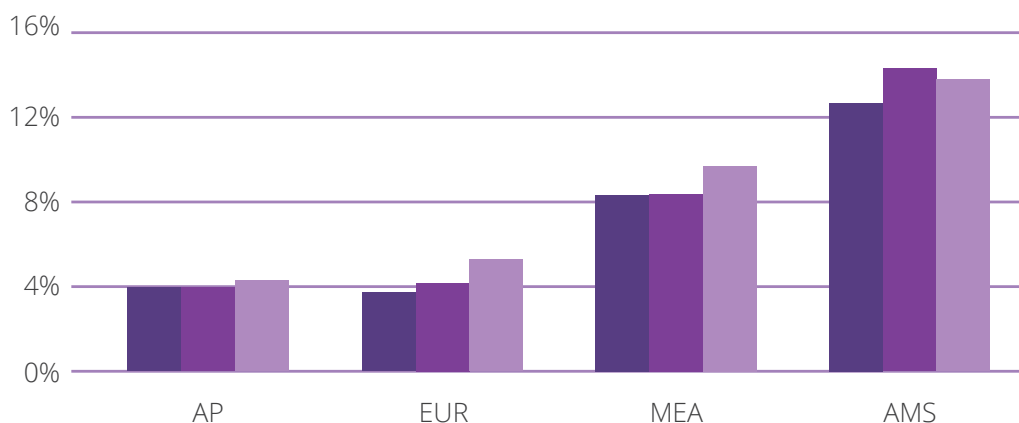


Fig.1 shows the prevalence of CVD among our members between 2014 and 2016 in the following regions: Asia Pacific; Europe; Middle East and Africa; Americas.

⁸ Aetna International internal study

Prevalence by age band (2016)

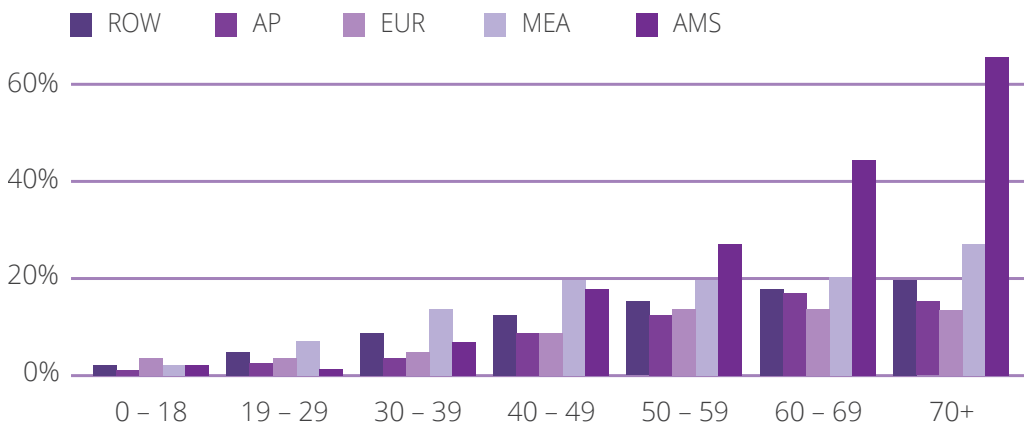


Fig. 2. shows the prevalence of CVD by age band and region among Aetna International members

As Aetna International's data shows, the CVD disease burden is not borne equally across the globe. According to the WHO, fully 75 percent of CVD deaths occur in low- and middle-income countries. And, tragically, the poorest of the poor tend to be the most affected, due to heightened risk factors, poor living conditions and reduced access to effective prevention and care. (The WHO identifies factors such as globalisation, urbanisation, poverty and stress as "causes of the causes.") And CVD can have a devastating financial effect, both at the household and macroeconomic levels, when people in their prime wage-earning years are killed or incapacitated by heart disease or stroke.⁹

From one population to another CVD can have starkly different impacts. Research reported in *Lancet Diabetes and Endocrinology* in 2017 sought to predict the 10-year risk for developing CVD. It estimated that risks in high-income countries ranged from just 1 percent for South Korean women to a shocking 42 percent for Czech men.¹⁰

The Global Burden of Disease Study 2013, a comprehensive effort to measure epidemiological trends from 1990 to 2013, revealed stark differences among the 21 regions it looked at. Central Europe and Western Europe actually saw significant decreases in CVD (5.2 percent and 12.8 percent, respectively), while South Asia and Central Asia saw drastic increases (97.5 percent and 47.2 percent, respectively). Other regions, including Southern Latin America, Australasia, and North America, saw no detectable change because "population ageing and growth balanced out declines in age-specific death rates."¹¹

A statistical paradox

That last statement hints at a seeming paradox. Between 1990 and 2013, CVD deaths increased by 41 percent, according to the Global Burden of Disease Study 2013, while age-specific death rates decreased by 39 percent.

⁹ <http://www.who.int/mediacentre/factsheets/fs317/en/>

¹⁰ [http://www.thelancet.com/journals/landia/article/PIIS2213-8587\(17\)30015-3/fulltext](http://www.thelancet.com/journals/landia/article/PIIS2213-8587(17)30015-3/fulltext)

¹¹ <https://jamanetwork.com/journals/jama/fullarticle/2468880>

That paradox was the subject of a study published in *The New England Journal of Medicine* in 2015 which sought to disentangle the causes of the rise in CVD. Researchers delved deeply into the data and calculated that a quarter of the increase in deaths was due to population growth — more people equals more disease — while 55 percent of the increase was due to ageing.¹²

This is not to say that CVD is an automatic result of ageing — far from it. Instead, ageing exacerbates the impact of the most prevalent risk factors: unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol. (Of course, most of these risk factors also contribute to a host of other conditions, including obesity and diabetes; see our white papers “Globesity: tackling the world’s obesity pandemic” and “Diabetes: the world’s weightiest health challenge” for more information.^{13, 14})

A catalogue of killers

Since CVD represents an array of conditions, it’s helpful to look at the most common of these conditions. They are:

Coronary heart disease. Also known as coronary artery disease or ischemic heart disease, coronary heart disease occurs when the blood vessels supplying the heart muscle become clogged with plaque, a substance that builds up over time. (Ischemia refer to a decrease in blood supply to an organ or tissue.) Early on, coronary heart disease can cause pain or discomfort known as angina.

When arteries become totally blocked (typically because a piece of plaque breaks off and a blood clot forms around it), a heart attack, also known as a myocardial infarction, occurs.¹⁵

Cerebrovascular disease. Cerebrovascular disease involves a reduction of blood supply to the brain; like coronary heart disease, it can have consequences that range from debilitating to fatal. Ischemic stroke occurs when a blood clot blocks the flow of blood to the brain; this is the most common type, involving 80 to 90 percent of cases. Haemorrhagic stroke occurs when a blood vessel leaks or, in the case of an aneurism, bursts. A third type of stroke, a transient ischemic attack (TIA), occurs when there’s a temporarily blockage of blood flow, such as when a clot blocks a blood vessel but then becomes dislodged. Often called mini-strokes, TIAs are a warning sign that a full-fledged stroke is possible; a third of people who experience a TIA will eventually have a stroke.^{16, 17}

Peripheral artery disease. Peripheral artery disease occurs when the clogging of arteries by plaque affects the legs (typically), arms or other parts of the body. Symptoms can include pain when walking and a sense of numbness or weakness in the legs.¹⁸

Deep vein thrombosis. Deep vein thrombosis is also related to arterial clogging. In this case, a blood clot forms in a vein deep within the body, typically in the lower leg, pelvis or thigh. Symptoms include unexplained swelling of legs and arms and pain and soreness when walking.¹⁹

12 <http://www.nejm.org/doi/pdf/10.1056/NEJMoa1406656>

13 <https://www.aetnainternational.com/en/about-us/explore/future-health/globesity-tackling-world-obesity-pandemic.html>

14 <https://www.aetnainternational.com/en/about-us/explore/future-health/diabetes-world-weightiest-problem.html>

15 <http://www.webmd.com/heart-disease/guide/heart-disease-coronary-artery-disease#1>

16 <http://www.webmd.com/stroke/default.htm>

17 <http://www.mayoclinic.org/diseases-conditions/transient-ischemic-attack/home/ovc-20314613>

18 <http://www.webmd.com/heart-disease/symptoms-peripheral-artery-disease#1>

19 <http://www.webmd.com/dvt/default.htm>

Pulmonary embolism. Pulmonary embolism is the blockage of a major artery in the lung; it can be deadly if the blockage is severe. The most common culprit is a blood clot in the leg that travels to the lung. That's one reason it's important to treat deep vein thrombosis promptly.²⁰

Arrhythmia. Arrhythmia encompasses a number of conditions in which the heart beats irregularly. Perhaps the best known is atrial fibrillation, which causes the heart's upper chambers to contract abnormally. At best, atrial fibrillation causes fatigue, dizziness and shortness of breath; at worst, it facilitates the formation of blood clots, which can lead to heart attack and stroke.^{21, 22}

Cardiomyopathy. Cardiomyopathy is a progressive disease of the heart muscle. It reduces the ability of the heart to pump blood, often leading to heart failure and atrial fibrillation.²³

Rheumatic heart disease. Rheumatic heart disease occurs when rheumatic fever (a complication of a streptococcal infection) scars the heart valves. The disease can eventually lead to heart failure, especially when the infection recurs.²⁴

Congenital heart disease. The term "congenital heart disease" covers a range of conditions people are born with, including heart valve defects and transposition of the great vessels (where blood flows in the wrong direction).²⁵

The promise and pitfalls of knowing one's genetic history

While modifiable lifestyle factors that contribute to CVD deservedly receive much attention, genetics are also important. Researchers have known since 1938 that family history plays a role in the development of CVD, and more recently over 50 loci in the human genome have been identified as risk factors. Making matters worse, genetic factors can also predispose individuals to behaviours—smoking, for example—that contribute to CVD, making genes indirect contributors to many heart attacks and strokes.

The emphasis on lifestyle factors can unfortunately lead to stigmatisation of those at heightened risk, while the reality of genetic predisposition can lead to a sense of fatalism, where individuals feel powerless to prevent disease. Genes are not destiny, however. It's important for individuals with a family history of CVD to address lifestyle issues that put them at risk. In a study cited in *The New England Journal of Medicine*, adherence to a favourable lifestyle was associated with a 45-percent lower risk among individuals at low genetic risk and a 46-percent lower risk among individuals at high genetic risk.

Many physicians recommend genetic testing of people with a family history of CVD; this is particularly true for people engaged in serious sport, as aneurysms and undetected heart conditions are often found to be a culprit in sudden deaths in the young or relatively young. That said, genetic testing — which involves the family, not just an individual — can be expensive. Moreover, as Mayo Clinic researchers have pointed out, "the development and implementation of genomics-guided approaches designed to further individualize the clinical management of a variety of cardiovascular disorders remains a challenge."

20 <http://www.webmd.com/lung/tc/pulmonary-embolism-topic-overview#1>

21 <http://www.webmd.com/heart-disease/atrial-fibrillation/default.htm>

22 <http://www.webmd.com/heart-disease/guide/heart-disease-abnormal-heart-rhythm#1-2>

23 <http://www.webmd.com/heart-disease/tc/cardiomyopathy-topic-overview>

24 <http://www.webmd.com/a-to-z-guides/understanding-rheumatic-fever-basics#1>

25 <http://www.webmd.com/heart-disease/tc/congenital-heart-defect-types-topic-overview>

Prevention before cure

Genetics play an obvious role in congenital heart disease, as well as in other diseases, including some cardiomyopathies. Moreover, someone is at heightened risk whose father or brother had a heart attack before age 55 or whose mother or sister had one before age 65. Other causes of CVD include physical injury and complications related to pregnancy, risk factors that are hard, if not impossible, to control. But in the vast majority of cases, CVD is the result of lifestyle choices that, over time, have a devastating cumulative effect.²⁶

One way to think about CVD is to picture an onion. The outermost layer represents the most visible outcomes of CVD, primarily heart attack and stroke. Peel back that layer, and you find coronary heart disease, cerebrovascular disease and the other diseases and conditions that lead to those outcomes. But those diseases and conditions are not the core of the onion. Remove another layer, and you find conditions like obesity, diabetes, clogged arteries and hypertension (high blood pressure) which contribute to them. Finally, peel back that layer, and you get to the key root causes of CVD: lifestyle choices that contribute to those conditions.

The National Heart, Lung and Blood Institute, part of the U.S. National Institutes of Health, focuses on four lifestyle choices that can help prevent CVD: eating a healthy diet, getting regular physical exercise, maintaining a healthy weight and avoiding smoking. It also estimates that just three percent of U.S. adults practice all of the “Big Four” habits, while two-thirds of American teenagers have at least one risk factor.²⁷

Targeting a handful of lifestyle choices is the goal of Global Hearts, a collaboration between the WHO, the U.S. Centers for Disease Control and Prevention and several global NGOs focused on CVD. Announced in 2016, the initiative emphasises reducing salt consumption, improving CVD management and combatting tobacco use.²⁸

Global Hearts’ programmes are:

- **SHAKE**, which strives to reduce mean intake of salt by 30 percent by 2025²⁹
- **HEARTS**, which focuses on primary prevention (addressing modifiable risk factors), secondary prevention (preventing recurrent events) and early detection of heart attack and stroke³⁰
- **MPOWER** (originally launched in 2008), which promotes demand-reduction interventions for effective tobacco control³¹

Each of the Global Hearts programmes combines an array of proven measures, ranging from surveillance to legislation to health promotion. As Dr Etienne Krug, the WHO’s director for the management of noncommunicable diseases said at the launch, “The Global Hearts Initiative takes a comprehensive approach to address the CVD burden. Its aim is to help countries scale up tested, affordable and adaptable measures to make their health services better able to detect and treat people at risk of, or suffering from, heart disease.”

26 <https://www.nhlbi.nih.gov/health/health-topics/topics/cad/atrisk>

27 <https://www.nhlbi.nih.gov/health/resources/heart/healthy-heart-guide-html>

28 http://www.who.int/cardiovascular_diseases/global-hearts/en/

29 <http://apps.who.int/iris/bitstream/10665/250134/1/WHO-NMH-PND-16.4-eng.pdf?ua=1>

30 <http://apps.who.int/iris/bitstream/10665/252661/1/9789241511377-eng.pdf?ua=1>

31 http://www.who.int/tobacco/mpower/publications/mpower_2013.pdf?ua=1

MPOWER has already borne fruit in Turkey, the first country in the world to adopt all six MPOWER measures. The country bans indoor smoking, offers free cessation support, mandates graphic warnings on cigarette packages, bans tobacco advertising and sponsorship and works with NGOs to promote cessation. One result: a 12 percent reduction in tobacco consumption in just four years. As the chair of the National Coalition on Tobacco or Health said, “It was like changing — not the ‘climate,’ that’s too mild. It was like changing the religion. And it was amazing; everybody said it would be protested, but then everybody started quitting.” Thanks to Turkey’s comprehensive antismoking efforts, the phrase “to smoke like a Turk” may soon take on a very different meaning than it holds today.^{32, 33, 34, 35}

The Turkish results are impressive but shouldn’t be surprising. Similar multifaceted efforts have achieved success across the globe.

The North Karelia Project

Tucked deep in the WHO’s Global Brief on Hypertension, prepared in support of World Health Day 2013, is a remarkable statement: Thirty-five years after Finland began a comprehensive nationwide program of lifestyle interventions, “the annual cardiovascular disease mortality rate among the working-age population in Finland is 85 percent lower compared to the rates in 1977.” That program, known as the North Karelia Project, offers a real-world, long-term example of the impact Global Hearts could have.³⁶

The North Karelia Project actually began in 1972, after representatives of the Finnish province of North

Karelia issued an urgent plea for help in reducing the incidence of CVD. For years, the province had suffered the highest rates in Finland — which in turn had the highest rates in the world. At the time, researchers were just beginning to connect diet and smoking with heart disease, but Dr Pekka Puska, the 27-year-old physician put in charge of the effort, focused heavily on those risk factors.³⁷

Puska and his team worked with a women’s club to organise “longevity parties” where women learned to add vegetables to traditional dishes, to use oil instead of butter and to reduce salt usage. They lobbied food producers to reduce the fat content in their products (in part by using local mushrooms as a filler in pork sausage). They helped establish food cooperatives and businesses that froze the region’s summer berries for use throughout the year. They convinced legislators and employers to implement smoke-free policies and even held contests where villages competed on the basis of participation in smoking-cessation programs. As author Dan Buettner wrote recently, “The North Karelian campaign had tackled the region’s health problem from so many different directions, its reforms were all but invisible. They’d simply changed the environment. Here was a rural community in far-flung Finland that had made deliberate decisions, changed its diet and habits, adapted its traditions and improved people’s health.”

After five years, the North Karelia experiment became a national effort, but grassroots work remained key to the programme — as it does with any similar programme. As Puska wrote in 2008, “Subsequent experience has shown that programmes which combine community involvement with environmental and policy-based measures receive markedly better

32 http://www.who.int/cardiovascular_diseases/global-hearts/Global_hearts_initiative/en/

33 [http://www.who.int/tobacco/surveillance/policy/country_profile/tur.pdf?ua=1,](http://www.who.int/tobacco/surveillance/policy/country_profile/tur.pdf?ua=1)

34 <https://www.dailysabah.com/health/2016/07/19/smoking-ban-in-turkey-7-years-later-turns-tide-on-prevalent-habit>

35 <http://www.who.int/bulletin/volumes/90/6/12-030612/en/>

36 http://apps.who.int/iris/bitstream/10665/79059/1/WHO_DCO_WHD_2013.2_eng.pdf?ua=1

37 <https://www.theatlantic.com/health/archive/2015/04/finlands-radical-heart-health-transformation/389766/>

results compared with purely educational and individual approaches. Community involvement entails the participation of various sectors of society. Experiences from North Karelia emphasize the important role played by primary healthcare, voluntary organizations, the food industry and supermarkets, schools and local media.³⁸

How much did people's health improve in North Karelia? By 2006, mortality from all forms of CVD had dropped 79 percent. And the interventions had other benefits. Most notably, cancer deaths dropped 65 percent over the same period, primarily due to an

80-percent reduction in lung cancer mortality. (Between 1972 and 2006, the smoking rate among men had dropped from 52 percent to 31 percent, although the smoking rate among women actually increased from 10 percent to 18 percent.)

The results Puska and his team achieved were extraordinary, but the work they did in North Karelia could be replicated in communities around the globe. In fact, Dan Buettner and his colleagues are now taking a similar systematic approach with the Blue Zones Project, which targets 37 communities across the United States.

The promise and limitations of new drug therapies

Since they were first approved in 1987, statins have become a drug of choice for helping patients lower their cholesterol levels. Today, the U.S. Preventive Services Task Force recommends use of statins by adults ages 40 to 75 who have one or more CVD risk factors and a 10 percent or greater risk of having a CVD event in the next 10 years.^{39, 40}

In 2015, the U.S. Food and Drug Administration approved a new class of drugs, called PCSK9 inhibitors, which promise to reduce levels of LDL (the so-called bad cholesterol) by an average of 60 mg/dl, a huge improvement. One study found that combining a PCSK9 inhibitor with a statin could reduce the risk of heart attack or stroke by about 15 percent over a statin alone. However, only two-thirds of patients saw a reduction in plaque build-up — not great odds considering the new drug costs \$14,000 a year.^{41, 42}

There's another downside as well: the drugs don't solve the lifestyle issues that fuel so much CVD. As Sami Inkinen, founder and CEO of VirtaHealth, has pointed out, the U.S. spends nearly \$1 trillion a year on drugs to control diabetes, blood sugar, cholesterol and blood pressure yet still faces a CVD crisis. "Look more closely at the role these medications play in addressing chronic disease, and you'll notice that most are designed to, at best, control progression, rather than target the root cause," he says. "We've created a massive industrial complex that is simply not designed to cure."⁴³

Drugs ranging from aspirin to statins to PCSK9 inhibitors play an important role in treating disease when patients use them appropriately and continually. But they should be considered a fall-back option for use when lifestyle changes aren't sufficient.

38 <https://pdfs.semanticscholar.org/0ff2/a9381edf12ee04f762e37af08ffd90efddf6.pdf>

39 <https://en.wikipedia.org/wiki/Lovastatin>

40 <http://jamanetwork.com/journals/jama/fullarticle/2584058>

41 <https://www.nytimes.com/2017/03/20/health/ldl-cholesterol-heart-disease-drugs-pcsk9-inhibitors.html>

42 <http://jamanetwork.com/journals/jama/fullarticle/2584184>

43 <https://worldpositive.com/turning-the-chronic-disease-paradigm-upside-down-c4ff161c58c8>

From populations to individuals

Population health programs like Global Hearts and the North Karelia Project are essential to addressing the root causes of CVD. But ultimately individuals need assistance in improving their lifestyles. At Aetna International, we take seriously our responsibility to help our members get the right advice, support and care in the right setting at the right cost.

We believe the best way to achieve that goal is to take a continuous, proactive approach — not one that is episodic and reactive — so we are transforming our health insurance model into a health and wellness ecosystem that helps people focus on being and staying well. For example, we engage with at-risk individuals to prevent the onset of disease and help people to keep healthy, and we offer those living with worsening and chronic conditions a wide range of care programmes to help prevent further deterioration. Meanwhile, those not deemed to be at risk receive support to help them maintain their health.

To better serve our members, we recently launched a virtual health care service in a number of markets. This gateway service makes it easier and more convenient for people to access quality, impartial primary health care advice and secondary treatment wherever they are in the world through our network of more than one million health care providers. Our In Touch Care model, which can give members direct one-to-one access to a highly experienced clinician, has proved successful since its launch 12 months ago. The model has increased member engagement by 73 percent and adherence to treatment recommendations by 12.5 percent, all while reducing the cost of care.⁴⁴

We have also partnered with our clients to create tailored solutions to improve the health of their employees. One such partnership in the Middle East focused on members who showed indications of ischemic heart disease, including cholesterol profile, high blood pressure, tobacco use and use of anti-hypertensive medication and beta blockers. Among members who were actively enrolled in the programme for at least 90 days, we saw a slight increase in specialist visits which resulted in 22 percent lower health care costs. More importantly, active enrolment in and prolonged adherence to the programme resulted in a 5.5 percent decrease in heart attacks compared with non-enrolled members.⁴⁵

Those Aetna International members were lucky in that they had access to quality care. Access to evidence-based primary care is essential to fighting the CVD epidemic, yet according to the WHO just two-thirds of countries have evidence-based national care standards — and barely half of them fully implement those standards. Furthermore, essential technologies (e.g., weighing scales and accurate devices for measuring blood pressure) and basic medications (e.g., statins and ACE inhibitors) are often not available in hospitals, health centres and community hospitals.⁴⁶

In 2010, the WHO debuted a simple CVD risk-management scheme for reducing blood pressure and improving lifestyle-change interventions. A randomised trial involving 2,397 patients in China and Nigeria found the scheme to be effective at reducing blood pressure, although more than half of patients still had uncontrolled blood pressure at 12 months (perhaps due to the low dosages of medicine that were prescribed). As the researchers concluded,

44 Aetna International internal study

45 Aetna International internal study

46 <http://apps.who.int/iris/bitstream/10665/252661/1/9789241511377-eng.pdf?ua=1>

“Our results suggest that the majority of patients with hypertension can be effectively managed in primary care facilities, even in low-resource settings.”⁴⁷

More recently, work by researchers at Harvard T.H. Chan School of Public Health produced customised risk charts for 182 countries that are intended to predict, without access to laboratories, the risk of fatal and nonfatal CVD events. Writing in *Lancet Diabetes and Endocrinology*, lead author Dr Goodarz Danaei said, “National and international guidelines recommend that physicians use risk prediction equations, usually in the form of risk charts, to predict which of their patients are at high risk for heart disease and stroke, and to suggest lifestyle modification or prescribe medication to lower their risk. These new risk charts, specifically calibrated for each country, remove major obstacles in applying risk-based strategies to prevent cardiovascular diseases.” How effective are the risk charts? Researchers found that the office-based risk model worked as well as the laboratory-based model between 85 and 99 percent of the time, although it underestimated risk among diabetics.⁴⁸

At Aetna International, we believe improved access to primary and secondary care is both essential and feasible to create. We are working with government health systems (both fee-for-service systems and those with salaried health care providers), as well as organisations with large populations of employees, to help them set up or enhance the building blocks needed to create successful primary care models.

One goal is to help our clients get the data and implementable strategy support they need to manage the health of their populations. For example, where an organisation has a population prone to CVD, we apply clinical and financial algorithms to identify the sickest members today (those with acute or chronic diseases), use risk scoring and predictive models to identify individuals at risk of developing CVD in the near future, and proactively engage with the sickest individuals and at-risk individuals via our one member-one clinician model. In this way, we create proactive prevention and care management programmes that help improve the health and productivity of the population while controlling costs for the organisation.

47 <https://www.ncbi.nlm.nih.gov/pubmed/20539854>

48 <https://www.hsph.harvard.edu/news/press-releases/cardiovascular-risk-tools/>

New technology could improve diagnosis

Effective CVD care relies on diagnostic tools like chest x-rays, electrocardiograms and magnetic resonance imaging. Unfortunately, these tools are typically unavailable or prohibitively expensive in low-resource settings.

An alternative, now being developed by a consortium of European universities and technology companies, would allow physicians to read the heart's vital functions using a handheld scanner that looks something like a supermarket scanner. Called CARDIS (for CARdiovascular disease Detection with Integrated Silicon Photonics), the scanner employs laser Doppler vibrometry to create a "vibration map" of the heart, revealing signs like plaque build-up and arterial stiffness.

"A stiff artery creates a faster pulse pressure from the patient's beating heart," project coordinator Dr Mirko de Melis told the Medical Xpress news service. "By measuring the 'pulse wave velocity,' we can assess the stiffness of the arteries using light and make informed judgements, long before the onset of cardiovascular disease."⁴⁹

An initial version of the CARDIS was laboratory validated in 2017. The next step is for a demonstrator device for clinical studies to be manufactured.⁵⁰

Conclusion

Before his 2012 heart attack, footballer Nicky Winmar was best known for his passionate stand against racism in sport. In recent years, however, he has perhaps become better known for his passionate stand against CVD. Now that he has regained his health and improved his lifestyle — in part by quitting smoking — Winmar is working with Australia's Heart Foundation to raise awareness of CVD among that country's indigenous population. His message is a simple one: "Before [my heart attack] happened, I was having all these blackouts, like dizziness, and falling over. If you ever get these symptoms, please go and see a doctor. Make time to do that. If I hadn't gone to the doctor, I might not be here today."

Of course, preventing CVD is not quite as simple as just seeing a doctor. It also requires lifestyle changes, an awareness of risk factors, access to adequate health care and often ongoing coaching and support. But there's little doubt that most of the 17.7 million people who die of CVD each year succumb to a disease that is preventable. In an age when obesity and infectious diseases dominate headlines around the globe, it's imperative that the health community refocus attention on this forgotten killer.⁵¹

49 <https://medicalxpress.com/news/2017-07-handheld-scanner-instant-heart-disease.html>

50 <http://www.cardis-h2020.eu/wp-content/uploads/2017/07/CARDIS-General-Presentation-2017.07.07.pdf>

51 <https://www.heartfoundation.org.au/news/nicky-winmar-kicks-goals-for-heart-health>

Building a Healthier World[®]

Aetna International is part of Aetna, one of the leading diversified health care benefits companies in the U.S., serving an estimated 46.5 million customers with health benefits and resources to support them in making better informed decisions about their health care.

Aetna International is committed to helping create a stronger, healthier global community by delivering comprehensive health care benefits and population health solutions worldwide.

One of the largest providers of international private medical insurance services, Aetna International serves more than 700,000 members worldwide, including expatriates, local nationals and business travellers. Its global benefits include medical, dental, vision and emergency assistance and, in some regions, life and disability.

Aetna International also offers customised programs, technology and health management solutions to support health care systems, government entities and large employers in improving access to quality care and health care outcomes in tandem with controlling associated costs.



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