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2017: Volume VI

The ticking time bomb:
Ageing poulation

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When Emma Morano died in Italy April 2017, she was the world's oldest person. She was also the last link to the 19th century, having been born in November 1899.

According to a BBC report, the 117-year-old woman's life "not only spanned three centuries but also survived an abusive marriage, the loss of her only son, two world wars and more than 90 Italian governments." She credited her longevity to genetics and a daily habit of eating three eggs, one cooked and two raw.[1]

As of September 2017, the world was left with 41 confirmed "supercentenarians" (individuals aged 110 or older), according to the U.S.-based Gerontology Research Group. Nearly 400 others have died since 2008.[2]

The deaths of supercentenarians are noteworthy, although hardly surprising. What is surprising is that the very old are but the vanguard of a swelling elderly population. The day is rapidly approaching when the world will, for the first time ever, have more people aged 65 and older than children under age 5, which raises a host of questions about issues ranging from infrastructure to social engagement to health care costs. As researchers from the World Health Organization and the U.S. National Institute on Aging have noted, "Population aging is a powerful and transforming demographic force. We are only just beginning to comprehend its impacts at the national and global levels."[3]

If the world doesn't quickly address those impacts, the ageing time bomb threatens to explode.

How we got here

The time bomb began ticking generations ago. In 2002, the journal Science published a paper that showed a remarkably steady increase in lifespan beginning in 1840. When researchers charted average female life expectancy in record-holding countries, they found an increase of almost three months per year; in other words, a child born in any given year is likely to live three months longer than a child born the year before. In 1840, Swedish women lived the longest: an average of just over 45 years; by 2000, Japanese women held the record and were living almost 85 years on average. Swedish women were just behind the Japanese at 83. (Men's life expectancy had also grown linearly, just not as rapidly.)[4]

Despite the steady increase in life expectancy, experts have long postulated theoretical caps. In 1928, a researcher settled on "an ultimate figure of 64.75

1 http://www.bbc.com/news/world-europe-39610937
2 http://www.grg.org/SC/WorldSCRankingsList.html
3 http://www.who.int/ageing/publications/global_health.pdf
4 http://user.demogr.mpg.de/jwv/pdf/sciencemay2002.pdf

years" for both men and women — failing to realize that non-Maori women in New Zealand were already living longer. In 1990, a new set of researchers set the upper limit at 85 years — a benchmark Japanese women topped just six years later.

As life expectancy has increased, fertility rates have decreased to roughly half the level of a half-century ago. In fact, the United Nations says 46 percent of people live in countries with birth rates below the replacement level of 2.1 children per woman.[5,6]

The demographics of ageing don't just affect individuals; they affect populations. According to the World Health Organization, the number of people aged 65 or older is expected to reach 1.5 billion in 2050 — nearly triple the number in 2010. Most of that increase is coming in developing countries and at a fast and perhaps unsustainable rate. In many low- and middle-income countries the percentage of residents who are elderly has doubled in a single generation, a feat France took 100 years to achieve. The WHO's 2011 Global Health and Aging reports describes the situation like this: "Many less developed nations will need new policies that ensure the financial security of older people, and that provide the health and social care they need, without the same extended period of economic growth experienced by aging societies in the West. In other words, some countries may grow old before they grow rich."[7]

At the same time, some wealthy countries may grow poor as they grow old. Increases in life expectancy affect the provision of health care services and the actuarial tables health insurers and retirement planners rely on. In the U.S., for example, even population growth below the historical norm will affect the solvency of Medicare, the health care system for older adults, and Social Security, the country's pension system. Analyst Jay Olshansky has projected that by 2050, Americans will be living three to eight years longer than actuarial tables predict, leading to unfunded obligations in the two programs of between $3.2 trillion and $8.3 trillion. What's more, notes The Atlantic magazine, "These disconcerting numbers flow from the leading analyst who thinks that the lifespan increase is slowing down." (By contrast, one of the authors of that 2002 Science report thinks life expectancy could reach at least 100 years.)[12]

Ageing and health

A major challenge in gauging the impact of ageing on health care lies in determining whether people's added years are being spent in good health or not. In other words, is 70 the new 60? As the WHO World Report on Ageing and Health put it, "If people are experiencing these years in good health, their ability to do the things that matter to them will be little different from that of a younger person. If these added years are dominated by decreases in physical or mental

5 http://www.visualcapitalist.com/fertility-rates-dropping-economy/
6 http://www.un.org/en/development/desa/population/publications/pdf/fertility/world-fertility-patterns-2015.pdf
7 http://www.who.int/ageing/publications/global_health.pdf
8 https://publichealth.wustl.edu/heatlhspan-is-more-important-than-lifespan-so-why-dont-more-people-know-about-it/
9 http://www.who.int/mip/2003/other_documents/en/hale.pdf
10 http://apps.who.int/gho/data/view.main.HALEXREGv?lang=en
11 http://apps.who.int/gho/data/view.main.SDG2016LEXREGv?lang=en
12 https://www.theatlantic.com/magazine/archive/2014/10/what-happens-when-we-all-live-to-100/379338/

Lifespan vs. healthspan

While many people might want to live to age 100, it can be a frightening thought, given the increasing odds of developing debilitating or life-threatening diseases. What is often lost in discussions about lifespan is that healthspan — years lived free of serious disease — is a more important measure. "Caring about extending the well period of one's life should be intuitive — if one is past their healthspan, it means they are chronically sick, often with a degenerating condition," writes Tim Peterson, an assistant professor in Washington University's Department of Medicine.[8]

Unfortunately, healthspan is trickier to measure than lifespan. To help, the World Health Organization has since 2000 used an indicator called health adjusted life expectancy (HALE), also known as healthy life expectancy. "Substantial resources are devoted to reducing the incidence of major diseases that cause ill health but not death and to reducing their impact on people's lives," the WHO explained in a 2003 report. "So it is important to capture both fatal and non-fatal health outcomes in any summary measure of average levels of population health."[9]

In 2015, global healthy life expectancy stood at 63.1 years, compared with life expectancy of 71.4 years. Regional data reveal interesting differences among regions. As might be expected, both figures were the lowest for the Africa region (52.3 and 60.0 years, respectively). People in the Americas enjoyed the longest life expectancy (76.9 years) but only the third longest healthy life expectancy (67.3 years), trailing Europe and the Western Pacific region.[10],[11]

capacity, the implications for older people and for society are much more negative."[13]

Unfortunately, the evidence is not at all clear. The report cites "considerable analyses" of health data collected in the United States and other high-income countries "with some studies suggesting falling levels of severe disability in people older than 65 years, other studies in the same age group suggesting rising rates of chronic disease and comorbidity but steady rates of disability and yet others suggesting an increasing prevalence of disability in 60- to 70-year-olds." In low- and middle-income countries, there simply hasn't been enough research on the subject to draw even mixed conclusions.[14]

What is clear is that the leading causes of death across the older population are noncommunicable diseases. (This is true regardless of the level of socioeconomic development, although these diseases tend to strike later in high-income countries.) According to the WHO Global Health Estimates, ischaemic heart disease, stroke and chronic obstructive pulmonary disease dominate mortality among people older than 60 years. In each case, age itself is a key risk factor.[15]

Of course, the elderly are also more likely than younger people to face an array of disabling conditions. According to the WHO World Report on Ageing and Health, the top causes of years living with disability are, in descending order of prevalence, sensory impairments, back and neck pain, chronic obstructive pulmonary disease, depression, falls, diabetes, dementia and osteoarthritis. Moreover, multimorbidity — having more than one disorder at the same time — is commonplace. According to The Lancet, "Multimorbidity can lead to interactions between disorders; between one disorder and treatment recommendations for another; and between drugs prescribed for different disorders. As a result, the effect of multimorbidity on functioning, quality of life and mortality risk might be much greater

13 http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)00516-4.pdf
14 http://www.who.int/ageing/events/world-report-2015-launch/en/
15 http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)00516-4.pdf

than the individual effects that might be expected from these disorders. Predictably, multimorbidity is also associated with increased rates of health-care use and increased costs."

And the problem is only exacerbated in the developing world, where the all-too-often fragile health infrastructure is challenged by so many competing demands. "People from disadvantaged backgrounds, those in poorer countries, those with the fewest opportunities and the fewest resources to call on in older age, are also likely to have the poorest health and the greatest need," according to Dr John Beard, Director of Aging at the World Health Organization. It is a sadly toxic combination of clear need that is unmatched as yet by the resources to address it.[16]

The impact of ageing on Aetna International members

The WHO's conclusions about the impact of ageing on health and the cost of care are borne out by Aetna International data. Among our members over age 50, the top nine conditions are hypertension, low back pain, hyperlipidaemia (high cholesterol), ischemic heart disease, type 2 diabetes, chronic obstructive pulmonary disease, osteoarthritis, asthma and glaucoma. (See Figure 1.) At least five of those conditions can be linked to noncommunicable and lifestyle-related diseases, although genetic predisposition also plays a role. If we extrapolate the trends into the future — even though we may no longer be looking after the health and well-being of these members — we can build a picture of the health of ageing expats and globally mobile individuals. We can also help educate our members and encourage them to establish healthy behaviours that will support their health in later life.

As our members age, the prevalence of hypertension, hyperlipidaemia, low back pain, ischemic heart disease and type 2 diabetes increases; we see a marked difference in the prevalence of these conditions

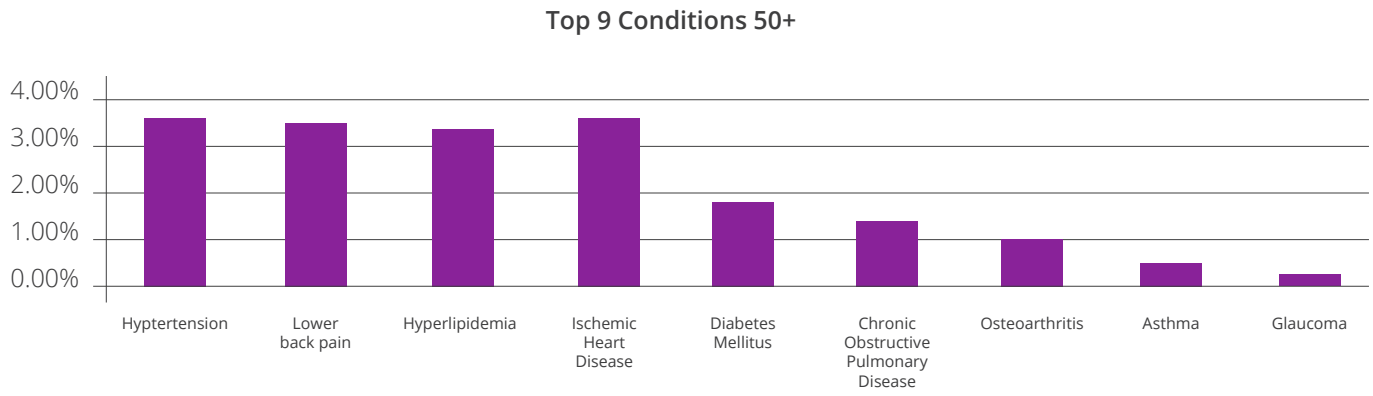

Fig. 1. *Top 9 condition prevalence among Aetna International's 2017 membership*[17]

16 http://www.who.int/mediacentre/news/releases/2015/older-persons-day/en/

17 Aetna International customer data, 700,000 customers, 2014 - 2016

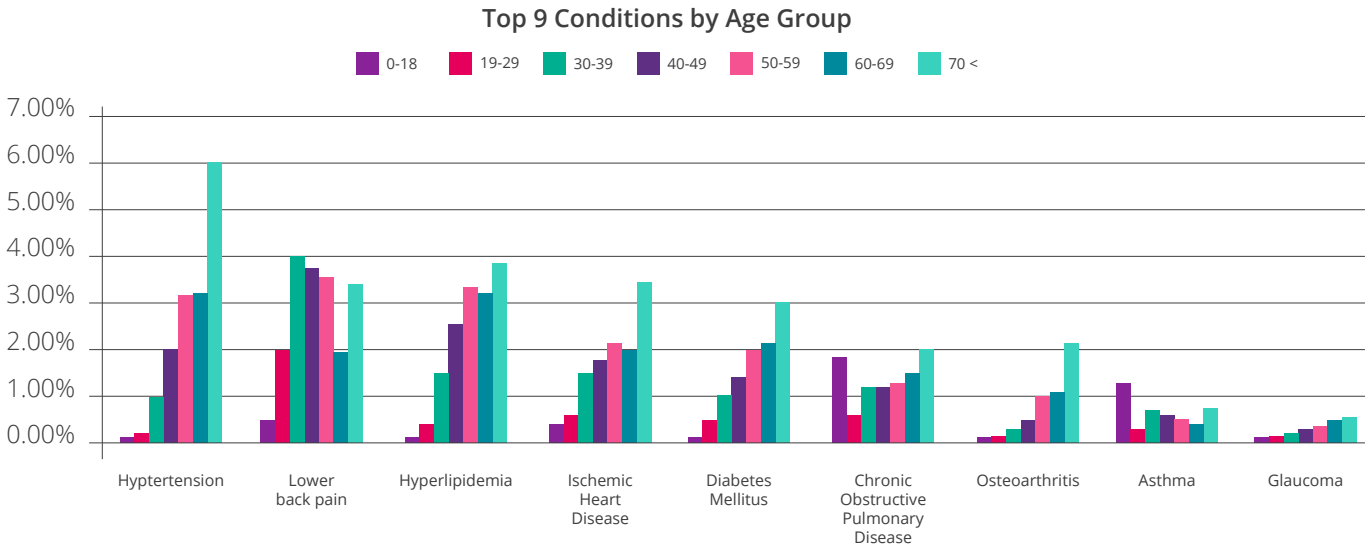

Fig. 2. *Top 9 conditions by age group*[18]

between the 60-69 age group and the 70+ age group. (See Figure 2.)

Not surprisingly, costs also increase with age. Among our membership, the most significant rise in average claims paid per member per month occurs between the 40-49 and 50-59 age brackets. Medical spend on members in the 70+ bracket is almost three times that of members in the 50-59 age bracket.

However, it is among members in their 40s where major chronic conditions really start to appear on the radar, suggesting the need for targeted education and wellness support for people in their 30s. (One outlier is low back pain, which is prevalent at significant levels across almost all age all adult age groups. Given that back pain can prevent people from getting adequate sleep and exercise, this condition could in itself lead to multimorbidity.)

An ounce of prevention

While disease and disability might seem to be automatic consequences of ageing, that's not the case. Decisions made across one's life — and even conditions before birth — can have a profound impact on health status in later years.

Researchers have long drawn causal links between childhood conditions and adult mortality in the developed world, and recent studies have extended this work into low- and middle-income countries. A review of 20 studies in China and Latin America demonstrated clear childhood links to adult heart disease, diabetes and other chronic diseases, disability

18 Aetna International customer data, 700,000 customers, 2014 - 2016.

Why and how we age

Given that people have been getting older since the dawn of time, it is perhaps surprising that the biological causes of aging are less than clear. As late as 1990, a researcher at London's National Institute for Medical Research was able to catalogue more than 300 then-current theories of ageing.[19]

Scientists still talk about a mind-numbing array of theories as to why we age, but they are clearer on how we age. Simply put, biological aging — senescence, in technical terms — is the result of a lifelong accumulation of damage to molecules caused by stress, poor nutrition and environmental factors.[20]

Even though the why is not clearly known, scientists around the world are conducting experiments to slow ageing. At California's Buck Institute, for example, researchers have seen success with the drug rapamycin, which is typically used to prevent rejection of transplanted organs. According to one report, "Lab mice dosed with rapamycin are dying off more slowly than they would naturally, and many of the old mice appear energetic and youthful." While human trials aren't scheduled, such results offer hope of a world where age-related disorders become as rare as once-endemic diseases like polio are today.[21]

and reduced cognition. Among Mexican women, for example, going to bed hungry as a child was associated with a nearly 90-percent increase in adult diabetes. In Puerto Rico, even the season of birth impacted adult health status, with those born during the lean season facing a 65-percent higher risk of heart disease than those born during the harvest. While some studies reviewed were inconclusive — and causality wasn't always proven — there's little doubt that an increased focus on child and maternal health is important.[22],[23]

Of course, it's never too late to improve one's diet, get more exercise or quit smoking, all actions with proven links to health. According to the American Lung Association, for example, just one year after a person stops smoking, his or her risk of developing coronary artery disease drops by half. In fact, there are measurable physiological improvements with even a few hours.[24]

Unfortunately, many people are doing the opposite of what they should. Obesity rates have more than doubled since 1980, according to the World Health Organization, and 6.3 percent of children under five years of age are overweight or obese. China now has 113.9 million adults with diabetes — and four times that number who are at risk of developing the disease. And in the United States, Baby Boomers (those born between 1946 and 1964) are more likely than their parents to be obese and to have high blood pressure, diabetes and high cholesterol.[25],[26],[27]

19 http://onlinelibrary.wiley.com/doi/10.1111/j.1469-185X.1990.tb01428.x/abstract
20 http://www.sciencedirect.com/science/article/pii/S0092867405001017
21 https://www.theatlantic.com/magazine/archive/2014/10/what-happens-when-we-all-live-to-100/379338/
22 https://www.ncbi.nlm.nih.gov/pubmed/23316272
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24 http://www.lung.org/stop-smoking/i-want-to-quit/benefits-of-quitting.html
25 http://www.who.int/mediacentre/factsheets/fs311/en/
26 http://jamanetwork.com/data/Journals/JAMA/927548/joi130040.pdf
27 http://online.adu.edu/blog/mha/infographics/how-aging-baby-boomers-will-challenge-healthcare-in-the-near-future/

Improving prevention

Croatia's Program of Healthcare Measures of Prevention for the Elderly offers an example of how prevention efforts could be improved. Implemented across a range of settings, from gerontology centres to nursing homes to clubs and associations, the program seeks to prevent "pathological aging" by preserving functional capacity.[28]

Croatia's scheme aggregates prevention measures in three groups: primary, secondary and tertiary. Primary measures focus on health education, identification of risk factors and unfavourable health behaviours, encouraging self-responsibility and promoting good nutrition and appropriate vaccinations and booster vaccinations. Secondary measures focus on early detection of a host of impairments and disorders, everything from hearing impairments to Alzheimer's disease. Tertiary measures address disease complications and focus on older persons who live alone, since they are at higher risk of having minor health issues escalate into major crises.

No matter how well thought out a preventive scheme is, it must reach those in need. Unfortunately, according to researchers, the elderly are rarely involved in designing health promotion programs and materials. Recently, researchers from Hannover Medical School in Germany undertook a study to see just how effective or ineffective current prevention programs were. Among other findings, they discovered significant differences in attitudes between older men and women about health in old age: women focused more on social participation, personal well-being and independent living, while men focused more on physical activity, mobility and performance. The researchers called for increased consideration of gender in the design of prevention programs, something German insurance companies are now required by law to do. Moreover, as they argued in BMC Geriatrics, "the integration of the elderly from starting the concept planning boosts the target accuracy."[29]

A shifting approach to health care

As the population ages, health care systems must adapt. Otherwise, they will be overwhelmed by a "silver tsunami" of patients — and with facilities and services that are poorly matched to those patients' needs.

In 2015, the International Society for Quality in Health Care (ISQua) conveyed a symposium in Doha, Qatar, where representatives from every corner of the globe (16 nations in all) gathered to discuss the implications of a rapidly ageing population. A resulting white paper called for major changes in the delivery of health services, the structure of health care organisations, the use of technology and systems to support health care delivery and the attitudes, expectations and competencies of care providers and patients. Rather than a fragmented, provider-centric system focused on treating sickness, ISQua envisions an integrated, person-centric system focused on wellness.[30]

A positive example the white paper cited is the Nuka System of Care, which provides care to Alaska Native people. As described in the International Journal of Circumpolar Health, the Nuka System integrates medical, dental, behavioural and traditional services, involves its patients (called customers and owners) in decision-making, supports innovation and creativity and focuses on continuous quality improvement. Results in the system's first decade were impressive,

28 https://hrcak.srce.hr/file/172140

29 https://isqua.org/docs/default-source/Special-Interest-Groups/isquawhitepaper.pdf

30 http://isqua.org/interest-groups/innovation-and-systems-change

including a 36-percent reduction in hospital days, a 42-percent reduction in emergency room and urgent care visits and a 25-percent increase in childhood immunisations. Ninety-five percent of Alaska Natives are now connected to an integrated primary care team, and same-day appointments are available for routine care.[31]

The Nuka System's successes aren't limited to the elderly, of course, but it's notable that the system ranks in the 90th percentile (based on the Healthcare Effectiveness Data Information Set) on annual diabetes testing and the share of patients whose LDL cholesterol levels are below 100. Also worth noting is that the system has an established Elder Council that offers input on services, ensuring that elderly patients are both seen and heard.[32],[33]

On a much larger scale, Japan envisions similar improvements to its national health system. In 2015, Prime Minister Shinzō Abe called for a 10-percent reduction in the number of hospital beds in the country and a stepped-up effort to care for patients at home or in nursing-care facilities. The country has also unveiled a vision for 2035 that calls for transforming health care into an integrated system that emphasises quality over quantity, value over inputs, autonomy over regulation, care over cure and integration over fragmentation. By the 2030s, one in three Japanese will be 65 or older — up from 23 percent in 2010 — making it imperative that the country rethink the way it delivers health services.[34],[35],[36]

Beyond addressing structural issues in its health care system, Japan is reassessing its attitude toward older workers. As of 2025, the mandatory retirement age will be 65 — up from 60 today. And the country's Silver Human Resources Centers are expanding their efforts to connect older residents with paid, often part-time, employment, which keeps them engaged in society and ensures that their skills and experience aren't wasted. One such worker, 80-year-old Nenosuke Yamamoto, reconditions abandoned bicycles, continuing his lifelong love of cycling. In an interview with National Public Radio in the U.S., he explained, "I feel that if I keep on working, I might not age as much. I might not have dementia or other sorts of aging issues."[37],[38]

Understanding the need for continuous proactive care

At Aetna International, we believe that insurance firms must shift from a focus on episodic, reactive care to continuous proactive care. Without making this fundamental shift, they risk becoming obsolete in the face of the silver tsunami and the rising tide of noncommunicable diseases. We are deliberately transforming from a health insurer into a health and wellness partner, taking a similar approach to the one

31 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3752290/pdf/IJCH-72-21118.pdf

32 http://www.nwrpca.org/news/260065/True-Patient-Focus-The-Nuka-System-of-Care.htm

33 https://www.southcentralfoundation.com/wp-content/uploads/2017/01/2012_30-yearReport_web.pdf

34 https://www.japantimes.co.jp/news/2015/06/15/national/government-aims-to-slash-number-of-hospital-beds-more-than-10-by-2025/

35 http://www.mhlw.go.jp/seisakunitsuite/bunya/hokabunya/shakaihoshou/hokeniryou2035/assets/file/healthcare2035_proposal_150703_slide_en.pdf

36 http://www.ipss.go.jp/site-ad/index_english/esuikei/econ2.html

37 http://www.npr.org/sections/parallels/2016/08/25/490687317/for-some-older-adults-in-japan-a-chance-to-stay-in-the-workforce

38 http://fpcj.jp/en/useful-en/wjn-en/p=20676/

seen in Japan. Our future focus will be on community-based care models and on holistic health — working with members to keep them healthy and helping them beyond their illnesses.

Under this new model, our services exist along a continuum, from wellness programmes for health and low-risk individuals and coaching for those at risk of disease and injury through to management of chronic diseases and major health events.

A number of factors inform our care concept, including a growing recognition that better health care starts with a deep understanding of people's health care needs and goals, as well as the social and economic factors that may impact those goals. What's more, through the use of analytics (both clinical and financial), we identify members for care management and deliver the most relevant aspects of our integrated system.

High-risk individuals receive one-on-one nurse support and high-touch clinical engagement and coordination of care. Moderate-risk individuals are given online tools and one-on-one support to help them understand and manage conditions and to prevent disease and disability. Low-risk individuals have access to self-learning and empowerment digital tools, such as text messaging programmes.

This approach has allowed us to increase member engagement by 73 percent in just 12 months, a testament to our ability to adapt to the changing needs of our members. Engaged members mean lower claim costs. And reduced costs for our clients lead to improved operating margins and better business outcomes.

A good example of our approach is a text-messaging programme we used with an international employee population in the U.S.. After reviewing which diseases and conditions were common among the population, we sent targeted text messages offering one-on-one support. Forty-three percent of those who received the texts said yes, and a third are now engaged in one-on-one coaching programmes or are participating in condition-management programs. We also connected many members to primary care physicians, a novel concept to those who come from countries where it's unusual for family doctors or general practitioners to triage health conditions and refer patients to specialists.

In every industry, there's a need for experts — trusted sources to provide advice, guidance, assistance, and reassurance. In health insurance, care professionals are those experts. The business of health insurance may be changing, but the people are the same. At Aetna International, we're simply meeting the need for change head on and adapting accordingly. Our evolution has only just begun.

From liability to asset

It seems inevitable that most of us are going to live at least a little bit longer than our parents, but will we be fit and healthy in our old age? Will we be fixing bicycles at age 80 like Nenosuke Yamamoto or eating two raw eggs a day at age 117 like Emma Morano? That's partially up to us.

While no one has the power to stop ageing, we all have the power to improve our odds of living long, healthy lives. Moreover, we all can play a role in creating a universal health system better structured to support healthy ageing, something even the youngest among us will one day need.

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 900,000 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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