

Cardiology and beyond: It's time to rethink care that really meets the challenges of health

Cardiovascular disease now heads the World Health Organisation list of biggest killers in the world and is rapidly increasing in prevalence. The burden of cardiovascular disease is crippling healthcare systems worldwide. We have to start doing things differently.



The cost of innovation

On the face of it, cardiovascular disease should be ideal for developing innovative models of care that will both improve the well being of the population and the sustainability of their healthcare systems. But innovation means different things to different people, and it is important to frame the challenge of innovation in cardiovascular disease by addressing a critically important question. Given that it is the only hope for addressing the unsustainable burden on healthcare systems worldwide, is innovation in cardiovascular disease management about small increments of ever diminishing residual gain in outcome by increasingly costly refinement of diagnosis and treatment, or is it about having the greatest

mass impact on global health? Or to put it succinctly, is it about increasingly expensive healthcare for the few, or increasingly cost-effective healthcare for the many?

The scale and intricacy of CVD

Cardiovascular diseases are the leading cause of death worldwide. The related mortality rate is influenced by many factors, including population-level factors (such as genetic predisposition, physical and cultural environment), individual-level behaviour (smoking, diet and exercise) and the availability and effectiveness of acute interventions when cardiovascular events occur. The net result is that the principal cardiovascular disease areas of challenge are hypertension, atherosclerotic arterial disease, atrial fibrillation, stroke, heart failure and sudden cardiac death – between them accounting for 97% of cardiovascular deaths – WHO's biggest killer category. But these cardiovascular diseases do not exist in isolation, interacting as causative risk factors for each other, and greatly exaggerated, both individually and collectively by the spiraling problem of obesity and diabetes.

Long-term treatment

The inspiration for the Future Health Index is that urgent health challenges and fast emerging digital health technologies are prompting a global rethink about how health care is organised and delivered. This is in turn driven by an overwhelming and expanding burden of long term conditions, to which cardiovascular disease is adding disproportionately as a direct result of the success of treatment of all the acute crises that characterise cardiovascular diseases – heart attacks (with coronary stenting), heart failure and sudden death (with implanted devices) and now stroke (with interventions to open the blocked artery to the brain). Each life saved will require progressively increasing care into a prolonged future, surviving to develop complications of both the underlying cardiovascular and other diseases. The downstream effects of the enormous achievement of these saved lives is long term disease, and the rethink of health care referred to in the 2016 FHI must therefore have as its principal goal: how to prevent this cascade of burden of cardiovascular disease.

Routes to success in population-based intervention

Although there have been some successes in cardiovascular disease prevention in the past, principally through education appealing to the good sense of the population, disease prevention through education alone has, in general, had limited success over the current obesity-diabetes global epidemic. This is perhaps not surprising in the context that we are programmed to crave carbohydrates when they are available as a manifestation of the primitive drive to consume as much of this once scarce resource when available, and so the current, somewhat defeatist emphasis appears to be on legislation by governments to **reduce sugar** content in foods.

Other more interventional preventative successes include a program set up by **Kaiser Permanente** to treat 350,000 high-risk patients with a simple medication bundle, including aspirin, a statin, and an ACE inhibitor – all agents known to have preventative benefits. In addition, partnerships with community-based health systems helped to further extend the program to their patient populations. The program has a direct cost of \$205 per year for each participating high-risk patient, which translates into a total investment of \$205,000 per 1,000 participating patients. The program prevents 19 heart attacks or strokes per 1,000 participating patients per year, which results in 147 fewer unhealthy years per 1,000 high-risk patients. Those additional healthy life years have a socio-economic value of \$7.8 million, giving a projected return on investment of 3,700%. Impressive though this figure is, this projected return on investment does not include savings on the resulting efficiency and cost structure of the healthcare delivery system, nor does it include a projected further halving of cardiovascular events if all eligible quit smoking, took recommended levels of exercise, and lost weight – illustrating the striking impact of behavior change.

Motivating behavioral change

On this background we surely need to consider promoting behavior change through a more conscious approach to creating desirability in the avoidance of carbohydrates and taking more exercise. Although it may feel a vain hope, the recent craze for **Pokémon Go** worldwide has undoubtedly increased exercise

with many reports of activation of otherwise non-activated citizens promoting previously unaccustomed levels of walking and significant weight loss. At the very least this provides some hope for how the fast emerging digital technologies that treat citizens not as patients but as partners who win from their use can create desire to do the right thing, even if sometimes for the wrong reasons. Indeed, there are many examples throughout human history of very effective behavior change driven by ulterior motives. Even the most pessimistic among those surveyed for the 2016 FHI would have to agree that in the age of being able to monitor and measure behavior, rewarding the citizen for a healthy lifestyle and adhering to treatment regimens when diseased by sharing the cost savings to the healthcare system – as hard cash in their pocket – might be an effective motivator.

Why now?

If it can be adequately motivated, there is a veritable army – massively underused resource available to help maintain both health and wellness – the patients themselves. The quest to engage the individual to achieve this may appear to be rehashing a long sought-after and elusive hope that has at times in recent history being naively articulated and sought. So what may now be different – why is now the time? The answer lies in the fact that we now, for the first time, have tools available and the readiness of the citizen to embrace what they have long demanded – greater responsibility for their own health and wellness. As the 2016 FHI has shown, there is also an awareness that the delivery of care requires partnership with patients – no longer considering them as subjects – compliant or otherwise with what they are instructed.

For citizens and their healthcare systems alike, the biggest challenges in cardiovascular disease require fundamental reform of how healthcare is perceived and delivered. This represents the single unified solution that requires changes in attitudes and behavior, encouraged and supported by appealing and rewarding technologies that promote wellness – be it by retaining health or the state of stability in the setting of cardiovascular disease.

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