

25

The future



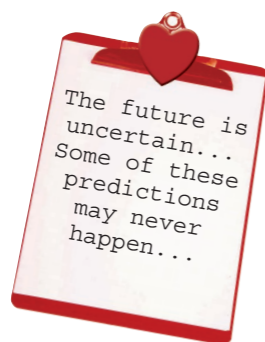
"I never think of the future – it comes soon enough."  
Albert Einstein (1879–1955)

Unlike Einstein, we have to think of the future, and plan now, to reduce the numbers of deaths from coronary heart disease and stroke.

Predictions are by their nature speculative. Nevertheless, this much is certain: the global epidemic of cardiovascular disease is not only increasing, but also shifting from developed to developing nations.

Action can work. There are currently about 800 million people with high blood pressure worldwide. Studies now indicate that in North America, Western Europe, and the Asia-Pacific region, each 10 mmHg lowering of systolic blood pressure is associated with a decrease in risk of stroke of approximately one-third, in people aged 60 to 79 years. Globally, if diastolic blood pressure (DBP) can be reduced by 2%, and by 7% in those with DBP over 95 mmHg, a million deaths a year from coronary heart disease and stroke could be averted by 2020 in Asia alone.

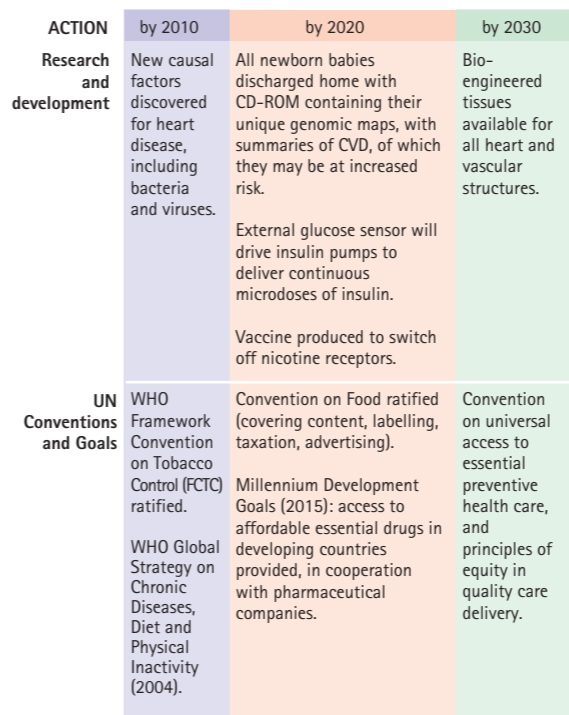
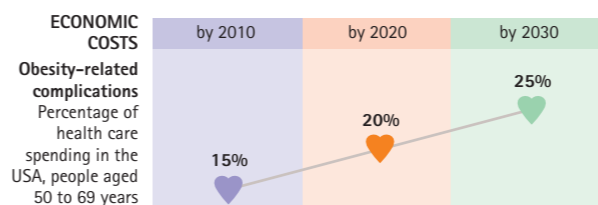
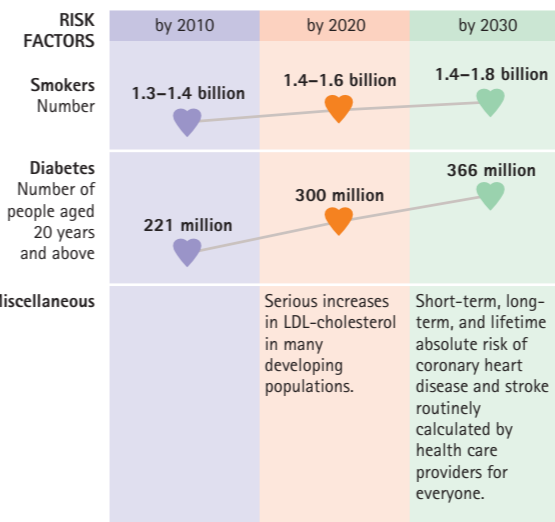
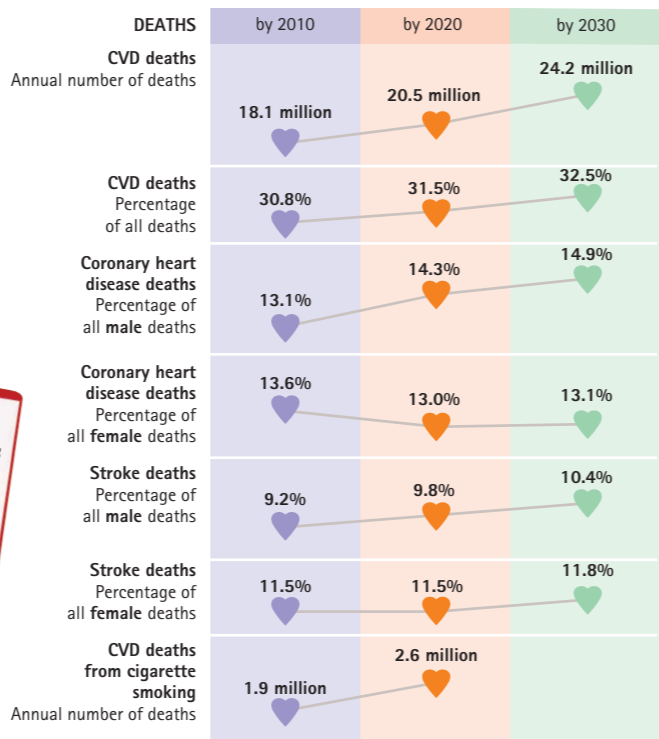
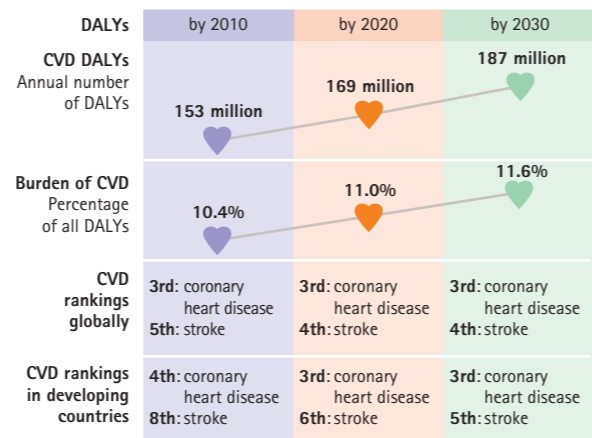
No matter what advances there are in high-technology medicine, the fundamental message is that any major reduction in deaths and disability from CVD will come from prevention, not cure. This must involve robust reduction of risk factors.



"Unless current trends are halted or reversed, over a billion people will die from cardiovascular disease in the first half of the 21st century. The large majority will be in developing countries and much of the life years will be lost in middle age. This would be an enormous tragedy, given that research in the last half of the 20th century showed that cardiovascular disease was largely preventable."

Anthony Rodgers, Clinical Trials Research Unit, University of Auckland, New Zealand, 2004

*DALYs*  
Disability-adjusted life years combine years of potential life lost due to premature death with years of productive life lost due to disability.



TREATMENT	by 2010	by 2020	by 2030
<b>Miscellaneous</b>	Full personal medical records stored on smart card.	Health systems driven by primary health care to ensure universal access to quality health care services.  Instantaneous computer language translation enables patients to be understood by doctors in any country.	Patients' knowledge of their own health equals that of doctors in the 1990s.
<b>Investigation</b>	ECGs, X-rays, ultrasound images, etc. transmitted electronically to diagnostic centres, often in another country.	Minuscule computer, with microsensors, automatically sensing and recording health data, could be everyday wear.  Biochemical inflammation and genetic markers used routinely in blood tests to screen patients for heart problems.	"Trial and error" in drug prescription abandoned in favour of personalized prescription through pharmacogenomic testing for predictable responses to drugs.
<b>Genetics</b>	CVD-modifying genes identified.	Genetic manipulation to prevent and treat CVD, including post-operative prevention of re-stenosis of arteries.	
<b>Artificial body parts developed</b>	Heart	Lungs	Brain add-ons  Nerves to transplanted hearts
<b>Transplant surgery</b>		Xenotransplantation with pig hearts soars as rejection problem overcome.	Pig-napping of personal transgenic pigs a new crime.
<b>High technology</b>		Nano-surgeons, or sub-microscopic robots, will crawl through arteries, scraping away fatty deposits and repairing damaged or diseased parts.	Computerized "auto-doc" machine externally detects and treats illness by magnetic resonance therapy.  Off-pump beating heart surgery predominates.  Automated external defibrillators offered as routine electronic options in new homes for persons at high risk of sudden death.
<b>Medication</b>		Six-drug "polypill" will reduce CVD by more than 80% if taken by everyone aged 55 and older, and everyone with existing CVD.	Drugs developed to raise HDL-cholesterol (as effective as statins are today for lowering LDL-cholesterol).