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A is for aphorism

'A normal person is only someone who hasn't been investigated enough yet.'

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Every year I read many applications for research grants, mostly for the National Health and Medical Research Council (NHMRC). Most start in roughly the same way: an estimate of the number of people suffering from the disease in question and the cost of the disease to the economy. From reading these applications, one would think the health of Australians is in crisis and the economic effects of ill health devastating. The evidence, however, is quite the reverse. Australians currently enjoy one of the longest life expectancies in human history.¹ Adult male mortality rates have fallen from 207 per 1000 male adults in 1970 to 81 in 2009; female mortality rates have fallen from 117 to 47 in the same period.² These trends continue to improve. There has been a spectacular decline in the prevalence of cardiovascular disease in Australia from the levels seen in the 1960s and 1970s.³ In the 2011–2013 Australian health survey, over half of the population rated their health as very good or excellent; there had been no change from 5 years previously, despite the ageing of the population.⁴ Even in the age group of 85 years and over, 60% rate their health as good to excellent.

So what accounts for the difference between the prevalence of disease we see in research applications (and newspaper headlines) and these data? First, we are labelling more and more people with risk factors for a disease as having a

'chronic disease', even though the risk factor itself causes no symptoms. Identification and treatment of risk factors has been a major contributor to the improvement of life expectancy, but as the number of potential risk factors has increased and the threshold that we use to define being at risk has been lowered, the proportion of the population living with these 'chronic diseases' has increased, even though the overall health of the population has improved.

Second, the definition for many diseases has been widened over time. In a recent review of guidelines,⁵ we showed that there was a general trend for widening disease definitions. Attention deficit hyperactivity disorder (ADHD), depression, multiple sclerosis, myocardial infarction and type 2 diabetes are all now more prevalent because the criteria that we use to determine if a person has these diseases or not have been widened.⁵ Again, there may be no change in the overall health of the population, and in some cases the widening of the definition allows access to treatment and so may improve health outcomes, but the change in the definition will increase the observed prevalence of disease.

Alongside the increased detection of risk factors and the widening of disease definitions is the increased access to and sensitivity of more recent pathology and imaging tests. CT scans and MRIs find cancers and other abnormalities, often as incidental findings. Thirty-five percent of men do not die of prostate cancer⁶ and 4% of people do not die of thyroid cancer,⁷ so it is clear that a large proportion of these abnormalities would be best left alone. Our quandary is which of these require treatment and which do not. Despite all the advances in medicine, as yet we have little to differentiate between lesions that are potentially life threatening and those that are not.

Some of the increased detection of disease and risk factors has been beneficial, but we also need to be cautious. The 2011–2013 Australian Health

Survey⁴ showed that 1 in 5 Australians who has diabetes is undiagnosed. This sounds like an alarming and important finding until one considers if there are any consequences of undiagnosed diabetes. It is not at all clear that earlier treatment of diabetes, particularly using the more recent threshold for disease definition, improves health outcomes. Trials that have tried to prove this hypothesis have so far been negative.⁸ Arguments for earlier identification or screening for diabetes rely on evidence from trials in type 1 diabetes (such as the Diabetes Control and Complications Trial⁹) or from trials using earlier definitions of type 2 diabetes (such as the United Kingdom Prospective Diabetes Study¹⁰).

There is a danger that in our enthusiasm to improve health we can paradoxically be making people ill. Overdiagnosis not only wastes resources but also causes patients harm. There is a quote, attributed to Aldous Huxley, which aptly sums up medicine in the 21st century: 'Medical science is making such remarkable progress that soon none of us will be well'.

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