

Professor Chris Whitty – written evidence (NHS0194)

What assessment has been made of the likely changes in England's demography and the burden of disease over the longer-term, and what impact will these changes have on the health and social care systems by 2030? Will this lead to ever greater funding pressures? What do [you] consider to be the most impactful driver of change? Is there planning in place?

As always for a Chief Scientific Adviser the technical opinions expressed are my own.

- 1) On the broad trends in demography, I do not think there are major points to add to my oral evidence and that of others. The increase in the overall elderly population, and the elderly population relative to the working population, are well known.
- 2) The less recognised relative increase in the rural elderly population due to the tendency of cities to import young adults who leave in early or late middle age was raised in my oral evidence. This has important implications for health service provision (for example stroke units, hospital-at-home) as well as social care provision. To illustrate this see Figure 1, maps of concentration of people aged over 85 over time (ONS data).
- 3) As important is the change in disease mix we can expect to see over the next 20 years (not covered in oral evidence). Whilst it is not easy to predict which scientific advances will have the greatest impact, it is possible to use trend lines in incidence, prevalence and survival over the last 30 years. Where for any disease they are straight lines over many years we can reasonably assume they will continue broadly on current trends. Based on this, improvements in primary and secondary prevention mean that *incidence* of cardiovascular disease (heart disease, acute stroke, some vascular dementia) and some major cancers (eg lung, cervical, gastric) will reduce (Figure 2, 3). Because of steady improvements in treatment the trend toward improved *survival* from several major diseases will also continue, including several major cancers (including breast, prostate, bowel) where most people can already expect to be alive and well 10 years post diagnosis (Figure 4, 5, 6). Some diseases will reduce in incidence but increase in prevalence due to better survival - stroke is an example. This has significant implications for the skills mix needed in the professions 20 years out.
- 4) The success against first infectious diseases, then cardiovascular disease, and more recently some cancers inevitably means prevalence of other diseases of old age will increase. Of these the most prominent is dementia (Figure 7), especially in women. An even larger issue is the rise in multi-morbidity (2 or more significant conditions) and frailty in the later years of life (Figure 8, schematic). The relative contribution of specialist medicine compared to general medicine and social care will need to shift. This point is worth making because although the trend is well recognised the planning for this has not yet begun seriously in the professions.

- 5) On whether demographic trends will lead to greater funding pressure in medicine and healthcare the answer is yes but the relative contribution of other trends are often underestimated. I agree with the assessment of the Office for Budget Responsibility (OBR) that the greater propensity of wealthier societies and individuals to consume healthcare and the opportunities that medical advances from science give for expanded treatment are likely to be strong drivers of demand and increased healthcare expenditure in the UK. The evidence that wealthier people and societies with the same 'need' by historic standards choose to consume more healthcare (increase demand) is clear and I think the OBR assessment on this point is a reasonable one. Although the OBR state that it is not settled whether the improvements in longevity lead to longer periods spent in disability, no difference or reduced period in disability, my reading of the evidence is that overall it is currently being accompanied by a significant expansion in time in ill health, and I think planning should be on that basis.
- 6) Demography and improved survival provides an inexorable upward pressure on social care costs in addition to health costs.
- 7) Demographic changes in other countries mean that global competition for the supply of health and social care professionals is likely to increase sharply over the next 20 years with implications for availability of workers in the UK especially those with long training lead times. The demographic expansion in the elderly in the UK is slower (so more manageable) than in many other countries in Europe and Asia. The need in several major countries for additional health and social care workers will therefore have a faster onset than the UK.
- 8) The expansion in demand from scientific advance is primarily due to expansion in the range of things medicine can do (increasing activity). The common assumption that new scientific advances in medicine are always more expensive is flawed viewed over the long run. Some transformational interventions are cost saving from the start (an example was the findings that aspirin reduces mortality from heart attacks by around 20%, and reduced risk of a TIA leading to a stroke). Many are mixed; for example the shift from cardiac surgery to angioplasty has led to shifting from a more expensive to a cheaper intervention, but also to an increase in the number of interventions performed (Figure 9). For most there is a period of increased expense whilst they are innovative and in the case of drugs or devices on patent, and then a steady reduction in cost provided the market works normally and competition emerges. Antibiotics are an historic example; more recently the overall cost of cardiovascular drugs has steadily decreased as the market matures (Figure 10). The substantial number of new (on-patent) cancer drugs is an example of a medium-term financial pressure which may well be stabilising or decreasing in 20 years time as markets mature. One of the main things we can do to meet the challenge that increased demand will produce for health and social care is research ways to optimise efficiency.

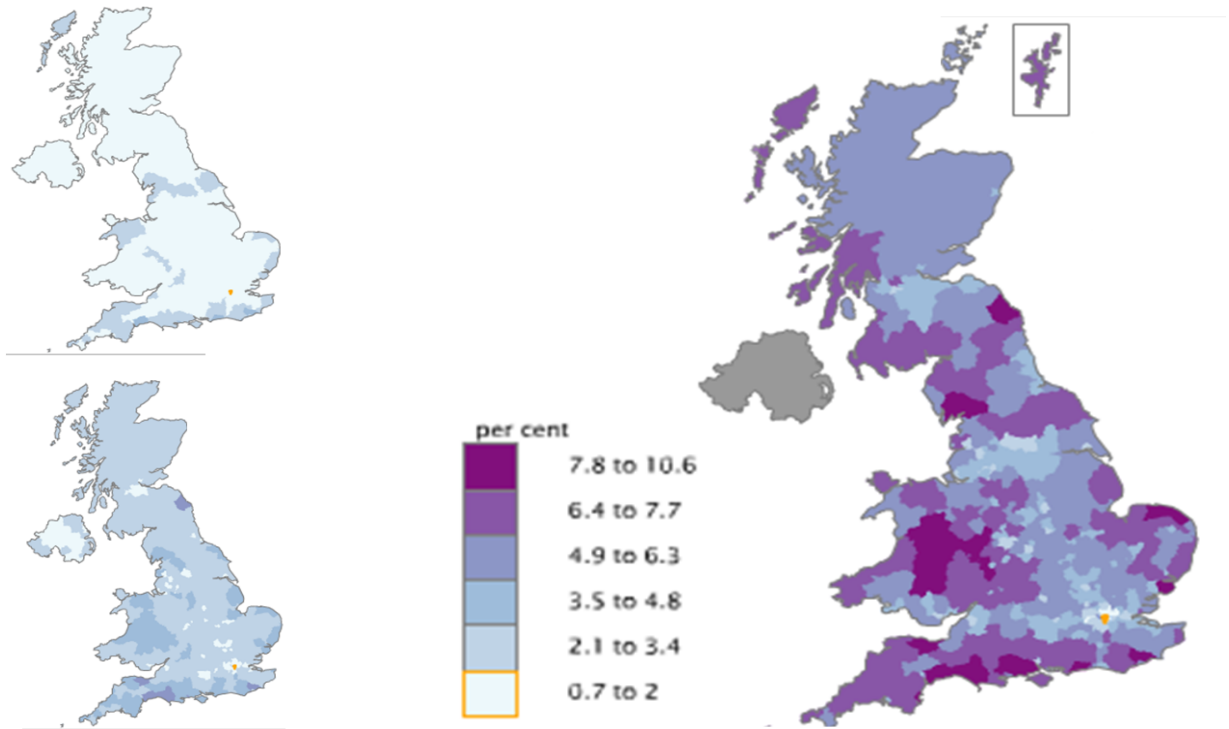


Figure 1. Population aged 85 and over: 1992 (top), 2015 (bottom) and projected 2033 (right). (ONS)

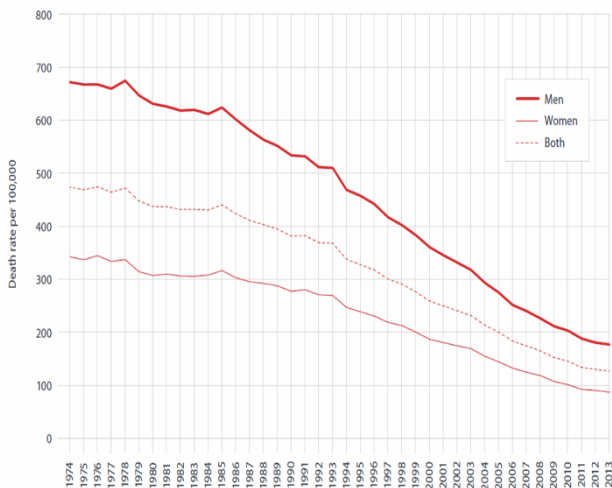


Figure 2. Age-standardised coronary heart disease mortality rates, UK 1974 – 2013. 73% reduction overall, 81% reduction on those under 75 years.

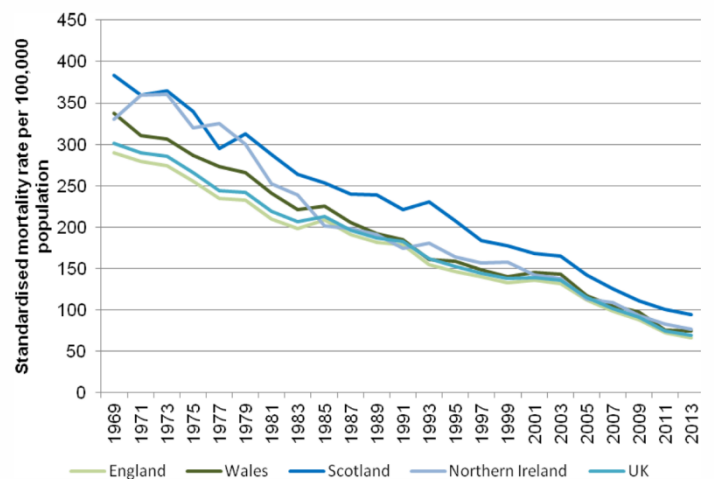


Figure 3. Stroke mortality in the UK 1969 – 2013 (Age standardised mortality/100,000 population (BHF data))

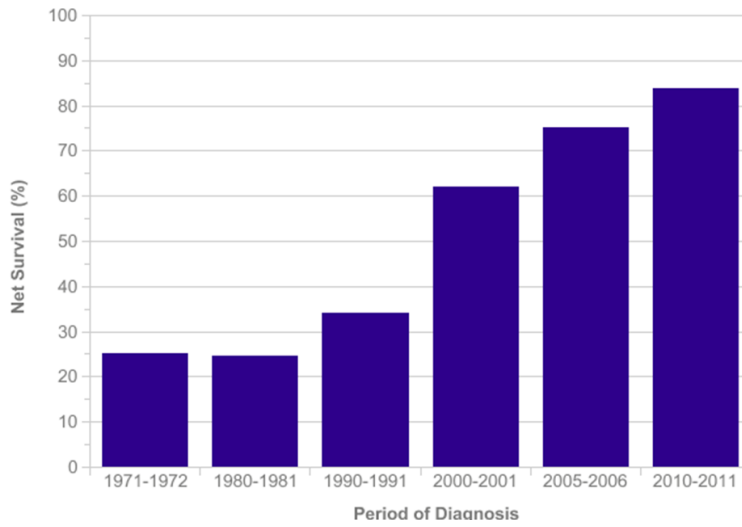


Figure 4. 10 year prostate cancer survival 1971 – 2011 (CRUK)

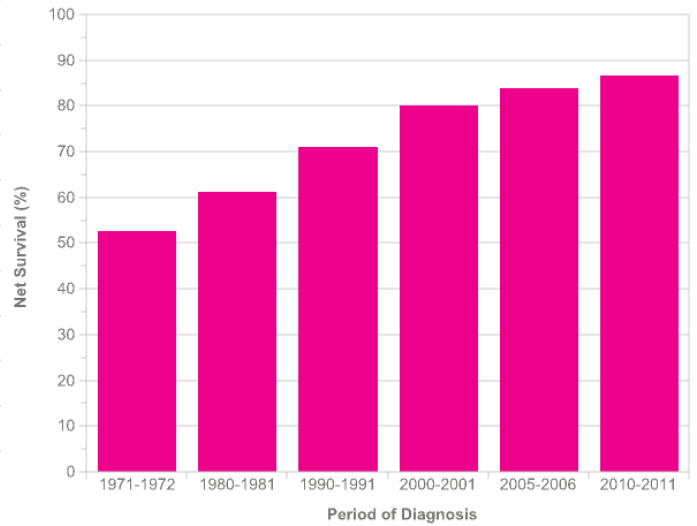


Figure 5. 10 year breast cancer survival 1971 – 2011 (CRUK)

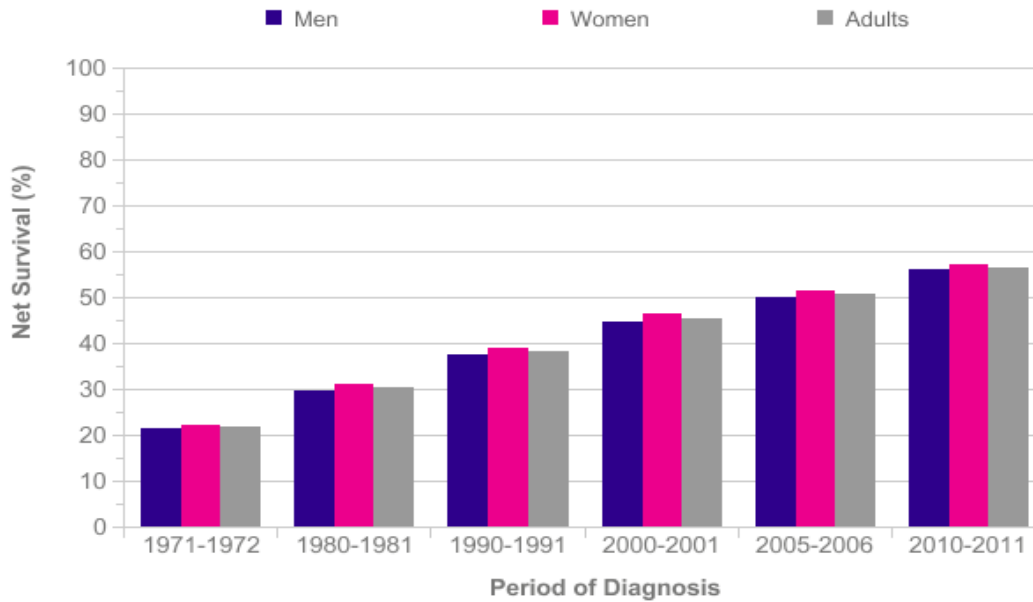


Figure 6. 10 year bowel cancer survival 1971-2011 (CRUK)

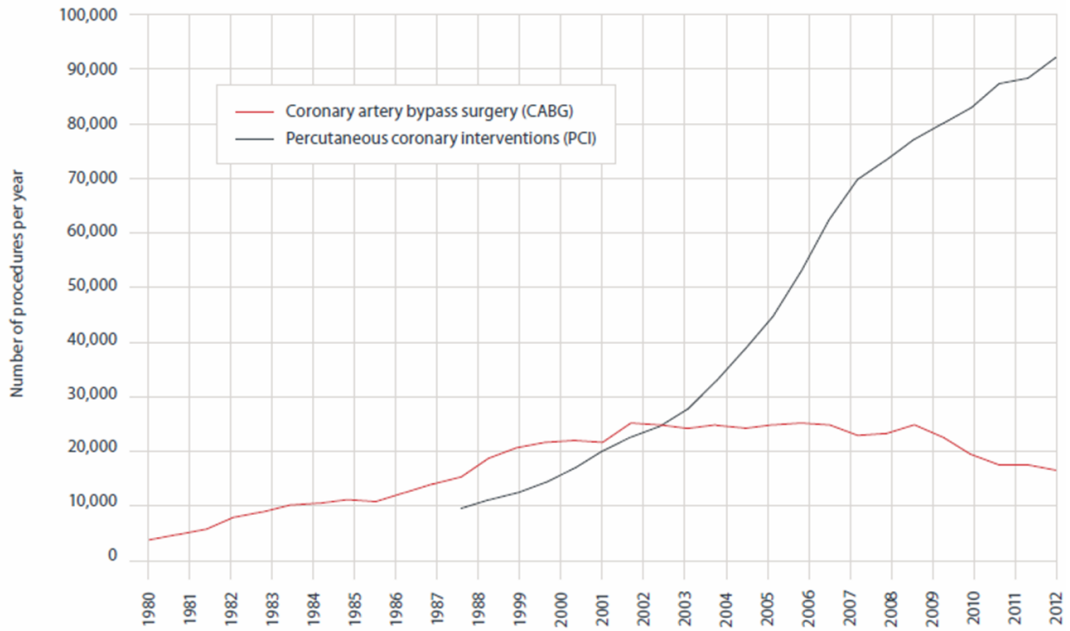


Figure 9. Coronary artery bypass operations compared to angioplasty 1980-2012 (data BHF)

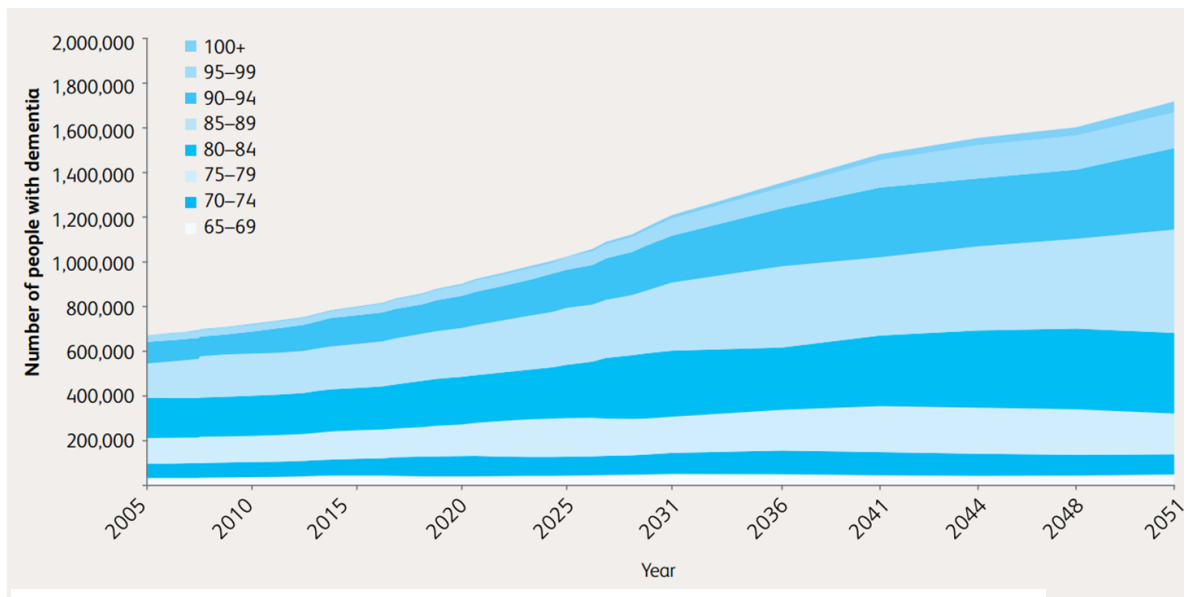


Figure 7. Projected numbers of people with dementia in the UK, 2005 – 2015 (Prince et al. 2015)

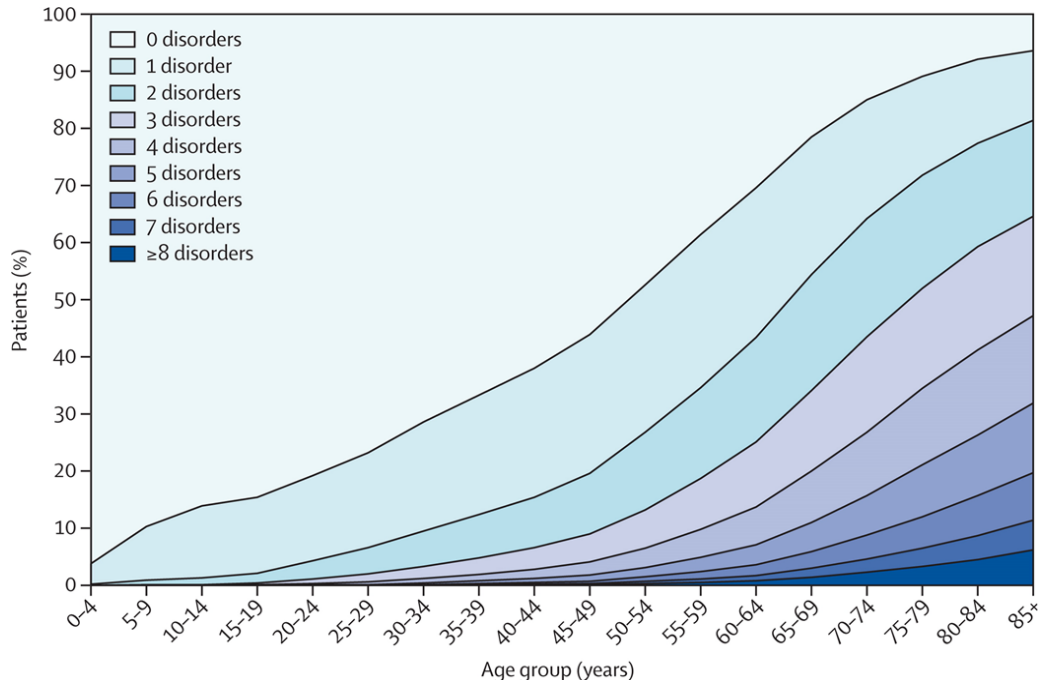


Figure 8. Multi-morbidity with increasing age. (Barnett et al. 2012)

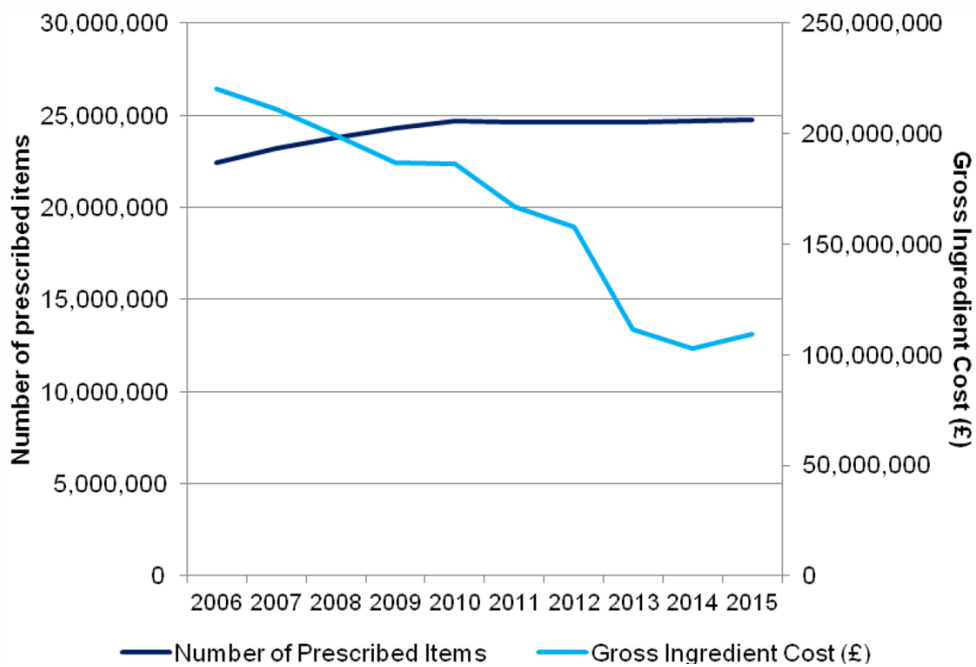


Figure 10. Volume and cost of cardiovascular prescribing, 2006-2015, Scotland. (Information Services Division, Scotland)

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