



The Economics of Preventative Healthcare in an Ageing Society

Notes from the ILC-UK/Actuarial Profession Joint Debate
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Introduction and background

The role of preventative healthcare has been rising to the top of the health policy agenda in the UK, but traditionally has not been seen as important for older people. However, demographic changes mean the workforce is now ageing, and older people are staying in work for a variety of reasons including rising state pension age, poor financial provision, or simply because they do not want to retire.

The main reason for people being forced to retire early is ill-health and studies show that those who retire early due to ill-health tend to be people who can least afford to do so. Many employers do recognise that they can benefit from the contribution of older workers, as long as the older people employed are able to remain in good enough health to perform their jobs. One of the key challenges is therefore is demonstrating the value of the older workforce to employers.

There are many interventions that have the potential to help older people avoid or minimise illness and stay healthier for longer, thus allowing a person to continue to work if they choose to do so. For example, lifestyle interventions in older people can prevent or prolong the onset of cardiovascular disease, and vaccination can protect older people from vaccine preventable diseases such as influenza, pneumococcal disease and shingles.

The ILC-UK/Actuarial Profession joint debate on 3 November 2010 examined the role of preventative healthcare in keeping older people, in particular older workers, in good health including whether this is practical and cost effective, and what it means for employers and the economy.

The debate was chaired by Baroness Jill Pitkeathley. The opening speaker was Professor Marc Suhrcke of the University of East Anglia who was followed by Dr Richard Pitman of Oxford Outcomes. Panellists were Dr David Heymann of the Health Protection Agency, Mr Darrell Gale of Wiltshire Primary Care Trust, and Mr Russell Turner from Marks and Spencer.

The questions that set the scene for the event were:

- In an ageing society, has preventative healthcare become an economic necessity?
- How can the economic benefit of health prevention be assessed?
- Is preventative healthcare cost-effective for older people?
- At what age is preventative healthcare most effective?
- What is the relationship between ill-health and work?
- How can preventative healthcare contribute to employment and well-being among the over 50s?
- How can the private sector play a role in health prevention?
- Is prevention cheaper than cure?

Presentations

Dr Marc Suhrcke, Professor of Public Health Economics, University of East Anglia

Professor Suhrcke began his presentation by explaining that he was taking a broader view of prevention than merely healthcare, but would look at the economic arguments in relation to chronic disease.

People are all living longer and also healthier lives, raising the need to work longer. Working age is typically defined as age 18-64. Extending the upper boundary of working age in line with longevity illustrates the difference this would make in terms of reducing the old age dependency ratio – a key indicator affecting the fiscal sustainability of health and social care systems.

However, increasing retirement age is likely to negatively affect those in lower socio-economic groups who are not as healthy. Nevertheless there is a gap between healthy life expectancy and healthy working life expectancy, which suggest at least on a population average “unused capacity” in the labour market. However, do we want people to work until the point when they are no longer healthy do so?

Traditionally, prevention in the area of health has been a low priority representing around 2-3% of health expenditure. Research on prevention has also been at a rather low level, at around 2.5% of all health research in the UK. However in current economic times, it is increasingly important to justify spending decisions or demonstrate value for money. If the research on prevention is not being done, resources will not follow.

Can the economic argument for prevention of chronic diseases be made in terms of demonstrating cost savings? More importantly, is this the right question to ask? A surgeon is not asked to justify the cost-saving potential of a surgical operation, so why do we ask that prevention must be cost saving? Value for money should instead be examined and there are many preventative interventions that represent good value for money. When people live longer, they are at risk of illness for longer, but it is possible to spend money on interventions that change behaviours and reduce the risk of illness.

There are significant economic costs associated with ill health, so what is the expected benefit of improving health and preventing disease? A healthier person uses less healthcare services, but if they live longer, they may accumulate more healthcare costs. However, it is necessary to take a broader view because ill health does not just result in healthcare costs; there are also productivity costs and welfare costs. In addition, we should, as economists, ask what the intrinsic value of health is and what people are willing to pay beyond healthcare costs.

Whether improving health reduces healthcare costs depends on how such costs are defined. For example, the UK has very high direct costs for cardiovascular disease (CVD), which can be reduced by preventing or delaying the onset of CVD, but cannot be eliminated completely.

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Looking at the additional per capita costs of smoking and obesity over a whole lifetime, a healthy person may consume less healthcare expenditure than an obese person or smoker, but this is not always the case. Therefore assessing preventative interventions purely on the grounds of saving healthcare costs is not a sensible economic measure; a more comprehensive assessment that includes welfare costs (or rather: benefits) would be more relevant.

Economists tend not to like government intervention, although it can still be justified from the perspective of market failure. Cost effective interventions are needed, but in prevention there is a bias towards infectious diseases, perhaps because tackling chronic diseases and health promotion are more difficult. Even when it comes to chronic disease, there is a bias is towards clinical intervention rather than screening or health promotion.

There are substantial economic gains to be made from more and better prevention to improve health and prevent disease, but the evidence for 'best buys' in this area is incomplete. More research is needed especially in relation to non-clinical interventions, but this should not stop us from investing in prevention.

Dr Richard Pitman, Senior Health Economist, Oxford Outcomes

In contrast to Professor Suhrcke, who focused on chronic diseases, Dr Pitman explained that he would be looking at infectious diseases, in particular vaccine preventable diseases, with a case study on influenza.

Influenza is a moving target as the virus changes constantly. Type A viruses change more frequently than others types and cause most pandemics, for example the 1918 Spanish flu, and the 1968 Hong Kong flu. The burden of flu in England and Wales is considerable amounting to around 1 million GP consultations, 25,000 hospitalisations, and 20,000 deaths per year.

An employee with flu usually spends between 1.5 and 5 days on sick leave, which has a significant economic impact. People hospitalised with flu tend to be the very young and the oldest old, who are also overrepresented in flu deaths. In addition, many deaths from pneumonia are also linked to flu.

Influenza brings significant costs for the healthcare system. A hospitalised patient usually spends 6-7 days in hospital, although older frail people can spend longer. The average annual cost of flu is dominated by the cost of hospitalising frail older people, which amounts to around £170 million per year.

When it comes to vaccination, the question is who should we target; those at greatest risk (older and frail people), or those who transmit the virus most easily (children) or combination of both? It is not a straightforward question and one in which transmission often gets forgotten. Vaccination also brings the additional benefit of 'herd immunity'¹, although who benefits from it depends on how different sections of the population mix with

¹ Herd immunity is the indirect protection that a non-vaccinated person can benefit from when a high proportion of the population is vaccinated, resulting in fewer people contracting and transmitting the disease concerned.

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each other. People tend to mix with others of their own age, especially school children and university students. There is however a generational effect: for example, grandparents may benefit from grandchildren being immunised.

When it comes to the economic modelling of vaccine strategies, it is important to remember that the probability of infection changes over the course of an epidemic.

There is evidence of the benefits of herd immunity from as far back as the 1960s when the Hong Kong flu pandemic hit the US state of Michigan. There were insufficient quantities of vaccine, so not all communities were vaccinated, thus a comparison of non-vaccinated and vaccinated communities was possible. Comparing the data of two similar towns, one called Tecumseh where 85% of schoolchildren were vaccinated, and the other called Adrian where vaccination did not take place, shows that rates of absenteeism from school and levels of respiratory illness were considerably less in Tecumseh than in Adrian. In addition, a herd immunity effect was also evident. Other studies have demonstrated the herd immunity effect, for example in the early 1990s in Japan, and more recently in Canada.

Numerous studies have shown influenza vaccination to be cost effective and in some cases cost saving, although none have calculated the cost or value of indirect protection due to herd immunity. Given limited health budgets and the competition for resource allocation, policy makers need to be able to accurately value different health policies. The economic analysis of vaccination strategies shows vaccination to be cost effective without taking indirect protection (herd immunity) into account, inclusion of which shows an increased cost-benefit. In addition, it is important to remember that vaccination is a public health population intervention, and that herd immunity can protect hard to reach populations, and those for whom vaccination is less effective, such as older people.

Panellists

Dr David Heymann, Chair of the Health Protection Agency

Responding to Dr Pitman's presentation, Dr David Heymann, Chair of the Health Protection Agency noted that the power of vaccines had been clearly demonstrated. He also noted the impact of vaccination in preventing deaths from infectious diseases, giving the example that had smallpox not been eradicated by vaccination in 1980 it would probably today account for 4 million deaths a year.

The 2003 SARS outbreak saw a single person from Guangdong attending a wedding in Hong Kong infecting fellow wedding guests who included people from Canada, the USA and Germany, who then went on to infect 317 healthcare workers. This highlights the need to vaccinate medical workers and those who work with older people, not just children who transmit viruses.

Speaking about prevention in general, Dr Heymann supported Professor Suhrcke's call for best buys and more research. In particular, there is a need for further research into the prevention of dementia, which is becoming one of the greatest burdens on society. There is recent research suggesting that continuing to work rather than retiring is protective against dementia although it is not totally clear why.

Darrell Gale, Consultant in Public Health, Wiltshire Primary Care Trust

Bringing the NHS local perspective to the panel, Darrell Gale began by commenting on the issue of vaccination, noting that last year Wiltshire had one of the lowest updates of H1N1 vaccination by healthcare workers. This clearly has a big impact on older people who are more likely to come into contact with healthcare workers. He suggested that vaccination should be made part of professional standards for healthcare workers rather than merely something that they recommend to others.

Wiltshire is introducing vaccination passports as part of EUGMS² working group project. The project is going further than flu and plans to cover diphtheria and herpes zoster (shingles) as well. This is particularly important for people going into a care home.

Mr Gale said he was very glad to hear that prevention being considered as not only a question of healthcare. Future changes to the NHS will see the responsibility for prevention going to local authorities, which may broaden the focus, for example thinking about investment to improve housing quality. At the moment, poor housing costs the NHS around £600 million a year and cold homes cost around £259 million a year.

² European Union Geriatric Medicines Society <http://www.eugms.org/>

Russell Turner, Operations Manager, Occupational Health, Marks and Spencer

Russell Turner explained the implications of prevention for the workforce of a retailer like Marks and Spencer, which has always believed in a strong social welfare package for its employees. In terms of economic benefit, it is sometimes difficult to argue the case for the well-being interventions, given that sickness levels at Marks and Spencer are very low at around 3%, and always have been.

The typical Marks and Spencer employee is a woman in her mid-40s who works part-time. For many employees one of the things they most enjoy about their work is about bonding with colleagues. The workforce is loyal, but it is ageing. There are problems of 'presenteeism' rather than absenteeism, and when employees suffer health problems they are mainly connected to obesity and musculoskeletal disorders. In relation to vaccination, Marks and Spencer does not vaccinate its workforce because most employees are in groups recognised to be 'at risk' by the NHS.

Audience discussion with the panel

Measuring the effectiveness of prevention

The audience raised several points about measuring the effectiveness of interventions including the double-whammy of ill-health for unpaid carers - being ill themselves, particularly getting depression due to lack of support, and then not being able to care for their family member. Also raised was the issue of priority setting and budget allocation by looking at costs and benefits, which was tricky for the prevention of ill-health as determinants are often wider than health and involve more than one government department.

Professor Suhrcke agreed that there was a need for better measurement of interventions that go further than the costs to the individual, for example factoring in the cost and benefit to others, which would surely increase the return on investment. Mr Gale also added that unpaid does not mean no cost, as if a carer falls sick, there is a big cost in supplying the care they can no longer provide, and this has to be factored into service planning.

Mr Gale went on to say that the determinants of health were too narrowly focused and that non-health outcomes such as criminal justice and environmental services needed to be considered. It was important to look at value, e.g. the value of takeaways to a community, includes the jobs provided, the litter generated, and a lack of fresh food, the latter being welfare costs. When the smoking ban was introduced, research was undertaken on the impact of this on the leisure industry. This research showed that savings were made in redecoration (less frequently needed in smoke-free premises) and improvements were made in staff health. There was also an increase in non-smoking clientele who often spent more than smokers. Measuring such outcomes needs data from broader sources than just health data, which is difficult.

Mr Turner said that for Marks and Spencer everything, including investment in health is measured in terms of success, that is, did it work or not, and what was the return on investment? In the past Marks and Spencer was ahead of the curve for example the company introduced breast screening for older women before the NHS did (then subsequently advised the NHS on the introduction of its own screening programmes). However there was no question of return on investment for this; it was innovation.

The panel was asked about using economic markers such as early retirement, to measure the effectiveness of interventions. Professor Suhrcke agreed that it is easier to say that health matters in relation to early retirement as it plays a significant causal role. One of the reasons that the USA outperforms the EU is that a larger older workforce, which needs institutional incentives. Mr Turner noted however that early retirement has become a thing of the past at Marks and Spencer; instead the company has employees working longer.

It is also necessary to acknowledge that there are factors unrelated to health that can affect health status and for which interventions are possible. For example Mr Turner mentioned that the ability to manage finances can have a massive impact on health,

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particularly affect mental health, due to the stress of worrying about financial problems. Providing assistance to people to enable them to better manage their money can therefore help improve health.

Healthcare and social care

A participant noted that cuts to social care were already impacting healthcare, for example through earlier hospital admissions. Mr Gale said that he had always struggled with the line between health and social care and could not see the point of separate budgets. He expressed hope that this would change with the new approach of giving public health responsibility to local authorities, noting that some care trusts have undertaken successful pilots.

Long term and chronic conditions

The panel were asked if it was possible to calculate the cost benefit of prevention i.e. how much healthy life expectancy results from each £1 invested, and whether they were worried about life expectancy running ahead of healthy life years given that that it implied badly managed chronic disease. The questioner noted that chronic diseases had a pattern, that for example a person develops diabetes and then goes on to develop coronary heart disease, so if the onset of the first chronic condition can be delayed, other conditions can be prevented. Also noted was data showing that giving up smoking buys you seven extra years of healthy life expectancy and the availability of similar data for obesity.

Professor Suhrcke said that there is as yet no list of 'best buys', although some interventions such as smoking cessation have good evidence; others do not. There is a need for more applied research, also in interventions that can make a difference, but might not be suitable for randomised clinical trials. Much of the existing evidence is of association rather than causation.

Professor Suhrcke also said that there was no optimal age for prevention, although there was evidence that early intervention gives better long term outcomes. There is good cost effectiveness data on a number of secondary prevention interventions, but not on primary interventions. In addition, non-medical interventions such as social networks are very difficult to measure in order to demonstrate their benefit.

Mr Turner pointed to data that shows a very good intervention age would be between 40 and 50 as this is when people realise they are at a tipping point in terms of own health and they might live for another 40 years. The kinds of issues that arise include starting exercise after many years without doing it, obesity, sleep deprivation and dehydration. These are all issues that often respond to simple interventions. Mr Gale said that realistically good health has to begin in early years to set people up for life, for example breastfeeding to protect against obesity. In relation to the current adult population, a good time for intervention is when people show the first signs of health problems. It is vital at this moment not to focus only on the particular health problem that has arisen, but to take a

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broader view because for example, a focus only on cardiovascular disease could miss out cancer risk factors.

In relation to vaccination, Dr Pitman said that the age of intervention was linked to likelihood of contracting the disease in question. The focus also has to be on the long term gain rather than the short term benefit, for example in the short term HPV (human papilloma virus) infection may only cause warts, but in the long term it may lead to cervical cancer.

Screening and monitoring

A participant asked whether the impact of the NHS health check can be fairly evaluated when some of the relevant determinants are very wide, for example obesity and fast food. Professor Suhrcke noted that economic modelling has been used to make a case for the NHS health check in the first place, although there had been debate about the validity of assumptions used. There should be resources allocated to evaluating such a huge programme, although controlling for other influences that affect outcome, such as diet, will be difficult.

Dr Pitman said that health checks fall under the general remit of public health and that education was needed to encourage people to undertake them. Very broad considerations need to be taken into account in relation to screening. The time span of economic evaluations can be problematic; people are interested in their budgets in the short term, but screening has long term benefits.

Vaccination

The panel was asked their opinion on the bad publicity surrounding the MMR vaccination. Dr Pitman responded by saying that the MMR scandal presented a case for strengthening peer review. There was no solid evidence to back up the claims in the original paper³ and yet it was published. The media cannot be blamed entirely for this. As health professionals and scientists, we need to think about the consequences of things we say and be more vigilant. Dr Heymann reported that MMR was not an unusual case; in France there were stories linking hepatitis B vaccine and multiple sclerosis and in some parts of Africa rumours spread that the polio vaccine was being used to sterilise young Muslim women or infect them with HIV. The rumours in Africa resulted in polio returning to 19 countries, which is dangerous for public health.

A question was asked about to what extent vaccinations should be mandatory. Dr Pitman responded that in a democratic society, mandatory vaccination is tricky, but incentives could be a halfway house. In the USA, children can only attend school if they have been vaccinated, but it can be circumvented. It had to be up to individuals to weigh up the advantages and disadvantages. However, vaccination can often be a victim of its own success; increased rates of immunisation decrease disease incidence, which reduces people's motivation to be vaccinated.

³ Published in the Lancet in 1998, lead author Dr Andrew Wakefield.

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Dr Heymann said that vaccination is a public good and in the USA it has been possible to justify school entrance requirements that include certain vaccinations. The same argument has not been successfully made for adults, so there is a need for more education, particularly in relation to the benefits of vaccination to individuals and population groups.

Dental health

A dentist in the audience noted the big gains in dental health due to fluoridation. For example in the 1960s older people did not expect to retain their teeth. Professor Suhrcke said that preventative dental care was an intervention that was relatively easy to quantify. Mr Turner said that entering later life with one's own teeth has a massive positive psychological effect. Dr Heymann reminded the audience that the argument for fluoridation was only won once it was possible to gather evidence about its effectiveness from fluoridated communities in the USA.

Access to services in rural areas

The problems of rural areas including rural poverty, lack of transport and poor housing were raised by several audience members. Mr Gale reported that Wiltshire was trying to overcome the problems of access to services in rural areas through the establishment of area boards with locally defined boundaries. These area boards have a say in local services and the primary care trust provides a joint strategic needs assessment at area level. This can help inform the thinking of the area boards as well as encouraging PCTs to think about issues that indirectly affect healthcare

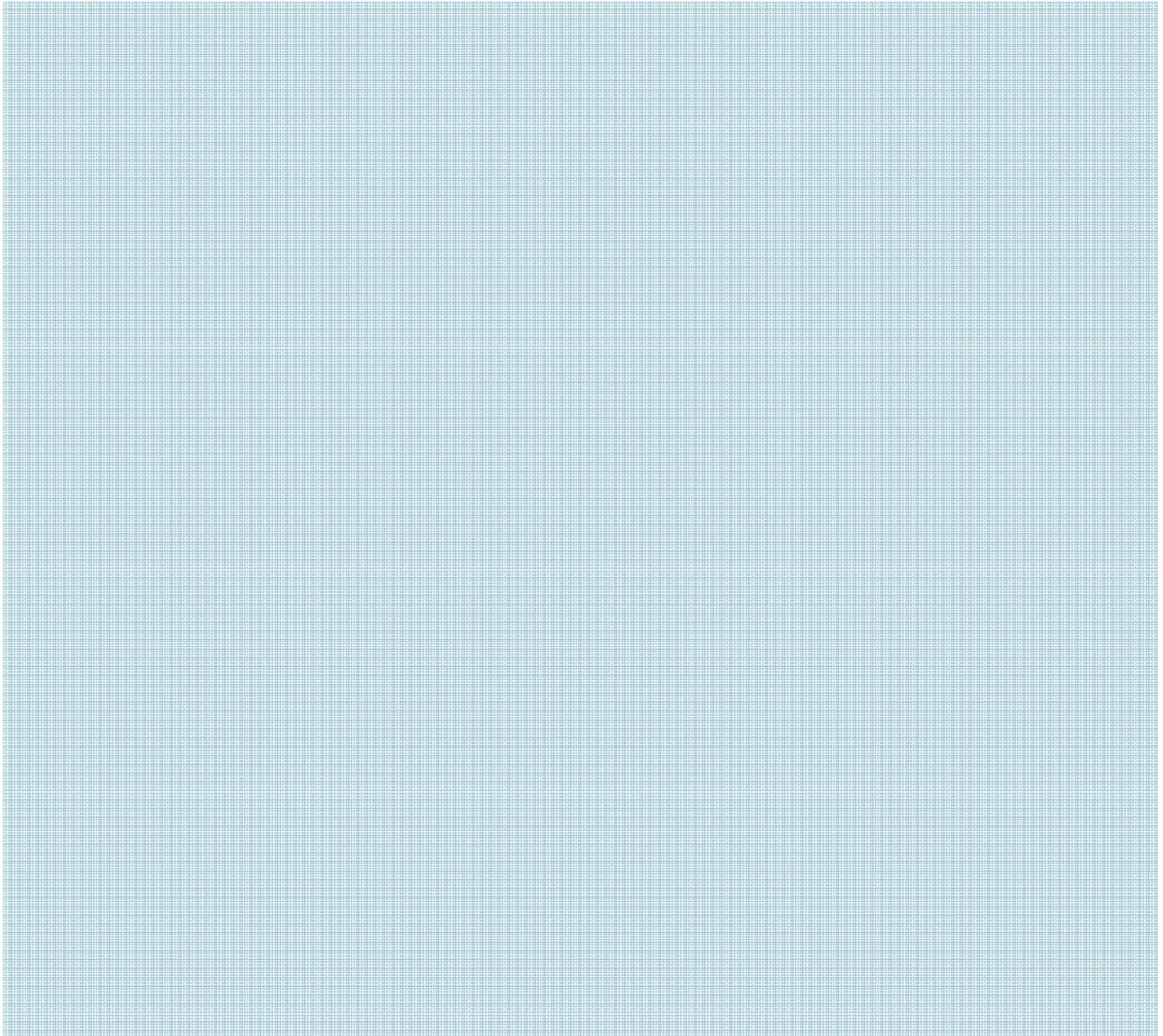
Genomics

A participant asked the panel for comments on the news that Stanford University had mapped the genome of a 14 year old and that preventative measures were being taken as a result.

Mr Gale cautioned that mapping the human genome is still a disease model, but nowadays we talk about a well-being paradigm. In Wiltshire people involved in their local area board do not talk about their conditions, but about the environmental and social factors that impact on their wellbeing. Genetics do not play any role in this.

Dr Heymann reported that the Wellcome Trust was looking at the genomics of cancer, which may produce interesting results, but environmental factors will still need to be taken into account.

Dr Pitman warned that genomics may be even more complex than we thought. Current work tries to identify markers, but we need to be very careful before saying anything definitive.



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