

MEASURING THE WORTH OF MEDICAL RESEARCH

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A new study, commissioned by the Medical Research Council (MRC), the Wellcome Trust and Academy of Medical Sciences, shows that every pound that the tax payer or charity donor invests in medical research yields a wider chain of benefits equivalent to earning 39 pence each year, forever. The report's findings provide some extraordinary insights into the wider benefits of medical research to both the health and wealth of the UK.

The contribution of medical research to health is clear. For example, research conducted by the MRC in the 1950s established a link between smoking and lung cancer which has since saved millions of lives. But the wider health and economic benefits of medical research can sometimes be overlooked.

The year-long study, commissioned in 2007, was carried out by a consortium involving Brunel University, RAND Europe and the Office of Health Economics. It based its analysis on the returns from investment in research in cardiovascular disease and

mental health over 17 years between 1975 and 1992. The consortium chose cardiovascular disease because much is known about how therapies and diagnostics affect health and lifespan, and conversely mental health because there is less understanding of such effects.

Developing methodology to work out the health and gross domestic product gains from investing in these two areas, the researchers aimed to address a raft of questions. These included: what proportion of global cardiovascular disease/mental health research can be attributed to the UK? What is the time-lag between research expenditure and its impact on health? And what were the key treatments and interventions over this period and how many people used them?

Data were gathered from UK research funders, including the MRC, Department of Health, and the Wellcome Trust, to work out total investment in the two chosen disease areas. Evidence-based clinical guidelines were used to estimate the UK's research contribution to interventions in this field including those from NICE (the

National Institute for Health and Clinical Excellence). Evidence on 46 different combinations of cardiovascular diseases and interventions to treat or prevent them was analysed, for example aspirin, beta blockers and smoking cessation, while the study for mental health used evidence on six such combinations. Quality Adjusted Life Years (QALY), estimated by NICE to be worth £25,000 each, were used to measure the quantity and quality of life gained from a health intervention.

The results were impressive. The researchers estimated that the health and gross domestic product gains from UK public and charitable investments in cardiovascular disease research over the studied period were equivalent to an annual rate of return of around 39 per cent for cardiovascular disease, and 37 per cent for mental health research. Overall, around 30 per cent of the gains consisted of benefits to the UK economy, and the remainder was derived from health gains from new treatments or preventive measures.

The findings also showed that public and charitable funding of medical research encouraged greater investment from the pharmaceutical industry, a so-called 'spill-over' effect. One example of this is that public investment in universities generates skilled graduates, new ideas, networking opportunities and high-quality libraries. The report points out that it is no coincidence that high-tech firms

choose to base themselves near top-quality universities. Each £1 of extra public/charitable investment in UK medical research was shown to yield £2.20 to £5.10 of extra pharmaceutical company investment, which taken together earned an extra £1.10 to £2.50 GDP per year for the UK economy.

Professor Martin Buxton from the Health Economics Research Group at Brunel University, who led the study, said: "Estimating the returns on investment in medical research is notoriously difficult. This is partly due to the time it takes for research to filter into measurable health benefits. We looked at the value of health gains once the cost of healthcare had been taken into account and gains to the UK's national income (GDP) from medical research."

He added: "Our aim was to generate realistic estimates of the economic impacts of medical research. The methodology we came up with should help to assess the returns for different disease areas. However, this was never intended as a one-off exercise, and we hope our results will stimulate more work in this important but neglected area of research."

The study also showed that there is a time-lag between research expenditure and eventual health benefits of around 17 years. This raises further questions, such as whether the measured returns on investment are specific to the time frame studied. Do returns differ depending on the

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area of research funded? These uncertainties also apply to the time-lag between investment and benefit in different disease areas. More research is clearly needed to answer these questions and expand upon the insights gained from the study.

As the researchers point out, the study was not intended to be viewed as a one-off exercise, but rather as an opening into a new research field which will lead to even more robust studies in future. However, the results do provide the first real quantitative estimates of the economic benefits of UK public and charitable investment in medical research. Although the work focused on just two disease areas, the results indicate that total health and GDP gains arising from medical

research across all areas could be even greater.

Sir Leszek Borysiewicz, Chief Executive of the MRC, said: "The report provides a fascinating insight into the substantial benefits of medical research. A key message we can take from the findings – particularly during the current economic downturn – is that supporting a wide portfolio of research is very important for future patient and wider economic benefit. It can be hard to see the full potential of research at the outset, but this study shows that investment at an early stage can pay very healthy dividends further down the line."

Download the full study at www.wellcome.ac.uk/economicbenefits

RSC BILL BRYSON SCIENCE PRIZE AWARDED IN THE ATTLEE SUITE



Bill Bryson (centre) is seen here with Dr Brian Iddon MP, Thomas Williams (winner of the secondary school category), Helen Southworth MP and Professor David Garner, President of the Royal Society of Chemistry at the prizegiving reception in the Attlee Suite, Portcullis House, on 14 October 2008. The reception was organised by the Royal Society of Chemistry, sponsored by Dr Brian Iddon MP and Mr Mark Lancaster TD MP.

An explanation of the aims and origins of the competition can be found on page 53.



The 2008 Winners are:

Emily Bullman of Walthamstow Hall, Kent who won the overall prize with her book *Science and Sport in Action*

Thomas Williams of St Gregory's Catholic High School, Warrington who won the secondary school category with his leaflet on *Drugs in Sport*

Kate Marks and Sophie Jarvis of St Joseph's School, Cornwall won the primary school category with their PowerPoint presentation *Getting ready for your first Marathon*