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Adding Value: The Economic and Societal Benefits of Medical Technology

Executive Summary

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Background

The current pressure to dramatically reduce public expenditure has led the NHS to review the efficiency of its services; this may in some cases include designating certain medical procedures as 'low value'. The study of chronic conditions demonstrates that quick-fix solutions for long-term illnesses – although incurring a low immediate cost – will be inadequate to deal with the longer-term impact of chronic disease on an ageing labour force, and associated costs to the welfare system. In order to reduce the societal burden of long-term conditions and maximise the cost-effectiveness of health and social care services, policy makers need to **invest in medical innovations that enable individuals to continue to live fulfilling working and family lives, and prevent their premature withdrawal from the labour market.**

Innovation and technology can deliver tangible improvements to important social outcomes, including the **healthy extension of working lives, increased job retention and return to work, and improved daily functioning** – all before the individuals are affected by the long-term consequences of disease. This report examines the positive impact that medical technologies like artificial hip/knee replacements, implantable cardioverter-defibrillators (ICDs) and insulin pumps can have on both quality of life and labour market participation as the UK workforce ages. It also examines the consequences of delaying access to such interventions, and the extent to which this may have the effect of increasing costs to patients, the health care system and the economy overall.

The coalition government's welfare reforms and the new NHS Outcomes Framework both aim to encourage individuals with long-term or chronic conditions to stay in or return to work, and therefore offer the opportunity to reduce both the payment of out-of-work benefits and lost societal productivity. Many of those receiving benefits are unemployed due to chronic disease and yet, ironically, active employment is known to improve health outcomes and quality of life at the individual level. Interventions, particularly **early and preventative interventions involving medical technologies, may help those individuals regain active employment status**, thus contributing to the retention of skills and improved societal productivity, while reducing the demand for the government to make payments to those individuals in the form of welfare benefits.

The study

In order to investigate the impact of these medical technologies on a number of outcomes, we explored the key questions below.

1. How can medical technologies be used as interventions to help improve:
 - a. Labour market participation and work productivity?
 - b. Quality of life through participation in society for people with chronic health conditions and independent living among those who have left the workforce?
 - c. The efficiency of the NHS?

2. Is there an economic case for wider adoption of some of these technologies? If so, what is it?
3. What factors contribute to the adoption of medical technologies in the UK?
4. What policy changes are needed to increase efficiency of the health and social care services through supporting longevity and workability of individuals with long-term conditions?

We adopted the following methods:

- Desk-based literature review examining the costs and benefits of medical technologies;
- Qualitative interviews with stakeholders and experts who know and use the three technologies;
- Expert focus group/workshop to examine the costs and benefits of increased adoption of medical technologies from a stakeholder perspective.

Main Findings

Used appropriately, we found considerable evidence that medical technology offers a number of benefits for physical, social and psychological well-being. This study has looked in detail at three medical technologies to assess their current use, their impact of quality of life and labour market participation and the economic arguments for their use to be increased:

Artificial hip/knee replacements prevent disability and allow patients to keep their jobs – 31 per cent of women and 42 per cent of men receiving an artificial hip are of **working age**. Around 32 per cent of women and 33 per cent of men had a knee replacement procedure before they were 65 years old. Further knock-on effects of treatment are associated with **preserved capacity of individuals to lead independent lives and return to work**: relieved burden of caregivers, improved opportunities of return to employment among patients, as well as the benefits associated with participating in family roles. In 2009 in the region of 11,000 people in England and Wales were enabled to return to work by a hip replacement surgery, saving the UK welfare system £37.4 million each year of their working lives.

Implantable cardioverter-defibrillators offer crucial advantages by extending lives of people with heart conditions at risk of sudden cardiac death. ICDs can be regarded as an insurance policy for those known to be at high risk for it, as the device has been shown to prevent death from sudden cardiac arrest 98 per cent of the time **The majority of patients receiving the device were able to return to work**. Given the severity of their disease state, this an achievement in and of itself, but the fact remains that the patients' recovery reduces systemic burden on resources when such individuals can begin again to function in accordance with their previous lifestyles and levels of employment. Return to work following implantation of an ICD

reduces the burden to the UK welfare system by £3.5 million each year. If the number of people with ICDs was to match the European rate, the savings would increase to £7.1 million a year.

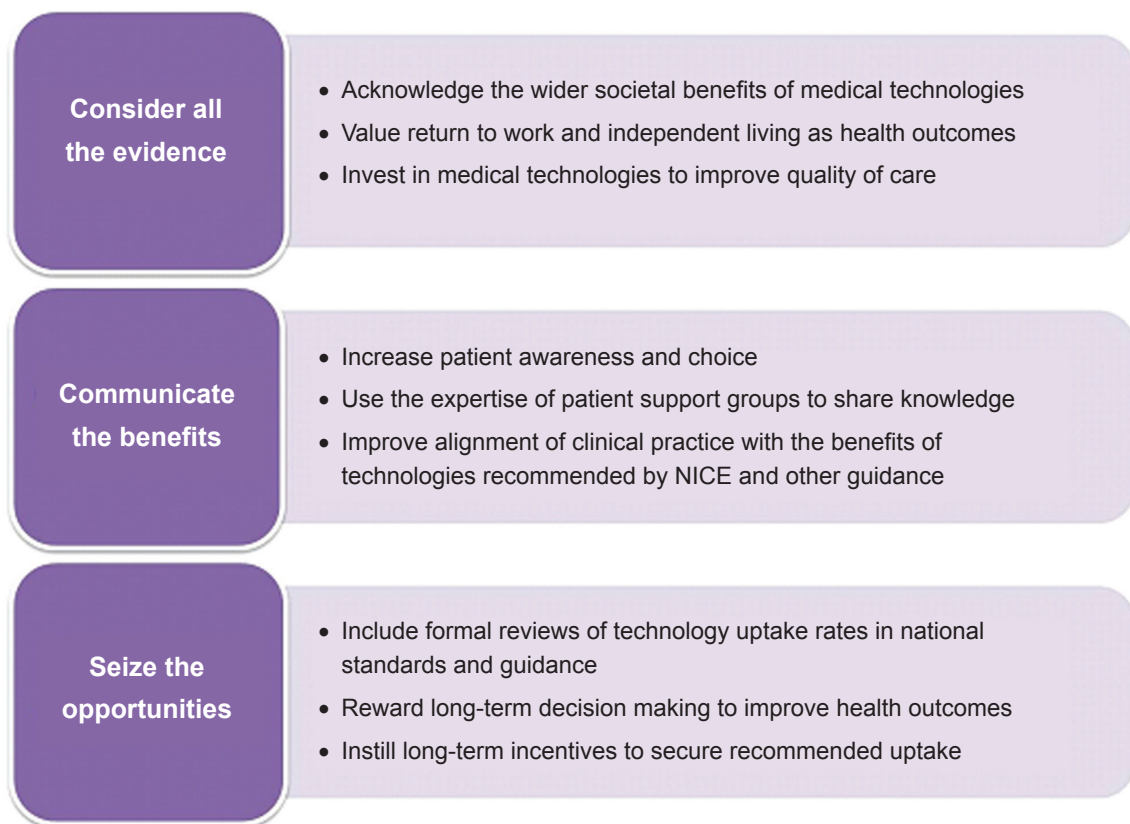
Insulin pump therapy provides greater **lifestyle flexibility (including that of relevance to working life)** and reduces risk of diabetes complications through improved control over blood glucose levels. Insulin pumps have been shown to support cognitive development and improved psychological adjustment of young patients, justifying the possibility of **early use of the intervention among children**. Numerous studies and volumes of empirical data advocate their use in order to better maintenance of safe insulin levels and in avoiding or mitigating some of the more severe health consequences of diabetes. As a result, individuals with diabetes require fewer adjustments within the work environment and can remain in work. If the number of pumps was increased by 7 per cent to reach the 12 per cent benchmark set by NICE in 2009, additional savings just on consultants' visits and hospital admissions would add up to between £37.2 and £62.5 million per year.

Overall, we identified three areas of benefits from medical technologies:

- Improvements in health care (quality, efficiency and the empowerment of patients);
- Improving quality of life and independent living (reducing fears and anxiety, increasing flexibility, and reducing the need for informal care and the burden on informal caregivers)
- Labour market participation and productivity (increasing labour market participation, retaining skills and improving productivity);.

The study concludes that the long-term effects of medical interventions are rarely taken into consideration in health technology assessments. A focus on short-term priorities coupled with a lack of policy coordination and the related failure to recognise the variety of benefits offered by medical interventions often hamper their wider utilisation. Commissioners and specialists involved in the decision-making process need to address cultural conservatism in the uptake of valuable medical technologies.

A call to action Medical interventions should be regarded by clinicians and health care managers as investments in future benefits and cost reductions. As a result of our study we propose the following **call to action**.



Recommendations to improve adoption of valuable technology

A. Improving data on medical technology use and effectiveness

1. With currently available data it can be difficult to measure the return on investment in medical technology. This report identifies a number of variables that may impact analyses and decisions related to medical technologies and **these should be adopted by NICE and the Department of Health in setting strategic investment priorities**. Better data collection and availability will allow for more informed assessments of the costs and benefits associated with the effective use of innovative medical technologies. Reliable measures of quality outcomes and long-term effects would be required to conduct accurate estimations of the impact of medical technologies on economy and labour market.

2. The Department of Health should conduct research to **monitor and evaluate the adoption, clinical and cost-effectiveness and labour market outcomes of wider adoption of medical technologies** – including international comparisons. The results of this work should inform clinical guidelines, care pathways and early intervention strategies, especially in the domain of long-term conditions.
3. The Department of Health should make more explicit provision within the **NHS Outcomes Framework to evaluate clinical and labour market outcomes** in relation to the use of medical technologies to inform innovative best practice.

B. Enhance education about medical technologies

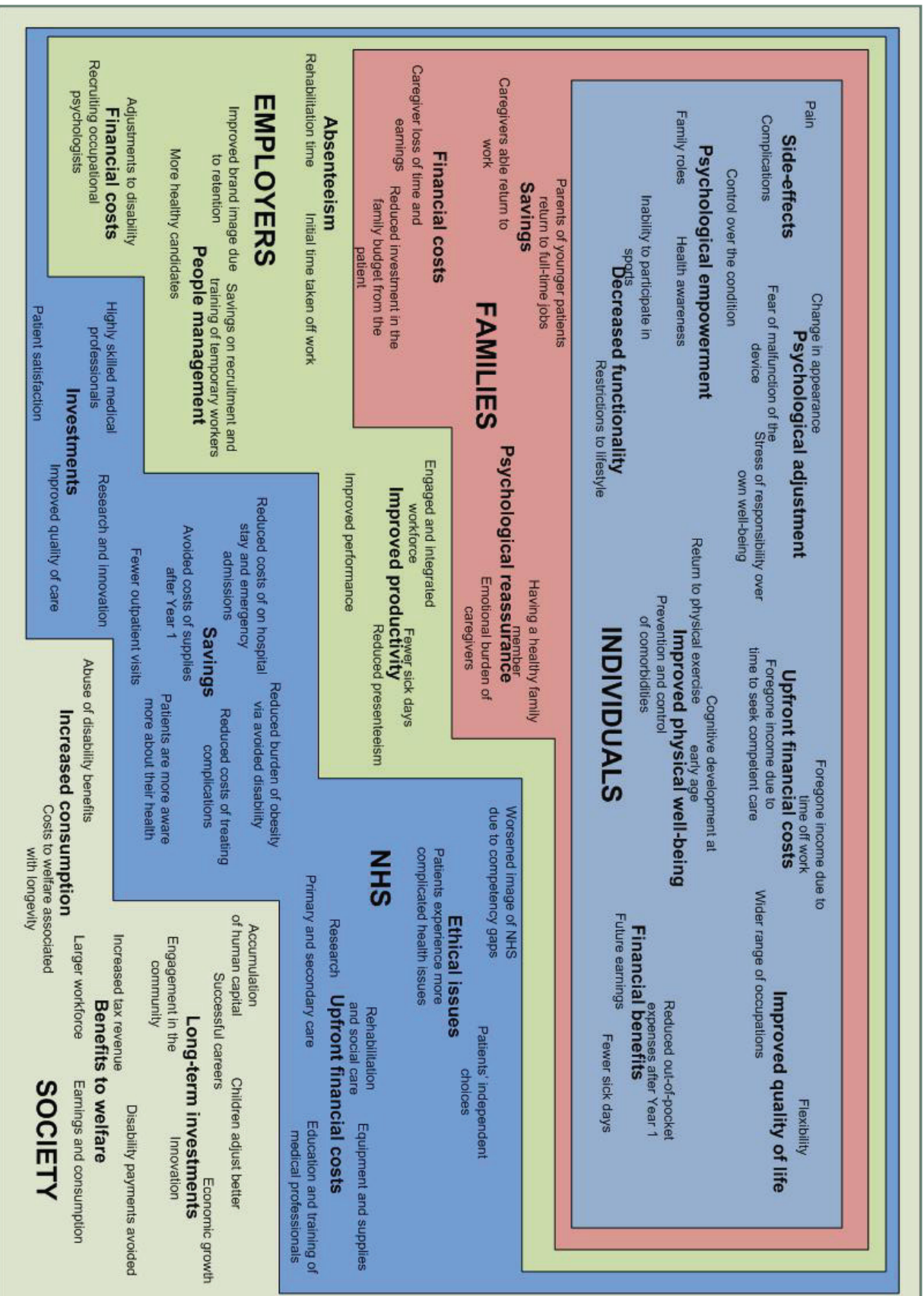
1. Both patients and health care professionals need to improve their awareness of currently available and innovative medical technologies. Raising patient awareness and their confidence in making health care choices would take into account quality of life and labour market outcomes on par with clinical effects of technologies. **The Department of Health should work in partnership with patients, industry and commissioners, and in conjunction with the Ministerial Medical Technology Strategy Group (MMTSG) to develop guidance which increases patient awareness and choice over treatment, therapies and medical devices.**
2. The Department of Health should **appoint expert users** of a range of medical devices (including those of working age) to be part of and advise the national HealthWatch body.
3. The NHS must **invest in the education of medical professionals** to challenge conservative approaches to innovation and to introduce incentives for the wider acceptance of medical advancements and their use, where appropriate, as part of earlier interventions to improve quality of life and labour market participation. Trainee and practicing doctors should be provided with **education and training on the features and benefits of medical devices which are cited in NICE or other professional guidance**. This would enable them to support patients through treatment and at the same time learn from the experiences of intervention users, especially if the technology has wider quality of life or labour market benefits.

C. Recognise the long-term benefits of medical technologies

1. For many medical technologies, health professionals and commissioners appear resistant to use them because of the high upfront costs associated with the uptake. However, the long-term benefits of improved health outcomes, quality and length of life and participation at work and in wider society should also be considered. **Where possible, NICE should be free to comment on the wider societal benefits of medical technologies as part its technology appraisal process.**
2. At the very least, **NICE quality standards should highlight the appropriate use of medical devices and aim to achieve the recommended uptake** where it has previously been outlined in NICE guidance.
3. In the interest of the wider economy and society, uptake of cost-effective, efficacious and beneficial medical technologies could provide long-term savings and benefits through improved health outcomes, NHS efficiency and participation in society. **Consideration could be given to some type of systemic modification that rewards long-term decision-making** or incorporates improved long-term health care and quality of labour market outcomes in the budgeting calculus at the local level.

Not having the intervention is often 'more of a cost' to patients, the health care system and the society. Evidence and experts consulted for this report suggest that further cost and benefit components should be considered when making treatment decisions, refining the cost-effectiveness models by including both short-term and long-term outcomes.

Costs and benefits of medical interventions: beyond the usual benefits framework – expert opinions



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