Chapter 1.1

The Implementation of Innovative Technologies in Healthcare:
Barriers and Strategies

Eddy M. M. Adang
Radboud University Nijmegen Medical Center, The Netherlands

ABSTRACT

Proven cost-effectiveness of innovative technologies is more and more a necessary condition for implementation in clinical practice. But proven cost-effectiveness itself does not guarantee successful implementation of an innovation. A reason for this could be the potential discrepancy between efficiency on the long run, on which cost-effectiveness is based, and efficiency on the short run. In economics, long run and short run efficiency are discussed in the context of economies of scale. This chapter addresses the usefulness of cost-effectiveness for decision making considering the potential discrepancy between long run and short run efficiency of innovative technologies in healthcare, the potential consequences for implementation in daily clinical practice, explores diseconomies of scale in Dutch hospitals, and makes suggestions for what strategies might help to overcome hurdles to implement innovations due to that short run-long run efficiency discrepancy.

COST-EFFECTIVENESS AND IMPLEMENTATION

Cost-effectiveness analysis as part of the evaluation of medical innovations has become mainstream in several European countries as in Canada and Australia. For example in the UK, the National Institute of Clinical Excellence (NICE) uses cost-effectiveness outcome, expressed as cost per quality adjusted life year gained, as a criterion for coverage recommendations to the National Health Service (Weinstein, 2008). In the Netherlands the Dutch Health Insurance Board (CVZ) uses the cost-effectiveness criterion in their advise to the minister about the inclusion of expensive intramural pharmaceuticals in the benefit package. Unlike the reimbursement authorities in Canada and Australia, and in many countries in Europe, in the US Medicare officials do not formally consider cost-effectiveness when determining the coverage of new medical interventions (Neumann, 2005).

In general one would assume that if the evidence on therapeutic value and cost-effectiveness of innovations in health care is convincing, implementation in clinical practice is warranted. However, a characteristic of the health care sector is the somewhat fuzzy priority setting about implementation and the numerous potential conflicts between the stakeholders in the health system. Also, behavioral factors in individual health professionals, such as clinical inertia and persistent routine behaviors, may inhibit change. Therefore implementation of evidence-based innovations and guidelines does not follow automatically, as there might be barriers for change at different levels that need to be solved. Specific strategies targeting increasing speed and level of adoption of innovations can be launched, such as 'tailored' strategies directed at the medical profession and patients (for example, providing information, education, training, communication etc.). However, in a situation with convincing cost-effectiveness evidence and a high willingness to implement by the medical profession, implementation of a technology or guideline into clinical practice might stagnate because there are negative consequences for specific stakeholders. The fact that economic evaluation might oversimplify complex health care decisions and disregards the multi-stakeholder issue has been noted before (Davies et al., 1994; Drummond et al., 2005; Eddama & Coast, 2008; Gold et al., 1996; Hoffmann & Graf von der Schulenburg, 2000; Johannesson, 1995; Lessard, 2007).

This chapter argues that implementation of technologies, despite proven cost-effectiveness evidence, might be hampered due to specific economic barriers related to disincentives to implement by management of care providers. Key in the argumentation about successful implementation directed to technological change is the state of equilibrium in production: long run versus short run. Aletras (1999) concludes from his empirical work on estimating long-run and short-run cost functions in a sample of Greek NHS general hospitals that the use of long-run cost functions should be avoided since it might seriously mislead policymakers. Consequently, according to Aletras (1999), evidence on economies should presumably place lower validity weight on estimates derived from long-run as opposed to short-run cost functions.

A necessary condition for achieving technical efficiency (an assumption underlying long-term cost-effectiveness) is that all inputs can be set at their cost-minimizing levels (Smet, 2002). However, inputs such as capital but also personnel with fixed labor contracts are difficult to adjust quickly to respond to changing output (levels) and will therefore not be set at their cost-minimizing level, given the output produced. This might have consequences for the management of health care providers who are often accountable for short run results like for example a balanced yearly budget or are restricted by tight financial frameworks. In health care systems where budgetary exceeds are sanctioned by a discount in the budget for next year (for example in the Netherlands) achieving

Related Content

Communication and Nursing Relationships

Kyung Rim Shin, Dukyoo Jungand Su Jin Shin (2011). *Evidence-Based Practice in Nursing Informatics: Concepts and Applications (pp. 25-39).*

www.irma-international.org/chapter/communication-nursing-relationships/48920

Adoption of Electronic Health Records

Yousuf J. Ahmad, Vijay V. Raghavanand William Benjamin Martz Jr. (2011). *Clinical Technologies: Concepts, Methodologies, Tools and Applications (pp. 132-146).*

www.irma-international.org/chapter/adoption-electronic-health-records/53581

The Unifying Theory Embraces Lagrange and Sinc Interpolation Functions

Carlo Ciulla (2009). *Improved Signal and Image Interpolation in Biomedical Applications: The Case of Magnetic Resonance Imaging (MRI) (pp. 353-370).*

www.irma-international.org/chapter/unifying-theory-embraces-lagrange-sinc/22504

Software Support for Advanced Cephalometric Analysis in Orthodontics

Demetrios J. Halazonetis (2009). *Dental Computing and Applications: Advanced Techniques for Clinical Dentistry (pp. 1-27).*

www.irma-international.org/chapter/software-support-advanced-cephalometric-analysis/8081

Advanced ROI Coding Techniques for Medical Imaging

Charalampos Doukasand Ilias Maglogiannis (2009). *Handbook of Research on Advanced Techniques in Diagnostic Imaging and Biomedical Applications (pp. 460-472).*

www.irma-international.org/chapter/advanced-roi-coding-techniques-medical/19612