THE ROYAL SOCIETY

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Royal Society study on the impact of information and communication technology on health and healthcare: call for evidence

1 Introduction

The Royal Society has established a working group to investigate the developments in information and communication technology (ICT) relating to health and healthcare in the next ten to fifteen years. The membership of the working group is given in section 5. The potential impacts and implications of these technological developments will be assessed. The study will involve the groups who are likely to use these new technologies, the developers of future technologies, and health policy makers.

To obtain a wide range of information for this study the Society is issuing an open call for evidence. The working group would welcome responses from individuals and organisations with expertise or interest in this topic such as academics (including scientists, social scientists and economists), bodies responsible for setting standards, civil society groups, Government policy makers, healthcare providers (both professionals and informal carers), healthcare provider organisations, industry (such as ICT, medical devices and pharmaceutical), the media, patient groups, the public, and any other interested parties.

2 Background to study

The Society's study will identify the relevant future technology trends that are likely to impact on health and healthcare in the next ten to fifteen years. In addition, it will assess the potential positive and negative impacts of these future technological developments and evaluate their wider implications.

The field of ICT is developing rapidly, leading to a shrinking in both the cost and size of sensors, monitors and other equipment. This shrinkage allows the creation of both novel uses for existing technologies and applications of completely new technologies. Some relevant trends in ICT include pervasive sensing networks, increasing processing power and the ability to transfer more information faster through both wired and wireless systems.

Such technologies might have health and healthcare benefits, but also raise issues about how any information generated is used, how it is analysed, who owns it and who should have access to the data. These technological developments also have potential wider social implications: will increasing the amount of data make patients feel better, or might it generate more uncertainty or concern? More specifically, the study will investigate concerns associated with the generation, release and subsequent use of personal health data.

These technologies will generate an ever increasing amount of health related data. It is important to ensure that these data are made available to appropriate groups, kept away from inappropriate groups, and processed to yield useful information. This study will investigate how best to establish and secure this communication.

All countries have finite resources that can be allocated to health and healthcare. Future developments in ICT might be one of a number of ways of ensuring that health and healthcare funding is prudently spent. The

UK's National Health Service is evolving with programmes such as *Connecting for Health* in England, the *National eHealth / IM&T Strategy* in Scotland and *Informing Healthcare* in Wales. The study will assess the potential impact of the costs of future technologies.

The study will not be investigating the handling of health care records with current technologies in detail, but will focus on the impact of future technologies on health information management. The study will not investigate the technological aspects of national identity cards or the current electronic patient record. These issues are currently the subject of studies by other organisations.

3 Specific questions

The working group would particularly welcome responses to some or all of the questions below.

Identifying relevant future technological developments

1 What relevant technology trends are likely to impact on health and healthcare in the next ten to fifteen years?

a) increasing speed/ breath of bandwich b) increasing quality of communication devices c) increasing access to communication devices (both in terms of affordability and availability) d) problems of increasing 'sharpness' of digital divide: ie, people who can benefit most from communication technologies in terms of their general and specific health being least equipped to take advantage

Assessing the potential positive and negative impacts of relevant future technological developments

2 What areas in the provision of health and healthcare could be positively or negatively affected by these developments?

Easier access to information/patient data/consultants, GPs/appointment-makers and changers, all good, but also creating bigger divide for those unable to operate indpendently via communication devices

3 What actions should be undertaken now to maximise positive impacts, or to prevent or minimise adverse effects?

Embark on a health-specific education campaign, to help those running risk of being left-out become IT literate/keen/motivated. Access in terms of affordability a reducing problem; but availability of customised training is very rare and many older customers complain about the fact that 'they are not considered' when services become available online or digitally. It's not that they don't want to learn, necessarily, but that they are not approached in the right, learner-centred ways.

Evaluating the wider implications of relevant future technological developments

4 Do you have any concerns associated with the generation, release and subsequent use of personal data?

Yes – always a concern, but probably less for average sick person than potential loss or misplacement of data.

5 What medico-legal and ethical issues merit consideration when introducing new technologies, such as the responsibilities, processes and liabilities for decision making?

From our point of view always important to make sure that those least likely to take-up, and most likely to benefit, are considered right from the outset, not as a set of 'annoying late adopters that we'll consider

later'. As potentially those most likely to benefit they should be seen as target early adopters, through taking creative approaches, using advocates from older people/disability groups to advise at all design levels. They will also provoke better/more innovative/user-friendly design which could have resounding impact on profitability of designers.

6 What regulations or other mechanisms (including standards) would facilitate the responsible development of relevant technologies?

Enforcement of Disability Discrimination Act and Ageism legislation, as it relates to 'inclusive design'. Always think of 'greatest benefit' with ICT design.

7 What infrastructure would be required to allow any new technologies to be used effectively?

An over-arching organisation that has a responsibility to make sure that older people/people with disabilities are not discriminated against with social technology, and can have some serious clout with designers.

8 What are the most likely promoters and barriers to the take up of new ICT devices and systems?

Promoters: really understanding who stands to gain or lose 'the greatest benefit@ and who we mean by that. Barriers: not trying to understand this.

9 What education and training would need to accompany the introduction of any technologies, and who would need to be involved?

Training organisations not hampered by obligations to deliver vocational outcomes – ie, need to concentrate on learner-centric training methods not, 'this is good for you' or 'this will make you get a job' but 'this is fun, helpful and just about you and your life and all that you care about'.

10 How are professional roles and responsibilities likely to be affected by the increasing use of ICT?

GPs/consultants moving further down the patient-led model, being 'information signposts' (as many are becoming), ie, sending a patient to a website (but when appropriate, not as a means of fobbing them off) for extra information. Eg, being available for patients to 'double-check' things by email (easy to keep records of exchanges). Allowing for patients to book their own appointments online, for example.

11 How can the development of technologies that meet patients' and informal carers' needs and are practically useable be best facilitated?

See above, right organisations championing such social technology and using patients and carers as advocates/advisers.

12 What are the potential impacts of the costs of any of these new technologies?

The new technologies will arrive in any case – the hidden cost is in not making them available to those who can most benefit because of lack of engagement strategies.

13 What are the implications of the international use of future technological developments, such as global use of health data, variability of ICT-enabled support, and interoperability?

Are there any other important issues that have not been addressed by the questions above and that you think the working group should address?

4 Responses

The deadline for submissions is **9 September 2005**, either electronically (preferred format) or by post to:

E-mail nick.green@royalsoc.ac.uk

Post Dr Nick Green, The Royal Society, 6-9 Carlton House Terrace, London SW1Y 5AG, UK.

Responses are likely to have the greatest impact if they are restricted to four pages, plus appendices if appropriate. The final report will list the individuals and organisations who submitted evidence. The responses might be published on completion of the project, so please inform the Society if you **do not** want your

submission to be made public. If you would like to submit evidence, but are unable to meet the deadline, please contact Dr Nick Green.

5 Membership of working group

Name	Location
Professor Peter Wells FRS FREng (chair)	Institute of Medical Engineering & Medical Physics, Cardiff University
Sir Mike Brady FRS FREng	Department of Engineering Science, University of Oxford
Dame June Clark	University of Wales, Swansea
Professor Brian Collins	Department of Information Systems, Cranfield University. Vice President British Computer Society
Mr Paul Garner	Head of Pervasive ICT Research Centre, BT
Dr Glyn Hayes	President of UK Council for Health Informatics Professionals
Professor Richard Kitney FREng	Department of Bioengineering, Imperial College
Professor Frances Mair	Department of General Practice & Primary Care, University of Glasgow. President of Telemedicine & E-Health Section, Royal Society of Medicine.
Professor David May FRS	Department of Computer Science, University of Bristol
Professor Mandy Ryan	Health Economics Research Unit, University of Aberdeen
Professor William Stewart FREng	Visiting Professor UCL & University of Southampton
Professor Andrew Webster	Department of Sociology, University of York
Dr Damon Wischik	Department of Computer Science, University College London