



ICT in the Health Sector

Literature review

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InfoDev Research Project - ICT & Health Literature Review

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Introduction

This literature review presents a brief survey of the materials that have been selected for presentation as part of the InfoDev supported 'ICT & Health' research project. These materials are presented online as a searchable annotated bibliography. http://www.asksource.info/res_library/ict_out.htm.

The online bibliography is presented according to a taxonomy agreed with InfoDev and the research partners, and which reflects current health and ICT themes. The bibliography is searchable by key words and free text searching, and particular themes have been drawn out in key lists.

The bibliography focuses on materials from 2000 – 2005, from a range of sources and perspectives. These include previous exercises to map ICT in the health sector in developing countries, white papers, technical reports, research reports on the aspects of ICT and public health, policy issues-related, and evaluations. The entries come from mining commercial and subscription resources available through major libraries, including the Joint library of the World Bank. International funding programs, ICT and health focused web sites, web logs and online journals have also been consulted. In the research phase we prioritized the finding of informative bibliographies, review articles and examples of clear policy guidelines.

Please see the Appendix for more information about the research methodology, and the rationale and description of the taxonomy used to structure the annotated bibliography.

Terminology

There is a challenge in the ICT field regarding terminology and definitions, as there is no single agreed definition of ICTs, and within the health sector there are also a variety of terminology differences.

Users of the bibliography are encouraged to use a key word search on 'terminology' and 'definitions' to access a range of documents that explore the issue of terms, you will also find there a number of useful glossaries.

For the purposes of this study, ICTs are defined as technologies that facilitate communication and the processing and transmission of information by electronic means.¹

ICTs are often divided into 'old' and 'new' technologies, with an emerging sub-set of 'innovations' or 'high end applications'.

In the same way as ICTs are not 100% clearly defined the concept of 'ICT in Health' is also open to some variation in interpretation, primarily between direct telemedicine health delivery practice and more overarching health communication and development sector utility. In the telemedicine section users of the bibliography can find a number of useful articles about the definitions of e-health and telemedicine.

Analytical work

There are a number of scoping studies about the 'ICT' and the 'ICT & Health' sectors; including literature reviews, bibliographies and other mapping exercises. These can be found in the strategy section, and also other sections depending on the primary theme of the item. Users can also search by the term bibliography and literature review.

The main areas that have been explored in this more systematic way are the ICT sector from the perspective of poverty; the ICT and health sector from a mainly telemedicine perspective; telemedicine itself, with a range of medical databases, in a number of languages, gathering systematic mainly pilot-based evidence data.

Geographical focus

The research team for the online bibliography included French and Spanish ICT experts and documents from Latin America and Francophone Africa / Francophonie have been gathered. These are not sufficiently represented in the bibliography at the preliminary stage (in time for WSIS), but will be further developed – with specific key lists and literature reviews for each language. However at this stage users can still find many useful documents, by searching the bibliography by language and view the range of content, also specific strategy and case study documents in Spanish, and to a lesser extent in French, can be found in these sections.

Impact assessments

The issue of impact and evidence is explored in documents that have been classified under the section case studies and good practice. Due to the scarcity of materials that examine macro impact there is not an impact section, however the more analytical documents that examine impact in various ways can be found in the strategy section. Specific evaluation studies and literature about developing methodologies in the evaluations of ICTs – the evaluations section – also contain some references that include impact. Medically based systematic evidence studies are gathered in the evidence section.

ICT and the Millennium Development Goals (MDGs)

The role of ICTs in development form a part of the discourse of the MDGs, and for most of the MDG targets there is a potential ICT tool and role to play. Itemizing each potential and role is complex however and cross references with many other classifications, such as ICTs by type, by usage or by implementing agent. While there are a growing number of documents that focus on the MDGs, and a sizable number are present in the bibliography, there is a gap in materials that examine specific health-related MDGs from the perspective of ICT usage.

Key documents that focus on the MDGs can be grouped according to the following clusters; documents that examine the achievements toward the MDGs generally, documents that focus on ICTs and the MDGs, documents that look at the health MDGs and finally a few documents that combine all these areas and present an analysis of ICTs and the health-related MDGs.

There are a small but growing number of references about practitioner level analysis on ICTs and the MDGs, and a number of articles and websites on this angle can be found in the bibliography.

The specific MDGs that feature most strongly in this study are MDG 1 - eradicate extreme poverty. This target is the one that most comprehensively maps across development targets where ICTs are

¹ This definition is taken from Marker, P., McNamara, K. and Wallace, L. 2002. *The significance of information and communication technologies for reducing poverty*. London: DFID (<http://www.dfid.gov.uk/pubs/files/ictpoverty.pdf>), and is a definition that encompasses the full range of ICTs, from radio and television to telephones (fixed and mobile), computers and the Internet.

increasingly employed. The link between ICTs as a tool in livelihoods and poverty eradication is the broadest topic in documentation about ICT and development impact. The positioning of ICTs and health in this target is both implicit and explicit; with health being a major determinate of economic development, but at the same time not the main focus in discourses about poverty. The documentation highlighted in the section on donor strategic thinking explores the theme of ICTs and poverty most thoroughly.

The second MDG, with the target of universal primary education has not featured in the materials as the connection with health is more tangential, although clearly there is a marked interconnectedness between many of the targets and health, and in education there is the link with the target of universal primary education and public health education with primary care health education for mothers and children.

The third target of gender equality / empower women does not feature in a significant way in the literature gathered to date, possibly as the link between this target and ICT and health is less clear. However in many of the case studies and in strategy documents, especially from Latin America, the theme of gender features strongly, as there are significant initiatives in health delivery and health communications where women are being enabled and empowered by ICTs.

The fourth MDG with the target of reducing child mortality, and the fifth with the target of improving maternal health are more explicitly health related; and documents that touch on these targets are more plentiful in the bibliography – in the strategy and case studies sections primarily. These two MDGs are related when viewed through the prism of ICT and health as ICT applications that benefit increased health delivery for mothers and children are linked. Areas of focus in the literature include direct health delivery, health informatics (that create a more efficient health system) and health communications that increase knowledge about maternal and child health.

The six MDG with the target of combating disease, especially TB, Malaria and HIV/AIDS, was the most well covered health-related MDG in the materials. The ICT and health aspect of this MDG is explicit.

The seventh MDG with the target of environmental sustainability has not been covered in the literature to any significant extent, as the connection between this and health is possibly not as clear as in other MDGs. Although in some strategy documentation questions about the appropriateness of ICT use in different contexts, disposal of hardware and other issues; and natural resource management are raised in relation to ICT in development generally.

The eighth MDG with the target of global partnerships for development includes the aspect of making available the benefits of new technologies, especially information and communications technologies. This relates fairly explicitly with issues of access and strategy, and literature on this can be found in the bibliography under strategy, access and cases studies.

The Taxonomy Areas

The taxonomy for the annotated bibliography has been divided into two main sections. The first section covers the overarching category of 'Information and communication for health in development' that includes strategy, access, M&E, communications, systematic evidence studies, case studies and good practice. The second section examines the more specific types and applications of ICTs. Types of ICT's examined include old, new and convergent technologies. Usage includes ICT use in/for health research, for community-based health, for telemedicine, or e-learning and capacity development, for information and knowledge management, for health management information systems, and for health campaigns.

Strategies, policies and regulatory frameworks

This section focuses on donor policies and thinking on ICTs; national ICT policies; national and international telecommunications regulations and other policies. The literature review has resulted in the gathering of a sizable collection of strategic documentation about the ICT sector, about ICT and development and about ICT and health.

It has been a challenge to find strategic documentation strictly about ICT and health, as this often appears as a topic within broader strategy frameworks. The material points to the need to consider the role of ICTs in Health broadly and to consider ICT in development broadly as well. Literature on this topic includes the broader context of ICT and development, ICTs & the MDGs and the usages of ICTs in health delivery and health communications. There is a growing body of literature about ICT and development (ICT4D).

Donor strategies

The strategies and thinking of most of the European and Canadian donors engaged in ICT have been gathered, but there is a clear gap in accessing donor thinking from the US, and to an even larger degree from Asia and elsewhere in the world. These include the Swiss Agency for Development and Cooperation (SDC), the Canadian International Development Agency (CIDA), The Swedish Development Agency ICT Secretariat; DANIDA, and DFID. A number of donors have also established ICT in Development focused portals online that present ICT advocacy material and thinking, these can be found in the strategy section.

Advisors

In addition to the specific donor policy documents on ICT and on ICT in health there are a range of documents produced by experts in the field to inform strategic thinking within the development sector. Expert strategic guidance on ICTs in development has been gathered in the bibliography, and can be found in the strategy section. These documents are not extensive and most do not go beyond ICT in development and/or ICTs and the millennium development goals. There are very few strategic guidance documents that relate specifically to ICT and health. Most of the guidance documents are also primarily commissioned by donors and often reflect the donor strategic direction.

National level analysis

There are some valuable materials on national governmental ICT and health strategies from Latin America, and some from Africa, but there is a knowledge gap in strategy content from elsewhere in the world.

Organisations

There is a gap in documentation from large development organisations, most materials are coming from donors, UN agencies or advisors/experts. The initial research process has not resulted in sizable gathering of strategic materials from large NGOs, and when found these are mainly case studies.

An important theme in ICT and development is access or 'the digital divide', and there is fairly extensive body of literature over the past ten years that explores this theme from the perspective of infrastructure, local initiatives and cultural context. In the bibliography access has been looked at primarily from the viewpoint of access to health information, rather than connectivity access which is the main area in the digital divide discourse. However documents on both aspects of access can be found in the bibliography within the access section and strategy section and through keyword searches.

Access to health information

This section focuses on access to health information for health professionals, researchers and the general public. The literature includes macro studies of health and access, and the demand for health-related information and infrastructure in a range of countries; national studies on health information access and anthropological studies about how people access and use ICT delivered information. ICTs present a range of opportunities for the delivery of health information to the public and the literature reflects this, however the digital divide and challenges of connectivity clearly remain a central focus; and the bibliography includes a number of digital divide background documents that help to locate the issue of access to health information and use of ICT for health, within the context of broader connectivity debates.

Monitoring and evaluation

This section focuses on the development of monitoring and evaluation methodology in 'ICT and Health'. The evaluation section includes a range of documents; from high-level donor guidelines about the evaluation of ICT projects to websites that showcase evaluations studies, and individual evaluations studies that point to impact and which contain useful learning for the sector.

Health communication strategies

This section focuses on the use theory and best practice of ICT in development communications broadly, and in health communications specifically. This section includes advocacy and campaigns on the strategic level (for specific campaign case studies see the campaigns section as well as case studies section). The materials reflect the situations that 'old' and increasingly 'new' technologies are often included in an analysis of media and health communications, as they constitute a large portion of media mediums (only print is not an 'ICT', but this definition is also not always very clear, as the materials show that increasingly the internet is also delivering content that was traditionally 'print', and there is a convergence between newsprint and internet versions of newspapers and other publications.)

The gathered materials point to the pre-eminence of communications in much of the ICT for development discourse, and the importance of the processes of communication in speaking about effectiveness of ICT usage. The materials show a significant body of work from Southern Africa and

some from Asia and Latin America. There is a clear HIV/AIDS focus that appears to be a driving force in much of the health communications innovation that is documented to date.

Evidence-based studies

This section focuses on systematic reviews and similarly rigorous syntheses of "what works" in mainly health delivery applications. This section is deliberately conceived as the location for systematic reviews – rather than more general ICT based impact analysis. As such it contains scientific systematic telemedicine reviews. These are mainly micro, with some effort to analyse across the sector, further evidence studies may be found in the strategy section as well.

Case studies and good practices

This section focus on collections of case studies, on key case studies and on best practice examples. Document about the application of ICT in health often examine both the type of ICT that has been chosen (what it is, what it does), and the usage of that technology (how it has been used,) and to a lesser extent what has happened due to its use (what results from usage, what impact). The bibliography research process has shown that material that focuses on the first two areas – the what and the how – are more plentiful and easier to find that material that goes beyond that to look at the evaluation of results, lessons learnt and replicability.

Within the literature there are significant compendia of case studies that are also strategy guidance documents. Then there are the ranges of individual case studies or example of best practice that are largely based on a single project or a small number of projects. Some of these are systematically approached (and for more systematic studies please also see the medically focused section of 'evidence') with extensive analysis of context and lessons learnt, but the majority are primarily project reports, that point to effectiveness but which are mainly anecdotal. The material generally is mainly on an anecdotal and micro level, with less documentation on the macro level of large-scale replicability, scaling up or review of national level ICT interventions. The ICT sector has an extensive array of case studies, pilot studies and anecdotal evidence of impact; but there is a sizable lack of more considered macro analytical data.

Within case studies there are a wide range of types of ICT applications; ranging from 'old' technology such as radio and TV to 'new' technology such as the web, mobile telephony and satellite technology. For further case studies on specific applications users should also view the sections that focus on particular ICT tools; e.g. the old, new and convergent.

The gathered materials to date point to a bias for the theme of youth, as well as a geographical strength in Latin American case studies.

Specific ICT applications and use

Documents that are concerned with exploring the role of these different 'types' of ICTs can be found in a number of areas in the bibliography depending on the primary relevance of the reference; in addition to the specific sections on the technologies please also see the 'analysis' and 'case studies' sections of the bibliography.

'Old' technologies

This section focus on the 'old or 'traditional' ICTs, which are primarily broadcast ones such as radio, TV, and video in health and development, documents include analytical / contextualizing references as well as specific case studies on the use of these applications. Traditional communication technologies - 'old' or 'broadcast' technologies - that have been in use for half a century are generally including in catch all definitions of ICTs. These broadcast applications include television, video, radio, and the convergence of these technologies with 'new' technologies such as the internet, mobile telephony and other innovations.

The gathered materials point to a bias towards radio in the amount of analysis, with high-level discussion about community radio and participatory radio; however this does appear to still be largely on an anecdotal level once again. There are many varied case studies for radio and video, but not much about the 'media' in the sense of professional journalists in the developing world who may be utilizing broadcast technology for health programming. This section overlaps with the health communications and campaigns sections and should therefore be read together with these other sections.

New and convergent technologies

This section focus on the 'new / internet enabled' and 'emerging' technologies in health and development, documents include analytical / contextualizing references as well as specific case studies on the use of these applications. This section also focus on the convergence or joining of 'new' and 'old' technologies in health and development, documents include analytical / contextualizing references as well as specific case studies on the use of these applications. New technologies include Web based tools – the email, websites, list serves/online discussions, and others; as well as also covering mobile telephony, wireless, satellite, and innovations such as GIS, personal digital assistants (PADs), mapping systems and others. There is a large area of potential convergence of old and new technologies and the bibliography reflects debate and some analysis on this theme.

The materials point to significant opportunities for health in GIS, particularly the mapping of diseases such as malaria. This may have relevance for emerging diseases as well. There is a clear focus in the materials on PAD and also India comes up frequently as a base for innovations, such as the kiosks. The materials emphasis the convergence potential of telecentres, with many case studies on telecentre projects and initiatives that include a health aspect.

Health research

This section focus on the use and the impact of ICT in the 'health research' sector. The materials are about health research and ICT not about research into health and ICT. The role of ICT in health research is clearly an important one, and one that is also part of other themes, such as ICT in health education and in access to information for health practitioners.

The bibliography includes a number of useful references that focus on the utility of ICT in health research; the importance of developing country access to electronic journals and the use of ICTs for networking health researchers. ICTs present the opportunity for developing countries to now access a wide range of medical journals online if publishers allow.

The materials gathered to date point to a significant usage of ICT by researchers in the north, and an emphasis on translating this usage, and networking potential, to the south. . A key area appears to be electronic publishing and access to medical journals.

Community-based health

This section focuses on the use and impact of ICTs in the context of community-based health. This section is somewhat thin and this fact may be compounded by some community-based projects being assigned to the case studies section. What there is points to a focus on local content and local context as a prime determinate in the success of ICT enabled health interventions and assistance on the community level. There is also an emphasis on local information access and telemedicine with a local indigenous knowledge base.

Telemedicine

This section focuses on the use and impact of ICTs in the context of medical health delivery; hospital based and in other contexts. Telemedicine or eHealth is a very large ICT and health sector in the developed world, and a growing one in the developing world. It has a number of definitions but can loosely be summarized as the use of ICT in delivering medical assistance; on all levels – from surgery and hospital based to primary care and community health provision. Sources that discuss telemedicine on a national or macro level are not as plentiful as the many case studies about pilot telemedicine projects around the world.

The materials point to the fact that the majority of analytical studies are western based and highly scientific, with a very proper evidence-based imperative. However there are also quite a few studies that attempt to translate the learning about telemedicine in the west into a developing county context.

There are a great many telemedicine case studies, some of which are highlighted in this literature review in 'case studies' section. The majority are western based; however some do focus on developing country piloting. The material demonstrates that telemedicine piloting is well advanced in Latin America, with a number of case studies in that contain learning that can be informative for scaling up projects.

E-learning

This section focuses on the use of telecommunications and IT for health practitioners to learn (distance or continuous education for health practitioners). Within the health sector the use of ICT for training of health professionals and community health workers is a significant theme, and there are a small selection of materials in the bibliography that focus on this topic. Distance learning and internet based

training materials are two important areas. Documents that examine ICTs and medical education include Information and communication technologies and continuing medical education in East and Southern Africa. Distance education in health is explored with case studies from Africa and Latin America. The amount of documentation on health education is not large, and may be coming under other sections such as strategy.

ICT capacity in health

This section focuses on the challenges and innovations in ICT knowledge within the health sector in developing countries. It is closely allied to the learning theme, and should be read in conjunction with the section on e-learning.

Studies on capacity are primarily on the basis of case studies of training interventions for sections of a community, for example women. It also looks at the challenge of health workplace practices in developing countries in the face of the advent of ICT systems.

This section contains references to health practitioner training on ICTs and a few references about development of the NGO level users' capacity. This is a weak selection, possibly because potential references have been prioritized for inclusion into the case studies section and other sections, or perhaps also because ICT and health is a subset concept of ICT and development; and there is more on capacity in that topical area, ICT and health being perhaps too specialized an area.

Information and knowledge management

This section focuses on health informatics and the management of information. The materials gathered to date show similar themes to materials in the general discourse about ICTs and knowledge management; i.e. the need for contextualizing ICT usage, the importance of local knowledge and the challenges of access and capacity. The materials include a number of African based studies of knowledge centres, libraries and other knowledge hubs.

Health management information systems

This section focuses on the use of ICT for health management systems; including medical records systems, disease surveillance systems, & other IT systems used to help plan and manage health care services.

The literature reflects the fact that a large area of work in ICT and health informatics is focused on developing health information systems that can be used by multiple institutions, including developing country institutions. A number of macro studies examines this theme; from the base of EU systems that may be replicable or present lessons, and then to a limited extent on the national level for India and Kenya as examples of developing country health management. The bibliography also includes a number of case studies from Latin America about large-scale health informatics projects.

The bibliography includes a number of useful references that outline the health information management needs, challenges and possible solutions in developing countries. The materials outline why information systems are important in many healthcare projects in the developing world; they present pilot projects and include important practical lessons in design and implementation. A few studies emphasise the importance of collaboration between projects in the development of electronic medical record systems rather than reinventing systems in isolation, and the use of open standards and open source software.

The materials point to the significance of major pilot projects on a national level, as well as a dynamic between health management information innovations in the North translating or being thought about for transfer to the South.

Health campaigns

This section focuses on the use of ICTs in large-scale health campaigns in developing country contexts. Materials in the bibliography that examine broad media campaigns which are using a number of broadcast applications, as well as other media, have a strong Southern Africa foundation, with Southern Africa and the theme of HIV/AIDS leading the development of ICT-enabled campaigning.

The materials show that in many instances HIV/AIDS communication initiatives using ICTs has lead the development of ICT use in health communications. There are many pilot studies and case studies about how these have been done, and to a smaller degree some good broader analysis about ICTs and HIV/AIDS communications.

The bibliography also reflects to a modest degree the growing range of health communication resourcing initiatives that are delivered by ICTs. This shows the imperative for resourcing local communicators in health, by providing websites that provide a range of communication resources such as audio sharing, fact sheets online and a range of production assistance for radio, TV and other community media.

Appendix

- Research Terms of Reference
- Research methodology
- Notes on research implementation

Research Terms of Reference

Key outcomes of the research

A knowledge map that will present, within public health taxonomy, the current state of and major gaps in knowledge related to the role of ICT in the health sector in developing countries. The knowledge mapping is meant to serve as a tool to point to key general assertions and gaps in the knowledge base of what is known about ICTs in health, especially as such knowledge may relate to the health-related MDGs. The end goal of this knowledge mapping exercise is to aid in the formulation of a number of key research questions that point to existing important gaps in the knowledge base.

The knowledge map on ICT in the Health Sector will include the following activities:

1. The development of an annotated bibliography, with a particular focus on materials and publications published between 2000-2005.
2. A comprehensive review of the literature on the topic of the use of ICT in the health sector in developing countries. This information should be organized by categories such as analytical work, impact assessments, and geographic focus.
3. The following types of information should be targeted: Previous exercises to map ICT in the health sector in developing countries, White papers, technical reports, research reports on aspects of ICT and public health, policy issues-related, evaluations and trends.
4. The rationale and description of the taxonomy used to structure the annotated bibliography should be provided
5. The Bibliographic entries should come from mining commercial and subscription resources available through major libraries, including the Joint library of the World Bank. International funding programs, ICT and health focused web sites, web logs and on-line journal should be consulted.

- Extract from Terms of Reference, InfoDev, June 8th, 2005.

Research methodology

The Search Strategy

The Consortium has extensive experience in searching and analysing the literature in ICT and Health in Developing Countries. The search strategy will be developed by some of the most accomplished researchers and librarians in health and development. It will take a unique approach in accessing information about developing countries. The Consortium will begin with an initial scoping. This will include dialogue with a core of experts and advisors, combined with a review of white papers, policy papers, and a number of recent studies pertinent to the area of ICT and health. This will help delineate an initial set of keywords and search terms for desk based research. Key organisations and individuals for consultation will also be identified from this scoping study. The keywords will be refined as ongoing analysis highlights additional areas of enquiry. In this way search terms and the related public health taxonomy will gradually be honed and consolidated throughout the research process.

Research will feature a comprehensive literature review on ICTs in the health sector in developing countries. This will be drawn from a comprehensive search of: international and local health, development and ICT databases, both database and 'handsearching' of the libraries of key NGOs, Ministries of Health and International Agencies utilizing the extensive connections of the consortium with these organizations, and a Knowledge mapping process using the Scientists for Health Research and Development (SHARED) knowledge management platform.

The range of sources will include: systematic and non-systematic reviews, controlled and uncontrolled trials, other published and unpublished research, grey literature, white papers and policy documents, major public agency private sector and foundation ICT strategies, reports, evaluations, cost-effectiveness studies, theoretical or analytical papers, existing maps, literature reviews and bibliographies. There will be a particular focus on materials and publications published between 2000-2005. Categories will include academic papers and other analytical work, ICT4D project-based Monitoring and Evaluation data and impact assessments, bi-lateral donor level learning studies and research. Categories will also include a range of language, location and rural/urban diversity.

The range of knowledge and expertise in the area of ICTs and the health sector goes beyond what is published in journals or available on websites. The researchers will seek to also access 'grey material', such as unpublished papers, evaluations, and organisational reports. Healthlink's own Source International Information Centre will be a key asset, as it archives a large collection of grey literature on a range of public health issues. Also highly relevant will be AfriAfya's leading research experience and contacts in the use of ICTs in HIV and AIDS communication and extensive network of community-based organisations in Africa will serve as a useful gateway to considerable field experience.

Extract from: Expression of Interest - ICT in the Health Sector, by the Consortium of Healthlink, ISHED and AfriAfya, June 27, 2005.

Research team

The research team consisted of researchers/librarians in different parts of the world is conducting the research; Margaret Nyambura Ndung'u (based in Kenya), Ligia Macias (Spanish language), Ibrahima Bob (French language), Lenny Rhine (based in the US), Sarah Greenly (based in the UK), James Kimani (based in Kenya). Staff at Healthlink and ISHED supplemented the research.

Notes on research implementation

The in-depth research process was informed by the combined research experience of the consortium partners with a strong pro-poor focus. The research process made use of two principal parallel tracks of enquiry: an iterative searching of secondary sources of published evidence and research, as well as grey literature in the use of ICT in the health sector; and consultation and dialogue with key health and ICT experts and practitioners.

Key research questions

The research team had clear criteria that the chosen references needed to provide insights on the following sample research questions:

1. What is the range of definitions being used by authors for ICTs (and ultimately, what's common in the definitions and what do we mean when by ICTs)?
2. Are there any indications of the potential that ICTs might bring to health care?
3. Is there any strong evidence (RCTs, impact studies, outcome evaluations) about the effectiveness of ICT interventions in resource poor settings?
4. Is there any link between ICT interventions and the MDGs?
5. What technological developments (mobile telecommunications, easy access to digital video and audio) are contributing to the health MDGs and enabling health communication for poor people?
6. Are there other possible interventions described in case studies that look interesting?
7. What success stories are out there for ICTs used to address prevention or support treatment regimens, i.e. SMS messaging to remind TB and HIV patients to take their drugs?
8. What ICTs are being used to support frontline health staff, in terms of training and provision of health promotion materials?
9. How can the health sector support community-led and more participatory ICT responses to health issues?
10. How do ICTs link with and inform social and interpersonal communication practices that focus on health?
11. Is there any information about the level of financing or resource flows for ICT and health activities?
12. Is there information about the challenges that are faced in trying to implement this type of intervention?
13. Is there evidence about what needs to be in place to improve effectiveness?
14. Can you draw out a clear policy implication from all of this?
15. How can ICTs be used to stimulate health policy debate and dialogue and to ensure better inclusion for people living with disease into such processes?
16. Are there clear gaps about where we need further evidence?
17. What's worth reading on this topic?

Challenges in developing a bibliography on ICT and Health

There is very little information available that is strongly evidence based or that draws on impact assessments or outcome measurements. Also there is very little of the information available on large databases (published material) cuts across multiple disciplines: so it is easy to collect information on particular technologies, information on the application of a technology with regard to a particular medical condition, or information on using technology within health systems, but it is harder to find information that deals with the links between ICTs and the social determinants of health, with the broader issues of poverty and with the issues of involvement, inclusion, participation and voice of the most poor and vulnerable.