Improving Health, Connecting People: the role of ICT in the Health Sector in Developing Countries

Summary of Online Discussions
Prepared by: Tracy Shields, Andrew Chetley and Jackie Davies
### Methodology

**Target Audience**

- Target policy makers, health experts in Donors agencies, and practitioners in the field.
- Serve as participatory needs assessment related to the issues and recommendations covered in the framework paper.
- Have duration of 3 weeks.
- Be organized using "d-groups", a software platform for managing online discussion groups created by a consortium of public agencies including the World Bank.

*(Extract from Terms of Reference, InfoDev, June 8, 2005)*

**Online discussion**

Following the established methodology for conducting successful online discussions the ‘ICT and Health – tracking information’ discussion will be moderated and the questions designed to create a flow in the discussion over a period of three weeks; beginning more generally and then focusing on specific sub-themes. The choice of these themes will be informed by the preliminary research and may track with MDG themes. The discussion will be moderated daily and summarized weekly, with these weekly updates being shared on the d-group workspace, in order to encourage further engagement by participants.

**Consultation and dialogue**

The Consortium partners will draw on their extensive networks to gather advice, opinion and recommended resources from experienced practitioners in key organisations working in the field of ICT use in health. The consortium represents a powerful network of networks in the field, with partners on all continents and with experience in a variety of developing country contexts. It will enable the identification of contacts for participation in the consultation process.

Individuals who will participate in this research will be experts in the field of ICT and Health, as well as practitioners from a variety of experiences, locations and backgrounds who may have insightful comment about ICT and Health. The consortium will be supported by a review and reference body for the research that will be made up from a range of experts in the field.

Online discussion participants will be drawn from donors, policy makers and practitioners through marketing via established networks and listserves. For example, the Communication Initiative, a close Healthlink partner, will be well positioned to highlight the forthcoming discussion and draw users to it. International Network for the Availability of Scientific Publications (INASP) Health’s extensive HIF-Net listserve of health practitioners interested in communication issues will also be another partner in advertising the online discussion. Through the network of networks and partners that the Consortium can draw on we are confident that experts and practitioners with knowledge of the use of ICT in the health sector will be reached and will participate in the online discussion.

Key Findings

- The consultation showed that ‘ICT & Health’ needs to be viewed within the context of a complex landscape of development practice, development goals and targets, and within a wide range of sectors and ICT applications.

- The theme of interconnectedness was a major one in the consultation, with many participants pointing to the interconnectedness of MDG targets, development sectors and different applications of ICTs.

- The consultation indicated that ICTs should not be viewed in isolation as a means in itself or a development area in themselves, they only a tool for development, and primarily for informatics and communication.

- The consultation highlighted the range of definitions of ICT within the health and development sectors, as well as the tendency for practitioners in the field to focus on the issue of definitions and barriers rather than on impact analysis.

- The consultation showed that there is insufficient ‘impact’ data about ICTs and health, and that this data is much desired by ICT in health advocates in order to ‘prove’ effectiveness.

- The consultation showed that there is insufficient learning about macro level evaluation and impact analysis for ICT and health, and also for ICT in development more broadly. It pointed to the problem of a ‘pilot syndrome’ in ICT and health; with many case studies and pilots but not enough scaling-up of initiatives or shared learning for use on a national or regional level.

- The consultation also pointed to the challenge in replicating best practice projects and innovations in other contexts in the absence of detailed impact analysis, due to the vital role of context in all communications endeavours.

- The consultation showed that ICTs need to be viewed as part of the process of communications, with all the multifaceted issues and conditionality that that implies; as tools they need to fit in with the context.

- The consultation highlighted that ICTs are only as good as the communication they enable, and that there is an imperative for appropriate forms of communication delivered and accessible in such a way that they have an impact on behaviour and on access to information for health.

- The consultation showed that there was much project-level and policymaker level enthusiasm about ICT in health, and a wide range of case studies that point to effectiveness and impact; for ‘old’, ‘new’ and ‘convergent’ technologies and innovations.

- The consultation showed that HIV/AIDS is the dominant health issue when examining the communication aspect of ICTs in health. HIV/AIDS is leading the field in the number of ICT and health projects, evaluations and reviews that are available.

- The consultation pointed to the potential of ICT for addressing other diseases – and increasingly emergent diseases – particularly via telemedicine and informatics interventions using ICTs.
Contents

1. Key Findings
2. Introduction
3. Themes
   i. Communication process
   ii. Interconnectedness
   iii. Pilot syndrome
   iv. Replication and context
4. Question One: Where do you see the best use of ICT related to the health MDGs?
5. Question Two: What are the best points of entries/applications for using ICT in the health sector (electronic medical records, decision support tools, telemedicine?)
   i. Old technology
   ii. New technology
   iii. Convergence
6. Question Three: Where are the tangible proofs that ICT is improving health care?
7. Question Four: What are the most important barriers for not using ICT in the health system?
   i. Lack of policy
   ii. Infrastructure and cost
   iii. Lack of resources
   iv. Lack of access
   v. Lack of ICT capacity
8. Appendix:
   i. Online consultation –methodology
   ii. List of participants
Introduction

An online consultation on the use of information and communication technologies (ICTs), in the health sector in developing countries, identified examples of the effective use of ICTs, a range of possible applications of technologies, and detailed many of barriers and challenges that needed to be faced.

The consultation which ran on d-groups from 12 September to 3 October 2005 – was part of an *infoDev* research study managed by Healthlink Worldwide in partnership with AfriAfya and the Institute for Sustainable Health Education for Development (ISHED). Further details of the study are available at [http://www.healthlink.org.uk/world/ict_health.html](http://www.healthlink.org.uk/world/ict_health.html) and the transcripts of all the inputs are available at [http://dgroups.org/groups/healthict/index.cfm](http://dgroups.org/groups/healthict/index.cfm). The consultation also informed the development of an online bibliography on the topic of ICT & health, this can be viewed at [http://www.asksource.info/res_library/ict.htm](http://www.asksource.info/res_library/ict.htm).

Nearly 200 people joined the online consultation. Most were practitioners in the field: project managers, NGO managers and consultants. There were also a number of academics and a small but significant number of international policymakers. Please see the Appendix for the full list of participants.

The consultation explored four key questions; Where do you see the best use of ICT related to the health Millennium Development Goals?; What are the best points of entries/applications for using ICT in the health sector (electronic medical records, decision support tools, telemedicine?); Where are the tangible proofs that ICT is improving health care? And lastly - what are the most important barriers for not using ICT in the health system?

Participant’s responses to these questions - together with general discussion about the topic of ICT & health - produced a dynamic discussion. Major themes that emerged included a strong emphasis on ICTs as tools not as a development area in itself, an emphasis on ‘communications’ as a process; and a clear awareness of the challenges of resources, cost and capacity.

**Policymaker views**

ICTs are not a vaccine, a water pump, food or a drug. They therefore do nothing directly themselves to prevent or treat disease or poverty. They are a tool for conveying information. This may be directly to individuals such as patients/clients; or by sharing between health (and other) staff i.e. training and management, or from “above” – as policy directives.

- Dr. Christopher Wood, Founder, AfriAfya

Participants showed a wide range of experiences in health – form diagnostics and telemedicine to informatics and health communications – and a deep base of experience in ICTs, on a mainly pilot level. The research team are exceptionally grateful to the participants for their active engagement and enthusiasm. Participants were positive about ICTs but also very questioning, with comment generally being grounded in experience and deep consideration of the issues. The enthusiasm shown for understanding ICT in health and helping to extend the effectiveness of these technologies in order to improve people’s health was clear, and it was the main theme of the consultation. This enthusiasm was most edifying; the following comment was not unusual:

**Participant view**

Health medical and scientific information has always been there. What has changed dramatically is the way, and how fast, that information is being transmitted to hundreds if not thousands of people all at once! This information is also reaching more people than before, and it is not only reaching the medical and scientific community alone, but anyone with interest can join in.
Themes

ICTs as a tool in communication process

A key learning of the consultation was that ICTs are ‘only as good as the information they seek to communicate’ and the importance of considering ‘the whole communication process of which ICTs have opened up unprecedented opportunities’. This underlines the comment that ‘people save lives; ICT is the tool that improves the odds.

(1) The process of health communications

Participants, primarily the policymakers, emphasised strongly that ICTs need to be viewed as tools in the process of communications, and that this need was strong because there is a tendency within development agencies and other organisations to view ICTs as a panacea and as a solution that is technically based; rather than as one tool amongst many in the age old process of communicating.

Policymaker view

The discussion so far has tended to focus on the application and introduction of ICTs to the health sector in the sense particularly of information systems, telemedicine and so on. This, to a large degree, reflects the discussion questions that whilst focusing on ICTs, health systems and the MDGs highlights the aforementioned areas without profiling the application and use of ICT in key areas such as health promotion and education. The principal questions ‘What do we know about ICT and Health?’ and ‘Are ICTs impacting on health in developing countries, and what lessons can be learnt about ICT and Health initiatives to date?’ seem to require a broad response. There is a need then perhaps to balance the equation by looking at how ICTs are used to raise awareness of health issues, how they are used in prevention, stigma reduction, and how they actively encourage people into health services.

The health MDGs, with their focus on halting and reversing the prevalence of key diseases and with reducing maternal and infant mortality, articulate with the MDGs on education and we should recognize in discussion that the quickest and longest-lasting benefits will be secured through improving education in schools and through other informal channels. Further, ICTs are only as good as the information that they seek to communicate, and it is always worthwhile remembering that behind ICTs stand research and evaluation processes that are critical to meeting poor people’s health information needs and which may also require exploration.

So here are some questions we might want to also think about (in no particular order, substantially incomplete and in addition to those already posed): (i) what is the scope of the definition of ICTs in this study? (ii) How are terrestrial ICTs (TV, Radio, video, film) contributing to the health MDGs? (iii) How do ICTs link with and inform social and interpersonal communication practices that focus on health? (iv) how is the rapid deepening of mobile telecommunications access and use enabling health communication for poor people? (v) What ICTs are being used to support frontline health staff, in terms of training and provision of health promotion materials? (vi) How can ICTs be used to stimulate health policy debate and dialogue? (vii) How can ICTs be used to ensure better inclusion for people living with disease into such dialogue and decision making processes? (viii) 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? (ix) How can the health sector support community-led and more participatory ICT responses to health issues?

- Andrew Skuse, University of Adelaide
Policymaker view

Although this discussion group is titled ICTs and Health, Communication is central to all development processes. Communication in Development is the planned use of communication strategies, activities and media including ICTs which enable people and institutions to share knowledge and information leading to concerted action. The convergence of communication technologies (e.g. connecting rural radio to the internet, the voice and text functions of a mobile phone, satellite imaging and statistical mapping) can help people (literate or not) share knowledge faster, cheaper and in far larger volumes than ever before. During this process Information intermediaries (e.g. advisory and support services, educators, radio broadcasters) take on a new significance as they require new skills to be effective in helping rural people identify and articulate their demands and enable the two way flow of relevant information for decision making.

I would hope that in our different areas of expertise we can consider the whole communication process of which ICTs have opened up unprecedented opportunities but are not the end in themselves. ICTs have also brought new actors into the arena and have made it possible for more people to demand information and to communicate. This means the development process is all the more complicated and requiring good planning and management if we are to successfully apply ICTs to address poverty.

Whilst I see a lot of technology and web content out there either in rural spaces or in agencies serving rural people I haven’t seen the same effort applied to changing how people and institutions work together, how we now manage development interventions and how we communicate differently given these new channels of communication.

- Clare O’Farrell, Communication for Development Officer, Extension, Education and Communication Service (SDRE), FAO

(2) HIV/AIDS communications

The online consultation reflect the situation that ICT applications for specifically HIV/AIDS communication has provided opportunities for social and behavioural change and for raising awareness of health issues, including rarely discussed areas such as oral manifestation of HIV/AIDS. Large scale health promotion and health education projects using various ICTs were able to impact upon many levels of the community, from individuals to health workers.
Interconnectedness
One of the key learning’s of the consultation was that there is a need to appreciate the interconnectedness of the problems and challenges; to how to move from the sector silos to the integrated and multidisciplinary use of ICTs across a number of related areas. A “go-it-alone” health sector approach is not optimal for the new technologies.

Policymaker view – example of Avian Flu strategy

At FAO, I work on two main areas, the design of participatory communication strategies and the application of ICTs in agriculture and rural development. At first I wondered why I should be invited to this ICTs and health discussion group, knowing that I have more to learn than to offer.

Later in the week I was asked to help design a communication strategy for FAOs Avian Flu Emergency Programme which brought home to me, the need to understand and address the rural space in an integrated way, not in silos of health, education, agriculture, enterprise etc or for that matter MDGs - which we all know easier said than done! However, starting with people (another development slogan!), actually makes this job easier.

The avian flu epidemic is a convincing example for health, agriculture, enterprise and education sectors to work more closely together. Consider a central market place in Vietnam. At these central nodes the disease spreads between one animal and another and potentially to humans, it also from these markets that the disease has spread across large distances (e.g. onto distant islands).

Communication for development interventions will naturally focus on these cross over points, first we will learn about the current levels of knowledge, regulations and practices amongst the smallholder poultry farmers, what livelihood constraints they face, how much they will loose, what alternative incomes are possible, are they organized into larger groups, etc.?

We will also use these meeting points for strategic communication e.g. campaigns on prevention, vaccines and hygiene and we are also assessing the feasibility of some form of electronic records or 'tagging' for the whole value chain - breeding, trading, transportation and processing of poultry which are all potential cross over points for human contamination.

For decision makers at policy level we will be mapping the impact of the disease, community based strategies to mitigate against the speed of the disease and hopefully reporting on the change brought about by our timely interventions.’

- Clare O’Farrell, Communication for Development Officer, Extension, Education and Communication Service (SDRE), FAO

When considering the challenges that arise in relation to a holistic view of ICT and health participants spoke about the problematic assumption that what will work for one area will work for others, and the problem of a lack of appreciate of the convergence of tools and targets.

In the area of MDGs it was emphasised that there is interconnectivity between MDG targets and various health interventions using ICTs. For example there was discussion about the interconnectivity of HIV/AIDS and other MDG health issues of Maternal and Child Mortality, and participants highlighted the link between the educational MDGs and health intervention.

Interconnectivity – participants’ views

"We’ve learned that many problems are interconnected, and that you can’t solve one without addressing the others. In the discussion about mother-to-child transmission of AIDS, for instance, we now know that there were many more factors beyond education, training, and drug treatment that need to be considered to effect results."

"We should recognize in discussion that the quickest and longest-lasting benefits will be secured through improving education in schools and through other informal channels."
**Pilot Syndrome**

The challenge of a longstanding state of piloting, with evidence being discussed on the level of case studies and anecdotes, was identified as a core theme. This was termed pilot syndrome in the discussion, and is widely recognised as a major problem within ICT for development generally, and within the discourse on ICT and health specifically.

Participants pointed to a need to develop policy to move from pilot syndrome to up scaling ICT initiatives. Potential solutions proposed included multi-stakeholder approaches and partnering with different organizations, and applying ‘convergence’ solutions using a number of ICT applications.

**Replication and context**

Participants raised the issue of how ICTs usage can be replicated or not, and the importance of context. It was discussed that examples of good ICT innovations in health in one context may or may not be replicable in another context; and that one of the most vital areas of learning must be to find out – based on impact analysis and evidence studies – whether what contributed to a project being effective is replicable in another context. This analysis is vital, as scaling-up or replicating pilot projects in other contexts is endangered by lack of knowledge about challenges and core applicability.

**Policymaker view**

Another issue is that many innovative ICT uses in the health sector are based on pilots and I would be very wary about making any recommendations where evidence is based on pilots, case in point being the Indian Institute of Technology, which has lots of interesting initiatives but their broader applicability is a problem. For example, they have an interesting telemedicine initiative, a remote sensor that takes temperature, BP, ECG, and stethoscope. The doctor at the other end of the computer line can read the indicators and speak to the patient, but the whole thing is let down by the inability of the doctor being able to prescribe a course of treatment. Telephone help lines on the other hand have been very useful, especially when they are Freephone and cover areas connected with advice and counselling, i.e. HIV and domestic violence has been an issue successfully covered in South Africa by the National Network Against Violence Against Women. My concern then is that info systems, whilst undoubtedly useful in health sector reform do little to get the poorest into health services, so again it’s a question of balance. There’s a danger of this becoming a panacea for the problems associated with reaching poor people, when what poor people really need is a reasonable basic health service with trained and supported doctors.

- Andrew Skuse, Convenor Development Studies, University of Adelaide
Question one: Where do you see the best use of ICT related to the health MDGs?

Practitioner view

These are complex questions, and can be answered in many different ways. … I suggest we need first to be able to answer more fundamental questions, namely: 1. What activities and outputs are needed at local, national, regional and international levels to achieve the health MDGs? What are the key processes and activities of the ‘roadmap’ towards meeting the MDGs? (Only then can one ask the question, ‘How can ICTs enable such activities/outputs/processes?’). 2. What are the key needs (perceived and ‘actual’) of healthcare providers (and other health professionals) to improve the quality of health care in resource-poor settings? (Only then can one ask the question, ‘How can ICTs help to meet these needs?’)

- Neil Pakenham-Walsh, Co-Director, Global Healthcare Information Network

The question of the best use of ICT in health, as related to the MDGs, was hotly debated – but mainly on the level of rearticulating the question, sharing case studies and debating the definition of ICT.

Knowledge gap: there was a difficulty in debating and discussing too many combinations of thoughts: health and ICT is one, and that does not appear to have been too onerous, ICT and the MDGs is another; but ICTs, plus health, plus MDGs is possibly too complex as it has difficult to focus discussions in a way that included all three aspects clearly. This may reflect a core difficulty in the general discourse about MDGs.

Participants answered this question by putting forward many examples of ICT projects/interventions that could contribute to achieving one or more of the health related MDG targets. These examples and case studies tended to be initiatives that the participant was involved with, or which they had studied or which they rated highly for effectiveness.

Knowledge gap: There was little discussion about learning from projects/pilots that had not gone well.

A clear theme that emerged was ‘interconnectedness’ – an awareness that development issues, challenges and solutions, are complex and often the solutions (whether using ICTs or not) are dependent on a wide range of factors. The consultation highlighted that it is necessary to approach the MDGs in an integrated manner, not one which addresses each MDG goal in a silo of its own. There was a clear message that the use of ICTs should be viewed, studies and applied across a number of areas - education, gender, health and poverty, for example – rather than be concentrated on supporting the achievement of a particular MDG.

Nevertheless, discussion did occur and participants did answer the question in a fashion, and these answers sometimes included examples of particular approaches that might contribute to meeting specific goals and targets.

Participant view

"In my country Uganda I see the best use of ICTs in basically two health MDGs – improving maternal health and combating HIV/Aids, malaria."
MDG 1 – Target: Eradicate Extreme Poverty
The online consultation featured broad discussion about ‘poverty’ as a theme that is an implicit foundation for most development efforts.

Knowledge gap: However the link between ICTs and poverty reduction was seen as difficult because of the present lack of impact data.

Knowledge gap: The consultation showed that the link between the three themes of ICTs and health and poverty was by extension seen as even more complex and difficult to discuss. Participants rarely analysed the three concepts together, but rather remained on the anecdotal level about ICT projects.

Participant view
"I was struck by the need to bring the debate back to MDG basics and think about ICTs and health through the lenses of poverty, equality, exclusion and gender. Evidence wins arguments and we need to demonstrate through solid empirical data that ICT interventions in health systems and health promotion reduce poverty through the realisation of better health for poor people."

The discussion mirrored some of the frustrations and tensions within the development sector and ICT4D sector generally - whereby practitioners have few tools for discussing the impact of ICTs in health, because there is a lack of data and lack of widely circulated analysis.

However the consultation did result in some valuable insights about the overarching positioning of this target as the foundation for most development efforts, including health targets. As well as insights about ICTs as a tool for achieving MDG targets.

Policymaker view
'It may be useful to step back from the question of which ICTs are most effective overall and look first at what the various types of health-oriented interventions might be for each MDG. Then, for each type of intervention you can look at how ICTs might be used effectively to complement other (non-ICT-related) activities. For example, for the MDG on improving maternal health, there are a lot of ways to go about trying to achieve this, including: improving skills/knowledge of health professionals; improving health system resources, infrastructure, and management; and public/patient education. Each of these types of interventions would likely involve very different ICT applications. For example, improving resources, infrastructure, and management, might involve developing a database to manage drugs, supplies, or patient information. Improving the skills of health professionals could involve complementing face-to-face training with improved Internet access or a distance learning program. Public/patient education might merit the use of TV or radio campaigns.'

- Mark Storey, Director, ICT Programs, American International Health Alliance

MDG 4 & 5 – Targets: Reduce Child Mortality & Improving Maternal Health
A number of participants commented that they had yet to find research specifically about these two issues (child mortality and improving maternal health). However there was some sharing of case studies.

Case Study – Health Management System, Bangladesh
"A case example of a system that helps to register, schedule and track immunisation of children comes from Rajshahi in Bangladesh. With four vaccines requiring up to four doses, tracking under a manual system was poor with up to 40% of children failing to complete their course. A simple computerised system ( <$5,000) was developed that creates a register card for each child, and a daily schedule for health workers. As a result, immunisation rates have risen and there is a sound data foundation for more strategic decision-making".
Case study – Handheld Computers, Uganda

“In my country Uganda I see the best use of ICTs in basically two health MDGs-improving maternal health and combating HIV and AIDS, malaria. There is a project in my country funded by IDRC working on the use of handheld computers. Under this project nurses get records, information on deliveries for the day, how many people have visited the health centre but most importantly they can communicate to the district on the need for niverapine (the drug that stops mother to child infection of HIV) which is registered minutes before child birth. These drugs are kept at the districts where there are storage facilities and usually it took long for the only district vehicles to deliver these drugs leading to delays in registering the drug. But when the health personnel got the handheld computers they could communicate and let the store manager know how many women were HIV positive and needed niverapine that day. This I think has helped in not only improving child mortality but also helped combat HIV transmission from mother to child.”

MDG 6 – Target: Combat diseases, TB, Malaria, HIV and AIDS

This target received the most discussion, and appears to be the MDG with a significant number of case studies of innovative ICT usage.

A number of participants emphasised that centrality of communications for disease prevention, and communications for development generally.

It was also discussed that while ICTs can - and do - play a role in health communications, there may be a danger that ICTs could be over emphasized at the expense of other communications tools that may be more effective and more appropriate in rural and semi-literate contexts.

Policymaker view

I do think there is a risk of diverting support and attention away from the more pressing problem of reaching poor people with information about disease prevention. The balance between health sector use of information systems, telemedicine and routine health promotion is the key issue. The MDGs imply a strong focus on prevention and behaviour change, i.e. using bed nets for Malaria and using condoms for safe sex. The problem with many uses of ICTs, in the information systems sense, in the health sector is that the poorest are still not adequately reaching services. So health promotion I would suggest is more important as at least it attempts to reach out to poor people.

- Andrew Skuse, Convenor Development Studies, University of Adelaide

Participants discussed various diseases in the process of discussing ICT interventions; malaria, TB and emergent disease were highlighted.

Tuberculosis

In directly addressing the subject of TB participants – mainly policymakers – contextualized it in the context of communications, and emphasised the importance of viewing ICTs as tools in the process of communications about TB and other diseases.

Policymaker view

‘Let’s briefly look at an issue like TB, and the WHO supported DOTS initiative (Directly Observed Therapy, short course) which aims to control it. Almost every aspect of the DOTS model has a behavioural element largely based around: changing political will, improving service provision, and mobilising communities to protect themselves and support TB patients. Here is a concrete example of how communication processes (as our main resource for changing behaviour) can impact significantly on a major public health issue. The use of ICTs is a given within this model, as a supporter of the communication processes required.’

- Fiona Power, Communications Adviser, DFID
Another policymaker’s observation was that ICT usage in TB communications is only as good as the communication these ICTs convey, and also that good ICT applications for health information systems are just as vital as communication applications.

**Policymaker view**

An example from China can usefully illustrate the need to achieve an appropriate balance in this discussion. The China National TB Control Programme for whom I’m a senior health promotion consultant, has been rolling out the DOTS (Directly Observed Treatment Short Course) approach to TB over the past few years, but have had difficulty in getting people into the service and therefore hitting their targets. Recognition of symptoms in rural China is low (depending on Province) and this often causes severe delays in people seeking diagnosis and treatment. The situation has been compounded for many years by poor health promotion materials, poor community outreach and poor support for village doctors, especially in terms of the provision of up to date e health education and referral incentives. Recent work on the production of a multi-media CD-ROM interactive health promotion toolkit to Centre for Disease Control (CDC) staff across the country has gone some way to addressing the quality of mass and interpersonal communications concerning the disease and numerous tested posters, radio spots & dramas, TV spots and dramas, as well as interpersonal communication training for county, township and village doctors on holding an effective consultation with a TB suspect.

However, once the suspect patient is in the system severe problems can still result from data management, and this is where the information systems standpoint is critical. Patients typically present at general hospitals, where they are entered in a TB registry since TB is a key notifiable disease. Diagnosis and treatment are provided through TB dispensaries, which are separate establishments. Because there is still some way to go in convincing people that treatment under DOTS is free, in many provinces only 50% of suspects actually turn up for diagnosis and treatment, which means that the public health threat remains significant. The tracing of patients, who don’t show at dispensaries, though technically feasible because of the patient data collected, does not tend to happen because of the costs that accrue to local TB programmes.

- Andrew Skuse, Convenor Development Studies, University of Adelaide

**HIV/AIDS**

The majority of online consultation focus in this MDG area was about HIV/AIDS, with participants shared knowledge about pilot projects and case studies of ICT interventions for HIV/AIDS. The online consultation reflected the position that AIDS communication (often using ICTs) has clearly been a powerful driver in development communication over the past 20 years, and is where there has been much innovation and piloting of ICT interventions for public health awareness raising and health service delivery.

**Participant view**

“ICT has started chipping in towards addressing the HIV and AIDS pandemic… through spreading education/awareness, patient management and treatment management.”
Question two: What are the best points of entries/applications for using ICT in the health sector (electronic medical records, decision support tools, telemedicine?)

The question of 'the best' applications of ICTs raised some concerns, as judgements of best are not always easy, and in some participants' view not always useful. Some participants, primarily policymakers, called for a more strategic broad view of health sector needs and then look at appropriate ICTs.

Policymaker view

'For donors/policymakers, it could be helpful to develop a more exhaustive list of the types of health-oriented interventions and then list the ways ICTs can support each of them. This could be supplemented with the lessons learned that have been identified by various groups who've implemented ICT programs. I suspect donors and policymakers would see a resource like this (focused first and foremost on health outcomes and interventions) as more relevant to them than a simple list of various ICTs and how they can improve health. This would allow donors and policymakers to look for the interventions they are inclined to fund and see how ICTs can be used to supplement other activities. Over the years, I've encountered a lot of anti-ICT bias among various donors and policymakers, and for this reason I think it's important to emphasize the use of ICTs as an important and often necessary component of a broader health program. This approach also helps to differentiate among ICTs in terms of their effectiveness because which ICT is most effective really depends on what objective and intervention you are focusing on.'

- Mark Storey, Director, ICT Programs, American International Health Alliance

Policymaker view

'I think there are several areas in health which could benefit from a more strategic use of ICTs, including: political will (e.g. through increasing civil society networking, and facilitating advocacy efforts); demand creation (e.g. through informing service users of their rights, and of the availability of services); supply-side efficiency (e.g. through supporting more effective records management, continuing medical education, supporting transparency initiatives etc.) and the broad information environment relating to behaviour change (e.g. through entertainment formats, spots and so on). What I feel is important to emphasise is that all of the above rely on PROCESSES (which ICTs facilitate and support), and that these should be considered outcomes in their own right. In programming terms, I think it is just as important to focus on the process side of things, as it is to focus on the technologies employed to support these processes. This is particularly important in the area of behaviour change, e.g. around HIV prevention, where increasing processes of dialogue and debate is shown to have an impact on stigma reduction and risk taking behaviour.'

- Fiona Power, Communications Adviser, DFID

Examples

Participants offered an interesting range of applications that they saw as effective based on their experience in the field, and/or as ICT4D sector experts.

Policymaker views

'I think the single most compelling use of ICT right now is improving the flow of data and email from remote health facilities (rural health posts, health centres, rural hospitals, etc.) up the organizational structures in Ministry of Health networks. With the expansion of phone networks and the availability of new low cost “last mile” technologies, we have opportunities for dramatically improving the management, efficiency, and quality of rural health services on a large scale at low cost.'

- Dick Martin, USAID/EGAT
Practitioner views

‘Electronic forms of communication (email, CDs, internet, etc) have replaced many older forms of manual returns, minutes and reports. These are labour saving, quicker and seemingly more efficient. They facilitate some forms of management and education (distance learning).’

- Dr. Christopher Wood, Founder, AfriAfya

Policymaker views

The best points of entry for using ICT in the health sector include………..epidemiological reporting from rural sites, administrative reporting (service statistics, inventory, budget, human resources, ordering), and patient referrals.

- Dick Martin, USAID/EGAT

Rural context

When considering the question of ‘best points of entry’ for using ICT in health the context of rural health provision and communications is of central importance, and many participants in the consultation raised this point, and shared about rural based case studies.

Policy Marker views

‘In rural areas some of the health related issues are not because the medic could not make a phone call to the specialist and get the guidance. The health is directly related to the lack of clean water, lack of electricity, lack of sanitation services, and most import of all the lack of community awareness of how to stay healthier even without modern day services (Education). Use ICT to address those issues, and you are using ICT in achieving MDGs in health services.’

- Clare O’Farrell, Communication for Development Officer, Extension, Education and Communication Service (SDRE), FAO

Types of ICT

Broad discussion on this question of the best applications for health tended to focus on the varied ‘types’ of ICT, with most participants putting forward case studies of effective use according to their chosen field of interest – radio, internet, new tech etc. Some participants also argued for a greater appreciation of the potential of convergent ICTs – old and new tech combining in innovative ways. New ICTs “tend to break the distance and broaden the participation” and that future development must make best use of this while “still utilizing the old methods where appropriate”. The difficulty in defining the limitations of what ICT are, and ICTs use in health, meant that during the course of the online discussion much attention was paid to the delineation between old (traditional) technologies and new technologies and the convergence between these.

Old technologies

In the consultation there was a range of terms for the grouping of technologies that have been in existence for decades; participants spoke of ‘old’, ‘traditional’, ‘broadcast’ or ‘terrestrial’ ICTs; but essentially the grouping of radio, TV, video and sometimes landline telephony were included in this area. Participants highlighted case studies of good use of these technologies, as well as highlighting the utility of combining them with new technologies.

In the discussion is seemed that participants gave older technologies considerable weight as ‘communication’ tools, which played a curtail role on health communication. Older technologies clearly are viewed as important as they offer affordable communication support services to remote, poorly-equipped and minimally-staffed health facilities and communities.
Expert view

Radio is a fairly established means of communicating - public health "adverts", although the growing presence of community radio adds new dimensions in terms of messages that allow for feedback - i.e. messages based on discussion of issues, and a more targeted message for a given locality. It has now been seen that where television signals are strong, the poor prioritise television ownership even over radio - so one of the questions we might raise in this debate, is how this will affect the ability of governments and public health bodies to communicate through the mass media. We have explored this a little in a study on community television found at www.tv4d.org.

Radio was given a high priority in the discussion, with many case studies being given and participants discussing radio as a key ICT application for health communication and informatics. An interesting issue in radio and other broadcast ICTs was the issue of the growing density of media in many developing countries, as highlighted by two participants:

Policymaker view

Another point that Simon hits on is the rapidly deepening media densities of many countries, i.e. the rapid expansion of community radio, TV and commercial stations. This has critical implications for how health messages are communicated, since there is very real potential for important health messages to be lost in a sea of media. Organisations such as the BBC Service Trust and Massive Effort respond to this by increasing the volume and density of messages in response. So increasingly, increased media complexity may force us to either 'upscale' on mass health promotion campaigns or 'go local' and use community mobilisation increasingly to get messages across. The example of the hand held VCD-DVD used at local level articulates with these kinds of arguments and concerns about how we use ICTs and better communication more generally to support both front line health staff and awareness raising.

- Andrew Skuse, Convenor Development Studies, University of Adelaide

Case study – radio and health, Amazon

"I believe the radio certainly can make a difference in saving a life. In rural Malaita where yes it does take you a couple of hours to get to a clinic too but if the nurse is unsure of diagnosis or treatment options then getting you to a Doctor or a hospital is many hours more including a long and sometimes dangerous canoe trip then sometimes a plane to a larger hospital. Lives have been saved by the nurse being able to HF radio or link using the non cost telephone interface to a standard phone in a hospital and get the help first up. And more lives remain healthy and in their villages by that same nurse being able to obtain updates to clinical practice through peer discussion and clinical supervision, sending and receiving email and through remote education sessions all by the radio."

- Dr Simon Batchelor, Director of Gamos, UK

A sample of case studies about video in health was also discussed. Knowledge gap: Participants had much more to say about radio than about TV or video for health, there may be a gap in this area.
Expert view

In the past video has been expensive to make and difficult to show in rural areas. Production of a video can now be done on a basic computer, and the cost of making a local language video produced by local health workers is less than a few hundred dollars. And showing the video can be done with portable digital players - and its only going to get easier. We have explored this in Mexico, Moldova, South Africa, Cambodia and Ghana and the studies on impact show a remarkable change to knowledge and behaviour based on the videos. This heralds a large potential tool - in Ghana a number of agencies have now had their staff trained and are beginning to develop local language videos that can be shared with each other.

- Dr Simon Batchelor, Director of Gamos, UK

Case study – video

Health workers in villages can now carry VCD and DVD players which instead of flipcharts can communicate a basic message that can then be followed through with discussion. We have explored this in Mexico, Moldova, South Africa, Cambodia and Ghana and the studies on impact show a remarkable change to knowledge and behaviour based on the videos.

New technologies

During the online consultation participants provided many examples of emerging and innovative uses of ICTs in health in the context of developing countries. The understanding about what ‘new’ technologies are was fairly consistent, and included new technologies such as internet based initiatives (email, list serves, websites, feeds), digital innovations, mobile telephony, satellite, PAD, and emergent innovations. Participants were generally enthusiastic about the potential offered by these for health interventions. Many participants offered suggestions to use ‘appropriate’ new ICTs; such as PDAs, GSM wireless technologies, to overcome some of infrastructure barriers.

Expert view

Health workers in villages can now carry VCD and DVD players which instead of flipcharts can communicate a basic message that can then be followed through with discussion.

- Dr Simon Batchelor, Director of Gamos, UK

Convergence

The consultation pointed to a key learning that convergence of technologies is a very important area of innovation. There were considerable examples of using combinations of technologies to increase impact and reach, particularly looking at ways to combine the internet, radio, TV/video and digital phone technologies.

Expert view

Then there are other questions about the linkages between radio (television) and the internet - getting a broader perspective from the internet in order to broadcast on local radio. Text messaging on health is being explored by OneWorld in Kenya - will the ever growing presence of mobile phones provide new opportunities for public health messages.

- Dr Simon Batchelor, Director of Gamos, UK
First, health sector applications should be combined with other applications and users (education, agriculture, business, local government) to make the local telephone service sustainable and profitable. A “go-it-alone” health sector approach is not optimal for the new technologies. Second, new health sector data protocols and procedures need to be developed to make efficient use of new communication services. Third, technological alternatives need to be evaluated and compared to inform the design of large scale future systems. Fourth, new systems and services need to be designed and implemented by multi-disciplinary professional teams with state-of-the-art knowledge of both health and ICT.

- Dick Martin, USAID/EGAT

Both Harry McConnell and Simon Batchelor rightly point to issues related to convergence and innovative ways of combining new and old technologies. One such example is the well known Kothmale Radio example, where they engage in 'radio browsing' using Internet to answer people's queries during phone-in programmes. UNESCO South Asia has good resources on this initiative.

- Andrew Skuse, Convenor Development Studies, University of Adelaide

Question Three: Where are the tangible proofs that ICT is improving health care?

Generally participants of the online consultation failed to answer the question ‘Where are the tangible proofs that ICT is improving health care?’ comprehensively. Many participants raised the issue of lack of impact data, and in their own discussions sharing seldom rose above the level of anecdotal and case study. At the same time participants clearly expressed the urgent need for evidence about the impact of ICT in health, and in development generally.

Knowledge gap: The area of ‘proof’ for the effective impact of ICT in health is clearly problematic. There is a lack of evidence-based macro studies.

I was struck by the need to bring the debate back to MDG basics and think about ICTs and health through the lenses of poverty, equality, exclusion and gender. Evidence wins arguments and we need to demonstrate through solid empirical data that ICT interventions in health systems and health promotion reduce poverty through the realisation of better health for poor people.

- Andrew Skuse, Convenor Development Studies, University of Adelaide

The consultation highlighted the challenges of ensuring that the use of ICTs has real impact in rural areas (highlighted in the telemedicine and other discussions), as well as fact that the proposed ICT solutions need to have relevance to local caregivers working in low resource settings. It also highlighted that solutions need to contribute to the ‘realisation of better health for poor people’.
There is very little (no) tangible proof of benefit. New ICTs are expenses in the early stages and this is one of the main barriers to their adoption. (Although) computers, mobile phones, satellite communications are gradually becoming cheaper. ........The key assumption here is that information/knowledge about health, disease; poverty etc increases the individuals’ ability to deal with the situation. UNICEF has shown that any/all education for girls reduces maternal and infant mortality. It is estimated in UK that 5% of patients know more about their disease than their doctors do – this is mainly due to use of internet information. I know of no data that shows whether they are any better off for having this information. Our information from Kwaie shows that the information we gave the community increased the uptake of immunization. Radio is probably the most important source of individual information. I don’t know if there are any surveys of the effect of radio health education programmes.

- Dr. Christopher Wood, Founder, AfriAfya

It is well known that it is difficult to prove a direct relation between information and communications activities and knowledge, practice or (most difficult) health outcomes. There are numerous examples that claim benefits from use of ICTs, but few would represent ‘tangible proof’, except that it is clear that effective health care cannot exist in the absence of ‘communication’ and ‘information’.

I think more support is needed for networking and learning, including collation and synthesis of experience. I think there should be more focus on looking first at processes, on a needs-led basis, and whether and how different ICTs might facilitate such processes. There is still a tendency for people to be driven by the technology, or by their favourite medium, and to ‘look for’ applications for that technology.

Too many ICT projects have been implemented with insufficient understanding of the information and communication needs of end users. Too often, there is insufficient attention to content, which continues to be ‘pushed’ rather than ‘pulled’.

I feel there should be much more sharing of experience and lessons learned about e-health successes and failures. There is a growing number of communication tools to facilitate this (e.g. HIF-net), but there is minimal support for the resource-intensive task of making the outputs of such communications useful to development professionals.

- Neil Pakenham-Walsh, Co-Director, Global Healthcare Information Network.
Question Four: What are the most important barriers for not using ICT in the health system?

Participants of the online consultation were most attentive to the issue of barriers; these included the barriers of lack of ICT policy, cost, infrastructure, resources and access.

**The barrier of lack of ICT policy**
The challenges that participants focused on included the problem of a lack of comprehensive ICT policies in most countries, and a danger that a lack of ICT policy can result in a lack of effective quality control and coordinated impact learning.

A number of participants emphasised the lack of adequate monitoring and evaluation and impact analysis, and how this may affect the constant ‘pilot syndrome’, with inadequate macro analysis and scale up of effective interventions.

Participants also discussed the tendency for policy makers to view MDGs in isolation (the word ‘silo’ was used a number of times), and how this tendency can result in projects that do not take into account the interconnectivity of MDGs and need for coordination.

The solutions that participants discussed included supporting decision-makers to about the ‘what’ before the ‘how’ in ICT and Health; i.e. they should list the desired health outcomes first and then apply the most relevant ICT, not list ICTs and see where they can be applied in health. Such a list could support funding decision-making.

A number of participants emphasised the need for governments, and international organisations, to take a more a more macro view of ICTs in health and in development in general, and to enable ICT interventions by supporting and funding a more enabling environment. This would include: improved regulation of telecommunication industries in developing countries, policies and strategies that support “social enterprise” investment e-health, increased ‘corporate social responsibility’ investment in e-health from telecommunication equipment manufacturers and service providers.

**The barrier of infrastructure & cost**
Participants discussed the issue of cost as a barrier for effective ICT usage/interventions in health. The cost of accessing mobile telephones (and terrestrial ones), computers and other newer ICTs was presented by a number of participants as a major barrier to the scale up of ICTs as tools in health in the developing world. Innovations in the developed world regarding telemedicine and other usages of ICTs in health cannot always be easily replicated in developing countries.

**Policymaker view**
Cost is obviously a barrier. We haven’t yet demonstrated convincingly the cost savings that ICT can produce. Another barrier is “quick fix” solutions where an application is slapped together because of a political imperative and then doesn’t work right.

- Dick Martin, USAID/EGAT

**Participant’s views**
“As you point out, there is exceptionally good coverage and access to mobile phone technology in Africa. However, there is an issue of payment for the air time. These are personal phones and we can’t expect individuals to bear the cost.”
The barrier of lack of resources

Some participants highlighted the core fact that in under resourced settings – and many health institutions in the developing world fall within this category – a general lack of facilities, can mean that policy for ICT interventions are viewed as too expensive, too advanced, and not appropriate for the context. However if the intervention can be proved to be effective in making systems of communication and information management better then there is a more strong argument for developing these interventions.

A key learning in the consultation was to never underestimate the amount of resources that need to be made available for ICT systems in health to be success – in terms of planning, in terms of people, in terms of training, in terms of monitoring and evaluating the impact. ‘The information can readily be available, but if the human resources required to make use of that information are not available, the situation will remain the same. Therefore there is need to educate and train more people, so that the information being provided can have a greater impact on the community it is serving.

The challenges that participants discussed included the lack of ICT equipment in impoverished settings, and the lack of support necessary for ICT systems to be a success, include support staff, IT infrastructure technicians and skilled users.

Participants’ views

- “Many of our health centres have not telephone networks. How can we even think of having the internet if we do not even have telephones?”

- “First, health sector applications should be combined with other applications and users (education, agriculture, and business, local government) to make the local telephone service sustainable and profitable. A “go-it-alone” health sector approach is not optimal for the new technologies. Second, new health sector data protocols and procedures need to be developed to make efficient use of new communication services. Third, technological alternatives need to be evaluated and compared to inform the design of large scale future systems. Fourth, new systems and services need to be designed and implemented by multi-disciplinary professional teams with state-of-the art knowledge of both health and ICT.”

The barrier of lack of access

Lack of access to both connectivity, varied communication mediums, and to health information specifically was discussed by the participants.

Access to telecommunications

Policymaker view

‘Recent research conducted under a DFID multi-country study (see www.isrg.info) on ICT use and access in poor communities actually found that telephone ownership and access was pretty high up on the list of essentials. 28% of chronically poor households surveyed in rural Eastern Cape, South Africa, owned a mobile phone. In acute emergencies telephones may be of limited importance, unless of course if you can access a health/help line or call immediate assistance. Where phones are critically important is in the long term sustainability of many rural households. During the aforementioned research in the South Africa leg that I conducted we found that access and ownership of telecommunications enabled poor households to be a part of extended kin networks (migration for employment, rural to urban is very significant in many places) which in turn enabled better access to remittances, access to advice about health, where to secure food and other types of support. 19% of all calls made by the rural households sampled were about health, which is pretty significant. Some papers on this and other themes are up on the aforementioned web site.’

- Andrew Skuse, University of Adelaide
Access to computers
Participants raised the issue of selective access in health ministries. With examples of how access to computers is sometimes limited to senior management (rather than the necessary internal ‘frontline’ users). A number of discussant pointed to a need for a ‘culture shift’ in use.

<table>
<thead>
<tr>
<th>Access – participants’ views</th>
</tr>
</thead>
<tbody>
<tr>
<td>- “The more deserving ‘frontline’ program staff would then either have no access or have to deal with the unreliable, slow, dial-up internet service or something.”</td>
</tr>
<tr>
<td>- “While we discuss the usefulness of ICTs I think a deserving area of attention is the culture of utilization, but also the enabling policy environment.”</td>
</tr>
</tbody>
</table>

The barrier of lack of ICT capacity
There is need to educate and train more people, so that the information being provided can have a greater impact on the community it is serving.

<table>
<thead>
<tr>
<th>Training: participants’ views</th>
</tr>
</thead>
<tbody>
<tr>
<td>- “People, particularly in government, tend to just get excited at times over new technologies and forget about the need for training in proper use.”</td>
</tr>
<tr>
<td>- “Whilst I see a lot of technology and web content out there either in rural spaces or in agencies serving rural people I haven’t seen the same effort applied to changing how people and institutions work together, how we now manage development interventions and how we communicate differently given these new channels of communication.”</td>
</tr>
<tr>
<td>- “There needs to be a system of training and education to support the technology. It is important to develop a culture of information use and to look at each technology as part of a system that facilitates information use. Often people become enamoured with the technology itself and fail to consider how it will be used effectively to improve care. If people are not trained well and if the technology does not fit in with the workflow to improve patient care or management information, it is just an expensive distraction.”</td>
</tr>
</tbody>
</table>
Appendix

Online discussion participants

Sukhdev Singh
Abdurrahman Erman
Adesina Iluyemi
Afework Negash
Ahmed Tahir
Aida Opoku-Mensah
Aleida ter Kuile
Alexandre Rideau
Aliyu Ahmed
Alma Sokolovic-Rasmussen
Alok Ranjan
alvin marcelo
Andrew Chetley
Andrew Skuse
Anne Mwangi
AnneRose Kaiya
Anthony Bloome
Anton Vladzymyrskyy
Antonio Lomba
Atsuko Okuda
Aydedee Ace Domingo, MD
Basheerhamad Shadrach
Bec Shaw Crompton
Beth Robinson
Billy Futter
Bob Pyke Jr
Carol Maringa
Catherine Coleman
Ceasar Barole Scott
Chris Carter
Chris Morry
Chris Zielinski
Clare O’Farrell
Clarisse Loumou Loé
Colette Vilgrain
Daphne kouretas
David Boone
David Souter
Dawit Isayas
Deborah Heimann
Dennis Foote
Devin James
Diana Anius
Dominic birtwistle
Dr Kamlesh Agarwala
Dr. Elizabeth Carl
Dr.Ghassan Issa
Ednah Karamagi
Edward Mensah
Egor Grebnev
Ellyson Stout
Elmarie Venter
Elsie okobi
Erik van widenfelt
Eskedar Nega
Fatima Rahiman
Fatima Sanz Leon
Fiona Power
Fran Cappa
Fran Cappa
Fred Onwa
Frederic Lievens
Fredrick Kanobe
Gavin Eaton
Gay Nyakwende
Geraldine O'Keeffe
Hanan Aruri
Harry McConnell
Helen Hambly Odam
Henry Meena
Herman Scholtz
Holly Ladd
Hui Jing Shi
Ingrid Glastonbury
Inon Schenker
Jackie Davies
Jackie Davies_email02
Jacky Gendre
Jacqueline Dubow
James Kimani
James Okeee-Obong
James Watiti
Jean-Philippe Duvert
Jeffrey Soar
John Eyers
John Rowlandson
Karen Fung
Kate Brincklow
Kefa Bosire
Ken Harvey
Kerry S. McNamara
Kgomotso Moahi
Kim Solez
Klara Tisocki
Kwasi Opoku
Lawrence Kweku Yamuah
Leela McCullough
Leonard Mboera
Leonie Steyn
Lishan Adam
Lodewijk Bos
Luis Alberto Bonifaz
Luis Villegas
M Whitehouse
Maggie Yamfwa
Makane Faye
Marc Lippman
Marcel Werner
Margaret Nyambura
Mariana Dyakova
Mark Brommeyer
Mark Spohr
Mark Storey
Mathurot Chuladul
Matthew Ericson
Md. Anisur Rahman
Mel Barnes
Mike Bailey
Mininim Oseji
Munira Siddiqi
Nadine France
Nakazzi Esther
Nand Wadhwani
Neil Pakenham-Walsh
Nick Ishmeal-Perkins
Niels Keijzer
niki maniam
nina allchurch
Njoroge Kamau
Nobuya Inagaki
Nomita Das
Noor Mohammed
Norman Nyazema
Nyambura Ndungu
Oryema Johnson
Oscar FIESTAS-TEJADA
Otto Martin
Ousmane Ly
P. ANBAZHAGAN
Patricia Methael
Paul Graham
Pauline Monro
Peter Fullarton
Peter Mwarogo
Peter Njuguna
Peter Thorpe
Philip Hassett
Phillip Olla
Rajeev rao
Rajesh Vasudevan
Ranjini Raghavendra
Raymond Byaruhanga
Renuka Bery
Ricardo Ramirez
Richard Garrett
Richard Heeks
Richard Martin
Rob Miller
Robert Mutai
Robert Rogers
Roberto Rodrigues
Ronald Kim
Roy Sastry C L
Rutger Rozendal
Ruth Hope
Sabita Banerji
Sanjay Sood
Sanjib Guha
Sarah Greenley
Shahram Honarzad
Shakoor Karim
Shannon Turlington
Sharique Jamal
Silas Owiti Mudekhere
Simon Batchelor
Sjoerd Postma