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Photo (left to right): Kathleen McQuone-Elliott, Dr. Robert Bollinger, Dr. Tom O’Callaghan, Jane McKenzie-White, Minister for Health, Leo Varadkar, Reza Jafari, Dr. Kunal D Patel and Clodagh McLoughlin

This report was prepared by iheed

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**Graphic Designer:** Aoife O’ Connell

_The information and recommendations provided in this report are representative only of the personal experiences and opinions of the participants at GETHealth Summit 2014 and do not necessarily reflect policy or strategies within their respective organisations._
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>3D</td>
<td>Three Dimensional Graphics</td>
</tr>
<tr>
<td>ADA</td>
<td>Advanced Development for Africa</td>
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<tr>
<td>BBC</td>
<td>British Broadcasting Corporation</td>
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<tr>
<td>CCGHE</td>
<td>Johns Hopkins Center for Global Health Education</td>
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<tr>
<td>CCT</td>
<td>Conditional Cash Transfer</td>
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<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<tr>
<td>CHW</td>
<td>Community Health Workers</td>
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<tr>
<td>GETHealth</td>
<td>Global Education and Technology for Health</td>
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<td>GSMA</td>
<td>GSM Association</td>
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<td>eBook</td>
<td>Electronic Book</td>
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<td>eHealth</td>
<td>Electronic Health</td>
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<tr>
<td>HCI</td>
<td>Human Computer Interaction</td>
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<td>HCW</td>
<td>Health Care Worker</td>
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<td>HRH</td>
<td>Human Resources for Health</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
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<td>ITU</td>
<td>International Telecommunication Union</td>
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<tr>
<td>IUD</td>
<td>Intrauterine Device</td>
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<tr>
<td>KOICA</td>
<td>Korea International Cooperation Agency</td>
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<td>mHealth</td>
<td>Mobile Health</td>
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<td>mHealthEd</td>
<td>Mobile Health Education</td>
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<tr>
<td>POC</td>
<td>Point of Care</td>
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<tr>
<td>NGO</td>
<td>Non-governmental Organisation</td>
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<tr>
<td>SAGES</td>
<td>Suite for Automated Global Electronic bioSurveillance</td>
</tr>
<tr>
<td>SIM</td>
<td>Subscriber Identity Module</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Message Service</td>
</tr>
<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
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<tr>
<td>TBA</td>
<td>Traditional Birth Attendant</td>
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<tr>
<td>UHC</td>
<td>Universal Health Coverage</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>USAID</td>
<td>U.S. Agency for International Development</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Forward

The GETHealth Summit was held at Dublin Castle, Ireland on November 13th and 14th, 2014. The event brought together healthcare professionals, representatives from the technology and education sectors, academic researchers, global health experts from backgrounds including non-governmental organisations to government. This diverse group of delegates were brought together to participate in a two day event that was composed of plenaries and workshops, whereupon discussion and debate revolved around the Summit’s theme of “Leveraging healthcare ecosystems and information technology to bridge the health workforce gap”. The sessions were designed to address this theme and the event was kindly supported by The Norwegian Agency for Development Cooperation, Qualcomm Wireless Reach, Johnson & Johnson, NIH Fogarty International Center, NIH Office of AIDS Research and the Novartis Foundation for Sustainable Development.

The Summit was a highly interactive, evidence based two day event, consisting of a combination of panels, poster and scientific sessions and workshops which were designed to establish both short and long term deliverables for addressing the global health worker shortage, ultimately contributing to better public health outcomes, particularly in resource poor regions. It was also the first year, where the Summit invited abstracts from individuals, organisations and partnerships who are working within the healthcare ecosystem, delivering healthcare education via the use of Information and Communication Technologies (ICTs) and supporting frontline healthworkers. The Summit was interested in research projects, (ongoing and closed), initiatives, project and business models that are delivering education with ICTs that have been seen as success, but also those that shown evidence of hurdles, challenges and failure.

Breakout sessions were designed via the support of organisations that are continually involved in health education and the use of ICTs. These in combination with the plenaries aimed to address the overall theme but also some key questions, including:

- Which new mHealthEd tools and point-of-care devices are needed to support providers in resource-limited settings and which existing platforms can/should be scaled up?
- How can we further integrate digital content (video, animation etc.) in health training programmes?
- How do we deliver intelligent education modules, and therefore avoid end user super-saturation?
- How can ICT empower vulnerable populations and members of society, and therefore engage them into frontline health care?
- How can fiber and wireless networks in developing countries be leveraged to improve health education?
- What is required to optimize distance-learning platforms to support health worker education in developing countries?

This report collects the experiences of individuals and organisations who participated within the plenaries and sessions containing examples of core issues discussed, questions raised and describes recommendations made by delegates, which it is hoped will provide a framework for ICT driven health training that can be implemented now and in the immediate future.
Executive Summary
The second GETHealth Summit took place on November 13th and 14th 2014, in Dublin Castle, Ireland. Building on the outcomes of GETHealth Summit 2013, and the recognition that it takes an entire ecosystem ranging from the IT and educational sector to the government, NGO and academic sectors to have successful scalable and sustainable solutions, the theme was: ‘Leveraging healthcare ecosystems and information technology to bridge the health workforce gap’. The Summit was designed to be a highly interactive two day event. Driven by a promotion of an evidence base, it consisted of a combination of plenary, poster and scientific sessions and breakout sessions in association with partner organisations.

Day one commenced with keynote speeches including a warm and insightful welcome from the Irish Minister for Health, Leo Varadkar. Speaking of his own experience and challenges as Minister for Health in attracting and retaining healthcare professionals, Minister Varadkar had a good understanding of the magnitude of the problem facing developing countries in recruiting doctors and nurses while attempting to retain them in country. He further recognized that current healthcare delivery models are not adequate to meet existing populations’ needs and expectations, and developed countries like Ireland are increasingly turning to new technologies, particularly information technology systems to support delivery. Hamadoun I. Touré of the International Telecommunication Union (ITU) participated via a recorded message voicing his belief in the transformative power of ICTs in battling epidemics, such as the current Ebola epidemic, and helping with relief efforts in response to crises and in tackling health problems globally. These points were further emphasised by way of a stimulating interview with Denis O’Brien, Chairman of Digicel Group. Declaring that “broadband is a human right”, Mr. O’Brien discussed the importance of technology in improving economic development which is essential to providing social services, such as healthcare. He further discussed the importance of partnerships and working with governments, which was a theme that continued throughout the two days.

“broadband is a human right”
Keeping in line with the theme of the Summit, the *Plenaries* which took place over both days included the following topics:

1. **IT Infrastructure** addressed whether fiber and wireless networks are where they need and should be to support all levels of health worker in improving health outcomes and education, what are the hurdles that we still face and how do we collect and utilize big data? It is clear that simple technologies are already in place and these can be used to train health workers where the IT infrastructure is otherwise poor. However, a core element in achieving sustainability and scalability is to have local ownership through collaborating with local governments. There is no shortage of data, but we are challenged as to whether it is accurate, how to use data effectively and how to share it. We need to work as a community to share outcomes and best practices, as well as data, so we can learn from one another.

2. **Distance Learning Platforms** addressed optimising the implementation of existing distance learning platforms to support frontline health worker education and training, and what the current hurdles are in the adoption and uptake of distance learning strategies. Discussions highlighted that cultural barriers are much more difficult to address than technological challenges. In addition there is a huge diversity in terms of quality and complexity between distance learning platforms; a rethink is called for on how we actively engage people in learning rather than the method of training. There is a lack of national strategy to scale up e-learning and training programmes, despite the reduced cost in comparison to traditional class room teaching. There needs to be increased research into the effectiveness of distance learning.

3. **mHealth Tools and POC devices** discussed the emerging mHealth and point of care (POC) devices that will impact providers in resource-limited settings, what challenges and barriers exist, and what must be in place to ensure scalability and sustainability. The advent of nanotechnology and miniaturisation has allowed for mobile devices to be used as POC diagnostics, however, it is important that the POC device should recognise an existing problem in the health system and address this problem. Simultaneously, it is necessary that the tool fits within the existing workflow and is easily adopted. Evidence is currently insufficient and the design of a device is crucial for success. In order to create scalability and sustainability, the whole ecosystem must be engaged and we have multi-sectorial partnerships.

4. **Use of Digital Media** focused on how digital media can be managed, catalogued and expanded to improve health worker training and public health programming without super saturation of the health worker. This panel outlined that there tends to be a lack of partnership when it comes to the creation and use of digital media. We should not create what already exists, but find the gaps. Partnerships are key; through partnerships it is possible to develop and assess content that is tailored to need and enables us to reach those that need it most. Digital media can be an incredibly powerful tool but can be difficult to measure and therefore it is difficult to evaluate its effectiveness. However, qualitative research and narrative from the field can be useful for improving content and process development.

5. The final plenary session, consisted of public representatives from Bangladesh, Malawi, USA and...
Tanzania discussing their individual perspectives about the successes and challenges of Public-Private Partnerships by providing their own experiences and examples. It was highlighted that success in public-private partnership is measured via assessment of its sustainability. To achieve this it is important to think about partnership needs and priorities. This involves working together on a unified plan, having a common understanding of plan execution and ensuring all parties are satisfied with the result.

These sessions were intended to be as interactive as possible, therefore the format included engagement of the delegates and the panellists in discussions instead of presentations with slide decks. The Breakout Sessions, which were led by partner associations, were conducted in the same manner; being smaller and more intimate, these sessions allowed for further in-depth discussion between panellists, delegates and between the delegates themselves. This interactive format received very positive feedback from attendees. When asked what they found most useful regarding the summit, responses included those highlighted on this page.

The Breakout Sessions held over both days, were led by a number of partner organisations and encompassed the overall theme and objectives of the Summit.

1. Keeping Track: Creating a System to Count Community Health Workers in association with One Million Community Health Workers Campaign. Data on Community Health Workers [CHWs] is inconsistent. This session examined current practices and panellists’ experiences with health worker registries. There is a need for CHWs to be included in a formal health worker registry. How the registry will be used and what value it will bring to stakeholders will depend on the data collected. Methods of sourcing, capturing, maintaining CHW data still needs to be ascertained. This will depend on who has the motivation and commitment to maintain and capture the data.

2. ICTs and their role in Communicating Health in Times of Crisis and Emergency in association with United Methodist Communications. This session examined how data can predict the spread of disease; what is the best means of communicating during a crisis and how can health workers prepare for such an event. Innovative processes are needed to communicate with people in Ebola affected regions and collect data from the field; for example, the BBC Media Action, via the use of WhatsApp1, has begun to gather and communicate information; United Methodist Communications combines the use of mobile phones, radio and solar devices; mPowering Frontline Health Workers established a webinar for health workers responding to Ebola. However, before intervention, anticipating disease outbreak patterns must be considered allowing for ‘preparation’ rather than ‘reaction’- data visualisation can aid this.

3. Gender eMpowerment: The Role of Women in Frontline Health Worker Training in association with mHelp. This session focused on gender and women’s empowerment in the design and implementation of training programmes and tools which are meant to support their role as frontline health workers. Often in the dialogue, women tend to be left out of the technology discussions because there is a

1WhatsApp Messenger is a cross platform mobile messaging app
dramatic technology divide in terms of access to technologies and or women as technology developers. Fighting patriarchal norms in countries, such as Bangladesh, where there is a strong male domination in society is difficult. However, we need to be gender inclusive rather than exclusive and engage males in development. In addition, there needs to be a greater focus on sharing lessons learned regarding gender and technology more widely, while increasing the rigor with which we collect this information.

4. From Local to Global- Just how Adaptable is Health Training Content? In association with mPowering Frontline Health Workers. This session explored what the global health community is doing to provide training for health workers, and how to accelerate access to quality training and resources globally without duplicating effort. While content developers produce high-quality content, more work needs to be done to support this content reaching its audience. By sharing and adapting existing content, training implementers could avoid duplication of effort, time, and money. The use of open source content should be promoted to increase re-use and adaptation of content. However, it is critical that locally adapted content retains the production value of the original materials and adheres to any licence requirements. Effective delivery of content through mHealth requires partnerships with many stakeholders, including ministries of health, training institutions, mobile network operators, health workers and others.

5. The Place of IT in the New Global Strategy on Human Resources for Health (HRH) in association with Irish Forum for Global Health. Global Health Workforce Alliance and USAID. This session examined the role of IT in the new Global Strategy on Human Resources for Health which is being developed by the WHO. Following the two introductory speakers, the participants discussed the issues in four breakout groups on different HRH themes. Matching four of the eight thematic papers being prepared by the HRH strategy working group, these were:

- Transformative Education
- Data and Measurement
- Improving Health Worker Productivity and Performance
- Building Capacity beyond the Health Sector

6. Tools and Experiences Using Mobile Money to Support Frontline Health Workers in Association with Pathfinder International. This session examined the lessons learned and experiences of using mobile money to build the capacity of and support frontline health workers in low and middle income countries. Mobile money can be used to support health service delivery including targeting clients or health workers stipend payments. Using mobile money opens opportunities to transfer payments to beneficiaries while reducing the overhead, increasing security of payments and improved transparency which would otherwise be difficult due to a lack of banks and financial institutions. As countries begin to adopt the use of mobile money, national regulations, linkages with banks and mobile network operators, availability of agents, client familiarity with cashless banking and cultural contexts should all be points of consideration when planning for adopting mobile payments.

7. The development of mobile training toolkits in mHealth: a way forward? in association with London Knowledge Lab. This Breakfast Session, in similar format to the breakout sessions, focused on the development of toolkits that allow the supervisors of frontline health workers to develop their own mobile applications based on community need, without the need for any programming knowledge. Customisable mobile applications for training frontline health workers, will only be effective if designers know how to apply educational theory to app design and integrate the new mobile apps into their programme interventions. Moreover, community engagement in the design of interventions [participatory design] needs to become a priority in order for the most appropriate intervention to be developed.

This year’s Summit saw the introduction of Scientific Sessions, promoting research in the field of ICT for health education, particularly in low resource settings. One scientific session took place each day of the Summit. Shortlisted oral presentations were given during these and posters were displayed throughout the duration of the event. The Scientific Advisory Board reviewed all oral presentations and posters for award selection. More details of the award winners can be found on page 30. The Plenaries and Scientific Sessions are available to watch at: www.gethealthSummit.org/gallery/gethealth-14-video/

The Summit brought together representatives from the entire ecosystem; private and public sectors, including representatives from governments, academia, NGOs, donor organisations, the educational, digital and IT sectors, to discuss and address the theme and the general issue of the current global shortage of frontline health workers. This representation came from over 18 different countries; a full list of represented organisations can be found in Appendix C.
Plenaries
IT Infrastructure

Moderated by: Reza Jafari, e-Development International

Panellists: Tom Arnold, Institute of International and European Affairs (IIEA), Lauren Woodman, NetHope, Philippa Biggs, ITU, Samara Hammond, AMREF

This plenary session aimed to discuss whether fiber and wireless networks are where they need to be and should be to support all levels of health worker in improving health outcomes and education. It also asked what hurdles exist and how do we overcome them? How do we collect data and utilise the big data?

Core Issues and Recommendations:

- How do we connect rural and remote areas? With what speed of services and how do we finance this given that old business models no longer work? There has been a significant shift away from the old business model, away from governments to international corporations. How will this influence delivery?

- Simple technologies which are already in place and being used widely can be used to train health workers where the IT infrastructure is otherwise poor. For example, using older generation mobile phones.

- The challenges we face are not just related to technology infrastructure. How do we look at the entire ecosystem and pull in the local communities we are working with? It is necessary to think ‘long-term’ because there are no short term fixes. A core element in achieving sustainability is to have local ownership. In order to do this it is necessary to collaborate with local governments.

- Emerging technologies have a huge promise but like anything else they need to be tested and evaluated before we put too much faith in them. We need to assess what the critical success factors are before deploying emerging technologies too broadly.

- The collection of data can be challenging, especially within rural regions. Although technology can be beneficial in collecting data, other existing methods may be cheap and effective. However, it is not just collecting data that is important; it is the quality of the data that is collected. This is only as good as the person who is collecting and entering it. Without quality data you will not be able to accurately answer the problem or questions you are assessing.

- The value of data depends on what you want to use it for; it is of no significance on its own. It is how it connects and informs actions and policy in the wider ecosystem that makes it valuable. Only then, the potential of how to use data to achieve positive health results becomes obvious.

- We need to discuss and act in regards to increasing data access, data sharing and devising better interventions. There is no shortage of data, but we are challenged as to how to use data effectively and how to share it. We need to work as a community to share outcomes and best practices, as well as data, so we can learn from one another.
Distance Learning Platforms

Moderated by: Jane McKenzie-White, CCGHE

This plenary discussed whether we can optimise the adoption and uptake of existing distance learning platforms to support frontline health worker education and training. It was asked what hurdles exist and what can we learn from previous failures and successes?

Core Issues and Recommendations:

- There is a reluctance to take part in e-learning, by trainers and trainees, as well as organisations. People do not see themselves as having time for e-learning; they want to have it incorporated into their working day. There are also barriers within organisations themselves, the organisational culture that exists, which need to be taken into consideration.

- Cultural barriers exist and are much more difficult to address than technological challenges. For instance, there is bias towards traditional teaching and learning practices within developing countries; people do not think they can learn effectively through e-learning platforms. We need to assess such cultural barriers before rolling out any programmes.

- In addition to the lack of resources and infrastructure in place for distance learning, especially within developing countries, there is a huge diversity in terms of quality and complexity between distance learning platforms. Standards should be developed to ensure quality learning is provided, in addition to increasing infrastructure and support.

- There tends to be a lack of interaction within existing distance learning platforms. This needs to change to optimise e-learning. Interaction between student and tutor is key to the success of distance learning. As such, regular interactions between student and tutor should be incorporated into learning programmes which can be achieved through technology. Not only is it important for learning but it is necessary for clinical teaching which requires face to face instruction.

- The focus of distance learning needs to shift towards pre-service training which is followed by in-service training. It should enable people to then apply lessons learned to practice in their daily work life.

- A rethink is called for on how we actively engage people in learning rather than the method of training. There should be an emphasis on the importance of the content, not just on the medium preference. If content is not interesting, engaging and current, students will find the course boring and learning will be limited. While the learning outcomes may be different between distance based learning and traditional classroom learning, we should introduce some of the successful instructional methods into distance learning.

- Meaningful incentives must be in place. Learners must see the benefits of participating in distance learning and training. The daily per diems and nice locations do not apply nor have they ever ensured or been proven beneficial for meaningful learning and active participation.

- There is a lack of national strategy to scale up e-learning and training programmes, despite the reduced cost in comparison to traditional classroom teaching. There needs to be increased research into the effectiveness of distance learning.

- We need to focus on the ‘how’. How are we going to provide education where it is needed? How are we going to deliver that education? How are we going to assess its effectiveness? How are we going to scale it up?
mHealth Tools and POC Devices

Moderated by: Craig Friderichs, GSMA
Panellists: Alain Labrique, Johns Hopkins Global mHealth Initiative, Patricia Mechael, mHelp, Guillaume Deflaux, Terre des Hommes, Blake Tye, Qualcomm Wireless Reach

This session discussed the emerging mHealth and POC devices that will impact providers in resource-limited settings, what challenges and barriers exist, and what must be in place to ensure scalability and sustainability.

Core Issues and Recommendations:

- There has been a shift from standard mobile phones to the use of smart phones which allow for computable processing at the point of care (POC). The advent of nanotechnology and miniaturisation has allowed for these devices to be used as POC diagnostics; from portable ultrasounds to eye and retina scanning systems. We are seeing an advent of not just purpose built devices but the leverage of peripheral devices and customised kit deployment.

- POC devices as tools for health systems strengthening can improve the quality of care at the point of care by supporting health workers to do their jobs better, more efficiently and to connect them with the larger health ecosystem.

- It is important to remember that the POC device should recognise an existing problem in the health system and address this problem. Simultaneously, it is necessary that the tool fits within the existing workflow and is easily adopted. ‘On the job training’ should be provided to the health workers to ensure adoption and correct use, and that the device is doing what it is meant to. To date it has been simplicity of the device that has stuck.

- However, it is not only the technology that is central in supporting health workers but also the solutions behind the technologies. How can we use the data that the technology collects to inform the practice of health workers and strengthen health systems?

- Current challenges include that evidence is insufficient regarding the effectiveness of POC devices. In addition the design of a device is crucial for success. The device may not be compatible with the needs of the health worker cadre; for example, the screen might be too small for the purpose they require it for. The tolerance of the device is another issue; many technologies cannot survive the challenging environments of developing countries such as Nigeria. Improving the evidence base so we have greater clinical reliability and improving the design so the technology fits with the end user will be critical to rapid adoption.

- Regulatory authorities have not kept up with technology development in measuring effectiveness. As such there is a collective responsibility that the devices we put on the market actually do the things they’re meant to do and meet the standards of what is currently available.

- Political will is another important factor to scalability and sustainability. Even if a POC device is proven to deliver the same or better service at less cost, this does not motivate governments to adopt it. It is evident that the development of technology moves at a much faster pace than its adoption.

- In order to create scalability and sustainability, it is also important that the whole ecosystem is engaged and we have multi-sectorial partnerships, not simply public-private partnerships.
Use of Digital Media

Moderator: Dr. Tom O’Callaghan, iheed
Panellists: Uju Ofomata-Aderemi, OneWorld, Firdaus Kharas, Choc Moose Media, Catherine McCarthy, Medical Aid Films, Linda O’Sullivan, Dun Laoghaire Institute of Art, Design and Technology

With the surge of digital media focused on the health provider, from eBooks to 3D animations, this session asked: how can this media be managed, catalogued and expanded to improve health worker training and public health programming without super saturating the health worker?

Core Issues and Recommendations:

- There tends to be a lack of partnership when it comes to the creation and use of digital media. We should not create what already exists, but find the gaps. Do not just do the same thing again; why not add on to what is already there, work with those organisations that are already working in places? We need more communication and more information about what is already being done, to share this and not work in isolation.

- Needs assessments should be carried out before rolling out projects to assess the cultural context to ensure content is locally contextualised, and importantly what content already exists which could be adapted.

- Developing digital content is not cheap, but if we leverage what already exists and engage in partnerships, scalability and sustainability would be much more achievable.

- What is the happy medium between localisation and being able to scale it up on the larger scale, either by district or national scale? There is no one-size-fits-all, so we need to always ensure we have as much representation from different stakeholders as possible and they need to be constantly engaged.

- There is not enough emphasis on prevention in digital media. We as a community are successful, to an extent, when responding to health issues; however, prevention would save cost in healthcare and ultimately deaths. We should take the costs we can save through prevention into account.

- Partnerships are key; through partnerships it is possible to develop and assess content that is tailored to need and enables us to reach those that need it most. Partnerships allow collaboration between medical experts and animators. Governments are essential to engage in such partnerships to ensure sustainability and acceptability of content and curriculum.

- Digital media can be an incredibly powerful tool in making a difference in people’s lives; in building confidence, building knowledge and showing best practice. But this can be difficult to measure and therefore it is difficult to evaluate the effectiveness of digital media. Evidence of effectiveness is important but it takes a long time and is expensive.

- Qualitative research and narrative from the field can be useful in getting feedback from the end user and help with improving content and process development. Moreover, it can be used to compare projects in different regions.

- There is a responsibility to the NGOs using your content. They are assuming that the content has been vetted in some way that it is going to be useful to them. Therefore, content providers have an obligation to ensure it is.

- There is a disconnect between claim and assessment – where do we have the evidence to make a certain claim? The tension lies when we make claims about ‘behaviour change’ with the evidence from knowledge, attitudes and accessibility/usability. Is our claim commensurate with the data that we have generated? If not, perhaps we can find out ways to do that.
The Public-Private Partnerships – successes and challenges

Moderated by: Dr. Robert Bollinger, CCGHE
Panellists: Roger Glass, NIH Fogarty International Centre, Mwendwa Mwenesi, Ministry of Health and Social Welfare, Tanzania, Chiwoza Bandawe, University of Malawi, Abul Kalam Azad, Directorate General of Health Services, Bangladesh

In this session, public representatives from Bangladesh, Malawi, USA and Tanzania discussed their individual perspectives about the successes and challenges of public-private partnership in the context of the conference theme, by providing their own experiences and examples.

Core Issues and Recommendations:

• Data collecting and sharing is one of the challenges among the public and private partnership. In Bangladesh, there is a very strong private health sector presence; this poses challenges for the national healthcare ICT system as there is no means of gathering data from both the public and private sectors.

• To tackle this problem the government has established a national data centre. The government and NGOs use the same data system; in addition the government has recommended this system for private sector providers, thus enabling them to gather national data. Additionally, all the stakeholders can access the data for analysis and use as needed.

• mHealth has been beneficial. In Tanzania, mHealth improves the accessibility to healthcare, the accuracy of diagnosis and the education while being cost effective. Three areas where mHealth has worked effectively are in child health, behaviour change communication and logistics management.

• An example from Tanzania which has been proven to be successful is a government supported ‘mHealth forum’, which allows for sharing and collaboration, without ‘reinventing the wheel’. This provides the opportunity to move forward in terms of partnership.

• There is a growing recognition of the importance of ICTs in healthcare and the partnerships to support their deployment. The tablet and other mobile devices are becoming just as important as stethoscopes for doctors. It is necessary that we introduce technologies into the local setting while also providing training and support for problem resolution.

• Two-way contribution and communication is essential in public-private partnerships. It is important to understand what is happening in the local context, and what partnership means in the local context, and to incorporate this feedback into programmes.

• It is important to think about partnership needs and priorities. This involves working together on a unified plan, having a common understanding of plan execution and ensuring all parties are satisfied with the result. Partnerships need to ‘trickle down’ toward the community, as they are an essential part of such partnerships. Typically, NGOs & donors will come in with an agenda, while expecting the community to comply. This results in communities being left out with very little opportunity for feedback. Therefore to address this, the partnership must reach each household within the community.

• Partnerships must learn about the community in which they work, ask questions and base delivery on community needs. What do they need in their context, what are their priorities in regards to ICTs and health training?

• The symbolism of partnership needs to be clear. If a project/partnership were to deliver ICTs within a community, how does this upset the status quo? Is power taken away from community leaders, altering the community irreversibly? Addressing and assessing these and other needs must be done
thoroughly in the local context via the partnerships that act within the area.

- Success in public-private partnership is measured via assessment of its sustainability. Achieving this requires all partners display transparency and provide legal frameworks that can guide partnerships.
This year, inaugural scientific sessions were introduced to the GETHealth Summit, promoting scientific research in the field of ICT use for health education, particularly in low resource settings. In conjunction with the event’s theme of ‘Leveraging healthcare ecosystems and information technology to bridge the health workforce gap’, a call for abstracts was announced on the event launch. There was a great response and abstracts were subsequently reviewed by the Scientific Advisory Board (Appendix B) who shortlisted submissions for oral and poster presentations during the two day event. Two scientific sessions were organised, one for each day of the event, where the shortlisted oral presentations were given. Posters were displayed throughout the event’s duration. Members of the Scientific Advisory Board reviewed all oral presentation and posters throughout the two days. The Summit was interested in research projects, (ongoing and closed), initiatives, project and business models that are delivering education with ICTs that have been seen as a success, as well as those that had shown evidence of hurdles, challenges and failure. The Board was further engaged to discuss and provide selections for best presentation and runner-up in both the Oral and Poster categories.
Scientific Session 1:
Moderated by: Dr. Kunal D Patel, iheed

Presentations:

Title: Leveraging agriculture extension workers for health and nutrition: The use of participatory, community-led videos on mobile pico projectors in rural India
Presenter: Kristina Beall Organisation: JSI/ SPRING Project

Title: Opportunities for mobile platforms in Africa: implementing mHealth interventions with grassroots health facilities in Tanzania
Presenter: Brenda Kitilya
Organisation: Dept. of International Public Health, LSHTM

Title: A Systematic Review of End Users of Health Interventions Employing Mobile Devices
Presenter: Travis Porter
Organisation: Tulane University Center for Global Health Equity

Title: CHN on the Go: Equipping Ghanaian frontline health workers through a comprehensive mobile application
Presenter: Jahera Otieno
Organisation: Concern Worldwide

Title: Health eVillages Educates Clinicians and Improves Healthcare with Mobile Health Technology and Collaborative iQ
Presenter: Wolfgang W. Renz
Organisation: Physicians Interactive

Discussion:

Following each presentation, each speaker had the opportunity to answer questions that were put forward by the floor and moderator. These included the following topics:

• How can sustainability for participatory video training be maintained? Through the engagement with local, grassroots organisations and local agents while also providing technical support.

• What is the error rate in terms of sending SMS based codes; are errors often seen? Errors are often seen when sending SMS based codes. However, by using a web based platform and engaging end users personally, you can identify those who are submitting error laden SMS messages.

Setting a threshold, for example three errors before engagement, can aid with this.

• mHealth reviews have highlighted a lack of mental health research. What are the reasons for this? The lack of mental health research is related to the ‘silos’ component of research. However, there are already tools available that can be used for mental health.

• There is a disproportionate representation of researchers who are not from Africa authoring surgical research in Sub-Saharan Africa. What are the numbers in regards to indigenous authors in research? Usually a local partner is engaged within such studies, however in what capacity they were
part of the study needs to be evaluated. We should use this gap to promote local research.

- How can video uptake be improved, for example in the case of labour and delivery information? Supporting further independence from the implementer can improve video uptake. Once a project commences and education has been delivered, the implementers can pull away and allow the uptake to improve without further drive from the implementing organisation.

**Scientific Session 2:**

**Moderated by:** Kieran Ryan, Irish College of General Practitioners

**Presentations:**

**Title:** Prenatal care SMS-based for communities and remote ultrasound imaging  
**Presenter:** Alessandro Crimi  
**Organisation:** ETH Zurich, AIMS Ghana

**Title:** Interactive voice response and basic mobile phones: A low-cost approach to deliver refresher training to health workers  
**Presenter:** Rebecca Bailey  
**Organisation:** IntraHealth International

**Title:** Can a little red beam of light save new-born lives?  
**Presenter:** Annamarie Saarinen  
**Organisation:** Newborn Foundation

**Title:** How telemedicine shortens distance in Mali  
**Presenter:** Francois Laureys  
**Organisation:** International Institute for Communication and Development (IICD)

**Title:** A mobile intervention for training community health workers to assess the stages of child development: an interim evaluation  
**Presenter:** Anne Geniets  
**Organisation:** Oxford University

**Discussion:**

Following each presentation, each speaker had the opportunity to answer questions that were put forward by the floor and moderator. These included the following topics:

- The distance one needs to travel to access health can be a major barrier. Is there evidence for how many health workers you need to train to fill these gaps in a country such as Ghana? Research has highlighted that within communities of 10-20,000 people, one health worker is adequate. In Ghana, there should be at least 10,000 workers in total; however, the expansion of training is an issue.

- Once an emergency pregnancy is discovered, such as an ectopic pregnancy, is there a mechanism...
in place to get these patients to care? The Community Health Workers (CHWs) are encouraged to think about such scenarios; however this remains to be a problem as many CHWs are unable to act on such situations.

• Can interactive voice mobile refresher training of health workers be superior, and thus more cost effective than other training approaches? The question is whether this approach can reach its objectives first. It’s difficult to compare this to other approaches, but you can compare learning objective success and track the cost per trainee, which can provide a comparative measure.

• What are the robust measures of effectiveness? Measures can be clinically based, such as the ability to insert an IUD, but also what kind of treatments you recommend. The measures have to be clinical and behavioural. It’s important to link clinical audit to the effectiveness measure.

• When you increase diagnostic ability via technology, there is a natural increase in requirement for treatment. Has there been research within the study to measure this requirement? Regional hospitals have, or should have technical ‘plateaus’ that allow them to respond to increased demand if they are initially able to perform a diagnosis. In regards to complicated procedures, the patient will have to be referred to a national hospital, but this can be avoided by having a higher number of ‘plateaus’ in place.

• What has improved via the intervention of technology in child disability training in Kenya? Children with cerebral palsy and other disabilities are commonly missed in Kenya. However, mobile intervention has raised awareness, creating the formation of discussion groups within the community with neighbours becoming aware of their disabled neighbours. This highlights that it is not only the improvement in health worker knowledge that is important but also increasing community knowledge.

Award Winners:

After reviewing both poster and oral presentations, the scientific advisory board awarded the following individuals:

Awards were presented by Dr. Graham Love, Chief Executive of the Health Research Board

Best Oral Presentation:

Title: Leveraging agriculture extension workers for health and nutrition: The use of participatory, community-led videos on mobile pico projectors in rural India

Presenter: Kristina Beall

Organisation: JSI/SPRING Project
**Oral Runner Up:**

**Title:** A mobile intervention for training community health workers to assess the stages of child development: an interim evaluation

**Presenter:** Anne Geniets

**Organisation:** Oxford University

**Best Poster Presentation:**

**Title:** eLearning at a Medical School in sub-Saharan Africa: Use of the Technology Acceptance Model to Evaluate Innovation Effectiveness

**Presenter:** Charles Muiruri

**Organisation:** Kilimanjaro Christian Medical University College

**Poster Runner Up:**

**Title:** “I can also serve as an inspiration”: a qualitative study of the TB&Me blogging experience and its role in MDR-TB treatment

**Presenter:** Shona Horter

**Organisation:** Médecins Sans Frontières (MSF), London, UK
In partnership with various organisations, the Summit encouraged delegate participation via breakout sessions and workshops. The event management team worked closely with representatives from these organisations to create a mix of varied sessions and workshops that focused on the event’s theme but also on emerging topics within the sector.

This element of the event provided a strong forum for all participants to express their views, and to discuss and provide recommendations for moving forward.
Keeping Track: Creating a System to Count Community Health Workers

In Association with: One Million Community Health Workers (1mCHW) Campaign
Moderated by: Dykki Settle, IntraHealth International
Panellists: Sharon Kim, 1mCHW Campaign, Hoon Sang Lee, KOICA & Estelle Guain, USAID

Data on Community Health Workers (CHWs) is inconsistent. This session examined current practices and panellists’ experiences with health worker registries. Following the panel discussion, the audience was engaged in a working group session focused on addressing the challenge questions:

1. Which stakeholders will capture and maintain the data?
2. What value will this data bring to stakeholders and how will they use it?
3. What are some sources of information for the CHW registry? What are some opportunities [e.g., trainings, campaigns, mHealth technologies, supervisors/managers, etc.] to capture information?
4. What data is needed to create a comprehensive community health worker registry system?

Core Issues and Recommendations:

- There is no current definition of a CHW and scope of practice varies by community and country. As a result, there are major problems in reporting the number of CHWs.
- There should not be a separate CHW registry; rather, advocacy efforts are needed to include CHWs in the formal health worker registry.
- Currently, the 1mCHW Campaign uses a survey to assess how many community health workers there are in Sub-Saharan Africa (SSA). This survey is a placeholder until there is a more universal method of collection. The 1mCHW Campaign’s Operations Room, an online dashboard used to track CHWs activities and operations across SSA provides information on CHW education levels, remuneration status, training levels, equipment distributed, etc.
- What value will registry data bring to stakeholders and how will they use it? Though this is dependent on the data collected, the audience suggested the following:
  - Training
  - Increasing transparency
  - Increasing accountability
  - Improving planning

- Increasing advocacy
- To provide additional funding
- Identifying the needs of the health worker
- Helping to provide better services
- To increase support
- Methods of sourcing, capturing, maintaining CHW data still need to be ascertained. This will ultimately depend on who has the motivation and commitment to maintain and capture the data.
ICTs and their role in Communicating Health in Times of Crisis and Emergency

In association with: United Methodist Communications
Moderated by: Neelley Hicks, United Methodist Communications
Panellists: Lesley-Anne Long, mPowering Frontline Health Workers, Sheri Lewis, Johns Hopkins University, Smitha Mundasad, BBC Media Action

Whether manmade, natural, or medical, crises often bring a unique set of circumstances to mHealth. This session aimed to discuss how data can predict the spread of disease. What is the best means of communicating during times of crisis? How can health workers prepare?

Each speaker used examples from their own organisations as a basis for discussion.

Core Issues and Recommendations:

• The current Ebola epidemic has resulted in over 5,000 deaths and 14,000 people being infected. The reasons for this: civil war, poverty and poor infrastructure. Traditions and cultures are being affected by this; people do not follow cultural burial processes anymore; people do not shake hands anymore.

• Innovative processes are needed to communicate with people in Ebola affected regions and collect data from the field; for example, BBC Media Action, via the use of WhatsApp, has begun to gather and communicate information.

  • WhatsApp is used to gather and exchange health information.
  • Data presented at the Summit indicated that 15,000 subscribers have used the service in Sierra Leone, Guinea and Liberia.
  • Partnering with the WHO, CDC and UNICEF will ensure dissemination of useful info graphics, audio and written material.
  • WhatsApp has efficiently spread core information with the ability to have 125 people per broadcast group.
  • WhatsApp, as well as through their radio, TV and online services has allowed BBC Media Action to provide quick answers.

  • Combining the use of mobile phones, radio, solar devices and animation, United Methodist Communications’ Ebola crisis response has proven to be successful. Their Ebola: A Poem for the Living animation is now being played on national television, radio, internet and group settings in several countries in West Africa using their regional dialects.

  • Establishment of a webinar series can rapidly spread knowledge and encourage discussion for intervention. One example is the mPowering Frontline Health workers series: ‘Training Health Workers for Ebola’ which consisted of four webinars and aimed to provide health workers with the clear, reliable, and timely information they need to protect themselves, detect the disease, and respond.

  • However, before intervention, anticipating disease outbreak patterns must be considered allowing for ‘preparation’ rather than ‘reaction’:
    • Data visualisation can aid in this. Different kinds of data are gathered, which modelling and simulation is then applied to, providing visualisation; this in turn is provided to public health professionals. Additionally, this data can assist with public understanding.
    • Methodology that was highlighted included the Suite for Automated Global Electronic bioSurveillance (SAGES). SAGES is a collection of modular, open-source software tools designed to meet the challenges of electronic disease surveillance in resource-limited settings. It allows public health professionals to identify potential disease outbreaks earlier than ever before.
    • SAGES looks at the data services within a certain region and seeks methods to channel out the data by finding individuals or groups on the ground who are already in some position to provide gathered data.
• To be prepared, alongside innovative data collection and modelling, a ‘preparation package’ must be developed. It is recommended this contains:
  • Consistent upgrades and updates of data
  • Immediate co-ordination with vital statistics
  • Understanding the effect of a previous crisis so that a current situation is more manageable now and in the future.
Gender eMpowerment - The Role of Women in Frontline Health Worker Training

In Association with: mHelp
Moderated by: Patricia Mechal, mHelp
Panellists: Coumba Touré, Advanced Development for Africa (ADA), Alain Labrique, Johns Hopkins University, Tamsyn Seimon, Health Communications Consultant

Women play a critical role in health systems as they make up the majority of frontline health workers. This session focused on gender and women’s empowerment in the design and implementation of training programmes and tools meant to support their efforts.

Core Issues and Recommendations:

- There is a need to think critically about how we include users in the design of the health education delivery product and how we can support them. Often in the dialogue, women tend to be left out of the technology discussions because there is a dramatic technology divide in terms of access to technologies and/or women as technology developers.

- Numerous mHealth initiatives in Africa are not reaching scalability. Partnership is key to achieve this. To make the partnership and the initiative successful, it is vital to work with the local governments and to work with the other mHealth initiatives working within the area. It is necessary to involve all the stakeholders, particularly women, for a successful partnership. An example of a mHealth initiative is ADA’s, Zero Mothers Die, to empower pregnant women to be able to make their own decisions regarding their health and to give them access directly to the health worker. A mobile phone is provided to the women that includes ‘free minutes’ to access the health worker. Simultaneously, they have a programme to train the health worker to ensure they are able to respond to the needs of the pregnant women.

- However, gender in Global Health is not only about addressing pregnancy and maternal health. Over 75% of the burden of mortality among young women of reproductive age in South East Asia is not due to pregnancy but also violence, infection, and chronic diseases. These issues need greater attention.

- Moreover, given the magnitude and importance of the health of women of reproductive age, there is a shortage of sufficient funding for this area. For years we have ignored adolescent health, but we now have the opportunity to build the competence of young women who are soon to be mothers. This is where an exciting opportunity lies to develop ICT and non-ICT solutions.

- Fighting patriarchal norms in countries, such as Bangladesh, where there is a strong male domination in society is difficult. Within such contexts the majority of the frontline health workforce are women, while their supervisors on up to national leadership are men. In addition, husbands and mothers-in-law have significant influence over the access to health care and the daily lives of the women in the family. This needs to be taken into account when developing projects and programmes.

- Engaging husbands is critical as doing so motivates them to take responsibility and to be part of the solution. We need to be gender inclusive, rather than gender exclusive.

- The use of ICTs can tackle social stigma: giving a health worker a mobile phone can set her apart from the rest of the community. She may be held in higher esteem and no longer be seen as a female community member but as a purveyor of information.

- However, in developing content it is necessary to tailor it specifically for women. Much of the existing health content is aimed at men using male characters; however this does not resonate with females. In addition, the content must be adapted to different regions and contexts in a way that is feasible.

- Early formative research can help to ensure the production of a more effective product that meets
the needs of the end user, particularly women’s needs, as well as reaching scale.

- There is a great opportunity to track the effectiveness of the content within the technology itself. It is important to think about how you embed monitoring and evaluation within the design and use of the technology. Thinking about it as an iterative process and knowing it is part of the work that you are doing is necessary.

- A high volume of evidence is being attained regarding whether or not women feel empowered through the use of technology, but it is not being shared. There needs to be a greater focus on sharing lessons learned more widely, while increasing the rigor with which we collect this information. There needs to be a greater onus on publishing the evidence.

- However, in order to share evidence we need to provide standardisation in terms of how we classify different types of applications and how we evaluate the impact of these different technologies. Unless we are using the same ‘language’, it is very difficult to share and compare accomplishments.

- Fitting the technology within the workflow is essential. How will this device optimise or hinder the workflow? Will it create opportunities for women within this workflow? These need to be considered during the design of the product.
From Local to Global - Just how Adaptable is Health Training Content?

In Association with: mPowering Frontline Health Workers
Moderated by: Lesley-Anne Long, mPowering Frontline Health Workers
Panellists: Anna Frellsen, Maternity Foundation, Florence Gaudry-Perkins, Alcatel-Lucent, Alex Little, Digital Campus, Peter Cardellicchio, Global Health Media Project, Trip Allport, Accenture Development Partnerships

With both panel presentations and participant involvement, this session explored two key areas: (1) what the global health community is doing to leverage mobile technology to provide training for health workers, and (2) how to accelerate access to quality training and resources globally without duplicating effort.

Core Issues and Recommendations:

• Access to high quality, relevant training content needs to be improved: While content developers produce high-quality content, more work needs to be done to support this content reaching its audience. By sharing and adapting existing content, training implementers could avoid duplication of effort, time, and money involved in developing new content for each programme, and contribute to improving the quality of training resources. To facilitate this, all global health content should be licensed through Creative Commons or other open sources.

• Quality assurance: Adapting content to the local context ensures it is relevant for a given culture, setting, or language. It is critical that adapted content retains the production value of the original materials and adheres to any licence requirements. It is important to foster an environment where quality is seen as critical and original production values of the content are maintained through all adaptations and translations.

• Attribution and ‘sharing back’: Open source publishing [e.g. under a Creative Commons license] allows content to be used for wider audiences and to be adapted as required. The use of open source content should be promoted to increase re-use and adaptation of content. The licence may require re-sharing the adapted content as well as acknowledging the original source.

• Partnership building: Delivery of content through mHealth requires partnerships with many stakeholders, including ministries of health, training institutions, mobile network operators, health workers and others. Collaboration requires understanding the diverse perspectives and motivations of the different players; projects therefore need time to build relationships and gain consensus around common goals.

  • Engage a neutral party to build partnerships, and to establish clear goals and consistent communication. Multi-sectorial partnerships bring together different viewpoints, professional languages and motivations. A neutral party can facilitate engagement and build trust among partners.

  • Build partnerships in alignment with key principles, including: honesty, equal investment, clear purpose and focus. All partners should share both the risks and the rewards of a venture, and have defined outcomes with flexibility for creative results.

  • Include government in partnerships to ensure for local ownership, sustainability and scalability.

  • Access to mobile devices and services: Though the level of mobile phone penetration is high worldwide, a significant proportion of people in developing countries still do not have access to mobile technology or networks. Where they do, access to a basic or feature phone is most common. Although some countries have made significant progress in developing the ICT infrastructure, many others have
not, and connectivity remains an issue, particularly for those living outside urban areas.

- Follow key principles when developing or adapting video content for training:
  - Use video for health topics which are easy to understand through visual demonstration
  - Adopt a simple, step-by-step approach to teaching
  - Improve authenticity by using live action in familiar settings (this enables the video to be used more widely than in the country where it was filmed)
  - Ensure that the production value is of high quality.

- There should be a central repository for global health content which will make it easy for training institutions, ministries and NGOs to access high quality relevant health content; m-Powering Frontline Health Workers is responding to this need by developing an online digital content library for open-source health training content.

- Expand the knowledge base for mobile training needs:
  - Through rigorous data collection and analysis to understand how content is used and adapted; and
  - By encouraging users to submit adapted health content back to the original author.

- Design training solutions for scale. This often requires heavy up-front investment of costs and time, including building partnerships. Funders and implementers should support the need for thorough planning, development, and partnership building when designing for scale.

- Use creative strategies for long-term funding to allow for long term use and adoption. This can be attained:
  - If the product is seen to be valuable and useful enough to attract additional collaborative investment; or
  - Via creative income streams such as pay-per-use, freemium model etc.; or
  - Through continued donor funding, which will be necessary for some projects.

Key principles when developing or adapting video content for training.

- Easy to understand
- Step-by-step
- Live action
- Familiar settings
- High quality
The Place of IT in the New Global Strategy on Human Resources for Health

In Association with: Irish Forum for Global Health, Global Health Workforce Alliance and USAID
Moderated by: David Weakliam, Irish Forum for Global Health
Panellists: Estelle Guain, USAID, Frances Day-Stirk, International Confederation of Midwives, Dykki Settle, IntraHealth International, Chiwoza Bandawe, University of Malawi

The World Health Organization is developing a Global Strategy on Human Resources for Health (HRH). The Global Health Workforce Alliance is coordinating a global consultation on the strategy. This session examined the role of IT in the global HRH strategy. Following the two introductory speakers, the participants discussed the issues in four breakout groups on different HRH themes. Matching four of the eight thematic papers being prepared by the HRH strategy working group, these were:

• Transformative Education
• Data and Measurement
• Improving Health Worker Productivity and Performance
• Building Capacity beyond the Health Sector

The full report of this workshop is included in Appendix A
Tools and Experiences Using Mobile Money to Support Frontline Health Workers

In Association with Pathfinder International
Moderated by: Stephen Redding, Pathfinder International
Panellists: Pamela Riley, Abt Associates, Marc Mitchell, D-tree International
Marion McNabb, Pathfinder International

This session discussed lessons learned and experiences using mobile money to build the capacity of and support frontline health workers in low and middle income countries. “Mobile money”, in this context and panel was defined as the practice of using mobile communication devices to facilitate the transfer of funds to support the needs of health workers and their clients as they seek to provide better healthcare.

Core Issues and Recommendations:

• ‘Mobile money’ as opposed to using cash, can be used to support health service delivery including targeting clients as in the example of D-Tree’s maternal health emergency transfer program in Zanzibar or targeting health workers stipends payments as in the example of Pathfinder’s programs in Kenya and Tanzania. Using mobile money opens opportunities to transfer payments to beneficiaries while reducing the overhead, increasing security of payments and improved transparency which would otherwise be difficult due to a lack of banks and financial institutions. Abt associates, under the USAID-funded health financing and governance project is supporting the expansion and documentation of the use of mobile money for health services.

• Why is the world excited about mobile money? Mobile money allows for more transparent financial interactions, improved safety of transactions and allows organisations to make payments to a large number of beneficiaries at scale. Mobile banking allows access to financial services such as the ability to save and access to loans and insurance for poor and underserved populations. It is quick and promotes transparency, as well as allowing for transparent financial record keeping, and addressing safety needs of those carrying large sums of cash. Mobile money markets are expanding around the world, with the most robust markets in Kenya and Tanzania using mPesa™. As other countries begin to adopt the use of mobile money, national regulations, linkages with banks and mobile network operators, availability of agents and client familiarity with cashless banking should all be points of consideration when planning for adopting mobile payments.

• Challenges around the use of mobile money include: creating agent networks, particularly in rural areas; understanding the local country context and stage of adoption of mobile payments. There is also a lack of consumer trust, as cash-less banking may be a new concept. Gender considerations, adoption of mobile phones in general and targeting uses of mobile banking for transactions, health savings, transportation, and general uses of paying bills are all important aspects an organisation should consider when adopting mobile money. Understanding the regulatory environment, the involvement of banks and mobile network operators in mobile money roll out and careful design of client or health worker education materials that link the use of mobile money to health outcomes should be considered.

• How can frontline health workers make a difference in adopting mobile payments for themselves or health workers? There are great experiences of organisations using mobile money to pay for community health worker stipends at scale in Kenya and Tanzania. These health workers, when they use the service themselves, can be used as trusted mediators, who can provide education not only on health but also on how mobile money can be used with clients to access the health system.

mpesa is a mobile-phone based money transfer and micro financing service
• An example of mobile money in use: Delivering babies in a safe facility in Zanzibar

  • Traditional Birth Attendants (TBA) register the mother on the phone with a step-by-step protocol: name, any problems associated with the pregnancy and where she is planning on delivering
  • The health worker collects phone numbers of private transportation providers that can transport clients to the facility for delivery
  • M-Pesa is used to reimburse the transportation providers via the traditional birth attendants
  • Permission is obtained from the husband and/or mother-in-law
  • The facility is alerted through an automatically generated SMS that the woman is on her way with her details, medical history and record.
  • The organisation transfers money to the community health worker – the amount of money women need to pay for transport is negotiated beforehand. The driver gets paid when they reach the health facility
  • An example of government adoption of mobile payments for a national maternal and child health conditional cash transfer scheme:

    • Health workers in public health facilities record women attending antenatal care, skilled delivery and postnatal care/immunization at the health facility. A dashboard detailing the women eligible for payments based upon the governments approved payment scheme allows the government to review, approve payments for women
    • Women are registered at the facility level with a SIM card where they will receive reminders about appointment visits and receive conditional cash transfer (CCT) payments via mobile money
  • The government has an agreement with a leading bank in the country that will elicit payments via mobile money. Agreements with mobile network operators and mobile money bank vendor were developed to ensure payments reach the clients.
  • The regulatory and process environment in Nigeria for mobile money is nascent, agent networks are not widespread and clients are most familiar with a cash based disbursement system. Therefore, careful planning and considerations of client familiarity, gender considerations in Northern Nigeria and mobile phone awareness and ownership should be considered.

    • The cultural context, especially the gender dynamics, must be considered when making mobile money available to women, as partners and family relations will have a significant influence on its use and potential benefit.

    • When considering the use of mobile money within a programme, or for developing protocols, we need to consider its mobile application and operational aspects, including transactions fees. Many resources, including those from NetHope and Abt Associates detailing cases of use for mobile money for health and considerations for organisations to take when adopting mobile payments are helpful resources.

    • Mobile money for health services is an emerging field and more evidence on the impact of using mobile payments to scale health interventions and impact health outcomes is needed
The development of mobile training toolkits in mHealth: a way forward?

In Association with the London Knowledge Lab (Institute of Education), AMREF Health Africa and the University of Oxford

Moderated by: Paolo Miotti, NIH Office of Aids Research
Panellists: Niall Winters, mCHW Project, University of Oxford, Vincent Richardson, Concern Worldwide, Anne Geniets, mCHW Project, University of Oxford

This session focused on discussion of the emergence of a new generation of mobile toolkits that enable the development of customisable mobile applications for training frontline health workers, without the need for any programming knowledge.

Core Issues and Recommendations:

• To address the global shortage of health workers, it is clear that new forms of education and training will be needed and the role of mobile technology rethought. There is a need to move from simplistic models of learning used in mHealth to more nuanced views of the role of technology to support training and capacity development.

• Over-simplistic ‘solutions’ of mobile interventions are sometimes limited in their ability to support learning and training for complex tasks such as diagnosis. Moreover, they often position health workers as ‘low-level’ users by promoting a codified view of knowledge, which is well known to have limitations when applied to practice. This requires researchers and practitioners to draw on research in eHealth and technology enhanced learning, which have shown the effectiveness of socio-constructivist approaches to learning for practice-based training.

• The current state-of-the-art is focused on the development of toolkits that allow the supervisors of frontline health workers to develop their own mobile applications based on community need, without the need for any programming knowledge. This work builds on innovative tools such as PhoneGap [http://phonegap.com] but are more aligned with training need rather than generic development.

• Customisable mobile applications for training frontline health workers, will only be effective if designers (e.g. NGOs, community groups) know how to apply educational theory to app design and integrate the new mobile apps into their programme interventions. This raises interdisciplinary challenges at the intersection of global health, education and technology.

• Community engagement in the design of interventions (participatory design) needs to become a priority in order for the most appropriate intervention to be developed. More research is needed on how to embed mobile health within community based care in order to allow for a more holistic intervention. For example, the mCHW project assessed the development of children under five systematically. However, as a result of this systematic assessment, which had not happened prior to the mobile health intervention, a considerable number of disabled ‘hidden’ children were identified in the community, for whom no support structures were in place in the community.

• Interdisciplinary partnerships to support integration of community based approaches in mHealth with the formal health care system: we need to better define and address the challenges of integration, in particular from a training perspective. For example, if CHWs are trained in awareness of disability rights and those in district hospitals are not, how does this really benefit those with disabilities?

• We need to find ways to make mHealth interventions accountable to the poor in order to foster structural change that alleviates poverty.
• To randomise or not? mHealth interventions are ‘complex interventions’: as an intervention that has several interactive components and is very sensitive to features of the local context. Given that this is the case, we often find that some projects or some evaluations jump to randomised control trials too soon, without doing a programme-in-context evaluation first. These programme-in-context evaluations should be the primary focus of mHealth evaluations for the next few years.

• The usual starting point for many participatory and community-focused projects is: what can we co-design with the community that will work on their phones? This often leads to projects that focus on SMS-based solutions, leading to interventions that scale too many users easily. Such a solution is seen as an ‘appropriate’ technology and is a position well supported by the Human Computer Interaction (HCI) community. However, is this the right starting point? From a social justice point of view, if you were a community health worker, what kind of tools would you like to use? Would the most interesting solution to you be an SMS-based solution that premises short text messages and interactive voice systems? Or might you be interested in an educational app that runs on a smartphone and allows for a much richer set of learning activities and interactions. The key question to ask is what is the highest standard to intervention that can be developed?

• In order to design and implement a complex, practice-based intervention, such as the REFER app of the mCHW project, and re-position health workers as core participants in the development process, there is no other choice but to use smartphones. The simple fact is that the quality of training experience that we wish to develop is not possible with low-end phones. In terms of innovation, the development of web applications for smartphones, in particular their ability to run offline, was seen as having strong potential. In particular, their ability for relatively easy maintenance at scale seems particularly valuable.

• In order to support the greater role-out of mHealth resources investment will be needed in back-end technologies [examples: servers] and their maintenance.

Research needed on how to embed mobile health within community based care
Appendix

Appendix A
Appendix B
Appendix C
Appendix A - Information Technology (IT) in the new Global Strategy on Human Resources for Health

Input to Global Health Workforce Alliance (GHWA) public consultation process from participants at the GETHealth Summit, Dublin Castle, Ireland, 14th November 2014. This Report was submitted on behalf of participants by Dr. David Weakliam, Chair, Irish Forum for Global Health (IFGH).

Introduction

A break out session was organised at the GETHealth Summit by the IFGH, USAID and GHWA. The aim of the session was to examine the role of IT in the global HRH strategy and generate an input to the public consultation on the strategy being facilitated by GHWA. Approximately 25 delegates participated in the session.

The 2-hour session was moderated by David Weakliam, Irish Forum for Global Health and Board Member of GHWA. The background and process of developing the global strategy for HRH was presented by Estelle Quain, USAID and Frances Day-Stirk, International Confederation of Midwives, both GHWA Board Members and the Co-chairs of the strategy Working Group. Two other panelists shared their perspectives – Dykki Settle, IntraHealth International and Chiwoza Bandawe, College of Medicine, University of Malawi.

Following the panellists’ remarks, the participants discussed the issue in four breakout groups on different HRH themes, matching four of the eight thematic papers being prepared by the HRH strategy working group. The participants spent 30 minutes each in two breakout groups. The discussions were fully documented and a summary of the key issues were reported back in plenary.

This document summarises the main points pertaining to the role of IT in the global strategy for HRH. It constitutes a range of issues that, in the view of the participants, need to be considered in developing and implementing a global strategy for HRH.

The feedback is structured with overall comments followed by comments on four themes corresponding to thematic papers #s 2, 3, 7 & 8):
• Transformative Education
• Data and Measurement
• Improving Health Worker Productivity and Performance
• Building Capacity beyond the Health Sector

General Comments

The rapid developments that are taking place in information and communication technologies (ICTs) offer unprecedented opportunities across all aspects of HRH systems. The digital age also has a big part to play in bridging the large information gaps about the health workforce at global level and in countries.

The role of technology should be needs driven and a good approach is to focus on what the health care worker (HCW) needs to do with technology in order to achieve his/her goals. HCWs have four interactions which provide the basis of thinking about IT:
• delivering services to clients [building capacity, empowering clients to be active in care]
• acquiring and sharing new knowledge [models of transformative education]
• interacting with peers and supervisors [performance, retention, motivation]
• interacting with the health system itself – contributing and accessing data [data and measurements]

In order that IT is responsive to health service and HCW needs, coordination between health and IT sectors is essential. It is important to involve local IT experts who understand the national and local context – community needs, interests and available resources. HCWs themselves need to be engaged with IT, and one challenge is how to make
them more interested in informatics and technology.

1. Transformative Education [Ref thematic paper #2]

Information technology is an important enabler in the model of transformative education required to produce a needs-based workforce for the future.

- IT can help make education available in all countries and avoid the need for students to travel overseas for education, with the risk that they will not return to their countries, creating both a ‘brain drain’ and ‘education drain’.
  - Explore developing health informatics programs in all countries
  - Develop N-S or S-S university partnerships for distance education.

- Informatics can help educational institutions respond to needs in the local labour market, including community and social workers who are outside the health sector but have a role in health care. IT can help bring multi-sectoral stakeholder groups together for curriculum development and link universities with health workforce planning in ministries of health.

- Online education should be developed to complement classroom learning and make optimum value of each approach.
  - Put lectures online and use classroom activities to check understanding and develop skills – such as through roles plays, simulations.
  - Use IT to improve teaching skills and develop use of peer teaching.
  - Use IT to measure competencies of teachers and students, including video consultations to assess skills.

- IT can further assist with delivery of education curriculum and administration
  - Put grades, curriculum, scheduling of classroom space, etc. online.
  - Provide easy access to resources such as electronic journals.

- Health Librarians have a role in training and providing information. They understand technology, and can help train health workers on how to access reliable information and improve their IT skills.

- Institutions and people can be connected through online networks
  - Bring all stakeholders together: from education, training, private sector, financial sector, unions, etc.
  - Provide mentoring, coaching and training at a distance via Skype™ or other online communication methods (particularly high level leadership skills)
  - Share curriculum, materials, films (no additional costs to providers – can be adapted to the local context – translated to local language)

- IT can help deliver inter-profession health worker education and break down the specialty disciplinary silos.
  - Facilitate more patient-centred education and promote team-based, holistic care.
  - Support step-ladder programs for workers to move between professions through additional education from community health worker, to nurse, to doctor.

2. Data and Measurement of HRH Availability, Accessibility, Acceptability and Quality [Ref thematic paper #3]

Any attempt at HRH strategy on the global, regional or national levels cannot work unless there is basic data at all levels, facilitated by IT systems.

- There is a need to broaden stakeholders engaging in this issue, both ‘up’ and ‘down’.
  - Engage economic development organisations and stakeholders beyond health – understanding and supporting HRH is an economic development issue, not just a health issue.
  - Health ministries need to collaborate with other government sectors to create a national database to track all health workers.
  - Engage the health workers themselves to contribute personally to a national and global tracking system -
sharing information is the best way to empower their advocates!

- Data interoperability and standards need to be addressed
  - In HRH, there are many stakeholders collecting many kinds of data, so data sharing, harmonisation and alignment with standards is key.
  - A great deal of HRH data is already present among the different stakeholders – councils, employers, training institutions have data, but there is no collection point. There is a need to identify national and international hubs with the authority to collect and disperse data.
  - Interlinked health worker registries at various levels should be established. An international agreement is probably necessary to govern and guide data sharing and harmonization strategies. Cross-platform approaches are essential though expensive.
  - Global and national stakeholders, including mHealth technology organisations need help understanding data sharing, harmonization and standards.

- Data quality and use depends on leadership, governance and understanding
  - All HRH leadership needs to be strengthened to ensure effective use of data – donors have made many investments in frontline health workers, but insufficient in leadership, stewardship and decision-making at the national level.
  - Quality of data is very important to encourage trust in the data and use. Stakeholders need to be supported to maximize their data quality and feedback loops from use to help improve quality.
  - One strategy to improve quality and completeness of data is training health workers in public and global health so that they understand the importance of being tracked and are able to contribute data themselves. These health workers should be supported with mHealth and related technologies that will allow them to view, correct and contribute data that will help countries, regions and global organisations understand them.

- It is necessary and feasible to track health workers
  - Learn from other sectors – Ireland tracks 10 million cows from birth to death, a practice mandated by EU regulators. The value is seen by farmers [data contributors], helping assure compliance and quality.
  - In comparison the One Million Community Health Workers campaign is tracking zero CHWs so far – largely due to a lack of stakeholder manageable interests and funding. The technology exists, between health workforce information systems and mHealth systems, but the will is weak.
  - The global surveillance system requires better information on all types of health workers. To achieve this, the value needs to be seen at all levels to encourage collaborative contribution and maintenance of data, and strong data quality practices.

3. Improving Productivity and Performance (Ref thematic paper #7)

There should be targeted IT interventions, based upon three established determinants of health workers’ performance and productivity which are closely linked with issues of motivation and retention:

1. Macro, overall health systems
2. Socio-economic, labour market & political level
3. The individual characteristics of health workers

- IT provides enormous potential to collect data and feedback to HCWs. IT has an important role in supporting the physical and mental wellbeing and self-care of the HCW. By concentrating on the individual workers’ health, motivation and well-being, IT supports HCWs which leads to improved productivity, performance and retention. For this to work frontline health workers need to be involved as principle users, for example:
  - Form an IT community for connection and communication. A connected support group will help to deal with challenges and also to support HCWs in maintaining values and dealing with ethical challenges [such as selling of medications, abuse of political influence].
  - Mobile tools can help HCWs cope and take care of themselves [Cell phones, WhatsApp applications, etc.].

- If standards and regulations are not applied to all HCW then Universal Health Coverage (UHC) cannot be achieved. IT can facilitate performance management and the adopting of performance-based financing mechanisms.
• Contextual population health information is important to inform criteria and help target the improvement of HCW performance and motivation.
  • Use IT to provide peer-to-peer consultation and social/professional connectivity.
  • Use IT to offer supervisory feedback loops for peers, supervisors and decision-makers. For instance, following up systemic evaluations with additional information directly to decision-makers and also back to HCWs and users.

• A robust and up-to-date registry for HCWs is needed, both locally and globally, to capture ‘who’ is doing ‘what’, and ‘where’. This information needs to be collated with population health information (demographics and determinants). This requires a set of global indicators and definitions that can be adapted locally. It can start by applying a set of ‘minimum’ standards across disciplines and cadres of health workers.
  • Adopt a digital ‘Score-Card’ approach to collection and feedback of data, looking at indicators vs. service based tasks.
  • Use IT to improve health registrations systems; Maternal Death Surveillance and Response.
  • Digitize and index guidelines and definitions that can be accessible and openly sourced.
  • Share and adapt national healthcare standards for different contexts.

• IT can help simplify regulatory purposes. Adopt a systems-based approach, including both individual workers and a collective system.

• IT can be used as a tool to disseminate information and shift who (what institution, organisation, or community) has the power to access information and the responsibility to share it.

• IT can help facilitate involvement and engaging traditional healers and also to help HCW to communicate with and value the traditional healer.

4. Building capacity beyond health sector [Ref thematic paper #8]

People-centred health care and universal health coverage cannot be achieved by focusing only on the health workforce. There is a need to look outside narrow definition – to communities, families, societies, social workforce, etc. The first point of contact for health care is often not a HCW – for instance it is often a teacher. Non-health professionals need to engage in health improvements – e.g. agricultural sector in relation nutrition. Political buy-in and economic buy-in are very important and ministers of finance need to be convinced.

IT can mobilise and engage in a way that other things cannot and needs to be integrated into the global HRH strategy so as to reach out and mobilise all these stakeholders

• IT can help to empower communities and enhance patient-family engagement to address local needs and increase self-reliance (behaviour change and lifestyle change). There are many emerging IT tools and it is important to use technologies that are available locally, e.g. WhatsApp.
  • Patient-centred responses are key to engagement – for instance blogs
  • IT applications for behaviour medicine and talking therapy – how to empower, enable and work out what works for people.
  • Digital therapeutic programmes built on behavioural therapy.
  • Tele monitoring can be used in the community for basic weight, glucose levels, etc. – paradigm you are the expert in yourself, it saves time and money, and conditions are caught and treated early.

• IT helps create clear messaging.
  • Unpick and simplify UHC so it means something to everyone.
  • Develop integrated treatment and communication guides.
Appendix B - Scientific Advisory Board:

Amita Gupta, MD, MHS  Associate Professor; Deputy Director of Johns Hopkins Center for Clinical Global Health Education (CCGHE) at Johns Hopkins University School of Medicine and Bloomberg School of Public Health

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Laura K. Povlich, PhD  Program Officer at Fogarty International Center; National Institutes of Health

Professor Jane Grimson, Mary Robinson Foundation for Climate Justice

Kunal D Patel, MB BA BAO BCh MRCS PhD  Medical Director, iHeed

Appendix C - Delegate Organisations

Organisation

3D4Medical  CPL Healthcare
3G Doctor  CUH
Abbott (AbbVie) Pharmaceuticals  Daltech
Abt Associates  Department of Health, Ireland
Accenture Development Partnerships  Dept. of International Public Health, LSHTM
Alcatel-Lucent  DeveX
Alma Mata Liverpool  Digital Group
AMREF UK  Digital Campus
Atlantic Philanthropies  DIT
BiHS  D-tree International
eCity Learning  e-Development International
Canada Research Chair in Health Informatics  Enterprise Ireland
CCGHE  ETH Zurich
Centre for Technology & Policy (CTaP)  AIMS Ghana
Centric Health  FOI
Chocolate Moose Media  Full Health
Clinical Options  General Institute of International and European Affairs
Concern Worldwide  George Washington University
Connected Health  Georgetown University
Country and Regional Operations at Pathfinder  Global Health Media Project
Global Network of Public Health Nursing
Globalization and Health
GSK
GSMA
Hamilton Care Center
Health Research Board
Hospital Universitario Burgos
HP Ireland
HSE
GHWA
Huawei
ICGP
ICT Unit
IFGH
iheed
IICO
Intel Ireland
Interactive Research and Development
International Confederation of Midwives
IntraHealth International
Investnet Healthcare
Irish Aid
Irish Forum for Global Health
ESTHER Ireland
Irish Institute of Pharmacy (IIP)
Irish Medical Times
ITU
Jadah Consulting
Jhpiego
Johns Hopkins
Johns Hopkins University Applied Physics Laboratory
Johns Hopkins University Global mHealth Initiative
JSI/SPRING Project
Kilimanjaro Christian Medical University College
Le Centre de Recherche en Telemedecine et E-sante
London Knowledge Lab
Makerere University College of Health Sciences
Management Sciences for Health (Nigeria)
Manchester Metropolitan University
Maternity Foundation
Medical Aid Films
Meningitis Research Foundation
mHelp
Minister for Health, Ireland
Ministry of Health and Social Welfare Tanzania
mPowering Frontline Health Workers
MSF
MVI
NetHope
Newborn Foundation
NIH Office of AIDS Research
NIH Fogarty
Norad
Novartis Foundation for Sustainable Development
Nurture Africa
One Million Community Health Workers
OneWorld UK
Partnerships for Health Information
Pathfinder International
Physicians Interactive
Qualcomm Wireless Reach
Quintiles
RCSI
Right to Sight
School in a Box, IADT
Swiss Tropical and Public Health Institute
Tanzanian Training Centre for International Health
TCD
Terre des hommes Foundation
ThoughtWorks
TMB
Treatment Advocacy and Literacy Campaign
Trinity College Dublin
Tulane University Center for Global Health Equity
United Methodist Communications
University College Cork
University College Dublin
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