



Communications and Technology for Violence Prevention: Workshop Summary

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Katherine M. Blakeslee, Deepali M. Patel, and Melissa A. Simon,
Rapporteurs; Forum on Global Violence Prevention; Board on Global
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Communications and Technology for Violence Prevention

WORKSHOP SUMMARY

Katherine M. Blakeslee, Deepali M. Patel, and Melissa A. Simon,
Rapporteurs

Forum on Global Violence Prevention

Board on Global Health

INSTITUTE OF MEDICINE AND
NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

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The serpent has been a symbol of long life, healing, and knowledge among almost all cultures and religions since the beginning of recorded history. The serpent adopted as a logotype by the Institute of Medicine is a relief carving from ancient Greece, now held by the Staatliche Museen in Berlin.

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This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this report:

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Although the reviewers listed above have provided many constructive comments and suggestions, they did not see the final draft of the report before its release. The review of this report was overseen by **Don E. Detmer**, Professor Emeritus and Professor of Medical Education at the Department of Public Health Sciences of the University of Virginia School of Medicine.

Appointed by the Institute of Medicine, he was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the author and the institution.

Acknowledgments

The Forum on Global Violence Prevention was established to develop multisectoral collaboration among stakeholders. Violence prevention is a cross-disciplinary field that could benefit from increased dialogue among researchers, policy makers, funders, and practitioners. As awareness of the insidious and pervasive nature of violence grows, so too does the imperative to mitigate and prevent it. The Forum seeks to illuminate and explore evidence-based approaches to the prevention of violence.

A number of individuals contributed to the development of this workshop and report. These include a number of staff members from the IOM and the National Academies: Patrick Kelley, Angela Christian, Julie Wiltshire, Marton Cavani, Daniel Bethea, Christina Fedak, Meg Ginivan, Yeonwoo Leibowitz, Patsy Powell, and Eileen Milner. The Forum staff, including Deepali Patel, Rachel Taylor, and Megan Perez, also put forth considerable effort to ensure this workshop's success. The staff at the Embassy of Canada provided excellent support for the event.

The planning committee contributed several hours of service to develop and execute the agenda, with the guidance of forum membership. Reviewers also provided thoughtful remarks in reading the draft manuscript. Finally, these efforts would not be possible without the work of the Forum membership itself, an esteemed body of individuals dedicated to the concept that violence is preventable.

The overall successful functioning of the Forum and its activities depends on the generosity of its sponsors. Financial support for the Forum on Global Violence Prevention is provided by the Department of Health and Human Services: Administration on Aging, Administration on Children,

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1

Introduction¹

The past 25 years have seen a major paradigm shift in the field of violence prevention, from the assumption that violence is inevitable to a recognition that violence is preventable. As evidence-based interventions increasingly demonstrate measurable impacts on the prevalence of violence, those who work in the field of violence prevention face the challenge of finding new ways to disseminate information and to rapidly deploy or scale up new programs.

At the same time, a massive change in communications platforms and standards has occurred around the globe. These new technologies have disrupted traditional means of communication and have provided opportunities for reaching farther and wider. Furthermore, new media make it possible to empower whole groups to engage in community-based efforts to prevent violence by making available the vast body of evidence-based knowledge previously only accessible in the academic realm.

Although it is tempting to push forward quickly in order to take advantage of these opportunities, that desire should be tempered by the importance of advancing both holistically and cautiously to avoid the unintended consequences of new ideas as much as possible. The fields of communications and communications technology offer much in terms of

¹ The planning committee's role was limited to planning the workshop, and the workshop summary has been prepared by the workshop rapporteurs as a factual summary of what occurred at the workshop. Statements, recommendations, and opinions expressed are those of individual presenters and participants and are not necessarily endorsed or verified by the Forum, the Institute of Medicine, or the National Research Council, and they should not be construed as reflecting any group consensus.

2 COMMUNICATIONS AND TECHNOLOGY FOR VIOLENCE PREVENTION

out-of-the-box thinking that could assist in overcoming persistent obstacles, while the violence prevention field draws on careful and considerable scientific expertise in building successful interventions. Combining the strengths of these fields, while minimizing potential harm, could prove beneficial for preventing violence and promoting well-being around the world.

On December 8–9, 2011, the Institute of Medicine (IOM) Forum on Global Violence Prevention convened a workshop to explore the intersection of violence prevention and information and communications technology (ICT). Dubbed “mPreventViolence,”² the workshop provided an opportunity for practitioners to engage in new and innovative thinking concerning these two fields with the goal of bridging gaps in language, processes, and mechanisms. Part of the Forum’s mandate is to engage in multisectoral, multidirectional dialogue that explores cross-cutting evidence-based approaches to violence prevention, and the Forum has convened three workshops to explore various elements of violence prevention.³ To that end, this workshop was designed to examine such approaches from multiple perspectives and at multiple levels of society. In particular, the workshop was focused on exploring the potential applications of ICT to violence prevention, drawing on experience in development, health, and the social sector as well as from industry and the private sector. Speakers were invited to share the progress and outcomes of their work and to engage in a dialogue exploring the gaps and opportunities in the field.

The workshop was planned by a formally appointed committee of the IOM, whose members created an agenda and identified relevant speakers. Because the topic is large and the field is broad, presentations at this event represent only a sample of the research currently being undertaken. Speakers were chosen to present a global, balanced perspective but by no means a comprehensive one. Working within the limitations imposed by its time and resource constraints, the planning committee members chose speakers who could provide diverse perspectives upon which further discussion could occur. The agenda for this workshop can be found in Appendix A. The

² “m” is shorthand for “mobile,” and is often used to define the concept of the application of mobile technology to a particular field, such as health, finance, etc. Other similar terms such as “e” for “electronic,” “d” for “digital,” or “open” reflect similar concepts of differentiating traditional or analog approaches from new and innovative ones (particularly those involving new technology or communications tools). The use of “m” here reflects a growing notion that communications is increasingly mobile vs. fixed.

³ Previous workshop summaries include *Preventing Violence Against Women and Children* (IOM and NRC, 2011) and *Social and Economic Costs of Violence* (IOM and NRC, 2012). Additionally, the National Academy of Engineering sponsored a workshop in 2007, resulting in the summary *Information and Communication Technology and Peacebuilding: Summary of a Workshop* (NRC, 2008) that explored a similar intersection of ICT and conflict resolution.

BOX 1-1 Statement of Task

Over the past 25 years those working in the field of violence prevention have brought about a major paradigm shift from an assumption that violence is inevitable to the recognition that violence is preventable, through the application of evidence-based programs to prevent specific types of violence. As practitioners gain further insight into successful avenues of research and intervention, the ability to transport such information to new settings is crucial in advancing the field. How could traditional tools of dissemination be used more effectively? How could newer tools such as the Internet and mobile technologies be introduced into this field? How can we better translate what works in one setting to another using such tools and media?

The Institute of Medicine (IOM) will convene a 2-day workshop to explore gaps in the four areas of knowledge management (knowledge generation, integration, dissemination, and application) and how closing these gaps might accelerate violence prevention in low- and middle-income countries.

The public workshop will be organized and conducted by an ad hoc committee to examine (1) the use of traditional and new media to communicate evidence-based information for violence prevention and (2) new applications of social media and new communications technologies to prevent violence. It will also highlight evidence-based best practices from other arenas of global health where use of such tools show potential for success.

The workshop will include invited presentations and panel discussions. Experts will be drawn from the public and private sectors as well as from academic organizations to allow for multi-lateral, evidence-based discussions. An individually authored summary of the workshop will be prepared by a designated rapporteur, in accordance with institutional policy and procedures.

speakers' presentations can also be found on the website for the workshop: www.iom.edu/mpreventviolence.

ORGANIZATION OF THE REPORT

This summary provides an account of the presentations given at the workshop. Opinions expressed within this summary are not those of the IOM, the Forum on Global Violence Prevention, or their agents but rather of the presenters themselves. Such statements are the views of the presenters and do not reflect conclusions or recommendations of a formally appointed committee. This summary was authored by designated rapporteurs based on the workshop presentations and discussions and does not represent the views of the institution, nor does it constitute a full or exhaustive overview of the field.

The workshop summary is organized thematically, covering the major topics that arose during the 2-day workshop, so as to present these issues in a larger context and in a more compelling and comprehensive way. The thematic organization also allows the summary to serve as an overview of important issues in the field; however, such an organization results in some repetition because themes are interrelated and the presented examples support several different themes and sub-themes as raised by speakers. The themes presented in this summary were the most frequent, cross-cutting, and essential elements that arose from the various presentations of the workshop, but the choice of these themes does not represent the views of the IOM or a formal consensus process.

The first part of this report consists of an introduction and four chapters which provide a summary of the workshop; the second part consists of submitted papers and commentary from speakers regarding the substance of the work they presented at the workshop. These papers were solicited from speakers in order to offer further information about their work and this field; not all speakers contributed papers. The appendixes contain additional information regarding the agenda and participants.

DEFINITIONS AND CONTEXT

Violence is defined by the World Health Organization (WHO) as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation” (WHO, 2002). WHO further categorizes violence into seven types: child abuse, elder abuse, sexual violence, intimate partner violence, youth violence, collective violence, and self-directed violence. This workshop examined, to various extents, the prevention of all seven types of violence.

The workshop organizers and participants took a broad definition of what the field of information and communications technology entails. To some extent, they included traditional media, including print and television. For the most part, however, speakers focused on new technologies, such as new and social media, mapping, large datasets, networks, and others. They also explored how information messaging and delivery has changed through new platforms.

The workshop explored the changing paradigm of communications and how that might be relevant to violence prevention, particularly in low- and middle-income countries. Speakers described both the current status of violence prevention and the current applicability of communications technology to health, and they offered thoughts on the intersection of all three fields. Several speakers presented examples of their work that

employed innovative uses of ICT. Because this area is a relatively new one and because technology changes at a rapid pace, many speakers presented theoretical or preliminary ideas, pointing the way toward how a body of work might be developed but by no means providing a comprehensive one at the workshop.

The next four chapters in Part I examine the four major themes that arose from participants' presentations and discussions: Transforming Violence Prevention Through New Communications (Chapter 2), Methodological Considerations of New Communications Platforms (Chapter 3), Addressing Disparities and Vulnerabilities (Chapter 4), and Framing Violence Prevention Communication (Chapter 5). Part II includes the submitted papers, organized into two chapters: Foundations of mPreventViolence: Integrating Violence Prevention and Information and Communications Technologies (Chapter 6) and Practical Applications of mPreventViolence (Chapter 7). These papers provide speakers' perspectives on the foundation and future of the integration of violence prevention and ICT.

Finally, the appendixes contain the workshop agenda (Appendix A) and the speakers' biographies (Appendix B).

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Part I

Workshop Overview

2

Transforming Violence Prevention Through New Communications

Billions of men, women, and children around the world have been exposed to violence. More than 1.6 million people a year die from violence, and many more are injured. Low- and middle-income countries bear 90 percent of the burden of violence (IOM, 2008). Many workshop participants believed that the potential of information and communications technology (ICT) to help in violence prevention efforts is great, but that ICT could also be used to facilitate violence and abuse.

Speaker and Forum co-chair Mark Rosenberg of the Task Force for Global Health noted that violence has traditionally been considered to be the product of evil and, consequently, not preventable. But today, he said, more people believe that violence is preventable, which is an important step in understanding violence and moving toward prevention. Dr. Rosenberg outlined a public health model that the Centers for Disease Control and Prevention (CDC) and others have applied to the prevention of violence. This model includes four steps: (1) defining the problem, (2) identifying risk factors, (3) exploring potential points of intervention, and (4) designing, implementing, and evaluating solutions (further information can be found in Chapter 6). This model has yielded much data on what works in violence prevention, and, as ready access to information and resources increases, dissemination of knowledge about how to prevent violence also increases.

VIOLENCE IN THE MEDIA

Speaker and planning committee member Vish Viswanath of the Harvard School of Public Health discussed the relationship between exposure

to media violence and aggressive behavior in some individuals. Although the evidence is not solid, some studies indicate that the impact of continued exposure to violence can desensitize individuals to violence and lead to the belief that the world is unsafe. Violence in television programming or in cartoons models violent behavior for viewers. It can also lead to the belief that physical aggression is the way to resolve conflict.

Speaker Dale Kunkel of the University of Arizona said that there is consensus in the literature that media violence risks harmful effects on children and that greater exposure increases the risk. He cited a number of institutions that are part of this consensus, including the American Medical Association, the American Academy of Pediatrics, the American Psychological Association, the National Academy of Sciences, and the National Institute of Mental Health. Dr. Kunkel sees violence in the media as a risk factor for aggressive behavior—not the only and not the most powerful factor, but one that is “consistent and meaningful.” He explained that contextual factors can increase the risk of later violent behavior. There is less research on the impact of violent video games than there is on the effect of violent TV, but there is enough to say there is a correlation between aggression and playing violent video games. A recently published meta-analysis of the effects of video games found that when the games are violent, exposure to them can increase aggression and decrease empathic behaviors. Dr. Viswanath also discussed cyberbullying through social media and its connection to violence. He said there is now evidence that text-based harassment is increasing, while harassment through other Internet media is neither increasing nor decreasing.

Dr. Kunkel brought up policy steps that could reduce children’s exposure to media violence. One such step would be to reduce the violent media content production and its distribution. The First Amendment, which guarantees freedom of speech, limits what can be done in restricting production and distribution of media that contain violence. Another policy direction would be to “facilitate” industry self-regulation, which would avoid the issue of First Amendment rights. Formal government restrictions could, for example, regulate the hours during which such media could be shown, as has been done in the United Kingdom. The United States uses this strategy to regulate indecency but not violence, because there is less public concern in the United States about violence than there is about sex. Dr. Viswanath speculated that there is probably much more organized opposition to portrayals of sex than there is to violence in the United States, despite the fact that most likely there is more programming with violence than with sexual content. Dr. Kunkel cited a study showing that children are more attracted to high action and that violent media generally has lots of action. The United Nations Children’s Fund’s (UNICEF’s) office of research, Innocenti, published a report in December 2011 titled *Child Safety Online: Global*

Challenges and Strategies (UNICEF, 2011). It explores the links between child abuse and information and communications technology and suggests ways to build a protective environment for children.

Media can be used for positive aims; for example, *Sesame Street* uses positive modeling for pro-social behavior. The Sesame Workshop is in more than 150 countries, and in 30 of them it is indigenously produced. It is designed to counter the negative images children see, particularly in relation to conflict and violence.

CREATING CONVERSATIONS AND EMPOWERING PEOPLE

Throughout the workshop, a number of speakers referred to the rapid change that has occurred in the technology space and to the transformational impact it has had on society. In his keynote address, Erik Hersman, co-founder of Ushahidi, illustrated how technology has provided tools for interaction among ever-expanding networks. Technology is no longer used only to send out information, but is instead used as a two-way communication channel and for the creation of dialogue among multiple parties. Such community networking is replacing, to some degree, one-way communication by experts or authority figures.

Gaming is another information and communications technology that has potential to influence behavioral change through empowerment, as noted by speaker Ben Sawyer from Games for Health. For example, the President's Emergency Plan for AIDS Relief has created a game to get Kenyan youth engaged in HIV prevention. Speaker and planning committee member Jody Ranck of the Public Health Institute mentioned another game, *Owning Asthma*, which enables youth with high rates of asthma to figure out where they are when they encounter their triggers. The game encourages their engagement with the politics of environmental pollution, particularly in relation to race and class. Mr. Sawyer discussed Games for Health as an example of organizations being able to identify, package, and make available accessible tools that allow people to model and play with health as a form of intervention. He said that when people think about games, "it really starts . . . with an engaging and motivating experience, but it also can be a supporting experience." Games can give people models and frameworks focused on concepts such as positive health behaviors that they can use in their lives to make better choices.

Dr. Rosenberg discussed the paradox of disconnection. As people are becoming more connected through technology, they have less face-to-face time. Increasing our disconnectedness poses a risk, he said, because people may be less cautious about hurting those they have not met or seen than people they have met or seen. Other speakers spoke of technology as creating "trust" between groups who may never have met.

COMMUNITY BUILDING AND FLATTENING HIERARCHY

Interactive social media are facilitating the development of communities from which ideas and innovative solutions to a wide array of problems can emerge. Participation in these networks by individuals from different disciplines and backgrounds allows boundaries to be bridged and cross-cutting ideas to develop. Social media are affecting societies and lowering barriers and, in the process, disrupting the status quo of hierarchical structures.

The National Suicide Prevention Lifeline was presented by speaker Ashley Womble as an example of a violence prevention initiative that is utilizing ICT to carry out its work. Established in 2005 and focused on the prevention of suicide, the hotline now receives about 2,200 calls per day. Lifeline also works with Facebook to reach out to individuals who have posted suicidal messages and refer them to a help center. It also has an online space where users can create avatars, interact virtually, and share their experiences.

Another example of a violence prevention initiative that is utilizing ICT is *Bell Bajao!*, presented by speaker Eesha Pandit of Breakthrough, which was established in India in 2008 to interrupt violence against women. The campaign urges people who hear or notice domestic violence taking place near their homes to ring the bell of the home where the disturbance is occurring in order to alert the perpetrator that the community is watching and does not condone the violence.

Mr. Hersman spoke about the ability of the new interactive technology and the communities it helps build to bypass hierarchies and experts. New technologies allow people to organize to solve their own problems. Ushahidi arose in response to the post-election violence in Kenya in 2008, and it allowed people to send reports of violence through the Web, which could then be put on a public map. The technology was built by people fascinated with innovation and driven by urgency, despite a lack of credentials, permissions, funding, and time. Mr. Hersman referred to the space in which the most innovation takes place as “white space”—a place “where the rules are vague, authority is fuzzy, strategy unclear, and budgets non-existent.”

Speaker John Pollock of *Technology Review* described how, during the Arab Spring, live-streaming created a space where people of all backgrounds could meet to acquire and share information that could be used to protect people and save lives. In situations of urgency, trust between people who have never met can be built through technology. Skype, in particular, provides a relatively secure environment in which to strengthen relationships, raise profiles, raise funds, shape stories, and help journalists get stories, quotations, and interviews. The flexibility of networks is a tremendous advantage vis-à-vis hierarchical institutions, which can freeze

up in crisis situations. Mr. Pollock talked about the strength of diversity in networks, saying, “monocultures collapse as soon as there’s rapid change.”

As several speakers noted, one of the key barriers to the use of new technologies is the need for accompanying organizational change. Using networking technologies with “analog mindsets and analog organizations” is a challenge for organizations and individuals. Formal institutions may take 2 years to gather data, making the information about a health problem 2 years old before it is released. The appearance of severe acute respiratory syndrome, or SARS, brought about a change in response in managing a rapidly spreading epidemic, and more such changes are needed. Reporting information rapidly and acting on it quickly, whether the information concerns post-election violence, rape, sexual harassment, or disease, requires huge shifts in the ways institutions do their business.

Speaker Mick Fealty, founder of Slugger Consults, discussed the post-conflict challenges Northern Ireland has faced in sustaining peace. There was a huge loss of trust not only between the Catholic and Protestant communities but also among those within each community who were most affected by the conflict. In the early 1990s, the advent of the digital age facilitated conversation beyond the power groups that negotiated ceasefires and peace. Mr. Fealty set up a blog, *Slugger O’Toole*, through which those outside the establishment could bypass politicians and the mainstream media and speak directly to each other. In order to preserve the pluralism of the conversation over the blog, Mr. Fealty established some rules, the principal one being that participants had to stay with the argument and not attack the other person. Mr. Fealty also felt that diversity was critical to gaining new perspectives on old issues that already have champions who do not want to be displaced. These conversations and connections take power away from authorities and put it in the hands of the users. “This is a show-me, not a tell-me paradigm,” he said. Mr. Fealty also discussed consultation, which he said has to be part of the design of a solution, not something that is done after a solution already has been proposed. People want to have agency through partnerships built on trust.

Speaker John Gordon of Fenton said that social media allow an “extraordinary degree of diversity.” People from across the socioeconomic and socio-demographic spectrums self-organize. Mr. Pollock also noted that the diversity is not just in identity, but also in cognition. Forum member Rowell Huesmann of the University of Michigan agreed, saying that there is also diversity of opinion and communication messages. He warned that a consequence of the explosion of new information and communications technology may be that each of us is exposed to less diversity of opinion, as we focus more on what we want to hear; these platforms readily allow these filters.

NEAR REAL-TIME DATA

Mr. Hersman stressed that technology is not a panacea and that it is actually less important than the use case.¹ He gave several examples. Harassmap, developed in Egypt, uses Medic:Mobile tools that receive messages that are then mapped to show the public where sexual harassment is happening in Cairo. The beauty of these maps is that they are based on near real-time data. Bully Mapper in Australia, Hollaback in the United States, and ApartheidWatch in Israel and Palestine perform similar services. In India, Maps4Aid is tracking violence against women. PeaceTXT in Chicago brings together people within the community who can interrupt violence, with CeaseFire as the largest user.

In Benin, Plan International has focused on violence against children. Kids or adults who see violence against children can send text messages to alert the government and the police. There are plans to scale it up to eight countries across the region. A new website called Street Watch Palestine was launched in late 2011 to draw attention to harassment of women in Ramallah, Palestine. Near real-time data make it possible to respond to a problem almost immediately; it is no longer necessary to wait a long time for information or data before interventions can be mounted.

Speaker Devon Halley of Deloitte Research GovLab (XBC) suggested that the most powerful idea circulating now is the idea of turning citizens into “sensors.” These sensors are low-cost, put forth a tremendous amount of data, and they feed directly into the “here and the now.” Whether it is through Twitter feeds or Facebook feeds or other mechanisms, “people are putting a tremendous amount of information out there.” With technology, it is now easy to set up networks or to detect patterns in datasets that one might not otherwise recognize. These data can help people discover various actionable areas or “hot spots to act in.”

COLLABORATION AND CONNECTION

Connections through today’s large networks can link those who deal with specific types of violence, helping break down the barriers between disciplines and different approaches to violence. Successful violence prevention depends upon effective collaboration between public health agencies, members of law enforcement, social services providers, educators, and other actors. Linking those who work on prevention and treatment is also important.

¹ A use case describes the interaction between an actor or “user” (either a person or an organization) and a system or enterprise.

Many speakers stated that collaboration is fundamental to finding innovative solutions to prevent violence. Mr. Hersman talked about the fact that both networks and technological innovations are often created by people driven to organize to resolve problems to which existing institutions are not responsive. Dr. Rosenberg cited the need for establishing connections between the officials who can respond to a problem and the people who are reporting the violence as well as the need to incentivize participation and reporting. At present, the connections between a citizen making a report and the institutional responders are tentative or inconsistent, and a “trust bridge”—a term offered by Mr. Hersman—should be formed between the two sides. Huge institutional shifts might be required to form such connections and trust. Law enforcement is beginning to make this shift through the combination of social media, citizen reporting, and police practice. Dr. Viswanath cited the importance of institutions maintaining contact with citizens, especially those under stress, so they have an ongoing connection.

Mr. Halley echoed other speakers, agreeing that the larger the network, the more powerful it is, and that cross-boundary connections are important for innovation. His remarks were based on a paper he co-authored, “XBC: Creating Public Value by Unleashing the Power of Cross-Boundary Collaboration.”² The central questions that this work tries to answer are: How can maximum value come from a network? What network structures are best for which purpose? How does one manage structures, and what should be considered in developing a network? Technologies for online collaboration can allow much larger numbers of people to become involved than is possible with the traditional networks used to find information or solve problems. Mr. Halley cited three steps that are at the heart of cross-boundary collaboration: connect, innovate, and execute. Connections break down barriers and increase the broad awareness of situations. When organizations take advantage of connectivity, they can rapidly source information and solutions at lower cost. Given the transboundary issues and complexity in the world today, Mr. Halley said an approach able to rapidly handle complex situations is needed.

Dr. Rosenberg mentioned the important role that advocacy groups have played in preventing and countering violence. Advocates began working to prevent violence against women 35 years ago. Attention to HIV/AIDS was galvanized by advocacy groups. Other types of violence prevention are now being supported by emerging advocacy networks, often facilitated through social media.

² See http://www.deloitte.com/assets/Dcom-Global/Local%20Assets/Documents/Public%20Sector/dtt_ps_xbc_060311.pdf.

BOX 2-1
Key Messages Raised by Individual Speakers

- Use of information and communications technologies disrupts the flow of information and hierarchies, with a transformational impact on society.
- An important barrier to the realization of the potential of new technologies is the need for and resistance to organizational change.
- The use case is more important than the technology itself.
- The dialogue about the advantages, disadvantages, and dangers of communications in the field of violence prevention might benefit from greater stakeholder prioritization.

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3

Methodological Considerations of New Communications Platforms

In a knowledge society of the sort existing today, being a “technological citizen” requires that one understand how to use current technologies as well as be able to learn how to use new ones that appear. Ensuring that the poor have access to these technologies and the knowhow to use them may require design of new approaches. Some speakers suggested that a curriculum to teach people how to use the new media in the most informed way should be developed and tested. As well, they believed it would be essential to develop rapid evaluation methodologies to ensure that interventions are evidence-based and successful. Several participants noted that as information and communications technology (ICT) moves forward, people should look for innovative ways that the old and new media can be used together.

COMPUTING POWER AND SPEED OF TRANSMISSION

Today’s technology is characterized by an increasingly rapid transmission of information and large datasets that can be stored and mined. Speaker and planning committee member Jody Ranck of the Public Health Institute discussed the effect of more pervasive computing power. He noted that the mobile phone of today is more powerful than NASA’s computing power in the 1960s.

As the use of mobile technology in the practice of medicine and public health has become more pervasive, it has evolved into a defined field known as mHealth. SMS, which can be used on all mobile devices, is the most common platform for mHealth; however, as the prices of smartphones decrease

it will be important to think about their design and uses as well.¹ In 2009 the number of smartphones imported to Africa was equal to the number of SMS-only phones. Citing Cisco's estimates that by 2020 there will be more than 50 billion things connected to the Internet, Dr. Ranck spoke of the coming of an "Internet of Things." These things may be, for example, sensors looking at air and water, and connected through a smartphone. Dr. Ranck noted that access to the Web is becoming more mobile, with most connections to the Web now being made by mobile phones. Because smartphones are also designed to collect data, this increasing connectivity raises the question of who is collecting data, what data are being collected, and who owns the data.

The proliferation of social media platforms is changing culture. Small numbers of people can raise the profile of the issues they care about by generating content for social media platforms and connecting to more people. There are a large number of mHealth deployments worldwide, ranging from HIV prevention messages and information via text to diagnostic tools and peripherals that can attach via Bluetooth wireless for remote diagnostics, acute treatment, and drug adherence. Dr. Ranck predicted that more democratic engagement in public health will result from the growth of peer-to-peer mHealth implementation, making it imperative to address "technological citizenship" in greater detail.

Dr. Ranck also cautioned that an intervention that worked well in one setting may not work in the same way in another cultural context. The issue of power often may be ignored in the development of mobile applications. He mentioned that there are some examples of domestic violence applications, successful in one area, that actually increased the level of domestic violence in other areas because of gender and control issues over the mobile phone.

PRIVACY AND MISINFORMATION

Security is a growing issue for ICTs, and tools are being developed to anonymize data that are sent through mobile devices—for example, to ensure the safety of human rights workers. Dr. Ranck noted that the potential for de-anonymizing large datasets could raise privacy concerns. Many participants and speakers felt that innovations in ICT are ahead of current policies regarding privacy.

One workshop participant expressed concern over the implications of citizen reporting, vigilantism, and "trial by publicity." Speaker Erik

¹ Short Message Service (SMS) is a text messaging data application for phone, Web, or mobile communication systems, using standardized communications protocols that allow the exchange of short text messages between fixed line or mobile phone devices.

Hersman of Ushahidi responded that the police are already using cameras to gather information on behavior, so that citizen reporting may actually level the playing field. He predicts that this will settle out in different ways depending upon the country. Mr. Hersman also said that although data can be poisoned by misinformation, the best way to counteract that is with more information. Despite concerns over data corruption, he said, it has been found that as more people use the data the better the data become.

CROWDSOURCING AND OPEN INNOVATION²

The emerging open health paradigm, in which access to information and decisions about health are available to all, includes open innovation and crowdsourcing. One example, InnoCentive, is a platform supported by Eli Lilly to find solutions to challenging scientific problems that had remained unsolved in the lab, and it relies on the success of this paradigm. Crowdsourcing and open innovation platforms can significantly reduce the time and expense needed to find a solution. Dr. Ranck also mentioned the work of Deborah Estrin at the University of California, Los Angeles, and Ida Sim at the University of California, San Francisco, to create an open mHealth structure that can allow many new applications that cross data silos.

Speakers shared a number of examples of open innovation, including

- Video: Events carried out throughout the Arab Spring were exposed on video. Such visibility can strengthen political will, as happened when a video reached and influenced the Libyan ambassador to the United Nations just before the UN Security Council vote on NATO's potential involvement.
- Satellite phones: Although allowing for greater access during conflict, when land lines can be compromised, satellite phones can place users at risk if used outside. A mobile network established in Benghazi with funding raised by the son of the deputy prime minister made it much safer for citizens.
- Microblogging: In emergencies—for example, during the 2011 Japan earthquake—it is important to get information from many sources, and when traditional communication lines are down, platforms like Twitter can be very valuable. There were more than 1,000 tweets per minute when the quake struck.

² Crowdsourcing is the outsourcing of task completion to an undefined group of people, such as the general public, in an attempt to leverage the problem-solving power of large groups. Open innovation is the process of reducing barriers to internal and external collaborations as well as the inclusion of increased or different partners in finding new solutions.

- **Mapping:** Several speakers discussed interesting ways in which mapping has been used. Mr. Hersman mentioned the mapping of sexual harassment in Egypt and India. Speaker John Pollock of *Technology Review* said that in Tunisia, accounts of human rights abuses in prisons were disseminated using a technique called “geobombing,” in which geo-tagged³ YouTube videos show up in Google Maps and Google Earth. In this particular case, nongovernmental organizations (NGOs) geo-tagged videos to the presidential palace.
- **Traditional TV media:** Networks such as Al Jazeera, Al Arabiya, CNN, and BBC also play a role, if not their usual one. Because deliberate misinformation is present in conflict situations, particularly in conflicts between freedom fighters and governments, verifiability becomes very important, and it is sometimes possible through collaboration between traditional and new media.

Mr. Hersman noted that the bigger the network, the more powerful it has the potential to be. However, open data do not necessarily empower the disenfranchised. In India, more affluent people of higher socioeconomic status used land records, released on an open data platform, to acquire more land from people of lower socioeconomic status. It will be important to consider possible downsides and unintended consequences and to think about ways to protect against them.

Public health prevention successes over the past century depended upon huge social change, and ICTs can be used to accelerate change. Dr. Ranck noted that a person with a design mentality looks at how to develop technology in order to achieve a particular outcome, not how to solve a problem within the traditional infrastructure. A platform should be developed for public health that enables innovation but provides protection at the same time.

SCALING UP

Most speakers noted the need for and challenges of scaling up. Innovation is most likely to happen outside of large institutions, but these institutions are often important for supporting the scaling up of technologies created elsewhere. Speaker and planning committee member Vish Viswanath of the Harvard School of Public Health cited policy as a means of enabling scale-up. Scaling up can also occur through social media, which

³ Geo-tagging is the process of adding a geographical location to a piece of information (such as videos, tweets, or blogs). Geo-tags are not necessarily accurate because they reflect the location the user has chosen to add.

Mr. Pollock described as having the ability to transform small events into large-scale change. Speaking of Tunisia, Libya, and Egypt, he described how protestors, most of them young, were protesting part-time while they worked or studied. He also described how doctors, dentists, and shopkeepers in Libya joined together with students and became organized.

Speaker Mike Fealty, founder of Slugger Consults, referred to work that he is doing with partners at Queen's University of Belfast on community asset transfer. The objective is to scale up ideas in spaces where people can converse and be part of the solution. In this way, if the audience is consulted and involved in the design from the beginning, problems that later arise are easier to manage.

Speaker Joseph McCannon of the Innovation Center at the Centers for Medicare and Medicaid Services spoke about the failure to bring innovations to scale and to bring about change. He suggested that the rewards in health care go to those who publish papers and post new information on the Internet rather than those who improve and scale up existing projects. One exception is Johns Hopkins University where successful improvements or the scaling up of a project is given equal weight with publications of original discovery in prestigious journals when determining academic advancement.

EVALUATION, DATA COLLECTION, AND PROGRAM DESIGN

Many speakers and participants felt that the lack of evaluation data is a large challenge. Evaluation methodologies that are applicable to the new technology and innovative programs are often necessary to convince governments, particularly those in low- and middle-income countries, to invest in the innovations and new policies under consideration. Speaker Harriet MacMillan of McMaster University said that interventions are too often scaled up too quickly without evidence, so that programs are often in existence even though there is no proof of their effectiveness. Speaker Judith Carta of the University of Kansas said she believes in starting with pilot studies, which make it possible to determine "at close range" whether the intervention is effecting small changes before moving to a larger study. Speaker Ben Sawyer of Games for Health concurred and also noted the importance of controlling for users' interpretations of technologies.

The speed at which new technological applications are developed also calls for new evaluation methodologies more appropriate to the technology and its uses. Speaker William Riley of the National Institutes of Health said that the length of time required for traditional evaluations using randomized control trials (RCTs) would result in a situation in which the findings of an evaluation would not be available until long after the technology had become obsolete or modified. For example, research on the efficacy of

mobile technology that was begun in 2005 and completed in 2010 would have missed YouTube, the iPhone, Android, and the iPad, all of which happened between those years. Dr. Riley said there is a tension between researchers and computer engineers; researchers want the technology to stay unchanged while the research is ongoing, and engineers want to tinker with the technology through continuous iteration.

The field of technology and violence prevention has great potential, but it lacks a strong evidence base. Dr. Riley said he believes that randomized clinical trials will eventually be necessary, although he also said that community interventions can generally not be randomized. Standards for evaluations and metrics are needed as well as a virtual space where evaluations can be shared and methodologies refined. It is also critical that evaluation of the interventions takes place in specific cultural, social, economic, and political contexts. What works in one place may not necessarily work in another. Further information on evaluation methodologies and considerations can be found in Chapter 6.

On the positive side, new technologies may prove to be helpful for meeting the challenges in data collection and analysis. For example, instead of relying on patients to call in their information daily, wireless technology today can take the information from the patients' devices to the server, making the data available in real-time and gathered continuously. Furthermore, using mobile technologies for recruiting and retaining individuals in trials will help streamline the process.

FINDING SIGNALS IN THE NOISE

A tremendous amount of data is now being collected through new technology. Datasets that are too large to be stored traditionally are called "big data." These can be analyzed with cloud computing. Dr. Ranck noted that although such large datasets can make it difficult to find some important signals, today's computing power can allow physicians to see certain signals that they ordinarily might have missed, such as predictors of domestic violence, because of increased statistical power.

An interesting example of the power of big data concerns Camden, New Jersey, medical billing records. A physician analyzed 8 years' worth of medical billing records in Camden, which included shootings and homicides. His analysis of the records for 600,000 hospital visits over the 8-year period found that most of the treatment received was neither cost-effective nor medically effective. It also emerged that the majority of the costs could be attributed to a small number of patients. These findings resulted in a coalition of people concerned about how to target interventions to address the violence in Camden.

Dr. Ranck cited the need for better commons-based tools and resources and better use of the commons. Several existing platforms spaces, including InnoCentive and Science Commons, deal with biomedical issues, but it would also be useful to have data commons and innovation for social and behavioral sciences.

Addressing the Digital Divide

Panelist Michele Moloney-Kitts of Together for Girls pointed out that if sexual violence data were publicized the same way that data on infectious diseases are, the effect would galvanize action. She also noted that 9 out of 10 women feel safer with a mobile phone. However, the gap in mobile ownership between men and women is great. Women in the Middle East and Africa are 25 percent less likely than men to have a phone. In South Asia women are 37 percent less likely to own a mobile phone than men. Among the poorest classes, the gap is even greater. Ms. Moloney-Kitts said it is important that those who are disempowered have access to technology, and cited mWomen, a program supported by the U.S. government, the Cherie Blair Foundation, and GSMA, an association of mobile operators. One of mWomen's primary objectives is to reduce the gender gap between male and female owners of mobile devices, particularly among men and women in lower socioeconomic brackets.

Panelist Kathleen McGowan of the U.S. Agency for International Development spoke about Afghanistan in order to illustrate the potential and risks that come with the proliferation of mobile technology. Mobile technology has transformed the country and its economy since 2001, and it continues to spread among the population. Eighty-five percent of Afghans live where there is mobile coverage. This mobile technology reaches where there is lack of infrastructure, ongoing insecurity, and high illiteracy rates. Women provide a great potential market for mobile phones, but cost can be prohibitive. Furthermore, control issues in a conservative society make it difficult for women to own phones. One operator in Afghanistan is trying to provide mobile devices to women through a package that the husband or father controls, which raises the issue of whether the reinforcement of traditional gender roles is harmful. One negative aspect of the spread of mobile technology in Afghanistan is that improvised explosive devices can be detonated by mobile phones.

Designers and implementers trying to prevent violence with technology must work to avoid doing harm, or, if that is not possible, at least to mitigate the harm. One audience member raised the issue of keeping child and female victims of domestic violence safe and helping them stay out of violent situations. Ms. Moloney-Kitts agreed and added that more public discussion about the issue, commensurate with its prevalence within society,

is required. She said she believes that the priorities include addressing child trafficking, pornography, and prostitution. Speaker and Forum member Xinqi Dong of the Rush Institute for Healthy Aging works with the elderly, where the most vulnerable to abuse are cognitively or physically impaired, socially isolated, and have mental health problems, and he stressed the need to adapt technology so that these vulnerable people can access and use it.

Forum co-chair Jacquelyn Campbell of Johns Hopkins University School of Nursing brought up the challenge of making not only phones but also the ongoing cost of phone minutes affordable for poor women. Ms. Moloney-Kitts said it does not have to be one phone per person. Phones can be shared by communities, or individuals can rent their phones by the minute to others.

Health professionals also need to know how to develop a business plan and to negotiate with mobile operators for lowered costs. Dr. Ranck said there has been a lot of recent work in the mHealth field on negotiating deals with operators for uses that could be free or subsidized. At InSTEDD a guide for NGOs on setting up such deals with operators was being developed.

BOX 3-1
Key Messages Raised by Individual Speakers

- There is a need for an evidence base concerning the effectiveness of new technologies for violence prevention.
- The speed with which new technologies are evolving renders traditional evaluation methodologies infeasible. However, the new technologies may actually help with both the collection in real time of large sets of data and the analysis of those sets of data.
- Privacy issues have arisen because of the data collection capabilities and the computing power of the new information and communications technologies.
- Open-source platforms and crowdsourcing provide a means for the audience to become part of the solution to problems more quickly and less expensively than traditional “expert only” problem solving.
- The growing community of “citizen scientists” and their efforts may foreshadow future trajectories for open data systems.
- Scaling up can occur in several ways: through policies made by governments, through adoption of innovations by large institutions, and through social media raising the profile of an issue.

4

Addressing Disparities and Vulnerabilities

The increase in technologies including smartphones, crowdsourcing tools, remote diagnostics, and other innovations does not offer a panacea for ending violence or leveling the power imbalance innate in violent acts. Rather, the increase in technologies used in prevention of violence has fostered an increase in the debate over the positive and negative impacts these innovations have within communities and worldwide. Some of the downsides of technology related to violence include cyberbullying, losses of privacy and security, and stories of perpetrators targeting victims through social media sites.

In the developing world the adoption of technologies such as the mobile phone creates a new path for combating longstanding, ingrained violence. But technology can be only a small part of a solution to help vulnerable populations that suffer from violence. Any successful program that integrates information and communications technology (ICT) into violence prevention will also need strong outreach, branding and publicity, verification, documentation, integration with other existing systems, and careful evaluation.

Including communications technologies in violence prevention strategies would offer great potential to address vulnerabilities among those populations that are most at risk for exposure to violence.

MARKET PENETRATION¹

With the increasing knowledge about and widespread use of information and communications technology, there is an increased opportunity to reach vulnerable and isolated populations globally.

For example, mobile technologies increase the reach and communication abilities of community health workers, allowing them to affect larger portions of communities and geographic areas. Confidential hotlines, which were described by several speakers, offer one of the most common ways to penetrate a community and affect wider geographic areas. An example is the National Suicide Prevention Lifeline in the United States, which individuals at risk for suicide can call for help or reach online.

Online platforms can aid in the dissemination and sharing of knowledge among creators, directors, and funders of programs. Furthermore, social media platforms allow an increased dissemination of a victim's experiences and also make it possible for the victims to quickly receive social support, advice, and companionship. Finally, communications technologies can provide a powerful source of funding for such programs and interventions, as text campaigns allowing individuals to donate to certain causes via their mobile phones and the Internet have become increasingly popular over the past few years.

Speaker Erik Hersman of Ushahidi emphasized the broad, large-scale impact of mobile technology on the spread of information. He said that new technology is lowering barriers and "just by its existence it is disrupting things." He spoke about the vast penetration rate for mobile phones, noting that more than 600 million phones are in Africa, a continent with a total population of approximately 1 billion.

Speaker John Pollock of *Technology Review* discussed one example of wide-scale community penetration was the power of social media to impact revolutions. He said that youth were starting the revolution, and, importantly, women were involved. In leveraging social media to build a revolution, people were able to find each other in real-time.

Networks are another important way to penetrate communities with violence prevention messages, as noted by Mr. Hersman and speaker Devon Halley of Deloitte Research GovLab (XBC) and discussed in previous chapters. The advantage of networks is they are more flexible, innovative, and resilient rather than command-and-control hierarchies.

Social support is another meaningful component of interventions and programs that can be improved with communications technologies. Social media platforms can help extend the reach of connections and experience

¹ Market penetration is the entry into a community, gaining new users or enhancing current users' experiences.

sharing. In Senegal, Tostan and UNICEF launched the Jokko Initiative, which allows community members to use SMS to send out various text messages, such as information on vital events, service announcements, and information on income-generating activities. It especially allows women the opportunity to promote their goods and share information and event announcements.

Finally, research dissemination is another area facilitated by the use of information and communications technology. Forum member Kristin Schubert of the Robert Wood Johnson Foundation said that it is frequently difficult to get information about research to public health providers in a community with target populations. Thus, this is an area where establishing important partnerships with researchers and experts in technology is essential to successful implementation and evaluation. The ability to penetrate markets and spread information more widely could be of huge importance in this respect.

EMPOWERING VULNERABLE POPULATIONS

Several examples were cited throughout the workshop of ways in which information and communications technologies can empower vulnerable populations.

Collective Violence

Technologies lead not only to increased communication but also to increased accountability and transparency. For instance, the organization Witness works to use the power of video advocacy by documenting and sharing human rights abuses. By working with constituents on the use of video as a medium for documentation, it has shed light on the repression of ethnic minorities in Burma and has helped to prosecute recruiters of child soldiers in the Democratic Republic of Congo.

Sexual Violence and Intimate Partner Violence

SMS and geocoding technologies can be used to display incidents of violence in real time, which can be particularly effective in combating sexual violence. In Egypt, Medic:Mobile, in conjunction with the Ushahidi platform, has been used for Harassmap. The basic idea behind the program is that if a woman is sexually harassed she can send an SMS to the Harassmap number with details of the incident. This information will then be mapped on the website, allowing “hotspots” of harassment to be identified. Harassmap also provides help and information for victims. This use

of technology is a way to break the silence that surrounds the issue, and it helps empower vulnerable groups of women in this geographic area.

Digital storytelling is another powerful tool for empowering victims and educating offenders on the effects their actions can have. The Mobile Cinema Foundation program uses short films to expose soldiers in camps to the consequences of rape. The goal is to educate the soldiers of the Congolese National Army through victims' testimonies and post-viewing discussions.

Conventional forms of technology and media can also play integral roles in the prevention of intimate partner violence. For example, hotlines and awareness campaigns can use both traditional and new media. *Bell Bajao!* is a series of public service announcements in India urging men and boys to combat domestic violence by notifying abusers that the community is watching. Liz Claiborne's Love Is Not Abuse iPhone application helps teach parents about teen dating abuse and demonstrates how technology, such as text messages, e-mails, and phone calls, can be conduits for committing abuse.

Texting is also used in some programs to prevent intimate partner violence. FamilyFirst is a program in the United States that uses a texting service that allows victims to report incidents silently via a simple SMS message and to make contact with a crisis intervention worker or police without making an actual phone call.

The Grameen Phone Foundation's Village Phone model is based on providing a small loan and a "business-in-a-box" to entrepreneurs to provide customers with access to a mobile phone and mobile airtime. Providing women with access to mobile devices allows them to move toward economic independence, which reduces their vulnerability to violence.

Elder Abuse

Hotlines and sharing of information via the Internet are integral to helping increase awareness of and to decreasing the incidence of elder abuse. The National Center on Elder Abuse has state resources, such as helplines and hotlines.

Social media platforms have been integrated into many elders' residences. For example, MyWay Village is a social network installed in nursing homes that allows residents to connect with new people and their families in order to share memories, information, and experiences, to play games, and most important, to feel less isolated.

Youth Violence

Youth are the fastest adopters of new media and mobile technology. The National Dating Abuse Helpline recently made its services available via text message by allowing teens to text a number and, in return, to receive help from trained peer advocates. CeaseFire in Chicago, Illinois, tracks violence in real time so that interrupters can intervene in tense situations. With Ushahidi, Medic:Mobile, and PopTech, the project PeaceTXT will look at how mobile tools can help accelerate CeaseFire's success.

Speaker Ben Sawyer of Games for Health said that games are an empowerment intervention for youth but that sometimes the empowerment and aspiration developed stay contained within the game. "What we have to figure out is whether or not we can take this really powerful concept that exists within games and . . . make it translatable outside of their world," he said. With Play2Prevent, he aims to prompt youth to discuss how they can translate the ideas that they have within games into their real lives.

Another example of a youth violence prevention program, Cool School, is made by Federal Mediation and Conciliation Service and is an animated adventure series produced by a game developer that takes a character-based approach to talking about bullying and violence prevention in schools. Other examples include NSTeens from the National Center for Missing and Exploited Children and Web Wise Kids.

Child Abuse

There has been an increase in health text messaging programs that target medically underserved populations. Text4Baby, guided by the Department of Health and Human Services, is a public-private partnership that provides pregnant women and new mothers with free text messages concerning health. The messages range from tips on how to care for the baby to information about what to expect during pregnancy. The mobile phone also offers a way both to report child abuse and to increase awareness of the issue. As well, hotlines are available to both adults and children, including the National Child Abuse Hotline, which is run by Childhelp.

Speaker Judith Carta of the University of Kansas noted that mobile phones can be used to enhance any kind of home visiting or parenting intervention. In particular she suggested they could be used for improving home safety for children and for improving early intervention for children with developmental problems. With certain smartphones or tablets, video streaming is being used to transmit information to parents. The next step is to move toward broad-scale implementation in order to affect a larger number of parents.

Self-Directed Violence

Telehelp, life and crisis lines, and call centers are important in dealing with self-directed violence. There are several online support groups that allow those at risk to reach out and connect with others, thus ensuring that they know that they are not alone. Awareness of and access to services permits many to move past the social stigma that is often attached to depression and suicide.

As in other areas of violence, there is controversy regarding the creation and use of some mobile applications, such as suicide-prevention applications. Some mobile applications let users track their moods and experiences, providing supplemental information for them as well as for their therapists.

As is the case with youth violence, blame is often placed on technology and media for suicide, and for teen suicide in particular, because of the presence of cyberbullying. Several speakers said that, in reality, it is difficult to determine how great a role media and technology have played in these deaths.

Potential Application to Disability and Impairment

Some speakers discussed the potential of information and communications technologies to reach and empower those populations who have cognitive or functional impairments or disabilities, but they noted this area has yet to be explored fully. Speaker and Forum member XinQi Dong of Rush Institute for Healthy Aging commented that the area of elder abuse involves very vulnerable groups, including those with Alzheimer's disease and those who are highly dependent on others. People with disabilities are also at very high risk for experiencing all forms of violence. Speaker and Forum co-chair Mark Rosenberg of the Task Force for Global Health asked, "How can we use social media to compensate for some of the disabilities that people may have to start to protect them against some of the violence?"

REFINING AND TARGETING OF MESSAGES

Messaging needs to be at a pro-social level that is valuable and targeted for specific groups. For example, speaker Charlotte Cole of the Sesame Workshop spoke about her work in the Middle East, where she and her colleagues are trying to introduce kids in conflict situations to "the other" to reduce acrimony between groups. Their messages seek to model the interactions between the parent and the child. Ms. Cole said, "Having just gotten back from Kabul and watching kids watch this is just amazing. They are just riveted. Part of that is because there isn't much on the screen that

has been created for them.” In this case messaging is trying to build pride in self, an awareness for and tolerance of others, and an opportunity to identify models for pro-social behavior onscreen.

Dr. Rosenberg said that these examples of messaging demonstrate the power of going beyond the individual level. It is important, he said, to realize the ability of technology to bring these messages out and to make communication a shared experience for everybody. He also emphasized the importance of the ability of technology to amplify rather than supplant one-to-one interactions.

BOX 4-1
Key Messages Raised by Individual Speakers

- Information and communications technologies play a powerful role in spreading messages, building movements, and reaching vulnerable, isolated populations.
- The spread of information and communications technologies can positively affect those vulnerable and isolated populations most at risk for violence, but it could be useful to further explore how best to maximize the advantages of such technology while minimizing the disadvantages.

5

Framing Violence Prevention Communication

The field of global violence prevention has made some advances in the past 35 years, but, as many speakers in the workshop noted, in some ways the dialogue around the field has stalled. The speakers suggested that technology can help frame communication regarding violence prevention in such a way so as to advance the field.

THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN CHANGING MESSAGING

Several speakers emphasized the observation that information and communications technology (ICT) is changing traditional violence prevention messaging, making it more accessible to wider audiences, filtering and targeting messages, and opening lines of multidirectional conversation.

Speaker Erik Hersman of Ushahidi said that Ushahidi was born out of the 2008 post-election violence in Kenya. He described the initial start-up as an ad hoc group of volunteers who came together over 3 days in response to an urgent need. Blogging and media played integral roles in accelerating the company's timeline. It is worth noting that Ushahidi is a broad-band platform that has since been used in many countries all over the world. It has been used for disaster response, such as in Haiti and Japan, for election monitoring, and for citizen journalism.

Speaker and Forum member Jim Mercy of the Centers for Disease Control and Prevention said that information and communications technologies disrupt hierarchies, change the flow of information, and allow failure to occur more quickly so that progress can take place more quickly. Other

speakers added that these technologies contribute to the democratization of information, by allowing ordinary citizens to discover solutions to their own problems.

Speaker and planning committee member Jody Ranck of the Public Health Institute spoke about key developments in ICT and about their effects on the future of public health. These key developments include more pervasive computing power, the appearance of cultures of sharing and cooperation, open health, biocitizenship and technological citizenship, and the rise of the infosphere¹ and the information organism.² Noting that global mobile network coverage has reached 90 percent, Dr. Ranck commented that social media has engendered a culture of sharing, of collective selves, and of real-time informatics. Dr. Ranck also emphasized the paradigm shift that has occurred in rethinking health with respect to the impact of technology: Internet and communications technologies have the power to make the invisible visible and to increase public engagement with data. Several speakers cautioned that as this paradigm changes, there will be a strong need to evaluate these new, faster, and more streamlined approaches in rigorous and appropriate ways that adapt to the rapidly changing technologies. Dr. Ranck also discussed new approaches to utilizing data, include the mining of “big data,” or datasets too large to store in a traditional manner. Big data has the ability to provide more nuanced information regarding communications trends and cultural and social norms.

NEW LITERACIES OR COMPETENCIES

Harnessing the power of ICTs could require adaptation of traditional communications tools. Several new literacies or competencies are required for adapting and incorporating information and communications technologies into violence prevention work.

Mr. Hersman spoke about one of the first competencies required for Ushahidi: the understanding from organizations that they should share their data. Large nongovernmental organizations were not sharing information or verifying if an event occurred. This barrier led to the building of a platform that could bypass these inefficiencies. Along the Ushahidi development path, many lessons were learned that are important to lay the groundwork for others developing their own ICT programs. The required skills include the ability to discerningly examine data sources and data, to question assumptions, to embrace innovation, and to take risks boldly

¹ The infosphere is the informational environment in which entities, processes, and interactions related to information exist.

² An information organism is an entity interconnected with other information organisms that operates through the use and sharing of information.

knowing that such risktaking allows one to fail and then subsequently adjust more quickly.

Mr. Hersman also discussed the skill of dealing with “white space,” where sometimes the most innovative ideas emerge. In Mr. Hersman’s opinion, the best disruptive ideas come from the edge, and this is where the intersection of technology and violence prevention has the potential to push the boundaries of innovation. The last competency that Mr. Hersman emphasized was the importance of humility with respect to approach, implementation, and advancement technologies for preventing violence.

Dr. Mercy agreed that there is a need for literacy in these areas, and he raised more questions: “What do we need to do to help us and help our colleagues, help our own fields to get up to speed? And where do we need to get up to speed? Do we need to know the intricacies of the technology, or what are the areas that we need to learn in order that we can advance and apply these technologies in useful ways?”

Dr. Ranck added that the area of visual culture—which includes visual data representation such as mapping, infographics, new media, and art—is expanding and these tools are helping to reframe health. That is, instead of simply displaying statistics and other numbers by themselves, people are using pictures to demonstrate the statistics and to send messages across populations and audiences with a wide range of background, knowledge, and literacy levels. More and more often data are being displayed in visually appealing ways in order to create more effective and meaningful messages.

Dr. Ranck also listed a number of other new literacies that are important for public health, including service design and change management, technological literacy, new methods in health informatics, and management of public–private partnerships. Transparency is also increasingly important because there are more participatory media and more distributed knowledge. Public health, he said, should address these arenas and could be leveraged as a platform to offer services that catalyze change.

Speaker Devon Halley from Deloitte Research GovLab (XBC) discussed the potential of cross-boundary collaboration and creating public value through ICT. He discussed the power of global networks in helping to buttress the use of knowledge. Social media and social networks offer a tremendous opportunity to develop new ways of engaging people and allowing them to collaborate and innovate. Thus, he said, new competencies are needed to manage this power.

As an example, Mr. Halley offered the story of a physician’s powerful use of Sermo, which is a collaboration platform for medical professionals. This physician, who was in the emergency department, had a patient who had a serrated saw blade completely through his thumb, and the physician was uncertain of which approach to removing the blade would result in the least collateral damage. In the past, Mr. Halley said, the doctor would have

turned to a colleague he knew in his own hospital or perhaps in some other, and the solution could have taken a long time to present itself. In this case, however, he posed the question online using Sermo, and very quickly another doctor who had seen this type of injury before posted a solution: use a drinking straw split along the length as leverage. Thus the physician, who had the knowledge, ability, and access to use Sermo, was able to effectively tap into the knowledge base of the entire medical community accessed on this website, not just those doctors in his immediate social sphere. As well, the solution itself was relatively low-tech and easy to manage, but would not have so readily manifested without this innovative tool.

Speaker Vish Viswanath of Harvard University of Public Health spoke of teaching children “media literacy” and how to develop a curriculum to do so. “Since we teach people how to buy clothes, how to buy cars, how to go to the restaurant from Yelp,” he said, “how do we do this for the use of media? We should develop an evidence-based curriculum around these new kinds of media and literacy and how we teach our kids to consume it in a more informed way.”

Breakout leader Kim Scott from the Child Resiliency Programme in Jamaica brought up another important competency related to the breaking down of the silos within the violence prevention field. In Jamaica, she said, the violence prevention field is splintered into sectors as well as within silos of types of violence. As had many other speakers in this workshop, she emphasized the importance of learning to perform multidisciplinary collaborations because so much effort and time is spent by researchers in one silo going over ground that has already been covered by others in similar fields. Being able to work across sectors and share information would allow researchers to work from existing knowledge and would thus require fewer resources. Speaker and Forum member Mark Rosenberg of the Task Force for Global Health responded to Dr. Scott, saying that collaboration is not easy. “It is not easy to get the people who work in HIV to go over and talk to the people who work in violence prevention or go talk to the people who work in polio eradication to share the lessons that they have learned. It is not easy, but it is possible. If we work only in silos, we lose that ability to get the bigger picture. If we are going to make progress, it is going to be because we see the details and the bigger picture at the same time, but that is going to take getting us together in ways that are hard but possible.” Because social and new media encourage sharing and collaboration, this goal might be easier to achieve through the lens of communications technology.

Speaker Judith Carta of the University of Kansas also noted the challenge in designing, evaluating, and scaling programs in an environment that changes rapidly, sometimes to the point that a particular innovation is no longer needed by the time the evaluation is finished. Dr. Rosenberg responded that the program design and evaluation cycle is going to undergo

changes because of our ability to use communications technology. Some applications will be put forth that become widespread before we understand why they work and before they are tested on the small scale. An important competency in building, Dr. Rosenberg said, is learning how to embrace this rapid change and incorporate what is learned from research to modify the process successfully.

Facilitator and planning committee member Lisa Witter of Fenton spoke about competencies that are needed in the workplace. She said that social media are changing people and changing what hierarchies look like. For instance, those who would be traditionally considered “experts” are changing as younger people often mentor their more experienced (and often older) counterparts in technology. In turn, this is affecting organizations with traditional workplace structures and offering a democratization of empowerment in workers. “There is power leverage along what was a ladder,” she said, “and is now a lattice.”

Speaker William Riley from the National Institutes of Health spoke about the need to improve evaluation competencies given the burdensome length of time required for a full randomized controlled trial to be carried out. A typical randomized trial, even one that does not require any revisions or other things that might extend the process, lasts at least 7 years. During this time the researcher could be left behind by evolving technology and end up with an intervention that is no longer relevant. On the other hand, speeding up the timeline could result in inadequate development, use, or evaluation of the technology. Although RCTs are considered to be the gold standard for evaluation, he said, there are a number of types of uncontrolled trials that could be useful as well, particularly because mobile technology can assist in the real-time capture of data, and so it is possible to embed evaluation into the intervention itself.

In the research world, a new measure must be both reliable and valid, but sensitivity to change should also be taken into account. “We have to actually be able to look at how we can truncate these things and have measures that are more responsive to these short periods of time we’re trying to assess,” Dr. Riley said. “We have to get to the point in the behavioral sciences and the epidemiologic world where our scales stay standard. Our instrumentation can improve, our processes and methods can improve, we can become more precise as we go along, but everything stays standard in terms of the scale, so that we can always talk to each other: clinicians to researchers, researchers to researchers, and we’re talking about the same scale.” Speaker Joe McCannon of the Centers for Medicare and Medicaid Services (CMS) noted that new evaluation methodologies are being developed, such as methodologies that integrate formative and summative evaluation.

Speaker Michael Feigelson of the Bernard van Leer Foundation offered a final important competency that the violence prevention community

needs to keep in mind when educating its donors and its potential donors: while reasonable attempt at prediction should be made, it should be made clear that exploring new fields requires accepting some level of uncertainty. “The problem that I came up against, which is a similar one that you will come up against, is, I could not prove anything. I could not even tell that reasonable a story because when you are in ‘white space,’ where it’s a little uncomfortable because the rules aren’t clear, you don’t know what’s going on, you don’t know what’s going to happen. The white space should be made attractive and not a scary phenomenon.”

APPROPRIATE MESSAGING AROUND VIOLENCE PREVENTION

Several speakers said that it is essential to ensure that violence prevention messages delivered with new communications tools are still appropriate and relevant. Breakout session leader Scott Goodstein of Revolution Messaging illustrated the importance of understanding who the target audience is and how usable the tools will be to that audience. Speaker and Forum member Kristin Schubert of the Robert Wood Johnson Foundation commented on the power of going beyond the individual level and amplifying the experience so it can be shared by everyone, while still ensuring that the experience is relevant.

Breakout leader Daniel Reidenberg from SAVE said that it is important to talk about and better understand the differences between the risk of something occurring, and predicting that something will occur. He also noted that deciding where to intervene on the continuum (that is, low-to-high) of risk requires careful examination of expected consequences. Speaker John Gordon of Fenton said that it is important to meet individuals where they are currently, so they are most receptive to messages, and both he and Dr. Reidenberg agreed that it will be important to move the messages past traditional public health gatekeepers directly to the target audience.

Breakout leaders Dahna Goldstein of Philantech and Harriet MacMillan of McMaster University both commented about the need first to clearly define the problem and then to identify important tools versus the other way around. Dr. MacMillan also noted that it would be useful for violence prevention practitioners to learn to create short messages, especially as people are growing increasingly more accustomed to receiving news and information in a short-message format.

Breakout leader Constance DeCherney of iCrossing noted that the best approach is not to try to solve a problem with one technology or one person but rather to involve all of the audiences affected by the issue in a variety of platforms, including mass media. Breakout leader and Forum member XinQi Dong of Rush Institute for Healthy Aging said that there is great ignorance concerning how to frame research-advocacy messages in

order to reach decision makers, while Dr. Viswanath noted that some of the evaluation research offers insight into this framing. Dr. MacMillan added to this by saying that it is important to bring the decision makers into the process from the beginning rather than planning to disseminate information to them after the process is done. Mr. Gordon posed one possibility of creating an ICT prototype, to brand something quickly and disseminate the message, before scaling up into a full program.

FRAMING ISSUES

Framing the issue is an essential part of building a message for violence prevention. Dr. Rosenberg spoke about challenges that come up in framing violence prevention issues. The challenges he listed included

- Fatalistic beliefs about violence
- The separation of different types of violence into silos
- Disproportionate effects on the most vulnerable with the least influence
- Issues of privacy
- Stigma and a fear of reporting

Speaker Eesha Pandit of Breakthrough spoke about the *Bell Bajao!* campaign. The message in this campaign is carefully framed to push the audience to make a conceptual shift from placing the responsibility for violence prevention on the government to putting that responsibility on individuals, because it allows people to engage with these issues from where they are.

She noted that another key component of the campaign is its effort to use culture to change culture. She said that media, arts, and technology can be used for more than just to improve productivity and disseminate information; they can also be vessels for communicating cultural values, such as human rights. She emphasized that their program “transforms the way people think about domestic violence by pervading the culture in that way.”

Third, she stated, “We really believe that everyone needs to be a part of the solution. . . . Having an intersectional approach to identity is really the core of this work. Asking men and boys to participate in ending violence against women is not only about stopping violence against women and empowering women but also about changing the way we think about community and accountability and identity. It moves us from this us-versus-them model of rights and rights violations.” Thus, this type of framing shifts the paradigm away from a victims-and-perpetrators model into a paradigm about collective and shared responsibility and reimagining a community.

Dr. Carta discussed the paradox that the highest-risk families have the greatest need for effective parenting intervention, but those parents are the ones who are the hardest to keep engaged in a series of home visiting interventions. Given this situation, Dr. Carta and her colleagues created a mobile phone component for their intervention that aimed to teach parents positive ways of interacting with their children in the hopes that the mobile component would increase the participation rate.

Ms. DeCherney discussed the need to frame the conversation around healthy relationships rather than only reacting to a victim or someone who is being victimized in a relationship. Breakout leader Eric Brown of Impact-Games discussed the importance of knowing the audience in order to help frame the conversation.

Mr. McCannon commented that it is important to understand that people are inundated with information, and that the creation of new information is incentivized. However, less effort is put toward translating the information into action or taking something to scale. This is changing, and technology can be part of creating new incentives because of the ability to use more existing information. Mr. McCannon also noted that when framing messages, people need to consider how assumptions can change. For example, assumptions about how long something can take to develop can be challenged in situations where an urgent need drives the creation of a disruptive innovation, so assuming that everything takes time can limit possibilities. On the other hand, rushing to push new products or interventions can backfire when quality improvement, monitoring and evaluation, and adaptation are not included in the design.

BOX 5-1

Key Messages Raised by Individual Speakers

- It is important first to have a deep understanding of the audience and the desired outcome and then to approach the solution technologically, if there is a technological solution.
- Existing self-organized and self-identified communities of people can be used to address gaps or challenges in translating experiences or messaging in order to improve service provision.
- Networks maximize value and power and increase reach; they might also assist in breaking down boundaries and silos. Information and communications technology has the potential to amplify this effect.
- Literacy in the use of information and communications technologies is critical in an information-based society.
- Promoting new media and technological literacy and building human capital could help make accomplishments in violence prevention real, while addressing or diminishing harmful unintended consequences.

Part II

Papers and Commentary from Workshop Speakers

6

Foundations of mPreventViolence: Integrating Violence Prevention and Information and Communications Technologies

In considering the potential usefulness of information and communications technology (ICT) to violence prevention, speakers at the workshop explored the existing structures and processes within their respective fields and assessed any potential overlap between the two. These papers provide the beginnings of a foundation upon which this new integration can be built.

In the first paper, Cathryn Meurn presents a scan of existing ICT applications to violence prevention. Ms. Meurn explores the design and planning of interventions for various types of violence, the gaps that still exist in designing ICT-enhanced violence prevention interventions, and potential needs for monitoring and evaluation.

The second paper, by Mark L. Rosenberg and colleagues, examines the current status of violence prevention, including a discussion of the idea that violence prevention can be addressed from a public health perspective. This paper also addresses current obstacles and needs in violence prevention, and potential avenues for the inclusion of ICT.

In the third paper, Jody Ranck explores the current state of ICT and how ICT might meet the needs of public health and violence prevention now and in the future. He also discusses how ICT affects the means of data collection, program design, and community-based interventions, a situation that could pose both solutions and challenges for violence prevention practitioners.

In the final paper, William T. Riley describes current and potential evaluation methodologies for determining the success of ICT-enhanced interventions. After examining the gap between the time required to perform

traditional evaluations and the speed at which technology changes, Dr. Riley also suggests several adapted methodologies that might be better suited for rapidly changing environments.

THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGIES IN VIOLENCE PREVENTION

Cathryn Meurn

Introduction

Violence is a global problem that crosses cultural and socioeconomic boundaries. From collective to interpersonal to self-inflicted violence, its impact on health is substantial. Violence is one of the leading causes of death worldwide for people between 15 and 44 years of age (WHO, 2002). However, the actual cost and extent to which violence occurs is difficult to measure. Countless violent acts happen out of public view in offices, homes, or even public institutions.

Violence can be prevented, and this assertion has been proven true within the field of public health. Action to prevent violence has been undertaken at various levels, from the local and community level to the international system. Methods have ranged from primary prevention, aiming to prevent a violent act before it occurs, to the tertiary level, which encompasses approaches that focus on long-term care.

The goal of this background paper is to provide a brief introduction to the current and potential role that ICTs can play in the reduction and prevention of violence. This paper by no means offers an extensive study on the intersection of ICTs and violence prevention. There are many ongoing projects, and a deeper landscape analysis is recommended. Furthermore, the use of ICTs in the field of public health is in its early stages. Much of the research cited in this paper can be classified as pilot projects, and, to date, there have been no in-depth measurements of their impacts. Therefore, this paper is intended to introduce the potential of the area and to encourage collective action going forward.

The Technology and the Debate

Technologies such as the smartphone, crowdsourcing tools, remote diagnostics, and other technological innovations have proliferated over the past decade, and many of them have shifted over to mainstream use. With this technological expansion, debate has also arisen concerning the positive and negative impacts that these innovations have within communities and worldwide.

ICT can be defined as a set of technological tools and resources used to communicate, create, disseminate, store, and manage information. These can include video, radio, television, Internet programs, social media platforms, and mobile phones. Distinctions are emerging between “old” and “new” forms of media and technology—that is, between the use of television, radio, and other forms of traditional media that have been employed for decades and newer forms of media, including social media and the mobile phone.

Particularly in the case of the developing world, the adoption of the mobile phone has created a new avenue for combating longstanding problems. With more than 5 billion mobile subscriptions worldwide, phone ownership has exploded. Two-thirds of these subscriptions are in developing countries, and it is predicted that soon 90 percent of the world’s population will be within the coverage of wireless networks. Furthermore, the number of unique users active on social networks is up nearly 30 percent globally, having risen from 244.2 million in 2009 to 314.5 million in 2010 as reported by the Nielsen Company (Grove, 2010). There are more than 800 million users on Facebook; Twitter is estimated to have more than 200 million users; and more video content is uploaded to YouTube in a 60-day period than three major U.S. television networks created in 60 years (Elliott, 2010). Teens are texting at record rates, and areas such as eLearning, remote diagnostics, and mServices are growing steadily.

Despite the hype, these various technologies are simply tools that can be used either for social good or for harm. The same was true for the invention of paper, the printing press, and the telephone, all of which changed the way in which we interact with each other. These innovations all had a positive impact on society, but these tools were also conduits for such negative things as yellow journalism and mass media campaigns against ethnic groups and certain minorities. It is also important to keep in mind that technology is only a small part of any solution.

Today, these new forms of communication and new technologies have led to some fantastic outcomes, as discussed in the next section. On the other hand, they have also elicited unintended adverse consequences in the pursuit of preventing and reducing violence. Trends in cyberbullying, losses in privacy and security, and stories of perpetrators targeting victims through social media sites—all of these must be kept in mind when we speak of using these tools for social good.

Program and Intervention Designs

Collective Violence

Collective violence is perhaps the most visible type of violence and often receives a high level of public and political attention. Whether arising from violent intrastate conflicts that account for the majority of conflicts today, from the flow of displaced persons, from acts of terrorism, or from genocide, the effects of such violence can be immense. Violent conflicts have profound health effects on civilian society via increased mortality, morbidity, and disability. The World Health Organization (WHO) defines collective violence as

the instrumental use of violence by people who identify themselves as a member of a group—whether this group is transitory or has a more permanent identity—against another group or set of individuals, in order to achieve political, economic or social objectives. (WHO, 2002)

With the rise of new media, and advances in and increased access to technology, opportunities exist to prevent some of this violence. One of the most popular types of programs using mobile phones is based on short message service (SMS) messaging, better known as text messages. The most frequent use of SMS has been the use of one-way messaging for educational awareness, such as in Amnesty International's SMS urgent-action appeals campaign in the Netherlands. This campaign raised the awareness of torture victims through text campaigns and in turn enabled the agency to collect "signatures" when immediate action from supporters was necessary (New Tactics in Human Rights, n.d.).

One of the most cited cases of the use of SMS, which exemplified its potential beyond simple awareness campaigns, occurred during the 2007 Kenyan election. Although initial results indicated the opposition candidate Raila Odinga was in the lead, incumbent President Mwai Kibaki was announced as the official victor. Six weeks of violence ensued during which the influential role of mobiles became apparent. Through the Ushahidi platform, those with mobile phones were able to send texts to a specific number to report on human rights abuses and incidents, which were then mapped geographically on a website. This use of both texts and online tools not only enabled the reporting of events in real time but also aided the mobilization of groups to prevent further violent outbreaks (Harvard Humanitarian Initiative, 2011). Other examples of the use of the Ushahidi platform have been during the earthquake in Haiti and, more recently, in the protests in Egypt and the crisis in Libya (Ushahidi, 2011). Nevertheless, it is important to note that this mode of communication can also make it

cheap and easy for others to spread hateful messages to incite additional violence, as happened in Kenya.

Traditional types of ICT, such as phone networks, radio, and television, can also play important roles. Radio and television have been used in many forms since their invention. One project of note that used phone networks was devised by Interaction Belfast, which created a mobile phone network to prevent outbreaks of violence between warring neighborhoods in Belfast. Volunteers in both Protestant and Catholic communities were given mobile phones to enable communication with their counterparts when potentially violent crowds gathered or when rumors of violence started to spread, with the goal of resolving the issue peacefully.

Technologies provide not only increased communication but also increased accountability and transparency. The organization Witness works to use the power of video advocacy by documenting and sharing human rights abuses via cameras. By working with constituents to use video to shed light on certain atrocities, the organization has helped to shed light on the repression of ethnic minorities in Burma and has helped to prosecute recruiters of child soldiers in the Democratic Republic of the Congo.¹ The organization's training includes information on how to use video safely, which is important given the complexities to which this type of intervention can give rise.

An opportunity that deserves highlighting, particularly in the developing world, is the increasing role of the health worker. As task shifting continues to progress in these countries, community health workers can help to draw attention to indications of violence. With multiple programs now using these health workers for community outreach, data collection, and reporting via the use of ICTs and mobile phones, opportunities for leveraging technology for violence prevention exist.

Interpersonal Violence

Opportunities for leveraging technology exist with respect to interpersonal violence as well. This category includes sexual violence, intimate partner violence, elder abuse, youth violence, and child abuse.

Sexual violence Sexual violence is defined as “any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic, or otherwise directed, against a person’s sexuality using coercion” (WHO, 2002). Research suggests that at least one in four women in the United States has experienced sexual violence (National Center on Domestic and Sexual Violence, n.d.). Sexual violence is a universal problem, and it

¹ For more information, see www.witness.org/about-us/witness-background.

can have deep impacts on both physical and mental health, including injury, stigma, and even death. One regularly noted aspect of this type of violence is the lack of information surrounding the magnitude of the problem. Data tend to be limited because many women do not report the violent act or seek medical services immediately afterward. Further complicating matters, data come from varying sectors, such as clinical settings, nongovernmental organizations, and the police.

SMS and geocoding can be applied to the prevention of interpersonal violence in much the same way that it has been applied to collective violence, as in the example of the aftermath of the election in Kenya. In Egypt, Medic:Mobile, a text messaging–based system, was used in combination with the Ushahidi platform in a project called Harassmap. In Egypt 83 percent of women are exposed to sexual harassment (Heatwole, 2010). The basic idea behind the program is that if a woman is sexually harassed she can send an SMS to the Harassmap number with corresponding details of the incident. This information will then be mapped on the website, allowing “hot-spots” of harassment to be identified. The project also provides help and information for victims (Heatwole, 2010). This program aims to help break through the silence that surrounds this issue.

Another program aiming to break through cultural barriers is the Mobile Cinema Foundation. This program travels to various soldiers’ camps in the Democratic Republic of the Congo and uses short films to expose soldiers to the consequences of rape. The goal is to educate the soldiers of the Congolese National Army through victim’s testimonies and discussions that are held after the viewing of the film. This form of digital storytelling can be a powerful tool both for empowering the victims and for educating offenders on the effects their actions can elicit.

Other programs are based on confidential hotlines, such as the National Sexual Assault Hotline in the United States, which victims can call for help. In a related use, in 2007 the International Organization for Migration partnered with Ukrainian mobile phone service providers to allow victims to dial a certain number to receive information and advice on migration and trafficking issues (Verclas, 2007).

Often it is an intimate partner that commits sexual violence, making sexual violence dovetail closely with intimate partner violence. Thus many interventions can help with both areas, including programs that promote gender equality, additional awareness campaigns, and microfinance programs and support networks for women.

Intimate partner violence Intimate partner violence is one of the most common forms of violence against women. This category refers to any “behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship” (WHO, 2002). Intimate

partner violence occurs throughout the world and crosses social, economic, and religious divisions. Women who are uneducated, low income, and lack support are most likely to fall victim to this behavior (WHO, 2002).

Conventional forms of technology and media have been used to prevent intimate partner violence. Examples include hotlines and awareness campaigns through both traditional and new media. *Bell Bajao!*, or *Ring the Bell!*, is an Indian program that provides a series of public service announcements urging men and boys to stand against domestic violence. The idea is that if one is hearing violence in progress, one should ring the bell and ask a simple question, such as “Can I borrow a cup of sugar?” It is likely the perpetrator recognizes that the person has heard the violence, which will interrupt the action. The organization also hosts a blog for victims to voice their experiences and access information and guidance (*Bell Bajao!*, n.d.).

In the United States the company Liz Claiborne initiated a Love Is Not Abuse program, which provides information and tools for men, women, and children (including teens) to learn more about the issue of domestic violence. In August 2011 it launched the Love Is Not Abuse iPhone application, which helps teach parents about teen dating abuse and demonstrates how technology, such as text messages, e-mails, and phone calls, can be conduits for committing abuse. Parents receive real-time communication that mimics the abusive and controlling behaviors teens might face in their relationships.² This program illuminates the negative role technology can play.

On the other hand, texting can be a cheap and effective way to prevent intimate partner violence, as demonstrated by a case in Ohio in which a texting service allowed victims to report incidents silently via a simple SMS message and to make contact with a crisis intervention worker or the police without making an actual phone call. The total cost to set up the program, which used the Medic:Mobile platform, was about \$380. FamilyFirst, as it was termed, processed between 6,000 to 8,000 texts per month during its first year and helped convict 18 abusers whose victims were able to report confidentially (Papillon, n.d.).

Technology can also play a role in helping to transform some of the underlying causes of intimate partner violence. Helping women gain access to both economic and societal support, such as is done through the Village Phone project by Grameen Phone Foundation, can lead to positive outcomes. The idea behind the Village Phone model is to provide a small loan and a “business in a box” to enable an aspiring entrepreneur to provide customers with access to a mobile phone and to sell mobile airtime. In March 2011, the program reports, 85 percent of the 6,876 entrepreneurs

² See <http://loveisnotabuse.com/web/guest/iphone>.

who had been recruited into the network were women (Grameen Foundation, n.d.). This idea of women having access to a mobile device can also be found in the report *Women & Mobile: A Global Opportunity*, published in 2010. This report states that 9 out of every 10 women surveyed who had a mobile phone felt safer, and 85 percent felt more independent (Vital Wave Consulting, n.d.). With the rise of mobile payments and mobile money, or mFinance, and with increasing access to mobile devices, women are beginning to gain more economic independence in areas where they have traditionally been limited.

Finally, social support is important for women who have found themselves in domestic violence situations. In the developed world, such support may be derived from in-person working groups or community groups as well as from social media platforms and the Internet, which allow women to connect and share their experiences. In the developing world, however, mobile phones can play a unique role in garnering this type of support. In Senegal, the organizations Tostan and UNICEF launched the Jokko Initiative. Using SMS technology, the program allows community members to send out messages on various topics, including information on vital events, service announcements, and income-generating activities (Vital Wave Consulting, n.d.). This allows women the opportunity to promote their goods and to provide information about events they organize. Not only does this provide a chance for women to connect with each other and provide support, but also the program is also tied into Tostan's literacy and math program.

Elder Abuse

Elder abuse has received the least public attention among the various forms of violence, having historically been defined as a "private matter." Today it is seen as an important problem that is likely to grow because of the rise in aging populations in many countries (see Figure 6-1). Elder abuse can be "either an act of commission or of omission," and it may be either intentional or unintentional (WHO, 2002). The elderly can experience violence physically, sexually, or psychologically, and they are also susceptible to economic abuse.

Again, the use of hotlines and the sharing of information via the Internet are integral to dealing with this type of violence. The National Center on Elder Abuse has state resources such as helplines and hotlines listed directly on its website in addition to listing where to report nursing home abuses and providing information about Adult Protective Services. There are also National Elder Abuse Awareness public service announcements that call attention to the issue.

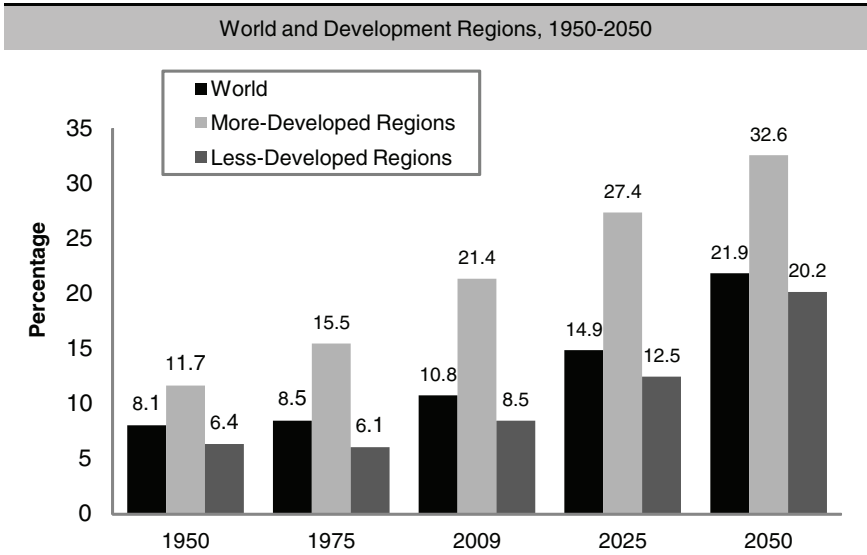


FIGURE 6-1 Percentage of population aged 60 or over.
SOURCE: United Nations, 2009.

Some sources state that a key prevention tactic could be the further use of intervention programs in hospital settings, which are currently lacking because of an absence of training in this area (WHO, 2002). Recently there has been an increase in the use of electronic checklists within the hospital setting concerning surgical procedures. Certain elements, such as signs and symptoms of abuse, could be integrated into these checklists. As tablets and electronic records become more common, a unique opportunity will appear to progress to a more holistic approach in health care. Furthermore, with the ability to train remotely, technology can be used to keep those in the health care industry abreast of the proper diagnosis of elder abuse and what to do about it.

The role of social media should also be mentioned. Social media platforms such as Facebook and Twitter, along with communications tools such as Skype, allow those traditionally cut off from the outside world to connect with both family and the wider community. According to a 2009 study by AARP, about one-third of people 75 or older live alone (Clifford, 2009). MyWay Village, a social network installed in nursing homes, allows residents to connect with new people and share their memories and experiences. Training sessions make it easy to pick up, and residents can send messages, play games, and, most important, not feel that they are isolated (Clifford, 2009).

Youth Violence

Youth violence is closely linked with other forms of violence, because youths who are exposed to other types of violence have an increased propensity toward committing violent acts themselves. Adolescents and young adults are often both victims and perpetrators of youth violence. The WHO says that violence involving youth greatly adds to the costs of welfare and health services, decreases productivity, and “undermines the fabric of society” (WHO, 2002).

Technology, particularly social media, is frequently thought to have a negative effect on youth. From online bullying to violent YouTube videos and video games, the various technologies are often cited as leading to increased violence among youth. The type of harassment that occurs through e-mail, instant messaging, and websites or via the mobile phone has even been given a name: “electronic aggression” (Hertz and David-Ferdon, 2008).

Regardless of the potential harm, youth are increasingly using social media, and there are ways in which it can be used positively. The increase in use of mobile phones by teens makes it possible to reach each one on an individual basis. A program in South Africa called loveLife launched a Web-based mobile program called MYMsta. This mobile social network allows the youth population to access information about HIV, employment opportunities, scholarships, and tips to improve their lives (Ngcobo, 2010). It also allows them to talk about concerns relating to sexual health and get responses from trained counselors.

loveLife employs other services to reach youth, such as its call-back service, which offers users free mobile connectivity to counselors. A user sends a message to the service saying, “Please call me,” and the automated system calls back and links the caller to a trained counselor.³ A similar program exists in the United States. The National Dating Abuse Helpline recently made its services available via text message by providing teens who text “loveis” to 77054 with help from trained peer advocates.⁴

In another effort to reach out to teens, particularly in cases of intimate partner violence or dating violence, Futures Without Violence developed the online campaign That’s Not Cool. The campaign encourages teenagers to decide for themselves what is okay and what is not okay in their relationships through the use of videos, interactive games, and an online forum for teens to share their stories and receive advice. That’s Not Cool recently launched an avatar application that lets teens create their own personalized mobile phone characters in response to animated videos addressing digital

³ See www.lovelife.org.za/what/call_me.php.

⁴ See www.loveisrespect.org.

dating abuse. Using text-to-speech technology, the character speaks the teen's response, and the result is a speaking avatar video that can be posted and shared with peers on Facebook and Twitter.⁵

To deal with youth gangs, an innovative partnership involving the Chicago-based organization CeaseFire had been developed that combines science and street outreach to track where violence is heating up and to interrupt in order to calm the situation down. With Ushahidi, Medic:Mobile, and PopTech, the project PeaceTXT will look at how mobile tools, such as those used by other crisis-mapping organizations, and mobile messaging can accelerate CeaseFire's existing success in decreasing deaths (Meier, 2010).

Child Abuse

Child abuse includes infanticide, mutilation, abandonment, and other forms of physical and sexual violence (WHO, 2002). It is a universal problem and often increases the likelihood of adverse health outcomes in adulthood. There is also a cultural aspect to child abuse because the standards and expectations of proper parenting can vary in different countries and societies. More often than not, the term "technology" combined with the idea of child abuse conjures up images of child pornography on the Internet and other negative ways in which recent innovations have harmed children. But technology also offers unique ways to prevent this type of abuse.

One underlying risk factor for a parent committing child abuse is a lack of education concerning a child's development (WHO, 2002). There has been a recent rise in health text messaging programs geared toward reaching traditionally underserved groups with important health information. For instance, in the United States the Text4Baby program piloted by the Department of Health and Human Services (HHS) is a public-private partnership that provides pregnant women and new mothers with free health text messages. The messages range from tips on how to care for a baby to information on what to expect during pregnancy. Evaluations of the program are scheduled to be made available in 2013, and the model is already being taken abroad with interactive voice response technology, which relies on voice instead of text. Another text program that HHS is expected to roll out next year is Text4KidsHealth. The Health Resources and Services Administration (HRSA) will develop text messages on nutrition and physical activity to be used for future programs targeting the parents of children from 1 to 5 years of age (HHS, n.d.).

The mobile phone can act as a reporting tool for cases of child abuse. As seen with regard to collective violence, there is power is capturing

⁵ See www.loveisrespect.org.

images of typically ignored issues and bringing them to light in the mainstream media. Using one's mobile phone in combination with community reporting is an easy way for stories to hit the Web that will be shared across masses of people through YouTube, blogs, and other social media channels (Nyirubugara, 2010). One can do a simple Google search online and find numerous online campaigns, blogs, and other videos calling for action and for attention to the issue of child abuse.

The traditional hotlines available to children, such as the National Child Abuse Hotline that is run via Childhelp, offer another approach to assistance and prevention. Childhelp also has information on its website to help children determine if they are being abused and what actions to take.⁶ Also, because health professionals play a key role in identifying any signs of child abuse in their patients, incorporating such identification as part of their training—or including information and prompts in the tools they use, such as checklists or reminders—could help prevent additional cases of abuse.

Self-Directed Violence

Violent acts that a person inflicts upon himself or herself are classified as self-directed violence. This includes both suicidal behavior and self-abuse. In the United States more than 35,000 people commit suicide every year, not including suicide attempts or self-abuse. Annually more than 1 million people attempt to take their own lives, and approximately 60 million Americans experience a mental health disorder, including post-traumatic stress disorder (PTSD) and depression, which can be risk factors for self-directed violence (National Alliance on Mental Health, 2010).

The WHO says that proper diagnosis of mental disorders is important, as is support for those who are contemplating destructive acts. Again, Telehelp lines and call centers are influential. Numerous lifelines, hopelines, and other crisis services are available. Opportunities now also exist for easy access to information and therapies online. The rise of online support groups also allows for those who are suffering to reach out and connect with others, which helps them understand that they are not alone. Awareness and access to services permits many to move past the social stigma often attached to depression and suicide.

There has been some debate over the creation and use of suicide prevention applications on mobile platforms. To have the applications verified and appropriate for the user, in addition to the possibility of producing any impact, is challenging. The QPR Institute released an Android app that turned the book *The Tender Leaves of Hope: Helping Someone Survive*

⁶ See www.childhelp.org.

a *Suicide Crisis* into a digital booklet in hopes of reaching more families and individuals.⁷ Some mobile applications let users track their moods and experiences, providing supplemental information for them as well as for their therapists. An app called “mobile therapy” has a “mood map” that pops up on a user’s screen that allows the user to indicate how he or she is feeling. The app responds by offering “therapeutic exercises” ranging from “breathing visualizations to progressive muscle relaxation” as well as ways to disengage from a stressful situation (Trudeau, 2010).

Again, there are risks involved. Technology and media are often blamed for suicide, particularly teen suicides related to cyberbullying. It is difficult to determine how great a role media and technology play in these deaths. Some instances become sensationalized, such as the 2008 case of a Florida teenager who posted online a live-stream video that showed his suicide, as he was encouraged by others he was chatting with online at the time (Friedman, 2008). With more than 87 percent of teens (ages 12 to 17) using the Internet and 19 million teens sharing their lives through text messages, this is definitely a cause for concern. As much as mobile phones, chat rooms, and other forms of communication can help teens work through their issues, they can also push teens in the opposite direction.

Overarching Gaps and Trends

From the program implementation cases above, several overarching gaps and trends begin to emerge, many similar to other fields using similar tools. In this section we will examine some of these gaps and what can be done about them.

Data Collection and Surveillance

A common problem in the field is the collection, analysis, and distribution of valid and useful data. As stated in the first WHO *World Report on Violence and Health*, countries around the world are at different stages of capacity for collecting data (WHO, 2002). There is a lack of quality and uniformity in the data. In addition, the problem of only knowing “the tip of the iceberg” remains, as research indicates many instances of violent acts remain unreported.

The use of ICTs can create certain efficiencies in data collection as well as improving its quality and associated information flows (Ranck, 2011a). Currently, in part because of the need for donor reporting, data collection is fragmented and siloed. Opportunities to increase the collection of and access to data and health information have increased, in large part because

⁷ See <https://market.android.com/details?id=qprinstitute.crisis>.

of the use of mobile phones in the developing world. Electronic capture of data can decrease human error and increase the speed of analysis.

Increasingly, people in the field of ICTs and their uses have been talking about the use of unique identifiers, such as biometric data, and the use of electronic health records to track patients has become increasingly commonplace. This type of data capture and storage can create better coordination across health systems and allow them to share data horizontally (Ranck, 2011a). Having access to broader data could lead to different actions and outcomes. Furthermore, the use of ICTs and mobile devices could aid health professionals, from doctors to community healthcare workers, in accessing and retrieving information.

EpiSurveyor and Commcare are examples of tools that have just started to be used in this area. EpiSurveyor allows anyone to create an account, design forms, and download the forms to a mobile phone in order to collect data for free. Commcare is free and open-source software that provides community healthcare workers with aid in case management through their mobile phones. The software contains registration forms, checklists, danger sign monitoring, and educational prompts and is designed to help manage the enrollment, support, and tracking of all of a community health worker's clients and activities. The data that are collected are sent to the cloud for easy analysis and retrieval.

Another project, ChildCount+, is a platform designed and used by the Millennium Villages Project. ChildCount+ uses SMS to assist and coordinate the activities of community-based healthcare providers such as community health workers. These workers can use text messages to register patients and report on their health status. This information is sent to a central Web-based dashboard that can then provide a real-time view of the current status of the community.⁸ There are also numerous other software kits being used in the developing world, such as EpiInfo, OpenXdata, Open Data Kit, Open Dream, Open MRS, OpenELIS, Open-Clinica, District Health Information System, Managing News, Sahana, Geo-Chat, Riff/Evolve, Mesh4x, Ushahidi, and EpiDefender.

Research and Evaluation

Along with the needs listed above for data collection and surveillance, there is also a lack of common metrics for monitoring and evaluation, especially for programs using ICTs and mobile devices. There are serious insufficiencies in rigorous evaluation of the many pilot programs that are using these new mediums of communication and determining their overall impact.

⁸ See www.childcount.org.

A unique advantage of ICTs is that they offer the possibility of real-time evaluation. Furthermore, linking data from one program to others could lead to a clearer view of where the field is and where it is heading. This could have important effects. However, issues remain, including a lack of understanding of the capabilities around the use of ICTs, a lack of common data standards that support interoperability, and the need to develop information-sharing policies (Ranck, 2011a). Conversations concerning the “enterprise architecture”—the “plumbing” of systems—are in the early stages. We have yet to hit a point where projects are no longer functioning in siloes and where sharing data leads to a leveraging of each other’s results. “Interoperability,” or the ability to share data quickly and accurately across different application and through the health system, will be an important property to develop in the coming years if the full potential of ICTs and mobile devices is to be realized.

A final issue related to sharing data across silos is the problem of privacy and security. Concern about the ability of users to retain anonymity, especially given the nature of collective violence or intimate partner violence, is understandable, and such concerns should remain at the forefront of any project implementation. Data ownership is another issue that raises various concerns, particularly as projects strive for scale in implementation or begin to share data between programs or with the health system at large.

Dissemination and Implementation

ICTs can play a pivotal role in the implementation of violence prevention programs throughout the program and intervention design section. Multiple modes of telecommunications exist, but the mobile explosion both within and outside the United States provides additional opportunities for impact (see Figure 6-2). Common elements of program implementation can include the use of electronic forms and checklists, remote training for healthcare professionals, the use of crowdsourcing and social media platforms, and the use of SMS and video or television.

A larger issue remains, however, which is the exchange of information and lessons learned throughout not only the violence prevention community but also the public health field at large. Online platforms can aid in the dissemination and sharing of knowledge. Although not yet widely instituted, GHD Online and the mHealth Alliance’s Healthunbound platforms offer a peek into what is possible. With the rise of webinars and remote access to meetings, and with the ability to share presentations online through websites such as slideshare, avenues for information sharing and collaboration have increased.

Finally, institutions should not overlook these platforms for supporting their advocacy campaigns and their ability to raise funds for the

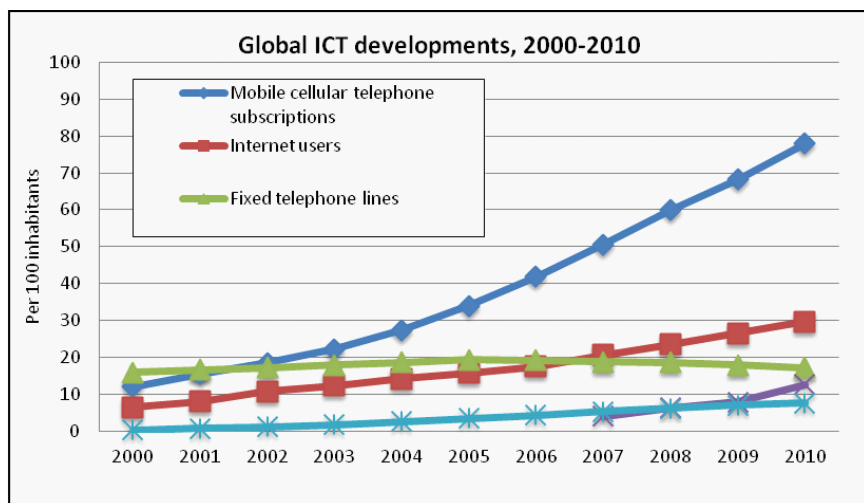


FIGURE 6-2 Global ICT developments, 2000–2010.
SOURCE: ITU, 2011.

implementation of programs. Multiple programs now use e-cards and on-line petitions or request advocates to share program information with their social networks. Text campaigns have become particularly popular over the past few years, allowing individuals to donate to certain causes via their mobile phones. Eight days after the earthquake in Haiti in 2011, the American Red Cross had raised approximately \$22 million via text messaging (Heath, 2010). Donors texted the word “Haiti” to 90999, and a \$10 pledge was automatically added to the person’s phone bill.

Recommendations

1. *Undertake a full-landscape analysis of the use of ICTs in violence prevention.*

Time and resources should be dedicated to a full-landscape analysis on the intersection between ICTs and the field of violence prevention, with particular emphasis on the mobile phone in relation to the developing world.

2. *Learn from other fields and each other.*

The mServices and mHealth spaces in particular have a lot to offer in terms of uses of new innovations and lessons learned. Conversations about the employment of electronic health records, interoperability, and the development of common metrics to evaluation are being explored. Furthermore, the types of violence outlined in this paper are interrelated

and interdependent in various ways. Using new platforms for information sharing and collaboration as well as sharing data and lessons learned could greatly push the field forward.

3. *Develop common metrics for monitoring and evaluation.*

With the ever-pressing need to know if these technologies are making a positive impact, the development of common metrics for monitoring and evaluation is important. With the ability for near real-time analysis of data, and given the infancy of this field, collaboration on metrics and the evaluation of programs will be vital for knowing what works and what does not.

4. *Further explore privacy issues.*

Given the sensitivities that surround certain types of violence, such as intimate partner violence, the need for anonymity is of utmost importance. Issues concerning user privacy, the sharing of data, reporting, and so forth need to be further explored. The technologies themselves must be investigated to make certain that they are not allowing sensitive information to be leaked to a wider public, for example via GIS mapping or forums on the Internet.

5. *Address development factors—move beyond intervention.*

Emphasis must be given to many of the underlying development factors that can lead to the instigation and continued perpetration of violence. Factors such as poverty, lack of access to the health care system, lack of access to education, and economic inequality can make any person or society ripe for violence. ICTs can be pivotal in addressing these issues, as with the use of *m*Finance to address poverty or with community health workers using computers or mobile phones to help expand access to health care and education.

**THE STATE OF GLOBAL VIOLENCE PREVENTION:
PROGRESS AND CHALLENGES**

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The field of global violence prevention has made some tremendous advances in the past 35 years. In some very important ways, however, it remains “stuck,” facing a number of serious obstacles, some that are generic for global health and others that are unique to the field of violence prevention. This paper sets the stage by describing some of these advances and then presenting the obstacles in order to explore whether ICT—including the new social media—can inspire ways to surmount these obstacles.

Perhaps the most important advance the field has made is to have helped people understand that violence is not inevitable, that it is not just an unavoidable aspect of daily life, and that it is not just one aspect of the existence of evil in this world. The importance of this advance can be seen in the story of smallpox, a disease that for centuries killed tens of millions of people every year. For many people, smallpox was seen as a recurring and unavoidable plague—until it became the first and the only human disease that has ever been eradicated (Foege, 2010). In 1806 President Thomas Jefferson wrote to congratulate Edward Jenner on his discovery that inoculating an individual with cowpox vaccine could confer immunity to smallpox. Jefferson told Jenner that within a few years his discovery would make smallpox a disease known only to history. It took a few more years than Jefferson thought. In 1973 Dr. Bill Foege was sent to India, where there were 87,000 cases of smallpox and the situation appeared quite hopeless. Foege shifted the strategy from mass immunization to the containment of outbreaks by vaccinating only those within or exposed to infected villages. This led to the eradication of smallpox in India and then the rest

⁹ One of the authors is a staff member of the World Health Organization. The authors alone are responsible for the views expressed in this publication, and they do not necessarily represent the decisions, policy, or views of the World Health Organization.

of the world. Smallpox eradication was the holy grail of global health, and this was an extraordinary achievement.

Sometimes tremendous leaps are made with a disruptive innovation; smallpox eradication was achieved when the containment strategy replaced mass immunization. The Swedish strategy for eliminating road traffic deaths was inspired by the eradication of smallpox. In *Vision Zero*, Claus Tingval put forward the idea that road traffic injuries are not “accidents”—not unpredictable and unpreventable acts of fate—but rather are very predictable and preventable events, and he suggested that we do not have to accept any number over zero. He was at first ridiculed for this idea, but now Sweden is well on its way to achieving this goal, and the European Union has adopted the *Vision Zero* goal for 2050. The idea that violence can be prevented is a similar sort of paradigm shift that can change the future.

The substantial changes that this paradigm shift brought about can be seen in the area of child sexual abuse. This was a problem to which the response used to be denial until it happened, and then perpetrators were sent to jail and victims to therapy. However, Fran Henry, through Stop It Now, helped to change the paradigm and demonstrated that identifying people at risk for perpetration and providing them help could actually *prevent* abuse from occurring. She made the case for prevention, and it has now become commonplace for the public to expect that preventive steps be taken. The failure to prevent child sexual abuse associated with the Catholic Church has provoked huge protests, and the most recent scandal involving a football coach at Penn State resulted in high-level firings. These are the results of a change in the paradigm—of a new and widespread belief that child sexual abuse can and must be prevented. Many believe that media attention to the Penn State case contributed to the response. This raises the possibility that change happens more quickly when the whole world is watching and suggests that ICT can help to spread the notion that violence is preventable and can accelerate positive change.

Significant Progress

Significant progress has been made in making it clear that violence is not “evil in the world” through the clarification of a definition of violence developed by the Centers for Disease Control and Prevention (CDC) and the WHO. The agencies have defined violence as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation” (WHO, 2002). The agencies have also helped to identify specific categories of violence: child maltreatment, intimate partner violence, youth violence, collective violence, sexual violence, elder abuse,

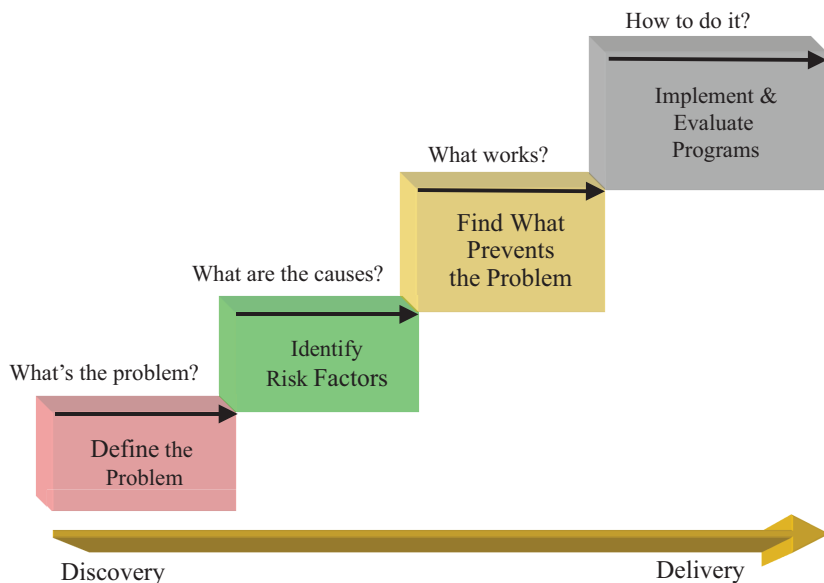


FIGURE 6-3 CDC Public Health Model.

SOURCE: CDC, 2008.

suicide, and self-directed violence. And they have helped to make substantial progress in each of these areas by asking and answering four questions: What is the problem? What are the causes? What works to prevent it? How do you do it? (Figure 6-3). We can see substantial progress has been made in answering each of these questions.

Progress Has Been Made in Achieving a Better Understanding of the Problem

We have developed a substantial science base ranging from knowledge generation (research) and knowledge integration to knowledge dissemination and knowledge application (delivery). We have demonstrated that the burden of violence is large and truly global; there are an estimated 1.5 million deaths each year, with more than 90 percent of the burden born by low- and middle-income countries. We also now understand that the burden of violence is exacerbated by its impact on other health and social problems. Exposure to violence increases the risk of mental health issues (e.g., depressions and anxiety) and physical health problems (e.g., diabetes, heart disease, and cancer) across the lifespan (Repetti et al., 2002). Exposure can also compromise cognitive development as well as the social development of communities and nations (WHO, 2008). Most important,

we have generated important knowledge about what works to prevent violence (Rosenberg et al., 2006; Mercy et al., 2008; WHO, 2010), although we have much to learn about how this can be applied in low- and middle-income countries.

We Also Have Made Progress in Understanding the Causes and Connections Among Different Types of Violence

There are identifiable risk factors and protective factors for each type of violence, many of which affect more than one type of violence, e.g., alcohol-related, child maltreatment, and exposure to violence (Rosenberg et al., 2006). We have learned that different types of violence are connected in many ways. A cycle of violence can begin, for example, with child neglect at birth, leading to hypervigilant children who are less likely to be calmed and more likely to participate in youth violence, and then intimate partner violence, elder abuse, and suicide when they get older.

We have a much better understanding of how to implement violence prevention programs and interventions. We have learned the value of collaboration among different sectors and disciplines, and we have seen the value that is added when police and public health, instead of fighting for control, work to collaborate effectively (Rosenberg et al., 2010). We have seen the important role that advocacy groups, often led by survivors, can play in program design and delivery. Advocacy groups have made substantial progress in many areas of violence prevention as they have expanded from treatment only to treatment and prevention, with prevention and treatment components working together rather than competing for funds. The place of public health in violence prevention has been well established, with the CDC and WHO providing leadership. The WHO has adapted the CDC model for use around the world. The organizations' success is reflected in a substantial worldwide demand for technical assistance for violence prevention, with 44 countries around the world receiving WHO technical support as of September 2011 (A. Butchart, personal communication, 2011). The institutions that work in the field of violence prevention have also been strengthened: The WHO established a growing network of officially appointed Ministry of Health focal points for violence prevention, with a global total of more than 130 focal points in 2011.

The Challenges Before Us

But in some important ways we are still stuck. In fact, we are still stuck getting answers to the “four questions”:

1. *What is the problem?* There is much more work to do in overcoming the sense of fatalism that pervades so much of our thinking about violence, in countering the notion that violence is an inevitable part of human life and thus not preventable. We also need to overcome the separation of different types of violence into silos, so that researchers and practitioners in different fields of violence prevention can benefit from understanding the common roots and interconnections among different types of violence across the lifespan. We need more resources for a better understanding of the social and economic determinants of violence. One consequence of these root causes is that violence affects the most needy, poor, and vulnerable disproportionately but they do not set the spending priorities. There is still a need for more interdisciplinary collaboration. Many people still do not believe that violence is really a public health problem, but instead feel that it “belongs” to criminal justice. We need to overcome the “privacy ruse”—the belief that interpersonal or self-directed violence is a family affair and that what happens in the family (or nation) stays in the family (or nation). Stigma and shame keep people and countries from reporting many kinds of victimization, such as rape. Nations do not want to stigmatize themselves by saying they hurt their children, their women, their elderly, or themselves.

We are also hindered in our understanding of violence prevention because we use the wrong calculus to identify costs and benefits. Traditionally the biggest threats to our own health have been traditional infectious diseases, such as smallpox, polio, MDRTB, HIV/AIDS, and cholera. Most people do not realize that the well-known philosopher Martin Buber was really the first philosopher of surveillance. His work tells us that there are two types of surveillance. The first is “I and IT surveillance,” which follow the principle, “My country is at the center of the universe, and I relate to others only insofar as they contribute to my own little agendas or pose threats to my own health.” The second type of surveillance is “I and THOU” surveillance: “We flourish best when we treat others with respect, care, and equality. We add value to this global human endeavor by understanding the needs and contributing to the lives of others. We are compassionate” (Buber, 1923). The International Health Regulations look at I and IT surveillance, taking account only of those conditions that pose a direct threat to the security of other countries. But if we let this guide our efforts, then we fail to account for the costs to the people who suffer in the developing world from interpersonal and self-directed violence because this is not seen as contagious and importable into our own countries. Using “I and It” surveillance will mislead our efforts in formulating policy and setting our priorities if we fail to see that interpersonal violence is intimately connected to group violence and in the end it will pose a threat to our own security.

ICT may help facilitate “I and THOU” surveillance by contributing to the breakdown of the walls and borders that separate us as residents of

countries. They open whole new possibilities for conducting surveillance and open up the participation of many new groups and types of people to the process of surveillance, to analysis, and to the application of surveillance data.

2. *What are the causes?* Positive relationships are crucial for violence prevention. There is much more work to be done in understanding how to improve relationships and break the cycle of violence. Additionally, there is a particular risk that faces all of us: becoming disconnected while believing that we are becoming more connected. There is a risk that increased reliance on indirect communication methods such as cell phones and e-mail may diminish direct personal communications and thereby make it more likely that violence will be employed against someone whose face and persona are not known. Thus, we must also be cognizant of the limitations of these new technologies and realize that they may also be used to cause or facilitate violence.

3. *What works to prevent it?* Although much progress has been made in understanding what works to prevent violence, we lack sufficient proof of effectiveness for many interventions in low- and middle-income countries, and, without the proof of effectiveness, donors do not want to invest in preventive interventions. Ideally we should be able to provide a short list of specific interventions or “best buys” that have been proven to be effective and are ready for application in developing countries. However, few interventions have been implemented in developing countries with the capacity to evaluate the outcomes and collect the data needed to measure cost-effectiveness. This is a vicious cycle because without the necessary investment, we cannot develop the evaluation capacity needed to demonstrate effectiveness. The strongest case possible must therefore be made for investing in building the capacity to take interventions that have proven effective in developed countries and systematically implement and evaluate them in developing countries (WHO, 2008). What role can new information and communications technologies play in preventing violence in low- and middle-income countries? These technologies may enable us to accelerate progress in finding viable and effective strategies in low-resource environments.

4. *How do you do it?* One fundamental obstacle to progress is the absence of commitment by decision makers to enact solutions and try ideas. This field is markedly under-resourced. The consequences of this include an intense rivalry among organizations that compete for the same limited pool of dollars and a lack of resources to build the violence prevention foundations that, at a country level, are required to ensure that prevention activities are sustained over time. We need to overcome skepticism about the feasibility of delivering complex social interventions in resource-poor settings, and we struggle with the large time lag between prevention program delivery and reduced rates of violence for interventions such as parent

training and life skills training. Those working in global violence prevention also have to deal with the significant cost of preventive interventions. In the current economic climate, with increasing cut-backs in foreign aid, people want to stick with what we have already started (i.e., programs dealing with AIDS, tuberculosis, malaria, and infectious diseases) and not get into something that is new and therefore a lower priority. We also do not know how to reach out to high-risk groups. In addition, we have a lot to learn about scalability—we can do demonstration projects, but we have had little experience with scaling up programs that work. We also need to do a better job at integrating the different phases of the public health model. Ideally, surveillance, evaluation, and response would be closely linked. Instead, we collect the data, analyze it, and then 3 years later perhaps it is applied or used. We have not developed the capacity to implement solutions to overcome the many bottlenecks that occur here. This is a universal problem for global health and one where ICT may be of great help.

INFORMATION AND COMMUNICATIONS TECHNOLOGIES AND THE FUTURE OF GLOBAL HEALTH

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Introduction

The past decade has witnessed a remarkable and truly global technology revolution unlike virtually any other. The mobile phone has placed more computing power in the hands of more people than even telecommunications experts in the 1980s thought would be possible. An executive from AT&T predicted that the global market for cell phones would peak at approximately 100,000. But by the end of 2011, according to the International Telecommunications Union, almost 6 billion people had access to mobile phones (ITU, 2011). The average smartphone today contains more computing power than all of NASA's computing resources at the time the first man was sent to the moon. Social media is an important driver of this growth.

In contrast to most public health practitioners' perspectives, Africa is one of the fastest-growing markets for Facebook. In fact, Facebook is becoming an important driver of Internet growth in Africa, because it has now become the leading site visited by Internet users on the African continent (Jidenma, 2011). Although Africa has become the continent with the fastest growth in Facebook use, there are important disparities in access and growth rates. Nevertheless, the developing world has rapidly become a major focus of the marketing departments of most major social media

platforms, such as Twitter, Facebook, and Google. The role that these platforms played in the Arab Spring of 2011 can certainly be overstated, but there is little denying that access to social media platforms that are essentially many-to-many self-publishing platforms, mostly accessible by mobile phones, is having a major impact on the way ideas are communicated, new knowledge is generated, and, as we will soon see, new research on the understanding of human behavior is being conducted.

Global health experts can no longer afford to view social media as trivial playthings of adolescents. These are major platforms with which to engage the public and to innovate in areas such as civic engagement, public policy, and technology development, and they are transforming the way we think about education, technology development, the media, politics, social movements, and science. These are all critical dimensions of public health, more largely, and for developing the next generation of global violence prevention tools and policies.

In this paper I will outline some of the most important technological innovations involving the mobile and social media platforms and provide some preliminary examples of the key lessons and impacts that these tools have had. There have been many early research studies on mHealth and social media tools, but these often suffer from small sample sizes and various other methodological shortcomings, so there are relatively few robust evaluations of the technologies (Mechael et al., 2010). In the discussion that follows, I will focus on innovations in mHealth and social media and how these have created the enabling conditions for open data, crowdsourcing, citizen science, new visual cultures and advocacy, the gamification of health, and open innovation, all of which can lead to a new approach called “open health.” I will conclude with some observations on how these may lead to new strategies for global violence prevention efforts.

Social Media: Amplifying the Self and New Forms of Cooperation

Since the early 2000s, social media tools have grown dramatically in use and scope, becoming mainstream communications tools that have helped foster what some have termed “new economies and cultures of sharing.” From Flickr to Facebook, the demographics of the adoption of these tools have grown in unexpected ways, and they have become important, if not central tools, for companies, nongovernmental organizations, and governments to share information and communicate. Early on, platforms such as Flickr proved to be virtual spaces where acts of resistance to gender norms could be acted out by youth; for example, in the Arabian Gulf states, where public spaces are strictly segregated by gender, teenagers used Flickr as a space for interacting across gender lines. Such examples illustrate how the use of many-to-many communications platforms can take on distinctly

political tones. The Arab Spring was just one of many instances in recent history in which mobile devices and social media were used to amplify voices of dissent and tell compelling oppositional narratives in public life. The Orange Revolution in the Ukraine and the toppling of Philippine president Joseph Estrada are further examples of the use of SMS or text messaging to coordinate resistance movements or what Howard Rheingold has termed “smart mobs” (Rheingold, 2003).

In January 2008 one of the most powerful examples of the use of social media and mobile devices and of the new forms of cooperation that they entail occurred. During the Kenyan electoral violence, bloggers critical of the national government’s media blackout created an open-source platform for crowdsourcing information about both violence and counter-violence via SMS messages that could be mapped on the platform called Ushahidi (Swahili for “Testimony” or “Witness”). Blogger Ory Okolloh suggested the need for a platform for information gathering, and a network of bloggers created the site in approximately 1 week. Incidents could be reported via mobile devices using a short code and were then verified by local groups on the ground and mapped in order to provide a visualization of the violence. Today this platform is used globally from Russia to Washington, DC, by groups involved in a variety of humanitarian and human rights issues. In its wake, a number of similar tools have been developed to raise awareness of gender harassment in Egypt (HarassMap) and violence against girls; in one example, a reporting tool similar to Ushahidi was even merged with open data initiatives in order to map murder rates (Evans, 2011). Social media have been a major driver in the move toward greater transparency and in the growing area of open data initiatives that have taken place in a number of formerly closed institutions, such as the World Bank.

Such examples point to the sorts of roles that the phenomenon of crowdsourcing that has arisen from the social media landscape can play in global health. Several years ago the pharmaceutical giant Eli Lilly launched an open innovation platform called InnoCentive to tackle difficult-to-solve scientific problems. The firm, after spending millions of dollars and many person-years without solving specific problems, began to reach beyond its own walls and disciplines to find assistance in solving these challenges. It placed problems on the site, which allowed potential solution finders to register and submit approaches to solving the problems. Frequently the company discovered to its surprise that the problems were easily solved by scientists halfway around the world who approached the problem through a different paradigm or discipline that made the challenge quite easy to solve. The success of InnoCentive has unleashed a wave of platforms and strategies to drive innovation and solve difficult scientific and health challenges by recognizing that our traditional forms of knowledge creation have not necessarily kept up with the technologies and new forms of sociality

that they engender. A new science of asking questions has arisen, and platforms are now being used to “micro-task” problems and work into smaller pieces that can be easily solved, often providing income to micro-taskers using platforms such as Amazon’s Mechanical Turk or the developing world platform, Jana. An example of such work that has taken place in developing countries is the group of Trinidadian and Brazilian students who developed a micro-tasking tool for performing medical diagnostics of digitized X-rays on mobile phones that users would scan for eye conditions; this was the winner of InfoDev’s microwork challenge, “m2work” (InfoDev, 2012).

Cooperation and the Commons

Elinor Ostrom won the 2009 Nobel Prize in economics for her path-breaking work on the commons and the strategies and tools used to manage the commons in the area of natural resources. Her work is all the more salient in our new world of ICT, because the examples demonstrate the power of the tools of cooperation. The commons can become an invaluable companion to these tools through creating a basis for shared resources. From open-source software to innovation commons such as the Science Commons or public goods such as health, we see a growing movement to deploy commons-based assets alongside the tools of cooperation in order to drive innovation and problem solving. As much of the world enters a period of prolonged financial crises, global health experts will need to become more literate and skilled in strategies for commons-based approaches that rest on an economics of sharing that can be disruptive to traditional approaches. In the biological sciences we have examples such as the ProteomeCommons, which involves protocols for sharing terabytes of data over the Web (Weinberger, 2012).

mHealth and Public Health 2.0

The near-ubiquity of cell phones in most low- and middle-income countries has created an unprecedented opportunity to extend the reach of community health workers as well as to provide a channel for public health messages and two-way communications. Mobile devices are increasingly playing an important role in data collection with open-source tools such as DataDyne’s Epi-Surveyor or INSTEDD’s Geochat, which enable the creation of forms and the transmission of data. The Praekelt Foundation and organizations such as Cell Life in South Africa have pioneered the use of SMS for HIV prevention, testing, and drug-adherence regimens. Beyond texting, there are new tools for eye exams, infectious diseases, vital signs measurement, and microscopy that are in various stages of development and that will be able to take advantage of the augmented computing power

of smartphones. Smartphones are coming down in price as well, as exemplified by the \$80 offering that HTC has developed for the Kenyan market. In countries such as Kenya and the Philippines, where the mobile industry has made extensive inroads, there are new possibilities for mHealth to piggy back on the mobile industry to enable micro-insurance schemes, such as the one by Changamka aimed at enabling pregnant women to cover antenatal care, child delivery, and postnatal care. These systems can also be extended to vouchers for supplementary feeding, cash incentives, and the payment of health workers (Gencer and Ranck, 2011).

Beyond mobile devices, the broader social media system is increasingly playing a public health role in the areas of epidemiology, participatory planning, and biosurveillance. Public Health 2.0 offers a new paradigm that democratizes the way science is practiced. In February 2011 a mysterious fever appeared among participants at the DomainFest Global Conference (Garrity, 2011). One of the attendees used Facebook to reach out to other participants to inquire about their symptoms. Within a few days, before the Los Angeles County health department and the Centers for Disease Control and Prevention had even launched an investigation, the participants had diagnosed the outbreak themselves as legionellosis and had entered the diagnosis on Wikipedia. HealthMap and Google's Flu Tracker, along with Twitter, are some of the more robust mapping/crowdsourcing tools that are becoming increasingly prevalent in public health science and practice. Rumi Chanara of Harvard used Twitter to track the 2010 cholera outbreak in Haiti (Chanara et al., 2012). These platforms are in essence large repositories of data which new data-mining tools can use that to make sense of much faster than is possible with traditional methods.

Big Data and Data Mining

Given the proliferation of mobile devices and data-collection devices, particularly with the emerging Internet of things including the billions of devices that can collect data and send them to the Internet, the major challenge has been to make sense of all of this data (Ranck, 2011b). The combination of cloud computing and big-data analytical tools such as Hadoop has enabled data scientists to take vast volumes of data, too big to fit on the typical server, and parse these data very rapidly. Tools such as IBM's Watson can now scan several hundred million pages of medical text in seconds or fractions of a second. These tools are capable of sorting through hundreds of millions of tweets and making sense out of this chaos, often at a much lower price than conventional approaches. Such tools have already been used to analyze data about violence, such as shootings in Camden, New Jersey. Jeffry Brenner used big-data analytics to sort through 8 years of medical billing records and to discover that 80 percent

of costs were associated with 13 percent of patients, and that much of the care was neither medically effective nor cost-effective. This discovery created the foundation for a new partnership to address violence prevention efforts. Another research effort, this one carried out by Harvard University researchers, uncovered indicators of risks of domestic violence in patients' electronic medical records that may help clinicians identify early risk factors that can prompt earlier interventions (Joelving, 2009).

Gamification

A final area where social media and ICTs can play a role in the future of global health is gaming. *Gamification* refers to the deployment of gaming tools, incentives, and technologies within the worlds of business, research, creativity, and innovation. In 2011 a major breakthrough in the area of HIV research came to light through the success of the online research and gaming platform Fold.it (Marshall and *Nature*, 2012). Researchers from the University of Washington created an online game that allowed users to manipulate three-dimensional structures of proteins on their home computers, which were then scored for the best (lowest-energy) configurations of the enzyme critical to some HIV drug therapies. For several years bench scientists had failed to come up with better configurations and thus had sought to crowdsource alternatives. Within several weeks amateur gamers had solved a problem that had plagued these scientists for years. There is growing use of games such as this designed for mobile devices to use the incentives and critical thinking fostered by game dynamics in order to encourage public participation in citizen science or behavioral change (Fogg, 2002; Bogost, 2010).

ICTs and Global Violence Prevention: Lessons for the Future of Global Health

In this paper I have outlined some of the key technology trends that are likely to play a significant role in general public health efforts in the future. Although many of the examples are from developed countries, we are seeing a dramatic growth of these tools for global health efforts. Some of the tools have been developed with violence prevention efforts in mind, but the violence prevention arena lags significantly and could explore these tools in more detail. For example, the United Nations Global Pulse platform is a big-data project that seeks to stimulate data philanthropy, sharing, and analytics in order to predict political crises much earlier through finely tuned analyses of the "data exhaust" from media, NGOs, evaluations, and so forth. A number of mapping tools for visualizing violence against women exist, such as HarassMap and Map4Aid's Fighting Violence Against

Women in India campaign, and text messaging is being used for a number of campaigns aimed at preventing domestic violence and violence against women. Take Back the Tech! is an effort mobilized during the 16 Days of Activism Against Gender-Based Violence that has developed various innovations in the use of SMS for public awareness campaigns.

Although the field is in its nascent stages, the time is ripe to begin building the evidence base for these tools and the lessons learned, with particular attention paid to the various cultural contexts. For example, some SMS campaigns to prevent domestic violence have actually backfired in some contexts because of the particular power and gender dynamics at the household level. This is an important element that often gets overlooked in the rush to deploy technologies, and it will be critical for the field to have more case studies seen through the prism of gender and power as it moves forward. Furthermore, the same technologies used for interventions can also help in evaluating these technologies. Data-collection tools used for health and human rights, such as the KoBo Project (KoboProject.org), provide open-source data-collection tools that also offer the encryption functionality that can protect users in conflict or human rights situations while also building the capacity of local organizations. Directories of these tools and case studies are in great need at the moment. Furthermore, the public health field itself can no longer afford to fall behind in its thinking about technology. Increasingly one's ability to realize one's capabilities, in the sense articulated by Amartya Sen, will require technological literacy that many in our field do not have. This emerging notion of technological citizenship (Barry, 2001) is likely to play a determining role in the social divides of the future as well as in the growing one within public health ranks, where new techno-political thinking is desperately needed.

EVALUATION OF mHEALTH

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The past decade has witnessed an explosion of mobile technologies. Eighty-three percent of U.S. adults own cell phones (Pew Internet and American Life Project, 2010). Worldwide there are approximately 6 billion cell phone subscriptions, and the rapidly growing rates in developing countries, where wireless technologies have leapfrogged the wired infrastructure, have made it possible to reach people in remote villages and communities (ITU, 2011). The public health community has begun to leverage these mobile devices in order to perform real-time assessments and to intervene at the times when these interventions would be most useful (e.g., in the context of the behavior).

Despite the rapid growth of mobile technologies applied to health (mHealth), the evaluation of mobile technologies has not kept pace with the development and deployment of these technologies. Although there also needs to be considerable emphasis on the reliability, validity, and sensitivity of measurements in mHealth, the focus of this summary is on research evaluations of mHealth interventions.

Randomized Controlled Trials

The randomized controlled trial (RCT) is the standard for intervention research. Meta-analyses such as those performed by the Cochrane Review routinely include only RCTs in their reviews (Higgins, 2011). The U.S. Preventive Services Task Force (USPSTF) recommendations are developed predominately from the findings of RCTs (USPSTF, 2010). The Institute of Medicine relies heavily on RCTs as the basis for its consensus reports (IOM, 2011). Given the reliance on RCTs as the accepted standard for biomedical and behavioral evidence, mHealth interventions, including violence prevention programs delivered via mobile devices, need to be subjected to this same standard if they are to be accepted as a valid and effective method.

Appropriate Comparison Conditions in mHealth

One challenge of evaluating the efficacy of mobile interventions via RCTs is the choice of a comparison condition. How the mHealth intervention is intended to be used is an important consideration for determining an appropriate comparison condition. If the mHealth intervention fills a gap where no other viable intervention exists, then a no-treatment or usual care condition is appropriate. If the mHealth intervention is intended to augment an existing intervention, then an additive design in which the existing intervention is compared to the existing intervention plus the mHealth intervention would be used. If the mHealth intervention is intended to supplant or replace an existing low-tech equivalent interventions, then the low-tech intervention may be the appropriate comparison condition.

The comparison condition in which the mHealth intervention is intended to augment or supplant the existing intervention is a high outcome standard to exceed. One solution to this dilemma is to use or develop a minimal-contact version of the low-tech intervention (e.g., a self-help book or non-interactive Web pages) as the comparison condition, but this dilutes the effect of the low-tech intervention and often delivers it in a form that was never intended. Therefore, it becomes critical to ask in what way the mobile intervention is hypothesized to be better than the other interventions currently available. In many cases, it may not be the case that the mobile intervention is expected to produce better outcomes, but rather that it is

expected to provide comparable outcomes while delivering the intervention either more consistently across individuals (e.g., with less variability in outcomes) or at less cost. For many mobile health applications, the hypothesis should not be that the mobile intervention will produce better outcomes than its low-tech equivalent, but rather that it will produce comparable outcomes at a lower cost. As a result, a cost-per-unit change is often a better indicator of mHealth intervention outcomes. Furthermore, because most mobile or other technology intervention costs are fixed (e.g., initial development and equipment) while most of the low-tech intervention costs are variable (e.g., professional time), extrapolating cost-per-unit changes across large numbers of individuals, not just those in the study, gives a better estimate of the reach possible from the high- vs. low-tech intervention.

Technology Outpacing RCTs

A more substantive issue regarding the fit of RCTs and mobile health interventions is the length of time required to perform an RCT. Previous research has shown that the median time from start of enrollment to publication is 5.5 years and substantially longer for negative trials (Ioannidis, 1998). From the initiation of a grant submission, an RCT can be expected to take 7 or more years to complete, a timeframe that does not keep pace with recent technological advances. As shown in Figure 6-4, an RCT with the primary results published at the end of 2011 would have required developing the initial project idea and submitting the grant application by 2005, prior to the advent of many Internet, mobile, and wireless advances, including YouTube, iPhone, Android, and iPad. As a result, most of the

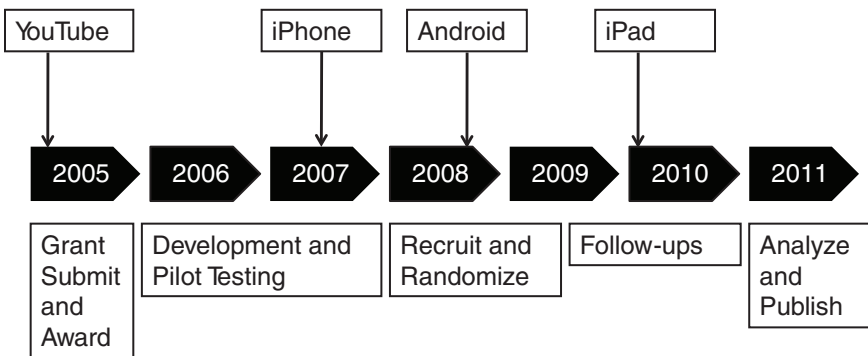


FIGURE 6-4 Mobile technology advances outpace traditional research design. SOURCE: Riley, 2011.

mobile health research published today was developed on dated technologies and mobile platforms.

Fortunately, mobile technologies can be used not only to provide interventions but also to streamline the RCT process. Mobile technologies can be used to recruit participants rapidly and to conduct the trial remotely. In one of the first uses of mobile phones for smoking cessation, Rodgers et al. (2005) recruited participants and conducted the study remotely across the continent of Australia. By being able to recruit with a text message to all mobile phone users and to conduct the study remotely, the researchers were able to make the study convenient for participants (e.g., no travel for in-person visits) and to reduce study costs (e.g., fewer research staff and facilities were required). This remote study capability is based in part on leveraging the mobile phone to deliver not only the intervention but also the study outcome measures. The frequent longitudinal assessments and the automated reminder prompts to complete the study assessments also potentially reduce missing data and the number of participants needed to find the hypothesized effect. The value of technology in streamlining the RCT process and performing remote RCTs has extended beyond those doing mobile interventions. Pfizer's REMOTE trial uses technology to evaluate medication for overactive bladder disorder without requiring the patient to visit a health clinic (Pharmacy Times, 2009). As a result, not only will Pfizer be able to perform this RCT faster and at less cost, but also it will be able to include patients who would otherwise not be able to participate.

By leveraging the capabilities of mobile technologies to streamline RCTs and by selecting the appropriate control condition and outcomes for comparison, RCTs can be conducted on mHealth interventions. RCTs, however, are not the only method—or even the most appropriate method in some cases—for evaluating mHealth interventions. The remainder of this paper discusses alternative methodologies that can be used to evaluate the development and dissemination of an mHealth intervention.

Evaluating While Developing mHealth Interventions

Evaluation During Development

The empirical evaluation of mobile health interventions should be integrated throughout the development process. The initial design and content should be based on theory and on prior empirical literature on the effectiveness of various interventions for the target problem (Riley et al., 2011). Because mobile technologies can deliver some intervention components better than others, an in-depth understanding of the mechanisms or components of an intervention and their relative contribution to intervention effectiveness is critical to mobile health intervention development. In addition to

its theoretical and empirical underpinnings, the core of the software development process is iterative and incremental development (Larman and Basili, 2003), which utilizes qualitative methodologies to obtain user input throughout the development process. A range of qualitative methods, both from health informatics (Borycki et al., 2011) and from violence research (e.g., Testa et al., 2011), can be used to elicit end-user perspectives on the usability and functionality of various design features during the development process.

Prototype Evaluations

As prototypes or components of the mHealth intervention are developed and tested (e.g., debugged), a number of research methodologies are available to evaluate efficacy prior to any full-scale RCT. These preliminary evaluations are particularly important for newly developed mHealth interventions in order to insure that the interventions have been optimized before subjecting them to an RCT. Although a single-arm pre-post pilot trial with a small sample is commonly used to determine if the mHealth intervention produces a significant change and to test the procedures for a subsequent RCT, this design may not provide the flexibility needed to test and further optimize the intervention before subjecting it to an RCT.

N-of-1 designs Instead of testing a group of participants pre- and post-trial, detailed testing of individuals longitudinally throughout the intervention period (AB) provides the development team with important information on how the intervention is used by each user and the effect on the target problem during the intervention. By staggering these N-of-1 trials, mHealth developers can detect potential improvements after a few users have been evaluated, modify the program, and then test the new version on the next N-of-1 users. (See Lillie et al., 2011, for a review of N-of-1 trials in personalized medicine and utilizing wireless and mobile devices for N-of-1 trials.)

To increase the internal validity of these N-of-1 studies, reversal and interrupted time series designs can be considered. When the effects of the intervention are expected to quickly dissipate once the intervention is withdrawn, a reversal design (ABA) can be considered. Although the improvement in the target behavior from baseline (A) to intervention (B) can be the result of a number of confounders, many of these confounders can be eliminated from consideration if the individual returns to baseline levels of the target behavior after the intervention has been withdrawn (A).

If the intervention is expected to have an enduring effect after the intervention is withdrawn (or if the intervention continues for as long as the user wants to use it), then an interrupted time series design can be considered (Biglan et al., 2000). This design is essentially an AB design, but the baseline

values are used to predict future values of the outcome variable. If after the intervention is introduced, the values for the target problem exceed what would have been predicted from baseline, then it is reasonable to conclude that the intervention produced this effect. Of course, extraneous variable outside of the researcher's control (e.g., a significant life event) could also have produced this effect, but such confounders can be minimized by staggering the initiation of the intervention across multiple users. If the improvement is seen for each user following interventions that are initiated at different times for different individuals, then the causal inference is stronger.

N-of-1 designs were commonly used in early behavioral intervention research and are still used regularly in many applied behavior analysis settings (e.g., developmental disabilities). The challenge with these designs is the frequent outcome assessments required to establish a stable baseline and to determine if the intervention affects the subsequent assessments. Mobile health interventions, however, are uniquely suited to generate the frequent longitudinal assessments needed to conduct these various N-of-1 designs. For example, an mHealth intervention is likely to have some specified baseline period (e.g., 7 days) and can be designed to continue the baseline period until a stable baseline has been achieved. The mHealth intervention can then introduce the intervention and continue frequent assessments and fully automate these N-of-1 designs so that every user of the mHealth intervention also contributes efficacy data.

Intervention optimization designs Even with a solid empirical basis, the development of mobile health interventions still involves guesswork. Which components should get a higher or lower dose in the mHealth intervention? Which modality would be best for delivering a specific intervention component? Should all of the intervention components be delivered simultaneously or in some pre-specified order? To address these questions, there are a number of intervention optimization design issues to consider. For N-of-1 designs, systems modeling, such as control systems engineering modeling, can be used to test the model (Rivera et al., 2007). For example, if the intervention model indicates that an intervention to identify potential violence or victimization will result in the avoidance of these situations and thereby reduce violence, the process of this change can be assessed and modeled. The intervention can then be revised based on how well the model fits.

Group-level randomized optimization designs include factorial, fractional factorial, and sequential multiple assignment randomized trials (SMARTs) (Collins et al., 2007). Fractional factorial designs mix and match the various intervention components and modes of delivery that need to be evaluated and determine which components in which combination produce the largest effect. SMART designs are similar in analysis but isolate the sequence of the components according to various considerations. For

example, if a user responds well to the first phase of the intervention, what should be the next phase? If the user responds poorly, should the first phase be repeated or should the user move on to a different phase of treatment, and, if so, which one? These optimization designs take time and resources to conduct, but they are important to consider before subjecting an intervention to a standard two-arm RCT, especially if considerable questions about how best to deliver the various components of the intervention remain.

Evaluating While Disseminating

Although an RCT to establish the efficacy of an mHealth intervention in a controlled study is an important step to take before disseminating and implementing the intervention, it is not always feasible to conduct an RCT. There may, for example, be inadequate resources to conduct an RCT, or the mHealth intervention may have been developed for a pressing public health need and the intervention needs to be deployed immediately. The organization employing the mHealth intervention may not want a random selection of those it serves to not receive the intervention. In these cases, the mHealth intervention should, at the very least, have been developed empirically and evaluated on some small scale (e.g., pilot or N-of-1) before implementation. There are, however, a number of designs that can be employed to evaluate the intervention while it is being disseminated and implemented. Many of these designs have been used in community-based interventions in which it is impractical to randomize communities to an intervention.

The same interrupted time series design described above for single subject users can be used for groups. The community or setting in which the intervention is being implemented is evaluated recurrently to obtain a stable baseline. This stable baseline can come from routinely collected public health data, but it can also be generated via the mHealth intervention itself by incorporating a baseline assessment prior to intervention initiation. Once the baseline is established, the intervention can be implemented with continued assessment to determine if the intervention is associated with a significant change in the outcome variable.

For example, if a community-based youth violence prevention program (e.g., Vivolo et al., 2011) incorporated a mobile or wireless intervention component, then the addition of this component could be evaluated in a single community by monitoring the relevant outcomes over time before and after the addition of the mobile or wireless component. An illustration of an interrupted time series design applied to a technological solution (radio-frequency identification, or RFID) for improving workflow and reducing hospital service wait times is shown in Figure 6-5. By tracking wait times for weeks before and after the implementation of the RFID

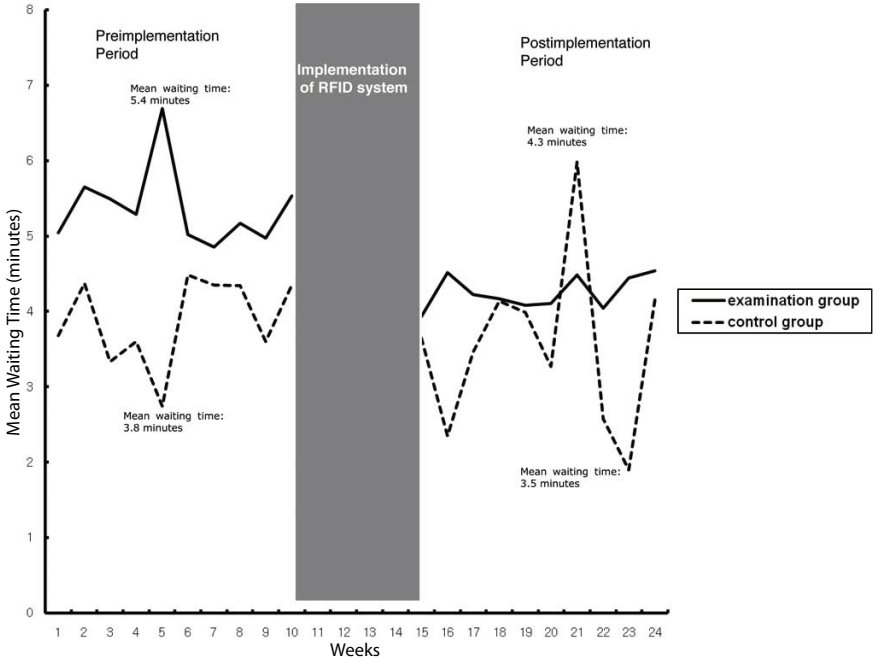
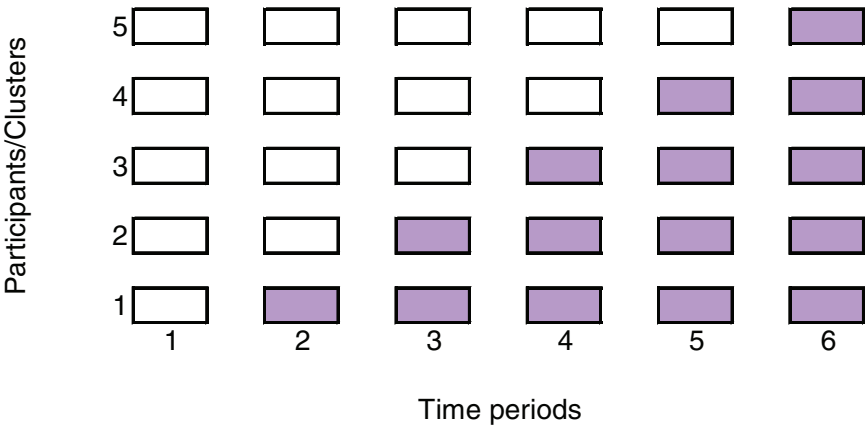


FIGURE 6-5 Interrupted time series example.
SOURCE: Kim et al., 2010.

system, Kim and colleagues (2010) were able to show that wait times were significantly reduced. Greater confidence in the causal inference from this design can be obtained by using a matched control (e.g., a health service that did not receive the intervention, as shown in Figure 6-5), by staggering the intervention across communities, or by applying propensity-score weightings (Linden and Adams, 2011). Given that an RCT is often not feasible for community, hospital, or school-based interventions, the interrupted time series design provides a quasi-experimental alternative that requires only one (or slightly more than one) community for evaluation.

The stepped-wedge design rolls out the intervention in a staggered or sequential manner to individuals or clusters of individuals over a number of assessment periods (see Figure 6-6, adapted from Brown and Lilford, 2006, for a graphical representation of this design). This design is particularly appropriate if there are well defined cohorts (i.e., communities), all of whom should receive the intervention for ethical reasons, and especially if there are insufficient resources to introduce the intervention to all of the groups at once. The groups are defined a priori and randomized as to when they will



Shaded cells represent intervention periods
Blank cells represent control periods
Each cell represents a data collection point

FIGURE 6-6 Stepped-wedge design.
SOURCE: Brown and Lilford, 2006.

receive the intervention. Compared to interrupted time series, the stepped-wedge design typically requires less frequent assessments (i.e., one for each new rollout) but more cohorts (e.g., communities, schools, or hospitals).

To see how the stepped-wedge design might be applied to mobile applications to prevent violence, consider a mobile intervention developed to reduce youth violence in schools. The schools receiving the intervention collect monthly data on violent behavior throughout the school year. The schools are randomly assigned to the order of intervention initiation. After a baseline month, the first randomly selected school receives the intervention and continues to use it throughout the school year. In each subsequent month the intervention is rolled out in the next randomly selected school until all of the schools have received the intervention, and violent behavior within and between schools can then be compared. In contrast to an RCT, every school eventually receives the intervention. The stepped-wedge design also makes better use of staff to roll out the intervention because the initial orientation, training, and deployment are performed at a different school each month instead of simultaneously. Newer technologies that have not been fully field-tested are often rolled out sequentially to detect problems before fully deploying, which fits a stepped-wedge model well. (See Handley et al., 2011, for a more detailed description of the stepped-wedge design.)

The regression discontinuity design assigns participants to an intervention based on a cutoff variable and then analyzes the change in slope or intercept at the cutoff between those receiving and those not receiving the intervention. The design is often used when only those deemed more in need or at risk are provided the intervention. For example, if only those at risk for dating violence are referred to receive a mobile application to change dating violence attitudes, the intervention can be evaluated by comparing dating violence attitudes of those referred with the attitudes of those not referred by analyzing differences in the prediction of dating violence attitudes from the risk variable used as the cutoff for referral. It is critical in the regression discontinuity design, however, that the cutoff criteria remain unchanged. Any variation in referral cutoff based on the risk score will introduce bias. Performed rigorously, the regression discontinuity design produces results similar to those of an RCT (Linden and Adams, 2011; Shadish et al., 2011). Regression discontinuity is preferable to an RCT when the referring agency wants all of those referred, not just those randomly assigned to the treatment group, to receive the intervention.

These examples of evaluating interventions during dissemination clearly show that dissemination should not represent the end of the research evaluation process. These methodologies do allow for evaluation during dissemination, and often these designs are more externally valid than RCTs because the intervention is being evaluated in actual users and, if well designed, the internal validity of these designs is comparable to RCTs (Shadish et al., 2011). The frequent longitudinal assessments often integrated into mHealth interventions can be leveraged to perform automated evaluations of the intervention while it is being disseminated and implemented using these designs.

Conclusion

Interventions delivered via mobile technologies (mHealth) have many potential advantages over traditional interventions. The mobile and wireless infrastructure already exists, so the costs of intervention delivery are greatly reduced. mHealth and other computerized interventions are completely standardized (i.e., they never deviate from the intervention protocol). They can be tailored and adapted over time to the user's needs. mHealth interventions can be more engaging, especially for younger users, because of their graphics and gaming modalities. There are no time or space constraints: mHealth interventions can be delivered at any time or any place. mHealth interventions are fully scalable, which greatly improves their reach when compared with traditional intervention delivery. The ability for frequent and real-time monitoring provides both a base for research and program

evaluation as well as for interventions that can adapt to ongoing changes in the users' responses.

All of these advantages, however, are more promise than proven. Public health has a long history of assuming that new technologies will improve public health. The Health Belief Model was developed in response to the failure of a new technology, mobile tuberculosis screenings in the 1950s, to substantially increase these screenings (Rosenstock, 1974). The mobile delivery of violence prevention interventions—and, indeed, of all public health interventions—requires rigorous evaluation. Although RCTs are the standard by which most of these interventions are judged, numerous other research designs can be used throughout the development and dissemination of mHealth interventions.

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7

Practical Applications of mPreventViolence

Although the use of information and communications technology (ICT) in violence prevention is fairly new, some interventions have already capitalized on this new avenue with promising results. This chapter includes papers from presenters at the workshop who explored this intersection and its potential.

The first paper presents data from an intervention designed to assess the impact of adding a mobile phone component to an existing intervention that teaches parenting skills. The paper describes the intervention design and evaluation and results of the study.

The second paper is a case study in using video and community education to raise awareness and reduce the prevalence of domestic violence, as part of the *Bell Bajao!* campaign in India. The case study examines the impact of the campaign and explores the potential for expanding the program.

In the third, fourth, and fifth papers, the authors describe the applicability of ICTs to dating violence, elder abuse, and suicide prevention, respectively. These authors, who had previously not collaborated before, worked together before the workshop to frame breakout discussions on day 2 of the workshop. Their papers explore the needs and challenges of each type of violence prevention, the use (or potential use) of ICTs, and any additional gaps or questions that needed to be addressed.

USING MOBILE PHONES TO ENHANCE PARENT
ENGAGEMENT IN A HOME VISITING INTERVENTION
TO PREVENT CHILD MALTREATMENT

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A recent worldwide study of child maltreatment reported that from 80 to 98 percent of children suffer physical punishment in their homes, with a third or more experiencing severe physical punishment from the use of implements. In the United States, approximately 800,000 cases of child maltreatment are reported each year. Of these cases, child neglect remains the largest single category. A disproportionate number of cases of abuse and neglect occur with mothers who have their own personal histories of maltreatment. As a result, an intergenerational pattern of inappropriate and destructive pattern is continued. As the cycle passes from one generation to the next, society—as well as the families directly involved—bear enormous costs, including mounting mental health concerns, increased medical expenses, greater needs for public assistance, and excessive burdens on the criminal justice system.

In the United States and other countries, a growing number of home-visiting parenting programs have shown positive results in reducing child maltreatment and enhancing parenting skills in high-risk populations (Olds et al., 2002; Barlow, 2006). However, studies of home-visiting programs have not found uniformly positive outcomes for parents and children. Rather, meta-analyses of these studies have produced mixed results (Layzer et al., 2001; Sweet and Appelbaum, 2004; Astuto and Allen, 2009). One barrier to achieving improved outcomes is parent participation (McCurdy and Daro, 2001). Program retention rates vary widely, and, as the prescribed duration of the programs increases, so do the programs' rates of attrition for families—especially for the highest-risk families (McCurdy et al., 2003). When families fail to show up for their home visit or drop out of interventions early, even the most powerful interventions will have diminished effects. A second determinant of effectiveness is parent engagement—the extent to which parents carry out the behavioral or affective components of the intervention program, such as keeping up with learning activities between visits and seeking more information (Berlin et al., 1998; Korfmacher et al., 2008). Programs that are able to maintain parents' participation and

keep them involved and actively engaged are thus more likely to achieve the desired results of improved parenting outcomes (Gomby, 2005).

A recently developed innovation for preventing attrition and promoting engagement in a variety of health promotion interventions is the use of mobile phones to increase contact with patients, provide reminders of patient behaviors in the health protocol, and send messages that encourage continued involvement. For example, researchers have recently tested the effectiveness of using mobile phones to increase HIV-positive patients' adherence to antiretroviral medication therapies (Villanueva, 2007) and to maintain smokers' involvement in smoking cessation programs (Lazev et al., 2004).

The CPAT Program

In a recently completed project, we sought to examine whether enhancing an evidence-based parenting intervention, Planned Activities Training (PAT), by using mobile phones for increasing contact between home visits would increase parents' engagement in the intervention, decrease their attrition, and result in greater improvements in their parenting skills compared to parents who received the parenting intervention without mobile phone enhancements.

PAT is one component of Project SafeCare, an approach to preventing child maltreatment that has been shown to improve positive parenting practices and parent-child interactions and to reduce challenging child behaviors (Silovsky et al., 2011). The current project employs a three-group experimental design with random assignment of parents to one of three groups: Planned Activities Training as usual (PAT), cellular phone-enhanced PAT (CPAT), or a waitlist control group (WLC).

For both PAT and CPAT groups, family coaches teach parents positive ways to interact with their children and to engage in appropriate behavioral expectations for common family activities and routines. Across approximately five sessions that take place in home visits, coaches help parents learn how to use PAT strategies in a play situation and in at least two daily routines that parents self-select as ones that have been difficult or challenging. Within the experimental design, parents assigned to the PAT or CPAT intervention groups were assessed prior to the intervention, as well as at 1-, 6-, and 12-month post-intervention time points. The control group participants completed assessments at time points similar to those of the intervention groups. Several outcomes were examined to measure intervention effects, including child maltreatment risk and occurrences, parent behaviors, and child behaviors.

Results thus far show the following:

- Parents in the CPAT group were more likely to complete the intervention, with 79 percent of the CPAT and 66 percent of PAT parents finishing [$\chi^2(1, n = 255) = 5.42, p = .02, \phi = .15$].
- Parents in the CPAT group were rated as being more highly engaged during the home visits ($M = 14.97, SD = 2.21$) than parents in the PAT group [$M = 14.16, SD = 2.72; F(1, 220) = 5.69; p = .02, d = .32$].
- Parents in the CPAT group were just as likely to learn new positive parenting practices as those in the PAT group, with parents in both groups demonstrating more significant improvements in positive parenting practices than those in the control group. These improved parenting skills were still apparent even 6 months after the training ended.
- Improved child behavior was apparent for children whose parents had received either PAT or CPAT intervention compared with children whose parents were in the control group when behaviors such as their responsiveness to their parent or their general affect were measured 6 months following the end of parent training.

Conclusions

One of the major challenges in preventing child maltreatment is the fact that across available sets of studies, only 30 to 80 percent of families who are at risk for child maltreatment actually complete prevention programs. Our finding that parents were significantly more likely to stay in parenting programs enhanced with cellular phone technology may point to a promising approach to keeping families involved in interventions that help them learn new approaches to interacting with their children, and thus lead to much larger reductions in overall rates of child neglect. Moreover, this approach using mobile phones can be useful for other home visiting programs with high-risk groups, such as those that seek to improve health outcomes of women who are pregnant or mothers of young infants. Even more broadly, mobile phones can be applied to any intervention in which continuous support from a coach or counselor is important, such as suicide prevention, bullying and youth violence prevention, prevention of intimate partner violence, and prevention of elder abuse. We look forward to applying this type of support for these and other issues and to using other more recent technological innovations to enhance the effectiveness of violence prevention efforts.

BELL BAJAO! AS A CASE STUDY¹

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Breakthrough

Overview

Bell Bajao! is a cultural, organizing, and media campaign strategy that calls on men and boys to join efforts to end violence against women. As such, it provides an object lesson in the principles, procedures, and processes that Breakthrough² uses to achieve its objectives. Breakthrough has been conducting *Bell Bajao!* in India since 2008, and it announced in late 2010 that the campaign would become global in scope starting in 2011.

The campaign's media component was its most prominent and visible feature—a series of television, radio, and print ads created pro bono by Ogilvy & Mather (O&M), which were disseminated widely through a partnership with the Indian Ministry of Women and Child Development. Bollywood actor Boman Irani was the campaign's first male ambassador. The powerful television advertisements show a man or a boy who hears a woman being beaten behind the closed door of her home. After a moment of deliberation, the man or boy then rings the doorbell of the woman's home. When the abuser comes to the door, the man or boy asks to borrow a cup of milk (in one advertisement) or use the phone or to retrieve a lost cricket ball (in others). In watching advertisements it is clear that the bell ringer is making the request as a pretext: He heard violence committed against the woman, and he is putting the abuser on notice that the violence will not be tolerated.

The media campaign was accompanied by a strong community mobilization initiative in the Indian states of Karnataka and Uttar Pradesh, led by Breakthrough's Rights Advocates Program (RAP). The mobilization initiative involved extensive leadership training, mass outreach, and face-to-face educational events. In 2010 Breakthrough released a series of three new TV advertisements asking if people had “rung the bell” and taken action against domestic violence. To date the campaign has reached more than 130 million people in India and has won multiple awards, including

¹ This paper is an excerpt from the report *Breakthrough's Bell Bajao!: A Campaign to Bring Domestic Violence to a Halt*. The full report is available at http://www.breakthrough.tv/images/downloads/147/BellBajao_Insight.pdf.

² Breakthrough is a global human rights organization that uses the power of media, arts, pop culture, and community-based action to inspire people to take bold action for dignity, equality, and justice. Working out of centers in the United States and India, Breakthrough addresses critical global issues, including violence against women, HIV and sexuality, immigration, and racial justice.

the prestigious Silver Lion at the 2010 Cannes International Advertising Festival.

The *Bell Bajao!* campaign provides an excellent example of the Breakthrough methodology:

- *Bell Bajao!* is Breakthrough's most evolved and sustained campaign to date; it has had the greatest impact, scale, and the most comprehensive set of partners.
- *Bell Bajao!* integrates mass media with community mobilization tools and leadership development training.
- *Bell Bajao!* incorporates lessons from Breakthrough's preceding campaigns, *What Kind of Man Are You?* and *Is This Justice?*, as well as using new social media tools such as Facebook, Twitter, YouTube, and blogging that it learned about from its U.S. programs.
- *Bell Bajao!* has been thoroughly evaluated and monitored using state-of-the-art tools and techniques.
- *Bell Bajao!* has demonstrated its efficacy in furthering knowledge about domestic violence, changing attitudes and perceptions toward such violence at the individual and community levels, and bringing about behavior change that challenges violence against women and reduces stigma and discrimination toward women living with HIV/AIDS.

At a time when *Bell Bajao!* is going global, this paper provides insight into how the campaign was conceived and rolled out as well as its scale and impact.

Message Development

Conceptualizing and Framing the Message

The first task for *Bell Bajao!* was to create a message, which is a rigorous and critical process. The goal of the campaign was to advance the current discussion and knowledge about violence against women while remaining consistent with Breakthrough's philosophy and mission. The message also needed to respond to current political realities and opportunities, build on past learning, and draw from what has been learned from research into violence against women in India and globally.

Employing a Variety of Research Instruments and Findings to Direct Its Message

Breakthrough retained the Centre for Media Studies (CMS), a media research organization, to conduct a baseline survey to determine the extent of the public's knowledge about the Protection of Women Against Domestic Violence Act of 2005. It also asked CMS to research attitudes toward and responses to domestic violence among a cross-section of the public. The center's findings showed that very few people take any action when they are aware of domestic violence occurring around them. The findings also showed that men and women were equally likely to take some action to stop domestic violence and that men typically take the lead to intervene in such situations.

Breakthrough also studied the literature in the fields of domestic violence and violence against women that focused on the attitudes that deter people from acting to stop domestic violence. The research pointed to several prevailing social norms: Domestic violence is viewed as a private matter, people resist intervening because of a fear of retaliation, and people are unwilling to get involved in protracted family issues.

The prominent finding that men play a central role in intervening in situations of domestic violence led Breakthrough to undertake secondary research on programs that engaged men and boys in various parts of the world to stop violence. This dataset provided additional background information that informed the message-development process.

After this research process, Breakthrough concluded that a single, direct media message to stop domestic violence was required for its campaign. The message needed to be grounded in women's rights, guided by research on the topic, and reinforcing of the political moment occasioned by the Indian government's commitment to end domestic violence. Men and boys were identified as the critical targets for this campaign.

Developing Media Components and Messages for *Bell Bajao!*

Once the leadership team agreed upon the message framework, Breakthrough located an appropriate partner, O&M, to deliver the message using multiple media techniques and instruments.

Determining the Media Message

O&M's creative team suggested two campaign directions based on Breakthrough's feedback: (1) direct action—*Bell Bajao!* and (2) unpacking masculinity. Breakthrough chose to move forward with the direct action concept. The message that O&M developed was “Ring the Bell: Can I Have

Some Milk?” After considerable discussion, the team decided that implicit in the ads would be the idea that the ringing of the bell was an “excuse” to intervene when domestic violence was occurring. The bell ringer, the domestic violence perpetrator, the woman, and the audience would all be “in the know” about the bell-ringing being a pretext to stop violence. From this concept, a tagline emerged: “Bring domestic violence to a halt. Ring the bell.”

Dissemination Strategy

The dissemination strategy for *Bell Bajao!* was determined after examining media viewership as documented by Mindshare, a media-planning agency, and a baseline survey carried out by CMS. Using the opinion-research datasets, Breakthrough determined the platforms and channels for the campaign. Breakthrough determined that *Bell Bajao!* should be broadcast on news channels, sports channels, and general entertainment channels as well as Doordarshan, the government-owned national television network.

Selection of Media Formats for Campaign

In keeping with commercial best practices, Breakthrough used a range of media platforms to disseminate its message. This is based on the widely accepted belief that audiences are heterogeneous and access information from multiple platforms. Repetition through multiple channels reaffirms messages and places them firmly in the minds of viewers.

For *Bell Bajao!* Breakthrough decided to use a mix of traditional and new media tools for dissemination: television spots, radio and print ads, a robust online presence (including a campaign website and social media tools such as Facebook, Twitter, and blogs), and a retail strategy of mobile video vans to ensure face-to-face communication.

Television proved to be by far the most effective and far-reaching dissemination tool for the campaign, reaching more than 130 million viewers through multiple channels during the first and second phases of the campaign. Radio and print advertising were most effective in some areas, such as the city of Lucknow in Uttar Pradesh, but they did not achieve the wide reach and recall of television. The *Bell Bajao!* microsite engaged public audiences through its blog and social media tools.³

³ The *Bell Bajao!* microsite received praise from media leaders such as IndiaSocial's Casebook. Breakthrough is now exploring the expansion of the campaign into mobile platforms and user-generated materials. Because there are few precedents for these kinds of programs, Breakthrough is experimenting with an Internet and mobile solution that was piloted in Lucknow, Uttar Pradesh, in November 2010.

Dissemination via video vans proved to be extremely effective. Vans carrying the campaign message were accompanied by staff and youth advocates who engaged directly with individuals, enabling the public to ask questions about domestic violence and women's rights. This strategy was especially effective in sustaining community engagement over a 2-year period.

Bell Bajao! has been more ambitious than previous Breakthrough campaigns in using the blogosphere. To raise awareness and stimulate discussion, Breakthrough developed a domestic violence-themed blog on its website. The blog is an interactive and dynamic virtual space where users leave comments and share their experiences. *Bell Bajao!* expanded its online presence in key social networking sites such as Facebook and Twitter, where news and views of domestic violence and other women's issues and causes are regularly posted. These social networking sites operated as discussion forums and as traffic generators for the campaign site and blog.

Integrating Media and Community Mobilization to Roll Out *Bell Bajao!*

The two strategic approaches that Breakthrough uses in its work—media and edutainment (entertainment designed to educate) development, and training activities for the community mobilization—occur in tandem and often overlap with one another. In this way partner organizations are trained and ready to conduct community mobilization efforts to deepen the media message. At the same time media products are finalized for rollout.

With the partner organizations ready and the media products finalized, Breakthrough was poised to initiate the next set of activities: At the local level, in four districts in Karnataka and another four districts in Uttar Pradesh, a “360-degree” comprehensive multimedia campaign was initiated. At the national level, Breakthrough conducted a media launch. It also deployed video vans in the cities of Mumbai and Delhi. This combination of national and local initiatives is a critical component of the *Bell Bajao!* campaign.

Activities at the District Level: Building a Sense of Ownership Among Partners

Prior to the *Bell Bajao!* campaign launch, partners had to develop a sense of ownership of the campaign. In its campaigns Breakthrough builds campaign ownership by collaborating on launch activities, including providing its partners with a road map of the intervention strategies that they will jointly undertake. Campaign publications designed by Breakthrough—brochures, pamphlets, information booklets, and posters—are shared with partners for review. Partner logos are incorporated in all publication materials, enhancing the partners' sense of ownership and giving them greater

visibility in the campaign. For example, Breakthrough developed a CD with footage and voice-to-camera interviews with local opinion leaders, heads of collaborating organizations, artists, and local government officials for screening in the larger community during the campaign. This CD provided local specificity as well as partner buy-in.

Working with Government at National and District Levels for Campaign Rollout

The Indian Ministry of Women and Child Development (MWCD) released the first phase of *Bell Bajao!* in 2008–2009 at the national level on all prime-time channels, including entertainment, news, and sports channels. Breakthrough optimized the national commitment of MWCD and collaborated with its district- and state-level officials to demonstrate local government support to end violence and empower women. Breakthrough also networked with government officials to involve them in campaign activities. Protection officers lent legitimacy to Breakthrough’s human rights messaging by their participation in trainings. Public and government officials spoke at Breakthrough events and in public venues. Government officials that took a public stand on violence against women during the campaign gave legitimacy to the Protection of Women from Domestic Violence Act (PWDVA) of 2005 and signified their willingness to implement it.

Gearing Up the Video Van

The video van is a mobile unit with audiovisual screenings on violence against women issues that was developed by the Breakthrough media team. Managed by selected rights advocates, the van carries video endorsements featuring local opinion leaders on campaign issues and interactive games and theater on the topic. The rights advocates, who accompany the van and lead most of the interactive sessions with the public, receive a small stipend and certificate for their participation. Handouts and other publicity materials—items such as t-shirts, caps, and flashlights—are dispensed from the van.

Trained youth advocates accompany the video van and perform activities such as street theater, interactive games, and puppet theater in order to amplify campaign messages. Rights advocates conduct games to draw in crowds, serving as a prelude to engagement on issues of violence against women. Once a critical mass gathers, street theater is performed, *Bell Bajao!* videos are screened,⁴ and questions are fielded on violence against

⁴ In Karnataka the video ads were transferred by Bluetooth technology to viewers’ mobile phones so that they could be watched and shared at viewer convenience.

women. The van is stationed at each site for approximately 1 hour, which includes time for setting up and winding down, allowing at least 35 minutes of substantive engagement on the campaign themes.

Audience Reach of Video Van

The van travels in each of the eight campaign districts of Uttar Pradesh and Karnataka from 10 a.m. to 5 p.m. for 25 days. It is estimated that in 2009 the video van reached 2.5 million people with the *Bell Bajao!* message, with an intended outreach by 2011 of 6 million people. The van will revisit the eight districts of Karnataka and Uttar Pradesh to reinforce *Bell Bajao!* messages with additional materials and new public service announcements (PSAs). In addition, the van will circulate for 15 days each in the cities of Delhi and Mumbai.

National Level Activities for Roll Out of Bell Bajao!

Campaign rollout at the national level is focused on getting optimum exposure for the campaign. Media planning—such issues as when to start the campaign and how to mix the media platforms—is done with the help of a professional agency. Breakthrough launched *Bell Bajao!* with its television campaign because television has the widest coverage. All other platforms—radio, print, advertising, and the video van—followed the television broadcasts in a staggered rollout.

Media Rollout for National TV

The decisions about the rollout of *Bell Bajao!* on national television were made by evaluating the efficacy and popularity of different platforms. Mindshare provided Breakthrough with state- and district-level data on the efficacy and popularity of different platforms. In 2008–2009 an investment from MWCD enabled *Bell Bajao!* PSAs to air during prime-time on all TV channels. Additionally, Breakthrough made direct media buys for print and radio dissemination. In 2010 Breakthrough commissioned Doordarshan, IBN7, Zee News, TV Today, Suvarana News, Zee Kannada, ETV Kannada, and Asia Net to broadcast the *Bell Bajao!* PSAs. Radio partners for the PSAs included AIR, Big FM, and Red FM. Breakthrough's print partners for the campaign rollout included Vijay Karnataka, Praja Vani, and Dainik Jagran. As a nongovernmental organization (NGO), Breakthrough was able to leverage good rates for media buys and often had additional value-added features, such as viewing in other television programs.

Using Publicity and Public Relations to Enhance Campaign Visibility

Breakthrough has consciously added earned media as a key strategy to generate greater exposure and impact for *Bell Bajao!*, actively soliciting media outlets to cover campaign-related events and to write editorials about violence against women and about *Bell Bajao!*. Breakthrough has found it prudent to outsource this task to a public relations agency because of staff capacity and the specialized nature of public relations work.⁵

Engaging Media Figures and “Influentials”

To generate publicity for *Bell Bajao!*, Breakthrough strategically engaged high-profile artists, such as actor Boman Irani, lyricist Javed Akhtar, and various fashion industry leaders, including designers Akki Narula, Laconet Hemant, and Narendra Kumar.

Connecting Users to Services

Breakthrough launched an interactive Google map feature on the *Bell Bajao!* website (www.bellbajao.org), which provides users with information about national, regional, and local service providers in the states in India where Breakthrough has a presence. Breakthrough is currently developing an interactive mobile-messaging platform to connect rights advocates.

Monitoring and Evaluation of *Bell Bajao!*

The evaluation of *Bell Bajao!* captures how a multimedia campaign, supported by in-depth community mobilization activities, can increase knowledge, change perceptions and attitudes, and mobilize action to reduce domestic violence.

A range of monitoring and evaluation techniques have been used to assess the extent to which the *Bell Bajao!* campaign has met its goals of actualizing changes in individual “hearts and minds,” reaching wide audiences with the *Bell Bajao!* message to initiate public conversations on issues of domestic violence, and changing the ways in which the issue is framed in the broader culture.

The extensive monitoring and evaluation techniques that were used for *Bell Bajao!* are instructive for organizational learning. The feedback from monitoring and evaluation activities has enabled Breakthrough to refine

⁵ Breakthrough’s experience in working with individuals, small and medium public relations firms, and large national companies has led the organization to the conclusion that it is more productive and effective to work with smaller firms that may have only city-level presence. Breakthrough has developed a list of firms and individuals across Breakthrough coverage areas to do public relations for the campaign.

and revise *Bell Bajao!* to be more effective—and to give it greater potency as the campaign takes on a global scope.

Breakthrough drew on both in-house and external evaluators to monitor and evaluate the *Bell Bajao!* program. In this section we discuss the various methodologies that Breakthrough used to measure the effectiveness of *Bell Bajao!* as well as the findings regarding the efficacy of the campaign. This section also discusses the human and financial investment required to implement a thorough evaluation and monitoring process, along with some of its challenges.

Data Collection

Primary data collected Breakthrough undertook primary research in order to obtain detailed, state-specific information related to domestic violence and HIV/AIDS. This research provided more information on the forms of domestic violence, the level of knowledge concerning PWDVA 2005, and the actions that are taken in cases of violence. Such granular information is generally not available in larger studies.

Breakthrough hired CMS to conduct this primary research. CMS conducted a baseline study in the intervention areas, performed “rapid assessment” surveys in the mid-period of the campaign, and did an end-line survey to see what changes occurred as a result of Breakthrough intervention.

Secondary data sources Secondary datasets were used to establish the prevalence of domestic violence and violence toward women with HIV/AIDS. These included data culled from the National Family Health Survey (NFHS) in India and from the World Health Organization (WHO).⁶ The data provided a global understanding of violence and its intersection with HIV. It was apparent that physical and sexual violence are not adequately addressed in India. Breakthrough used state-level NFHS data from Uttar Pradesh and Karnataka regarding the level of violence against women in the domestic sphere. This enabled Breakthrough to establish state-level benchmarks and parameters on violence against women.

Qualitative tools applied Breakthrough used state-of-the-art evaluation techniques for assessing the *Bell Bajao!* program. CMS recommended the use of the Most Significant Change Technique (MSCT), a method of collecting stories that indicate behavior change that occurs because of a particular intervention. MSCT is used to ascertain changes in practice, and it obtains more nuanced outcomes of community education and leadership

⁶ NFHS, 2005–2006; WHO Multi-Country Study on Women’s Health and Domestic Violence Against Women, 2005.

development programs. MSCT allows beneficiaries and stakeholders to participate in a dynamic and integrated way in defining what constitutes success.

CMS and Breakthrough provided MSCT training to 15 people from different organizations who had received Breakthrough training on issues of domestic violence and HIV/AIDS so that they could monitor and evaluate their work in the community. Story collectors gathered stories originating from their fields, and story selectors validated and selected the best stories that showed significant change. To date, more than 100 stories have been collected. These stories track changes experienced by those who have received RAP training and as well as changes reported by community members who were affected by Breakthrough interventions.

MSCT also serves as an in-house monitoring tool. Every 6 months, stories are selected and used by Breakthrough staff and trainers to gauge if the people they are training are continuing to progress in terms of their knowledge and attitudes toward domestic violence.

In-depth interviews CMS has conducted in depth interviews with different Breakthrough partners—organizational heads, cultural groups, people who travel with the video van—to ascertain the extent to which Breakthrough partners have taken ownership of the campaign and the issue of domestic violence. The key findings of this study were:

- There has been an increase in knowledge and a shift in attitudes and behavior among Breakthrough partners concerning domestic violence and HIV/AIDS issues.
- Partners have started disseminating information about domestic violence and HIV/AIDS in their own spheres of work through one-on-one interactions, group meetings, theater, folk art, and so forth.
- Many of the partner organizations have incorporated Breakthrough's campaign issues as part of their work mandate. For instance, CARDTS adapted issues of HIV/AIDS and violence against women—in particular, domestic violence—as a priority in its policy and planning.

Longitudinal panel study A longitudinal panel study is currently being conducted by the International Center for Research on Women (ICRW) to track long-term attitude changes that have occurred among the 60 advocates who received a comprehensive RAP training. The participants have been selected to represent the different target audiences of Breakthrough: youth from college, youth from marginalized communities, members of NGOs, and people living with HIV/AIDS. Representatives from each of these groups will participate in an in-depth, 2-hour interview to ascertain whether the training they received led to shifts in attitudes and behavior.

Two follow-up interviews, 6 months apart, will examine whether changes that resulted from the training have been sustained.

ICRW will produce a report that is expected to provide insights on how the Breakthrough training has affected trainees and if it has led to changes in their interactions with peers. Insights from this study will be used to improve training modules.

Quantitative tools applied CMS designed and conducted baseline, mid-line, and end-line studies in the states of Maharashtra, Uttar Pradesh, and Karnataka to statistically record how the *Bell Bajao!* campaign changed knowledge, attitudes, and behavior as they relate to domestic violence, PWDVA 2005, and HIV/AIDS. The baseline survey explored attitudes and practices toward issues of gender, condom use and negotiation, inter-spousal communication, HIV/AIDS, and domestic violence. The mid- and end-line surveys made it possible to compare shifts that occurred at both timeframes as a way to capture campaign impact. The survey also sought to capture where people obtained information on these issues.

In order to assess the differential impact of Breakthrough's education and media interventions, a control group technique was employed. Two districts were selected for research under the assumption that when both media messaging as well as educational and training outreach activities were undertaken, the effect of the campaign would be greater. One district that used education and media components and one district that used only mass media were chosen for study—and comparison—so Breakthrough could see if there were differences in impact.

Key Findings of the End Line Surveys

The key findings from the end-line survey indicated significant changes in knowledge, attitudes, and behavior at both the individual and community levels with regard to domestic violence, HIV/AIDS, and safe sex. Important outcomes include

- *Increased knowledge and awareness of what constitutes domestic violence.* The end-line survey showed that as a result of the *Bell Bajao!* campaign there was greater knowledge and community awareness about the various forms of domestic violence. For example, a significantly higher proportion of respondents expanded the definition of domestic violence beyond physical abuse to include emotional abuse, threats, economic deprivation, and sexual abuse.
- *Increased knowledge and understanding regarding PWDVA 2005.* Respondents had a better grasp of PWDVA 2005 and the protections it offers victims of domestic violence. There was a significant increase in the proportion of respondents who knew that a woman

had the right to stay in her house even after filing a complaint against her husband. There was significantly more knowledge among the public regarding the other benefits to which survivors of violence are entitled, including monetary compensation, right to residence, and custody rights.

- *Changes in attitudes toward domestic violence.* Public attitudes showed less acceptance and justification for domestic violence as a result of the campaign. For example, fewer people justified wife beating, even when a husband suspected infidelity. The majority of respondents listed many justifiable reasons for a woman refusing to have sex with her spouse: 93 percent of respondents thought it was justifiable to refuse sex when a husband had a sexually transmitted disease, 90 percent thought it was justifiable to refuse sex when a woman was not in the mood for sex, 87 percent felt a woman feeling tired was a justifiable reason, and 86 percent thought that the man having sex with other women was a justifiable reason. Fewer respondents felt that it was justifiable for a man to have sex with other women, to have sex forcefully, or to stop providing financial support if a wife refused sex.
- *More women took action against perpetrators of violence.* Women are increasingly taking proactive stands against domestic violence as a result of Breakthrough's campaign. A majority of respondents favored taking legal action (90 percent) in cases of domestic violence. There was a significant decrease in the number of respondents who felt that taking legal action would bring shame to the family.
- *Rising concern and greater intervention by community members in cases of domestic violence.* There was a significant increase in the proportion of respondents reporting that community intervention had taken place in cases of domestic violence. Only 9 percent of respondents thought that domestic violence is a private matter in which nobody should intervene. Nearly 61 percent of respondents (as compared to 53 percent at baseline) of those who came across incidents of domestic violence reported that the community had taken action to stop it.

The end-line study indicated that community support for legal action against domestic violence is of utmost importance. There was a significant increase in the proportion of respondents reporting that both men and women were taking action against domestic violence but that men continued to be the majority.

- *A decline in ignorance and reduced stigmatization of people with HIV/AIDS.* There was significant decrease in ignorance and attitudes of shame and blame toward people with HIV/AIDS among

respondents. For example, the percentage of respondents who felt that a woman should be ashamed of her HIV status dropped from 25 percent to 8 percent. The end line study indicated less fear associated with the spread of HIV/AIDS. A significantly lower number of respondents said that an HIV-positive woman should be kept away from her children and that her belongings should be segregated. Stigma and discrimination against women living with HIV/AIDS also showed a significant decrease: Some 86 percent of respondents at end-line said that an HIV-positive woman should not be ostracized from society. The reduction in stigma was also apparent in the significant decrease in respondents wanting to keep family members' HIV status secret. The percentage dropped from 45.3 percent at baseline to 6.3 percent at end line.

- *Increased knowledge and responsibility regarding the practice of safe sex.* In the end-line report there was a significant increase in knowledge about safe sex among respondents. Roughly 81 percent promptly referred to “condom use,” while nearly 31 percent could correctly identify safe sex as “consistency in the use of condoms for safe sex.” More than two-thirds of respondents reported that being monogamous is a safe sex practice. Both base- and end-line data revealed that men are comparatively more aware than women about safe-sex issues.
- *Increased joint decision making between spouses.* Breakthrough's campaign led to greater respect for women's role in decision making within the family. A majority of the respondents indicated that decisions relating to children's education, children's marriage, the purchase of major household items, and visits to a wife's relatives were being made by both the husband and wife. A significantly higher proportion of respondents reported joint decision making on family planning matters, including whether to have sex.
- *Continued unwillingness among unmarried men to discuss sexual partners.* The end-line data underscored the continuing unwillingness of men and women to disclose sexual relationships outside of marriage. Only 6 percent of unmarried, widower, and separated men reported having a sexual partner, and none of their partners asked them to use condoms. None of the unmarried women reported having a sexual partner.

The end-line study also revealed a greater openness to express one's sexual inclinations and disinclinations. Both male and female respondents indicated a greater willingness to say whether or not they wished to engage in sexual activity with their spouse.

Key Results Regarding Numbers Reached by *Bell Bajao!*

Audience-reach measurement tools show the extent and scale of the *Bell Bajao!* campaign and identify the numbers and demographic information of people reached. Television, radio, print, and online audience measurement tools provide estimates of:

- When and how often *Bell Bajao!* ads, music, or music videos are played on television, radio, or print outlets—data provided by Television Audience Measurement (TAM), the National Readership Survey, Nielsen ratings, and similar industry standards.
- Website viewership and participation through the use of Google AdWords, Google Analytics, and online commentary on the Breakthrough website as well as online platforms such as Facebook, YouTube, The Hub, and MySpace that feature *Bell Bajao!*
- Audience reach through *Bell Bajao!* press coverage, including blogs and online coverage.
- Videographic, photographic, and written documentation of *Bell Bajao!* presentations at workshops, trainings, conferences, forums, and film festivals.
- Use of *Bell Bajao!* materials by other groups, including civil society actors, educational institutions, the United Nations, and government agencies.
- Number of *Bell Bajao!* media products and curriculum materials disseminated online, downloaded, or provided in hard or soft copy.

These various measurements indicate that the *Bell Bajao!* campaign has had extraordinary reach and impact. According to TAM, in 2008–2009 *Bell Bajao!* reached 130 million people (via television, radio, and print), and the video van reached 2.5 million people. In 2010 *Bell Bajao!* reached 115 million people through television ads, and the video van reached 2.4 million people. In addition, since 2008 Breakthrough has built capacities of more than 75,000 people through RAP to take the *Bell Bajao!* message forward. The website (www.bellbajao.org) has reached millions more people.

It is important that *Bell Bajao!* reach scale because Breakthrough seeks to change public conversations and to change the dialogue around issues of domestic violence, which can be achieved only when significant numbers of people are reached by the campaign and the issues of women's rights and ending domestic violence enter the public imagination and lexicon. *Bell Bajao!* continues to resonate in varied mainstream popular culture spaces. For example, Breakthrough's reach expanded exponentially when *Bell Bajao!* was featured on the popular television soap opera series *Is Desh*

Na Aana Laddo and as a question and correct response on *Kuan Banega Crorepati (Who Wants to Be a Millionaire?)*.

Challenges in Evaluation

Monitoring and evaluating social change is not an exact science but is instead a challenging and constantly evolving field of social science. There are always new methodologies and new techniques that can be used to capture the complex change process. To conduct comprehensive evaluation and monitoring requires a great deal of capacity building so that the *Bell Bajao!* staff them may represent the data they are receiving from analysts in an accurate and meaningful way as well as to use it internally to improve performance and outcomes.

Furthermore, social scientists who design and carry out the research face the issue of communicating with nonprofit organizations that must translate the research findings to make them accessible to non-specialists. Too often the social scientists' reports are technical and hard to adapt for reporting purposes, making the results difficult to communicate to a larger public.

Despite these difficulties, the evaluation of *Bell Bajao!* captures how a multimedia campaign, supported by in-depth community mobilization activities, can increase knowledge, change perceptions and attitudes, and mobilize action to reduce domestic violence.

DATING VIOLENCE PREVENTION: USING INFORMATION AND COMMUNICATIONS TECHNOLOGIES FOR GLOBAL DATING VIOLENCE PREVENTION⁷

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Definition and Prevalence

Dating violence is a type of intimate partner violence that occurs between two young people in a close relationship. The nature of dating

⁷ Author note: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

violence can be physical, emotional, or sexual, or it can involve stalking behaviors (CDC, 2010a). Dating violence can occur in person or electronically, such as through text messages or on social networking sites. Across studies, the prevalence of dating violence varies by the age and location of the sample as well as by the type of violence that is measured. For example, in the United States it is estimated that 1 in 10 high school students has experienced physical violence from a dating partner in the past 12 months (Eaton et al., 2010) and that about 1 in 5 women and nearly 1 in 7 men who have ever experienced rape, physical violence, or stalking by an intimate partner first experienced some form of partner violence between 11 and 17 years of age (Black et al., 2011). The rates of teen dating violence (TDV) in middle school vary across settings, ranging from 5 percent in rural Canada to 21 percent in rural North Carolina and 45 percent in urban Philadelphia (O’Leary and Slep, 2011). Studies across 48 countries indicate that 10 percent to 69 percent of women report having experienced physical violence from an intimate partner during their lifetimes (Heise et al., 1999; Heise and García-Moreno, 2002). Emerging data from national surveys of violence against children suggest that many individuals experience sexual violence in a dating relationship. For example, in Tanzania 25 percent of women and 50 percent of men who experienced sexual violence before age 18 reported that a dating partner perpetrated the violence (United Republic of Tanzania, 2011), and in Swaziland 26 percent of sexual violence experienced by girls prior to age 18 was perpetrated by a boyfriend (Reza et al., 2009).

Risk Factors for Victimization and Perpetration

Risk factors for experiencing dating violence include having dysfunctional coping strategies, destructive or dysfunctional problem-solving skills, and poor communication skills and experiencing stress (Lewis and Fremouw, 2001). Risk factors associated with perpetrating dating violence include experiencing anger, perpetrating aggression toward peers, holding traditional gender views or beliefs that are accepting of violence in dating relationships, using drugs or alcohol, having multiple sexual partners, experiencing or witnessing violence in the home, and having friends who experience or perpetrate dating violence (Vagi et al., in preparation). Research examining the effects of societal norms and customs on dating violence is scant, but communities in which cultural or social norms accept, promote, or excuse violence against a dating partner may create a context in which dating violence is viewed as acceptable and permissible and in which policies that sanction such violence do not exist or are not enforced. Moreover, norms, practices, and policies that reflect or support harmful traditional gender roles may also foster and reinforce violence in dating relationships.

Primary Prevention

A shift in primary prevention approaches has taken place over the past several years. Although early work focused only on preventing and responding to violence, current approaches to prevention focus on promoting respectful, nonviolent, and healthy relationships.⁸ Healthy relationships are relationships in which each partner feels empowered (as opposed to feeling in power), respected, safe, and supported. Such relationships are characterized by trust and shared decision making. Currently, four primary prevention programs have demonstrated effectiveness in preventing physical or sexual dating violence: Safe Dates (Foshee et al., 1998), Fourth R (Wolfe et al., 2009), Youth Relationships Project (Wolfe et al., 2003), and the Shifting Boundaries school-level intervention (Taylor et al., 2011). However, these programs have been developed and evaluated only among middle or high school students in the United States and Canada. Their efficacy in contexts with different cultural or social norms is unknown, and their uptake in other countries has been minimal and has not been evaluated. Globally there have been HIV behavioral prevention programs targeting youth that address harmful gender norms and dating violence as a part of broader agendas. For example, Stepping Stones (Jewkes et al., 2008) has been evaluated and shown to be effective in reducing HIV risk-taking behaviors but has not specifically been evaluated in terms of changing harmful gender norms or the incidence of dating violence. The use of information and communications technologies (ICTs) in these programs is limited to the inclusion of electronic aggression in vignettes and the option to use technology in some of the activities. Although numerous organizations have developed ICT-based approaches to raise awareness of dating violence⁹ and facilitate help seeking, these approaches have not yet been evaluated.¹⁰

Next Steps for Global Dating Violence Prevention

In light of the limited evidence base concerning what works to prevent dating violence among young people, universal primary prevention efforts implemented globally may initially focus on increasing awareness about the frequency and risk factors for dating violence and countering cultural and social norms that support harmful gender norms and the social acceptability of violence in relationships. Increasing awareness may be targeted

⁸ E.g., Start Strong: Building Healthy Teen Relationships: www.startstrongteens.org/; Dating Matters: Strategies to Promote Healthy Teen Relationships: www.cdc.gov/violenceprevention/DatingMatters/; and CDC Strategic Direction for Intimate Partner Violence Prevention: www.cdc.gov/ViolencePrevention/pdf/IPV_Strategic_Direction_Full-Doc-a.pdf.

⁹ E.g., www.thatsnotcool.com/; www.loveisnotabuse.com/; www.breakthecycle.org.

¹⁰ E.g., the National Dating Abuse Helpline can be called or texted: www.loveisrespect.org/about-national-dating-abuse-helpline.

at policy and decision makers to build political will for dating violence prevention. Efforts to counter harmful cultural and social norms may focus on individuals who are dating or about to initiate dating and on their influencers (e.g., parents, educators, and religious leaders) and may address such issues as negative portrayals of women in the media, media representations that support harmful gender roles, norms that perpetuate intergenerational relationships or child marriage, and norms that promote entitlement rather than respect in relationships.

ICTs provide a vehicle for reaching a specific audience with targeted prevention messages, strategies, and resources in an efficient and cost-effective manner. Popular among health agencies, such as the U.S. Department of Health and Human Services, SMS/text messaging campaigns often link subscribers to resources, such as clinics, treatment facilities, and other resources, based on geographic location. For example, the National Institutes of Health has implemented a SmokefreeTXT campaign that tailors smoking cessation SMS/text messaging to the user's projected quit date and includes a mobile application to enhance the user's interaction with tools, tips, and resources provided by the agency. Because mobile technology is so widely accessible, it is an ideal mechanism for disseminating information about healthy relationships as well as dating violence prevention messages. Furthermore, in the global context, dating violence prevention should be incorporated into HIV prevention and broader development agendas. Dating violence increases sexual risk-taking behavior and the risk of HIV infection and, at a broader level, can affect and impede social and economic development in developing countries.

Considerations for ICTs and Global Dating Violence Prevention

Besides identifying the focus of prevention efforts globally, our work integrating ICTs with dating violence prevention suggests a number of considerations are warranted as the field moves forward.

Collaborate on Development of Dating Violence Prevention ICTs

It is critical that the development of ICTs for primary prevention of dating violence reflects and extends the state of the field and the current evidence base on what works to prevent dating violence, including known risk and protective factors for dating violence and best practices in prevention (e.g., Nation et al., 2003). This would entail, for example, targeting prevention strategies to age groups and communities at risk, countering the specific norms and practices that sustain violence in different communities, and building healthy relationship skills. ICTs also should take into account the range of audiences who may be key agents in prevention. For example,

traditional approaches build skills among parents, educators, and youth, and prevention delivered through ICTs may engage these groups. Unfortunately, technology applications for prevention are often developed without taking the best-available science into account and, as a result, do not have the maximum potential to affect violence. Similarly, prevention scientists are often reluctant to entertain alternative modes of delivering prevention (vs. school-based curricula) and, as a result, do not take full advantage of the reach and relevance that ICTs offer. Ideally, the development of global dating violence prevention will be informed by the best available science and will use ICTs to make prevention accessible and engaging to young people and their influencers. Given the length of time that is traditionally involved in developing effective prevention, crowdsourcing techniques such as app challenges (e.g., Apps Against Abuse) may be used to stimulate the rapid development of innovative prevention strategies. When crowdsourcing is used, prevention scientists and technologists may be encouraged to work together to ensure that the strategy reflects the current state of the field as well as being feasible and sought after by the intended users.

Evaluate New Approaches

Similarly, new technologies that are developed and used in prevention must be evaluated for effectiveness. To minimize the dissemination of ineffective or harmful approaches and to maximize the use of limited resources, new evaluation techniques must be integrated into the development and refinement of preventative ICTs. Digital and personal technology, including SMS, mobile applications and social platforms, should encourage a “test and learn” approach to evaluation. Gathering real-time, human-experience feedback while programs are being developed allows programs to be launched with insights embedded in the final product. Moreover, new technology and digital media programs encourage an iterative approach to programming in which a project can be launched with groups in phases so that researchers can evaluate the impact, success, and shortcomings while the program is running. A special consideration with ICTs is the potential use of technologies for violence perpetration rather than prevention. For example, many violence prevention applications currently integrate global positioning system (GPS) to enable friends, families, and law enforcement to know where an individual is in case he or she needs help. However, GPS could also be used to control one’s partner by tracking his or her activities and location. Therefore, it will be critical to carry out evaluations to detect misuse and iatrogenic effects. Although ICTs may necessitate novel evaluation approaches and evaluation timelines may need to be abbreviated to account for the rapid evolution of technologies, nonetheless evaluation should be a cornerstone of the global prevention of dating violence. The

pace of technology innovation and adoption is rapid. Programs should be built to adapt and evolve with technology.

Combine Technology with Traditional Approaches

In order to develop prevention that is both comprehensive and has a sufficient dose (Nation et al., 2003), a first step may be to combine traditional classroom-based approaches with ICTs. For example, the CDC's Dating Matters youth communication campaign will utilize both social media (e.g., Facebook) and mobile media (e.g., SMS/text messaging) to engage the youth audience with primary prevention messages. The messages will complement the content delivered in the classroom model, but social and mobile media channels present an opportunity for youth to interact with the messages on their terms, in environments where they are comfortable, as well as an opportunity to use the influence of the youths' own social networks. In addition, ICTs can expand the reach of traditional models in a more cost-effective manner. For example, a teen could opt in to the text message program to receive tips about healthy relationships as well as information about local campaign events. This would be supplemented by a Facebook page on which teens can interact with their peers and talk about the kinds of relationships they see in their communities. While classroom instruction might reach 30 students at a time, mobile and social media have the capacity to reach thousands of teens in that same community. Moreover, a need exists to combine primary and secondary prevention approaches when ICTs are used, so that individuals who are utilizing ICTs and are already experiencing violence may access resources and referrals for dating violence services as well as dating violence prevention.

Be Aware of Regulations Related to Engaging Youth Through Technology

Although the use of ICTs to communicate with multiple audiences, particularly youth, has increased dramatically in recent years, access to youth through technology is often governed by stricter laws and regulations than the laws that regulate similar communications with adults. For example, the Children's Online Privacy Protection Act of 1998 (COPPA) prohibits the collection of personal information from youth under the age of 13 by all "commercial websites and online services" unless verifiable consent is obtained from a parent or guardian.¹¹ Proposed changes to COPPA made as recently as 2011 would further delineate a data retention and deletion requirement when such information is collected from youth under 13, mandating that information collected should be stored only for the length of time necessary to achieve the purpose for which it was

¹¹ See www.ftc.gov/os/1999/10/64fr59888.pdf.

obtained. Other countries have passed or are considering similar legislation to protect youths under the age of 13. In addition to national laws, consideration should be given to state, territorial, and local regulations further limiting access to youth because some jurisdictions may provide for even less access to youth under a certain age. Because primary prevention must be implemented before dating violence begins, restrictions on interacting with middle-school-aged youth complicate the task of implementing prevention during this key phase in development.

Conclusion

Dating violence is a preventable but all-too-frequent form of violence among young people around the world. ICTs offer the potential to increase the reach and relevance of prevention; however, to maximize the opportunity to stop dating violence before it begins, several considerations must be taken into account as the field moves forward. Collaboration, evaluation, and prevention-informed regulation will ensure that ICTs are applied in a way that promotes healthy relationships globally.

LEVERAGING SOCIAL MEDIA AND TECHNOLOGY TO ADVANCE THE FIELD OF ELDER ABUSE

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Introduction

Elder abuse is a substantial global public health and human rights problem. Elder abuse includes physical abuse, sexual abuse, emotional abuse, neglect (both caregiver and self-neglect), and financial abuse. Available prevalence data suggest that at least 10 percent of the elderly population in the United States experiences abuse each year, and many of them experience it in multiple forms (Acierno et al., 2010; Beach et al., 2010). Furthermore, data from U.S. adult protective services agencies depict an increasing trend in the reporting of elder abuse (Teaster et al., 2004). This trend is particularly alarming because the literature suggests that elder abuse is associated with increased risk of morbidity and mortality (Lachs et al., 1997, 1998, 2002; Dong et al., 2005, 2009, 2011a, 2011b; Dong, 2011).

Despite the accessibility of adult protective services and the existence of nursing home regulations in all 50 states as well as mandatory reporting laws for elder abuse in most states, an overwhelming number of abused elderly pass through the health care system undetected and untreated. It is estimated that only 1 in 14 cases of elder abuse comes to the attention of social services (NRC, 2003). In this paper we review the epidemiology of elder abuse and describe how social media and technology could synergistically advance societal awareness of elder abuse at the broad level.

Risk Factors

Available evidence suggests that those over 75 years old, African Americans, and those of lower socioeconomic status are at particularly high risk for elder abuse (Mosqueda and Dong, 2011). A number of cross-sectional studies have found that cognitive impairment and physical disability are associated with increased risk for elder abuse. Recent studies suggest that older adults with higher levels of psychological distress and lower levels of social relations are also more likely to be reported to adult protective services (Mosqueda and Dong, 2011). There are few longitudinal studies examining the factors associated with elder abuse. A study of 5,519 older adults from the Chicago Health and Aging Project (CHAP) found that both the presence and severity of self-neglect were related to a decline in physical performance tests as well as a decline in self-reported physical function. The study also found that a decline in cognitive function, particularly executive function, was associated with increased risk of encounters with adult protective services (Dong et al., 2009, 2010).

Morbidity and Mortality

Despite major gaps in our knowledge about the ramifications of elder abuse, available evidence suggests that it is associated with significant adverse health outcomes. Prior studies of 2,812 older adults in the EPESE (Established Populations for Epidemiologic Studies of the Elderly) cohort suggest that elder abuse is associated with an increased risk for nursing home placement and with higher all-cause mortality. Recent data from Dong et al. (2009), who examined the relationship between elder abuse and mortality (all-cause and cause-specific) for 9,813 participants within the CHAP study, found that elder abuse was associated not only with increased all-cause mortality but also with increased cardiovascular-related mortality over the 15 years of follow-up. In addition, mortality associated with elder abuse was most prominent among those with the lowest levels of cognitive function and physical function and the highest levels of psychological distress and social isolation (Dong et al., 2009, 2011a). Dong and colleagues

also found that black older adult victims had significant higher mortality risk than white older adults in the same CHAP cohort (Dong et al., 2011b).

Raising the Awareness of Elder Abuse

We examined the types, prevalence, risk factors, and consequences of elder abuse and discussed reasons why the majority of the abuse goes unreported and unnoticed. For the workshop we were asked to examine prevention strategies globally; therefore, issues of cultural and social norms needed to be considered. Our hypothesis: If we raised awareness of elder abuse at the community level, it would have a positive impact on families and help build the groundswell required to raise awareness and action with policy makers.

Approach We researched successful taglines used in national awareness campaigns on other important societal issues, in order to determine what might be applicable to elder abuse.

We identified common elements found in all of the campaigns: a memorable tagline that empowered the reader or viewer and, in most cases, a call to action. The campaigns made it clear that the reader could do something to make a difference. The taglines were frequently combined with startling imagery.

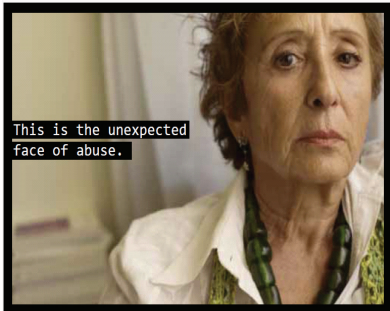
We generated a list of tagline ideas to help facilitate the brainstorming session:

- Get LOUD about elder abuse.
- This is the unexpected face of abuse.
- Unfortunately, you're never too old to need protection.
- Treat your elders how you want to be treated. Your children are watching.
- Cherish a life. Report elder abuse.
- Don't abuse your parents. And your children won't abuse you.
- Don't be mean to your elders. Remember, you will be an elder someday, too.
- Stop elder abuse. It is a national shame.

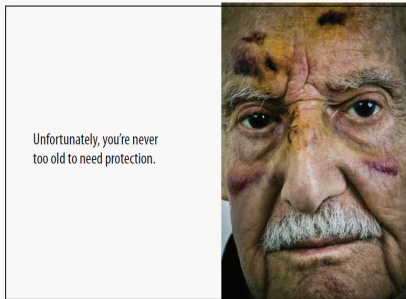
A few of the taglines (Figure 7-1) were paired with images found in the public domain to conceptualize what an actual elder abuse awareness campaign might look like.

Of the three concepts, Concept C came closest to capturing most of the elements of the brand awareness campaigns that we examined. It empowered the viewer with the call to action "Get LOUD," indicating that it was okay to talk about a topic that may have been traditionally considered

Concept A



Concept B



Concept C

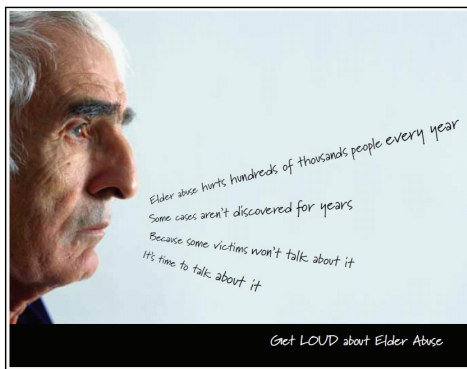


FIGURE 7-1 Concepts for elder abuse awareness campaign.

taboo. This tagline and message were used to mock up awareness campaigns using social media and existing technology.

Social Media We compiled a list of websites, technology tools, and social media campaigns (Table 7-1) with which members of our group had experience, and we imagined what these would look like when translated to the vocabulary and demographic of elder abuse.

Current understanding of the types of elder abuse that exist has been formed by what is reported in mainstream media, which misses much of the breadth of abuse being perpetrated, such as the abuse an elder may experience at the hands of family. In the face of the overwhelming yet underexposed issues and statistics, a general awareness campaign that could address any of the issues—and, more importantly, raise the overall awareness of the need to act—would be a monumental task yet a great starting

TABLE 7-1 Examples of Successful Social Media

	User-Generated Content Tools
Witness.org	Allows users to upload videos of human rights violations that have been captured on cameras or phones or by whatever means are available. Elder abuse is a human rights violation issue, so it was easy to imagine a dedicated version of the Witness model focused on elder abuse. (See #1 in the mock-up website: Figure 7-2.)
ItGetsBetter.org	This project started with the aim of collecting and displaying user-generated videos of LGBT adults telling their stories of abuse and how they have since found happiness. A similar model could be employed for collecting and distributing personal narratives of elder abuse to help elders being abused feel less alone in their situation and envision a future without abuse. (See #2 in the mock-up website: Figure 7-2.)
	Web Utility Tools
FamilyWatchDog.us	Allows users to conduct a search based on specific locations to find registered sex offenders within a certain radius. This simple interface and concept could be used to create a search tool for convicted predators of the elderly or to map reported cases of abuse down to specific care facilities. (See #3 in the mock-up website: Figure 7-2.)
AFSP.org	The American Foundation for Suicide Prevention has a very simple search function for finding suicide bereavement support groups. It would be very easy to create this type of search function for elder abuse support networks, something that we were unable to find in a simple Google search. (See #4 on mock-up website: Figure 7-2.)
Change.org	An online tool for creating, distributing, and broadcasting petitions online. Petitions can easily be spread through social networks, requiring a minimal level of effort to engage. We have envisioned a similar tool for galvanizing people around pledging to end elder abuse. (See #5 on mock-up website: Figure 7-2.)
	Broadcasting and Network Tools
AmberAlert.gov	This program has implemented a mobile phone text notification system that broadcasts children to be on the lookout for, which increased the speed and breadth of the organization’s alert network. This same approach has been applied to mentally disabled and elders through nationalsilveralert.org . We envisioned this same system being used for such things as alerts for financial scams currently targeting the elderly. (See #6 on mock-up website: Figure 7-2.)

continued

TABLE 7-1 Continued

Facebook Groups	It is easy to imagine the moment when a friend asks you to sign a pledge to combat elder abuse for which the commitment is small and the social pressure to do so high. While following the link from Facebook to the pledge on the Loud.org site, users discover all of the other valuable tools and content available to them, leading them to subscribe to the feeds themselves. These feeds, such as the Silver Alert, are then published to that user's news feed, both broadening awareness and providing a service to the elder community. (See #7 on mock-up website: Figure 7-2.)
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place. And for an awareness campaign, the most important place to start is with the brand and the messaging.

Brand awareness We created a mock-up of how different re-purposed Web and social media tools would look if implemented with the taglines and messaging expressed in the awareness and messaging section of this paper and under the faux organizational name Loud.org (Figure 7-2). In exploring why elders do not report abuse—usually because of fear of being removed from the home or from a facility, the fear of change, and the fear of the unknown—the value becomes clear of some of the ideas represented in the list of social media examples, such as providing a place to “tell your story” for others to benefit, generating a pledge that people could take to help end elder abuse in their communities, or using technology to identify violence hot zones.

Scoping and understanding what actions or inactions constitute elder abuse across different cultures, situations, and demographics leads to looking at tools that allow definitions and descriptions to be flexible enough to evolve and incorporate new research and perspectives. For example, Wikipedia uses user-generated content to create an encyclopedia of knowledge to define words, concepts, and events. Using this concept, we thought about crowdsourcing the definition and spectrum of elder abuse by allowing users to complete the phrase “Elder abuse is _____.” Over time this could be refined and edited in different ways to create a growing and ever-changing taxonomy of elder abuse. This concept was informed by the messaging concept formulated in Donna Levin’s brainstorm of “Elder abuse = ” and could carry the experience from the messaging to the actionable items in the campaign (not included in the mock-up).

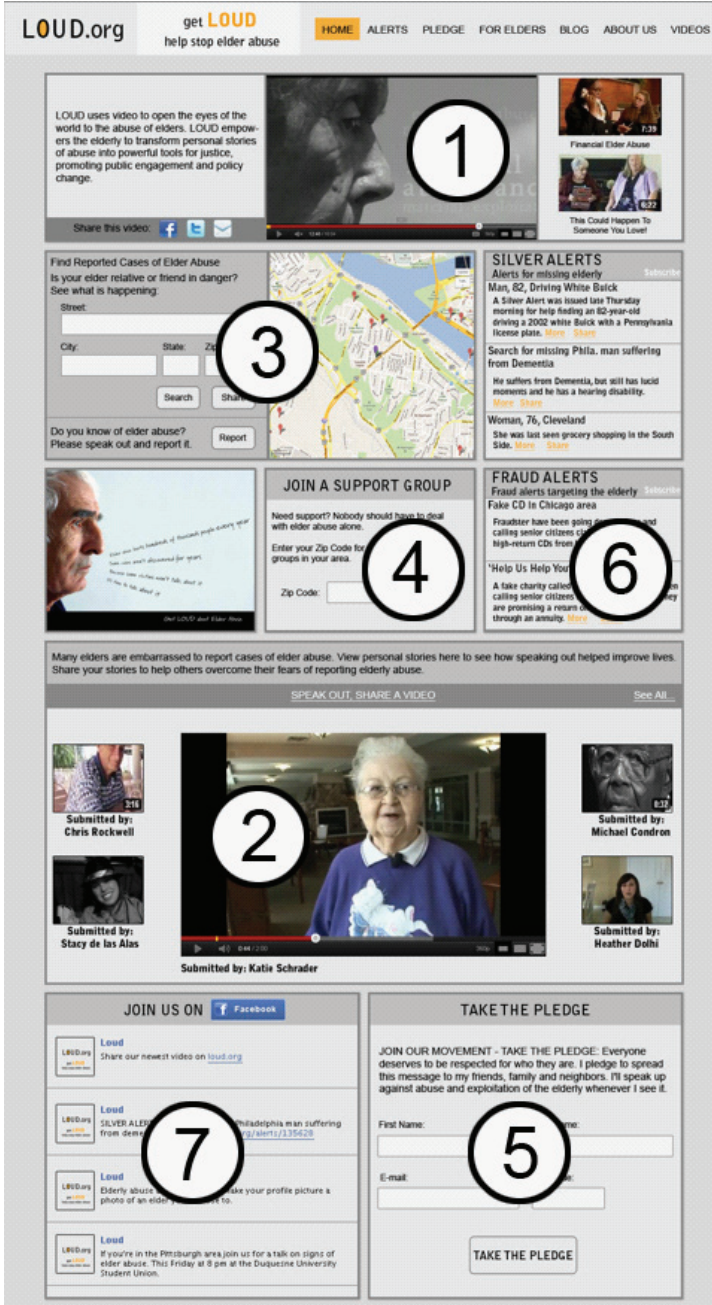


FIGURE 7-2 Mock-up website for elder abuse.

Summary

Elder abuse is a pervasive public health and human rights issue and is associated with premature morbidity and mortality. Despite the fact that an older adult is victimized every 2.7 minutes, there remain major challenges and barriers in raising social awareness on these issues. The three authors of this paper collaborated synergistically outside our traditional comfort zones to tackle the global issue of elder abuse. We believe this process demonstrated that fruitful collaboration is possible and that it is feasible to combine scientific knowledge with input from experts in technology and social media to increase community and societal awareness of elder abuse and to improve the health and aging of an extremely vulnerable population.

USING BIG DATA TO UNDERSTAND AND PREVENT SUICIDE

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Suicide Awareness Voices of Education

John Gordon
Fenton

There is no greater tragedy or malady in our world than the loss of life by self-harm. While many people today will say the word “suicide,” on a global level, it remains a taboo word in most cultures. Suicide still invokes questions and curiosity, myth and misery, especially for the survivors (those left behind after a suicide). For researchers there are more questions than answers, and the more that is learned, the more that is still unknown comes into view. Often suicide is said to be the most preventable fatality, and although this may be true, there is a long way to go before claiming victory over this complicated and devastating form of death.

Historically we have approached suicide prevention as a traditional public health campaign and used traditional “gatekeepers” (individuals, family, friends, and survivors after a suicide) as the target audience for these campaigns. Unfortunately, these efforts have proven less than successful, and the rates of suicide have not been reduced despite widespread efforts using this approach.

We can summarize the current situation as follows:

1. There are few good data on suicide—what causes it and what truly can prevent it.
2. Up to now programs have focused primarily on education instead of intervention.

3. Society is moving to an increasing public lifestyle using social (online) media and technology.
4. Current online behavior is generating massive data streams (“big data”) that might be helpful in identifying people at risk of suicide as well as effective intervention approaches.

To begin understanding the links between suicide, online behavior, and the goal of saving lives on a global scale, it is important to start with knowledge-sharing in order to form a basis for where to go next. The most interesting thing about this process is that this is not only where we began, but also where we ended in our thinking about suicide prevention and technology. Ultimately, what we know about suicide is almost as limited as what we know about how technology can help prevent suicide. Thankfully, the potential is far greater than what heretofore has been imagined, and, once clarified and implemented, it could offer the first real opportunity to save more lives.

Definition of Suicide

Suicide is a fatal, self-inflicted destructive act with an explicit or inferred intent to die (IOM, 2002). Suicide methods vary across the globe, with ingestion of pesticides being the leading one. However, suicide by firearm, hanging, poisoning, and, to a far lesser percentage, jumping, falling, and drowning are also ways in which people take their life.

A *suicide attempt* is a non-fatal, self-inflicted destructive act with explicit or inferred intent to die (IOM, 2002). The methods used in suicide attempts are similar to those used in successful suicides. *Suicidal ideation* refers to thoughts of harming or killing oneself (IOM, 2002). Estimates of the number of those who have suicidal ideation vary, but they are always in the millions, with the vast majority of those who think about suicide never actually dying by suicide. Yet, the idea that a person would contemplate taking his or her own life—in particular, when paired with other risk factors, such as mental illness, prior attempt at suicide, family history of suicide, and substance abuse—makes those millions with suicidal ideation of great concern.

Global Aspects of the Issue

There are 1 million suicides every year in the world—one every 40 seconds. More people have died by suicide than from all the wars in history combined (WHO, 2012). Some countries have better reporting and monitoring systems than others, but it is believed that suicide occurs in all countries, among all ages and all demographic groups. More males die by

suicide than females (by a four-to-one ratio) in all countries except China. On the other hand, females attempt suicide more often (three to four times more often) than do males. The loss of life is tragedy enough, but compounding this tragedy is the fact that this topic remains largely unspoken in the media, by governments, and in health care systems. Imagine seeing a news report that there were 1 million deaths by suicide last year. There would likely be public outrage around the world, with people demanding more research, better treatments, and early intervention programs. Yet today suicide is one of the least funded health-related causes of death in our world.

People at Risk for Suicide

We have learned much about the risk factors for suicide. For example, males are at a higher risk of completed suicide, while females are at greater risk of attempted suicide. A psychiatric disorder increases one's risk of suicide, and 90 percent of those who die by suicide have a psychiatric disorder at the time of their death. Mood disorders and substance abuse disorders increase one's risk of suicide (Moscicki, 2001). By the year 2020 depression is projected to become the second-leading cause of loss of DALYs (death- and disability-adjusted life years) for all ages and both sexes. Today, depression is already the second-leading cause of DALYs among people aged 15 to 44 (WHO, 2012). A prior suicide attempt significantly increases one's risk, and older adults are disproportionately at risk of suicide (CDC, 2010b). Other risk factors include a history of impulsivity, mental illness, physical illness, violence and trauma (including physical or sexual abuse, exposure to war), substance abuse, suicide in one's family, lack of access to care, and failed treatment. Persons with access to lethal means and who are socially isolated or lack connectedness are also at greater risk. Just knowing the risk factors does not by itself prevent suicide, but technology to better recognize the written, posted, and communicated risks could hold the key to more effective prevention efforts.

Prevention Strategies Shown Effective

There are several strategies currently used in suicide prevention. Public awareness campaigns show promise and are effective at getting a message out and reducing stigma; however, there is little research on their long-term effectiveness. There is evidence that safe media reporting reduces the risk of suicide contagion (Gould and Davidson, 1988). Reducing access to lethal means (such as storing firearms, providing for safe pill dispensing, and installing barriers for access to railroad tracks, bridges, dangerous buildings, and pesticides) has been shown to be effective at reducing suicide. Selected prevention programs include screening programs, gatekeeper

training, skills training, and the U.S. Air Force suicide prevention program. Indicated prevention programs address specific populations, such as those in need of a crisis response and youths judged to be at risk because of a previous attempt.

Cognitive behavioral therapy, a form of psychotherapy, has been shown to be effective at reducing the rate of repeated suicide attempts by 50 percent during a 1-year follow-up (Brown et al., 2005). Some medications, such as Clozapine, has been shown to be effective in preventing suicide among patients with schizophrenia (Meltzer et al., 2003), and lithium has been found to be effective in reducing suicide among patients with bipolar disorder. According to the National Institute of Mental Health, when combined, psychotherapy and medications together effectively treat depression 85 to 90 percent of the time. Treating mental illnesses (brain disorders of mood, thought, anxiety, and substance abuse) has been shown to prevent suicide.

Strikingly, none of the prevention efforts mentioned above include the use of new technology and all it has to offer.

Need to Better Understand How Someone at Risk Communicates: Can Technology Help Save Lives?

Research shows that the majority of those who died by suicide communicated their intent prior to their death (Michel et al., 2001). Sometimes this verbal communication was very direct—"I am going to kill myself"—while in other cases it was more indirect, such as, "The team would be better off without me." Thus if we know how those at risk communicate, know their intent and ideation, and recognize the rapid advancements made in technology's ability to help us communicate, we should be able to use technology to help us identify those individuals at risk and when these communications should occur to better prevent a suicide.

Although it is not a proven, evidence-based technique, consider the following approach: A person who has several risk factors for suicide uses his or her mobile phone to text, e-mail, post, or send out a message via one of the many current applications available. This hypothetical person might type something like, "Thanks for everything, checking out now," or "I know you'd be better off without me around. See ya." Or the language could be more direct: "I'm sorry. I just can't take this pain any longer. I just want to die." If we had a better sense of the language that people naturally use to communicate their intents, whether it is logical or not at the time, and if we had a better analysis of the online behaviors and rituals that precede an attempt, technology might be able to catch the pattern and offer interventions immediately. For example, a post as described above is sent out. The platform algorithms compare the words and phrases of the current post to past posts, and then an alert is sent to the sender. "We see

you posted something a few minutes ago. This is a little worrisome to us. Are you ok? Would you like to chat with someone?” The system could then be programmed to offer a chat service, to make a connection to a live phone contact, or to continue the monitoring of the posts. Further analysis will reveal if this is a suitable intervention, but first we need to determine the relevant information that helps us identify the early and late stages of suicide communication.

Research Is the First Key to Developing Technology That Can Prevent Suicide

Technological advances have brought about remarkable capabilities and a wealth of new measurable data, but to date they have not been applied to suicide prevention efforts. We must begin by acknowledging that data can help us develop better preventive strategies and possibly better intervention strategies. There is a virtually unlimited amount of data that already exists that we can use to begin to understand communication patterns. Why start here? Because going back to the previous example, what appears clear is that how people communicate (in this case, communication about suicidal intent) does not appear to be the basis for how current suicide prevention strategies identify or assess the risk of suicide.

We did a brief look into written communication messages about suicidal intent. We found the following:

- There are far more searches performed on the phrases “suicide how to” (7.4 million per month) and “suicide methods” (110,000 per month) than on “suicide help” (40,000 per month) and “suicide hotline” (49,000 per month).
- There is a high volume of natural speech searches like “how to kill yourself” (246,000 per month), “I want to die” (368,000 per month), and “how you can kill yourself” (246,000 per month).

A Google search for “commit suicide” yielded 12 million hits. A Google search for “kill myself” yielded 17.8 million hits. In addition to the sites displayed by Google, advertisements appeared on the right side and at the top of the page containing the searches. While there have been few studies on advertising and suicide prevention, research by Klimes-Dougan et al. (2009) found that brief exposure to billboard campaigns resulted in increased maladaptive coping by viewers who were at risk of suicide. The billboards studied displayed the message “Prevent Suicide. Treat Depression. See your doctor.” The brief messages portrayed in advertisements in search results might have the same unintended consequences as the short billboard signs and should be examined further.

More research is needed to better understand the effects of ICT-based suicide prevention efforts. The ways in which people are thinking and using technology may not be the same as current science-based assessment or intervention strategies would lead us to believe, and research is needed to better understand the effects. Existing technology has already provided us some idea of the power of language. If a person carries out a search using any of the terms in our first example, Google displays a red telephone with a National Suicide Prevention Hotline phone number as the first result. Interestingly, when the search terms from our second example are used instead, Google's red phone and crisis number come up third on the list.

Another example of an existing suicide program that uses information and communications technology can be found on Facebook's social networking site. When someone is concerned about a person at risk of suicide, that person can immediately report his or her concern through Facebook's Safety Center, and Facebook will contact the individual reported to be at risk and offer a national crisis line number and the ability to engage in an online chat with a certified mental health professional.

Even if we were able to gather all of the search engine data on people who typed in "commit suicide" or "kill myself," we still might miss a substantial number of people at risk of suicide. On the other hand, if we learned more about how people are actually using technology to communicate, it might allow us to do a better job of identifying people at risk. Taking this further, suppose we could use technology to intervene when someone at risk was identified. And suppose that technology could be used to alert others in the at-risk person's life of the communication so that they too could reach out and intervene? Technology might also be able to be used to send a message to the at-risk person with information about local resources, hospitals, and crisis lines and other national resources, or it could provide messages of hope and recovery or immediate interaction with someone who could help through text, chat, or video platforms. In reality, there is no limit to how much could be done to immediately intervene and prevent a suicide, provided that we know who is truly at risk.

What Are Some of the Questions We Need to Ask?

- Is there a pattern to online social behavior that mirrors offline suicide behavior?
- Is there posting or social behavior that is unique to social media?
- What words do people use when they decide to commit suicide?
- What role does or could anonymity play in outreach and engagement with our audiences?
- Are there media consumption patterns that precipitate an attempt?

There are some challenges and limitations to ICT-based suicide prevention efforts that should be addressed. For example, privacy and confidentiality are critically important to users as well as to the platforms and systems that obtain this information. It is important to address when and how communications that are believed to be private are shared with law enforcement, mental health agencies, and even within system staff. Another limitation is the workforce capacity of the systems that run these applications. Most likely do not have mental health professionals on staff to deal with either user issues or work stress from addressing suicide risk. Further, most health care professionals' lack of technological skills limits their ability to truly respond to and address this type of online content.

Recommendations

Given the wealth of social media and online data already in existence from user content, we propose working with Facebook, Google, and Twitter to try to better understand the online behaviors of people considering suicide. We propose studying audience, behavior, language, and tone to look for patterns that match verbal communications and online communications of people who have died by suicide or who have attempted suicide. We believe there could be significant benefits to obtaining this information. Those benefits could include

- Direct online intervention strategies
- Search and Facebook advertising
- Search-optimized landing pages
- Filters and notifications
- Offline education materials for gatekeepers

Therefore, we recommend:

1. National suicide prevention (content) experts should continue to develop relationships with social media and new technology businesses, including coding and development experts.
2. One or more major platforms (e.g., Facebook or Google) should conduct an analysis of user-generated content (posts or searches) and look for patterns that might help inform designers of programs about ways that technology can identify those at risk of suicide. This may require looking at content from users who have died by suicide or those who have attempted suicide and who allow access to the content for analysis.

3. Development of policies and practices for technology platforms should be considered based on research on the language of users at risk of suicide.
4. Suicide prevention experts and mental health professionals should be trained in the new technology and implications for use with patients.

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Appendix A

Workshop Agenda

mPreventViolence: Communications and Technology for Violence
Prevention
A Workshop
December 8–9, 2011

AGENDA

Workshop Objectives:

- To transform the field of violence prevention by accelerating the integration of information and communications technologies (ICTs) into research and prevention activities;
- To explore and anticipate the application of innovative ICTs to violence prevention;
- To highlight:
 - the use of traditional and new media to communicate evidence-based information for violence prevention;
 - new applications of social media and new communications technologies to prevent violence; and
 - the negative impact and unintended consequences of traditional and new media along with ways to mitigate these impacts.

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DAY 1: THURSDAY, DECEMBER 8

SESSION I. Setting the Stage

8:30 AM – 12:00 PM

8:30 AM – Kickoff

DEEPAI PATEL, Institute of Medicine

JIM MERCY, Division of Violence Prevention, Centers for Disease Control and Prevention

LISA WITTER, Fenton

9:00 AM – Keynote

ERIK HERSMAN, Ushahidi and iHub

9:30 AM – The State of Violence Prevention: Progress and Challenges

MARK ROSENBERG, The Task Force on Global Health

10:00 AM – Facilitated Audience Discussion

10:30 AM – BREAK

10:50 AM – The Field of Information and Communications Technologies and What It Promises for the Future

JODY RANCK, Public Health Institute

11:10 AM – Response Panel

KATHLEEN MCGOWAN, U.S. Agency for International Development

MICHELE MOLONEY-KITTS, Together for Girls

11:40 AM – Facilitated Audience Discussion

LUNCH IN THE CANADA ROOM

12:00 PM – 1:00 PM

SESSION II. Preventing Violence Using Information and Communications Technologies

The purpose of this session is to illustrate the myriad ways that ICTs can be used to prevent violence. A series of short, animated presentations will illuminate some of the most interesting current approaches.

1:00 PM – Session Overview

KRISTIN SCHUBERT, Robert Wood Johnson Foundation

1:10 PM – Promising ICT Approaches

CHARLOTTE COLE, Sesame Workshop

BEN SAWYER, Games for Health

EESHA PANDIT, Breakthrough

JUDITH CARTA, University of Kansas

ASHLEY WOMBLE, National Suicide Prevention Lifeline

2:00 PM – Facilitated Audience Discussion**SESSION III. The Problem of Violence in the
Media and Potential Remedies**

The purpose of this session is to acknowledge and discuss the role of traditional and new media in causing violence as well as potential avenues for preventing these unintended consequences. The session will outline the evidence base supporting such effects for both traditional and new media, review current approaches to mitigating the impact of such mediated violence on children and adolescents, and address the role of public policies governing media content and how it is shared.

**2:30 PM – The Contribution of Traditional and New Media to Violence
and Potential Remedies**VISH VISWANATH, Department of Society, Human Development and
Health, Harvard School of Public Health**2:50 PM – The Use of Public Policy in Addressing Media Violence**

DALE KUNKEL, University of Arizona

3:10 PM – Audience Discussion and Interactive Dialogue**3:40 PM – BREAK****SESSION IV. Social Technology and Large-Scale Change****4:00 PM – 5:15 PM**

The use of social media and ICTs to effect macro-level change has gained significant attention in the past year, particularly in the Middle East and North Africa. How have these tools changed the ways people mobilize? How can they be leveraged for positive and sustainable change?

**4:00 PM – Revolutions Gone Viral: How Social Media Transform Small
Events into Large Change**JOHN POLLOCK, *Technology Review*

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4:20 PM – Sustaining Peace Post-Conflict

MICK FEALTY, Slugger Consults

4:35 PM – Facilitated Audience Discussion

5:15 PM – End of Day 1

DAY 2: FRIDAY, DECEMBER 9

8:30 AM – Opening Remarks and Summary of Day 1

JIM MERCY, Division of Violence Prevention, Centers for Disease Control and Prevention

9:00 AM – Evaluations of mHealth

WILLIAM RILEY, National Heart, Lung, and Blood Institute, National Institutes of Health

9:25 AM – Facilitated Audience Discussion

SESSION V. Information and Communications

Technology for Violence Prevention

9:45 AM – 12:00 PM

The goal of this session is to connect ICT and violence prevention experts to brainstorm, innovate, and scale new or existing ideas, tools, and tactics to prevent violence.

9:45 AM – Introduction

FRAN HENRY, F. Felix Foundation

10:00 AM – Breakouts: ICT Views of Violence Prevention

- Child maltreatment prevention
HARRIET MACMILLAN, McMaster University
DAHNA GOLDSTEIN, Philantech, LLC
- Suicide prevention
DAN REIDENBERG, Suicide Awareness Voices of Education
JOHN GORDON, Fenton
- Youth violence prevention
KIM SCOTT, Child Resiliency Programme, Hope Counseling and Wellness Center
SCOTT GOODSTEIN, Revolution Messaging

- Dating violence prevention
 ANDRA THARP, Centers for Disease Control and Prevention
 CONSTANCE DECHERNEY, iCrossing
 JASON RZEPKA, MTV
- Elder abuse prevention
 XINQI DONG, Rush University Medical Center
 ERIC BROWN, ImpactGames
 DONNA LEVIN, Care.com

11:00 AM – Presentations on Pre-Workshop Ideas and Breakout Sessions

11:45 AM – Full Audience Interaction

**BREAK FOR LUNCH
 12:00 PM – 1:00 PM**

**SESSION VI. Use of Information and Communications Technologies in
 Dissemination and Implementation of Violence Prevention Concepts and
 Knowledge
 1:00 PM – 2:00 PM**

The purpose of this session is to describe the challenges inherent in dissemination and implementation, to illustrate how ICTs can be used to address these challenges, and to discuss the implications for the field of violence prevention.

**1:00 PM – Creating Public Value Through Cross-Boundary Collaboration:
 The Utility of ICT**
 DEVON HALLEY, Deloitte Research GovLab (XBC)

**1:20 PM – Scaling Up: Lessons Learned from Public Health and
 Applications to Violence Prevention**
 JOE MCCANNON, Centers for Medicare and Medicaid Services

1:40 PM – Facilitated Audience Discussion

2:00 PM – Closing Observations and Insights
 MIKE FEIGELSON, Bernard Van Leer Foundation
 JOHN GORDON, Fenton
 BRIGID MCCAW, Kaiser Permanente
 JIM MERCY, Centers for Disease Control and Prevention

3:00 PM – Workshop Adjourns

Appendix B

Speaker Biographical Sketches

Eric Brown, M.E.T., co-founded ImpactGames to influence society and promote change through interactive media. Toward this end, ImpactGames developed PeaceMaker, a video game simulation of the Israeli–Palestinian conflict to promote dialogue and understanding. Unlike most serious games, PeaceMaker aims to bridge the gap between education and entertainment and reach a mass market. PeaceMaker has been sold in more than 60 countries, been featured in media outlets around the world, and won several international awards. ImpactGames also created Play the News, a Web-based platform to bring interactive gaming elements to the online news media industry. Play the News changes the paradigm of news consumption from passive reading to active engagement. Play the News won the first Knight Foundation News Game Award. Mr. Brown was listed as one of the “100 Social Entrepreneurs Changing the World” in *Newsweek Japan*. He holds a master’s degree in entertainment technology from Carnegie Mellon University and received a B.F.A. in painting, with focused studies in education and computer graphics, from Washington University in St. Louis.

Judith Carta, Ph.D., M.S., is director of early childhood research at the Juniper Gardens Children’s Project, a senior scientist in the Institute for Life Span Studies, and professor of special education at the University of Kansas. Her research focuses on developing strategies to minimize the effects of poverty on children’s development and translating that research into practices that can be used by teachers, parents, and other caregivers to promote children’s school readiness and prevent child neglect. Her work has been funded by the National Institutes of Health, the Centers

for Disease Control and Prevention, the Department of Education, and the Administration for Children and Families, and since 1984 she has received federal grants totaling more than \$28 million. She has been the principal investigator or collaborating researcher of numerous federally funded centers, including the Early Childhood Research Institute on Substance Abuse, the Early Childhood Research Institute for the Measurement of Growth and Development, the Centers for the Study of Child Neglect, Using Cellular Phones for Enhancing Parenting Interventions for Preventing Child Maltreatment, Early Head Start National Research and Evaluation Project, the Center for Response to Early Intervention in Early Childhood, and the Technical Assistance Center for Social-Emotional Intervention. She was recently appointed by the Secretary of Health and Human Services to be part of the Advisory Committee on Head Start Research and Evaluation. Dr. Carta served for 10 years as the editor of *Topics in Early Childhood Special Education* and serves on the editorial boards of numerous scientific journals. Since 1985 she has been responsible for more than 100 publications in peer-reviewed journals and has authored books and several book chapters related to evidence-based practices to improve the language and social competence of young children, reduce risk factors affecting children's development, advance approaches for monitoring progress in young children, and promote parenting interventions to prevent child maltreatment. She is a national and international presenter and consultant to numerous projects in the United States, Australia, and New Zealand.

Charlotte Cole, Ed.D., is senior vice president of global education at Sesame Workshop in New York, overseeing the nonprofit's company-wide global strategies and leading the development of all curriculum and research around Sesame Workshop's international projects. Working with educators and production teams throughout the world, she has most recently been engaged in projects in Bangladesh, Colombia, Egypt, India, Indonesia, Israel, Jordan, Mexico, Nigeria, Northern Ireland, South Africa, and West Bank/Gaza. Prior to joining the workshop, Dr. Cole worked as a senior researcher at Joslin Diabetes Center in Boston on a longitudinal study of families of children with acute and chronic illness funded by the National Institutes of Health. She has also served as a consultant to the Harvard Institute for International Development on several child-health projects in Thailand. Dr. Cole received her doctorate in human development and psychology from the Harvard Graduate School of Education at Harvard University. Her teaching experience includes serving as a course instructor at Boston College (Newton, Massachusetts), Lesley College (Cambridge, Massachusetts), and Saint Mary-of-the-Woods College (Terre Haute, Indiana). She has worked as a board member for several community service organizations, including the Council on Domestic Abuse in Terre Haute, Indiana; Oxford

Academy in Westbrook, Connecticut; and NetAid in New York. She is a member of the editorial board of the *Journal of Children and Media* and served as the publication's first review and commentary editor.

Constance DeCherney is a strategist for iCrossing, where she serves clients across numerous categories, including finance, travel, and health care. iCrossing is a unit of the Hearst Corporation. Prior to joining iCrossing, Ms. DeCherney led global digital strategy and innovation for the Planned Parenthood Federation of America. She built an award-winning mobile program and implemented search and social media strategies as well as a national social governance program. Under her leadership, Planned Parenthood was ranked 13th out of 100 by L2 Think Tank for the Public Sector Digital IQ Index and received an eHEALTHCARE Award for Best Design in 2010. She has lectured at Columbia University and New York University and has been interviewed on culture and the Web by the *New York Daily News*, *BusinessWeek*, and MSNBC.com. She earned a dual B.A. in anthropology and political science from the University of Delaware.

XinQi Dong, M.D., M.P.H., is the associate director of the Rush Institute for Healthy Aging and an associate professor of medicine, nursing, and behavioral sciences at the Rush University Medical Center. Having emigrated from China, he has had longstanding interests in human rights and social justice issues in vulnerable populations. Dr. Dong's research focuses on the epidemiological studies of elder abuse in the United States and China, with particular emphasis on its adverse health outcomes and its relationship between psychological and social well-being. He currently is an American Political Science Association Congressional Policy Fellow/Health and Aging Policy Fellow working with a diverse group of policy leaders at the national, state, and local levels on issues relevant to elder abuse. He has been working with the Centers for Disease Control and Prevention, the National Institute on Aging, and the National Academy of Sciences on the state of the science for the issues of elder abuse. Moreover, he has been working with the Chicago Well-Being Task Force and the legislative task force to revise and ultimately pass the Illinois Elder Abuse Act. Currently, Dr. Dong serves as a senior policy and research advisor for the Administration on Aging at the U.S. Department of Health and Human Services and a senior policy advisor for the Centers for Medicare and Medicaid Services. He is actively working with Chinese communities to promote understanding and civic engagement on the issues of elder abuse through innovative, culturally and linguistically appropriate ways. He serves on the board of directors for the Chinese American Service League, the largest social services organization in the Midwest serving the needs of Chinese population. He is a fellow of the Institute of Medicine of Chicago and a member of the Institute of

Medicine's Forum on Global Violence Prevention. He is a Beeson Scholar and is the recipient of the Nobuo Maeda International Aging and Public Health Research Award, the National Physician Advocacy Merit Award, and the Maxwell A. Pollack Award in productive aging from the Gerontological Society of America.

Mick Fealty is a writer and analyst and is the founding editor of *Sluggish O'Toole*, one of Northern Ireland's leading political blogs. His study of the future of unionism in Northern Ireland was widely acclaimed on all sides of the political divide. He has blogged for a number of other websites, including live reporting from the Commonwealth Heads of Government Meeting in Abuja, Nigeria, in December 2003. He is currently working in partnership with the British Council in Dublin as commissioning editor for the Britain and Ireland website which is tasked with examining the political and cultural shifts in relations between the United Kingdom and the Republic of Ireland since the signing of the historic Belfast Agreement. He has also written for a number of publications on the subject of journalism and the challenge of the new media. He was born in Belfast and now lives in Dorset, where he also teaches the Irish language to adults.

Michael Feigelson, M.P.A., is a native of New York City and worked in Chiapas for the child-protection nongovernmental organization Melel Xojobal before completing a masters in public affairs at Princeton University and joining the Bernard van Leer Foundation in 2007, initially as a program officer. He has worked with various international organizations, including UNICEF and the International Rescue Committee, and was the recipient of a Thomas J. Watson Fellowship through which he worked with street children in Mexico, Ghana, and Romania. He also spent some time as a business analyst at McKinsey & Co.

Dahna Goldstein, M.B.A., is the founder and chief executive officer of PhilanTech, LLC, provider of the PhilanTrack online grants management system (patent pending), a Web-based platform that helps social sector organizations manage grant information more efficiently for greater social impact. Prior to starting PhilanTech, Ms. Goldstein worked for venture philanthropies, including Ashoka and the Blue Ridge Foundation New York, and produced interactive eLearning programs for the Global Education Network and Harvard Business School Publishing, including the award-winning "What Is a Leader?" program. A graduate of Williams College, she also holds a master of education degree, with a concentration in technology, from Harvard University, and an M.B.A. from the Stern School of Business at New York University. She has written extensively about change management and data integration in the nonprofit sector, including a chapter on

managing change for technology in *Managing Technology to Meet Your Mission: A Strategic Guide for Nonprofit Leaders* (Wiley, 2009). She serves on the board of JustGive.org and was recently named one of *Business-Week's* 25 Most Promising Social Entrepreneurs.

Scott Goodstein is founder and chief executive officer of RevolutionMessaging.com, a progressive digital and mobile technology company. Mr. Goodstein was external online director for Obama for America in 2008 and developed the campaign's social networking platforms. His pioneering work included running the first political campaign effort to launch niche-based social networks such as BlackPlanet, Eons, MiGente, AsianAve, and Disaboom. He built the campaign's lifestyle marketing strategy and developed the "street team" materials used in battleground states. He also created and implemented Obama Mobile, an advanced communication strategy that included text messaging, downloads, interactive voice response communication, a mobile website (WAP), and even an iPhone application. Prior to his work at Obama for America, Mr. Goodstein worked for the Democratic Legislative Campaign Committee, the Democratic Congressional Campaign Committee, and more than two dozen progressive political initiatives. In 2004 he co-founded Punkvoter.com and Rock Against Bush, which became a \$4 million young-voter mobilization effort. He has conducted political training for the National Democratic Institute, UNICEF, Democracy for America, the Campaign Management Institute, and the New Organizing Institute. Mr. Goodstein has spoken at Columbia University, American University, George Washington University, and the Milken Institute. He has been a featured speaker at events in Morocco, Hungary, Finland, Singapore, and Malaysia.

John Gordon is senior vice president of digital in Fenton's New York office and manages the social media practice firm-wide. In that position he works to create successful engagement campaigns by integrating strategy, technology, and content for clients like the American Jewish World Service, ASPCA, and Stonyfield Organics. Mr. Gordon was formerly the director of new media at Spitfire Strategies, where he helped clients such as the Hewlett Foundation, the Robert Wood Johnson Foundation, and the Joint Ocean Commission use new media to drive supporters, win campaigns, and build capacity. While at Spitfire, Mr. Gordon worked with the president of the firm to develop a comprehensive step-by-step guidebook to help nonprofits plan public policy, advocacy, and social marketing campaigns. Prior to Spitfire, Mr. Gordon was the director of interactive communications and marketing at the Girl Scouts of the USA (GSUSA), where he developed on-line marketing and communications initiatives that served the membership, fundraising, advocacy, and e-commerce goals of the national organization

and more than 300 Girl Scout councils nationwide. He created GSUSA's first online marketing campaign to support the \$700 million annual cookie sale and led Web strategy for a Dove Super Bowl ad campaign in partnership with Unilever. Prior to GSUSA, he was partner and creative director at the Carol/Trevelyan Strategy Group (CTSG), where he led the development of award-winning creative campaigns, including the reality show-inspired cartoon series "Republican Survivor" for the Democratic Congressional Campaign Committee and Amnesty International's Stop Violence Against Women. His innovative efforts have been recognized with multiple Webby, Pollie, and Golden Dot awards.

Devon Halley is a senior technology consultant at Deloitte Consulting LLP. He co-authored "XBC: Creating Public Value by Unleashing the Power of Cross-Boundary Collaboration" as well as "What Geeks Can Teach Government" for *Governing* magazine. He is a recent alumnus of Deloitte's GovLab, which is a program that works closely with senior government executives and thought leaders to conduct research into critical and emerging issues shaping the public and nonprofit sectors in order to develop innovative yet practical ways that governments can transform the way they deliver their services and prepare for the challenges ahead. Mr. Halley is currently helping the Transportation Security Administration find ways to leverage social computing to meet critical mission needs and improve the passenger experience. He holds degrees from Allegheny College and Carnegie Mellon University.

Frances Henry, M.B.A., serves as advisor to the F. Felix Foundation. From 2005 to 2009, she created and directed Global Violence Prevention, a project which advanced the science-based prevention of violence in low- and middle-income countries through a coalition of U.S. researchers and practitioners. Based on her experiences of childhood sexual abuse, for 13 years she founded and directed Stop It Now!, an organization that prevents the sexual abuse of children. She is author of *Vaccines for Violence*, a set of five essays exploring how she learned to counter violence by dealing with fear, by balancing accountability and compassion, and by increasing her capacity to connect to others. Ms. Henry's previous work includes owning a management consulting company and directing presidential and gubernatorial commissions for women. She served as staff to the U.S. Commission on International Women's Year.

Erik Hersman, who was raised in Kenya and Sudan, is now a technologist and blogger who lives in Nairobi. He is a co-founder of Ushahidi, a free and open-source platform for crowdsourcing information and visualizing data. He is the founder of AfriGadget, a multi-author site that showcases

stories of African inventions and ingenuity and is an African technology blogger at WhiteAfrican.com. He currently manages Ushahidi's operations and strategy and is in charge of the iHub, Nairobi's Innovation Hub for the technology community, bringing together entrepreneurs, hackers, designers, and the investment community. Mr. Hersman is a TED Senior Fellow, a PopTech Fellow and speaker, and an organizer for Maker Faire Africa. You can find him on Twitter at @WhiteAfrican.

Dale Kunkel, Ph.D., is professor of communication at the University of Arizona. Dr. Kunkel studies children and media issues from diverse perspectives, including television-effects research as well as assessments of media industry content and practices. He is a former Congressional science fellow and has testified as an expert witness on children's media topics at numerous hearings before the U.S. Senate, the U.S. House of Representatives, and the Federal Communications Commission. Dr. Kunkel previously taught at Indiana University and the University of California, Santa Barbara. Among the topics he examines are the effects of television violence, sexual content, and advertising on young people.

Donna Levin has had a 15-year career as a social entrepreneur, most recently serving as vice president of operations at Upromise.com, an online service that helps families save for college. At Care.com, Ms. Levin has served on the management team as vice president, operations, establishing the company's safety and customer service infrastructure. Care.com (www.care.com) is the largest and fastest-growing service used by families seeking high-quality caregivers, providing a place to easily connect with hundreds of thousands of care providers, share care giving experiences, and get advice. Care.com has been featured in national news outlets including NBC's *Today*, *Good Morning America*, the *Wall Street Journal*, the *New York Times*, *USA Today*, *Parenting*, and *Fortune*. In September 2011 she transitioned to spearhead new programs for families who face some of the most challenging care situations—our nation's military population and families with special-needs children and seniors. With a strong belief that both government and corporate entities have a fundamental responsibility to help improve their communities, she and her team are currently developing innovative technologies and resources to unite all sectors in their mission. Ms. Levin holds a B.A. from Emerson College.

Harriet MacMillan, M.D., Ms.C., is a psychiatrist and pediatrician conducting family violence research. She is a member of the Offord Centre for Child Studies and professor in the department of psychiatry and behavioural neurosciences and in the department of pediatrics at McMaster University, with associate memberships in the department of clinical epidemiology and

biostatistics and the department of psychology. Dr. MacMillan holds the David R. (Dan) Offord Chair in Child Studies and has received funding support from the WT Grant Foundation, the Canadian Institutes of Health Research, NARSAD and the Centers for Disease Control and Prevention. From 1993 to 2004, she was the founding director of the Child Advocacy and Assessment Program (CAAP) at McMaster Children's Hospital, a multidisciplinary program committed to reducing the burden of suffering associated with family violence. Her research focuses on the epidemiology of violence against children and women, including prevention of child maltreatment and intimate partner violence. She has led randomized controlled trials investigating the effectiveness of such approaches as universal screening in reducing intimate partner violence and nurse home visitation in preventing the recurrence of physical abuse and neglect among children.

Joseph McCannon is senior advisor to the administrator and group director of learning and diffusion in the Innovation Center at the Centers for Medicare and Medicaid Services. Prior to this, he was vice president and a faculty member on dissemination and large-scale improvement at the Institute for Healthcare Improvement (IHI). He worked at IHI beginning in 2001, leading organizational efforts to spread change in Africa, the United States, and several other regions. Specifically, he supported IHI's collaboration with the World Health Organization to design and amplify its "3 by 5" initiative, an effort to deliver antiretroviral drugs to 3 million people globally by the end of 2005. He also directed the organization's major domestic initiatives to improve patient safety, the 100,000 Lives Campaign and the 5 Million Lives Campaign, which involved more than 4,000 hospitals and 70 field offices. He has advised or consulted on other national quality-improvement efforts in the United States, England, Japan, Canada, and Denmark and on initiatives outside health care (e.g., homelessness and corrections) as well. Mr. McCannon started his career in the publishing industry, with roles at *Fast Company*, *Atlantic Monthly*, and *Outside* magazines. He is a graduate of Harvard University and was a Reuters and Merck fellow at Stanford University in 2003–2004.

Brigid McCaw, M.D., M.P.H., M.S., FACP, is medical director for the Family Violence Prevention Program at Kaiser Permanente (KP). Her teaching, research, and publications focus on developing a health systems response to intimate partner violence and the impact of intimate partner violence on health status and mental health. She is a fellow of the American College of Physicians. KP, a large nonprofit integrated health care organization serving 8.6 million members in nine states and the District of Columbia, has implemented one of the most comprehensive health care responses to domestic violence in the United States. The nationally recognized "systems model"

approach is available across the continuum of care including outpatient, emergency, and inpatient care; advice and call centers; and chronic care programs. The electronic medical record includes clinician tools to facilitate recognition, referrals, resources, and follow-up for patients experiencing domestic violence and provides data for quality improvement measures. Over the past decade, identification of domestic violence has increased six-fold, with most members identified in the ambulatory rather than acute care settings. The majority of identified patients receive follow-up mental health services. KP also provides prevention, outreach, and domestic violence resources for its workforce. Violence prevention is an important focus for KP community benefit investments and research studies. The KP program, under the leadership of Brigid McCaw, has received several national awards.

Kathleen (Kay) McGowan provides policy advice to the administrator of the U.S. Agency for International Development (USAID) on political and development issues pertaining to Afghanistan. A Persian speaker, Ms. McGowan has been involved in rebuilding Afghanistan since 2003, when she served as chief of staff to U.S. Ambassador Zalmay Khalilzad at the American embassy in Kabul. At USAID she is responsible for identifying high-impact development opportunities that complement the U.S. government's civilian assistance portfolio for Afghanistan and foster improved coordination with Afghan public- and private-sector stakeholders. Specifically, she pursues foundational investments that are appropriate to Afghanistan's current capacity and needs, that are sustainable, and that contribute directly to Afghanistan's capacity to transition to full sovereignty. She leads USAID's effort to leverage the success of Afghanistan's mobile telephony network for economic and social development goals, including scaling the country's nascent mobile money sector and building innovative extension services for agriculture, health, and education into USAID's assistance portfolio. Before joining USAID, Ms. McGowan ran the political section at the Iran Regional Presence Office out of the U.S. consulate in Dubai. In 2006–2007, she was a Rusk teaching fellow at Georgetown University's Institute for the Study of Diplomacy, where she remains a non-resident associate. She has written about Afghanistan for the *New York Times* and *State* magazine. She is a term member of the Council on Foreign Relations.

James A. Mercy, Ph.D., is Special Advisor for Strategic Directions at the Division of Violence Prevention in the National Center for Injury Prevention and Control of the Centers for Disease Control and Prevention (CDC). He began working at CDC in a newly formed activity to examine violence as a public health problem and, over the past two decades, has helped to develop the public health approach to violence and conducted and overseen numerous studies of the epidemiology of youth suicide, family violence,

homicide, and firearm injuries. Dr. Mercy also served as a co-editor of the *World Report on Violence and Health* prepared by the World Health Organization (WHO) and served on the editorial board of the United Nations Secretary General's *Study of Violence Against Children*. Most recently, he's been working on a global partnership with UNICEF, PEPFAR, WHO, and others to end sexual violence against girls. His recent publications include "Attention-Deficit/Hyperactivity Disorder, Conduct Disorder, and Young Adult Intimate Partner Violence" (*Archives of General Psychiatry*, 2010) and "Sexual Violence and Its Health Consequences for Female Children in Swaziland: A Cluster Survey Study" (*Lancet*, 2009).

Michele Moloney-Kitts, M.A., is the managing director of Together for Girls, providing strategic leadership to the partnership as well as management and oversight of day-to-day operations. A staff member of UNAIDS, the Joint United Nations Programme on HIV/AIDS, she also serves as a senior advisor to the executive director. Prior to joining Together for Girls, Ms. Moloney-Kitts served as the assistant global AIDS coordinator for the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). As a leader in international public health for more than 30 years, her primary focus has been on women and children. She has served as a health officer for U.S. Agency for International Development, with long-term postings in Morocco, Cambodia, South Africa, and Washington, DC. Within PEPFAR she was the deputy assistant secretary responsible for oversight of field implementation and multilateral relations. In that capacity she also served on the board of the Global Fund for AIDS, TB, and Malaria and as the chairman of the Portfolio and Implementation Committee. Ms. Moloney-Kitts has worked as a nurse practitioner and a nurse midwife, with a particular focus on underserved populations, especially adolescents. She holds a bachelor's degree from Boston College and a master's degree from the University of Pennsylvania.

Eesha Pandit is currently women's rights manager at Breakthrough. She is the former director of advocacy at MergerWatch, where she worked on the Raising Women's Voices project, a national initiative working to make sure women's voices are heard and that women's concerns are addressed in national health reform policy. Previously, Ms. Pandit served as associate director of programs at the Civil Liberties and Public Policy Program and has been a weekly staff writer for RH Reality Check. She has also worked with the Carr Center for Human Rights Policy at Harvard University and Amnesty International USA's Women's Rights Program. She serves on the board of the New York Abortion Access Fund and the National Network of Abortion Funds. She is a graduate of Mount Holyoke College and the University of Chicago.

John Pollock is an award-winning analyst, writer, and communicator. He has consulted at senior levels for nonprofit organizations, in the private sector, in the public sector, and for government. Former clients include international organizations such as the United Nations, the Organisation for Economic Co-operation and Development, and the World Health Organization; government departments, such as the United Kingdom's Department for International Development; and ministers, including H.E. President Kagame of Rwanda and his cabinet. Private-sector clients include blue chips such as eBay (for which he was Chief Clue Elf), BlackBerry, and T-Mobile, as well as major nonprofit organizations such as Oxfam and Save the Children. A former research academic at Manchester University, he went on to become the UK government's first social policy researcher specializing in the environment. For several years he specialized in exploring how the private sector could have an impact on the global HIV/AIDS epidemic. He has published in publications around the world, including *Technology Review*, the *Guardian*, the *Times*, and *Red Herring*. He has a longstanding interest in the nexus among creativity, policy, and technology. Recently he has been working on a series of high-level briefing, and white papers on subjects as diverse as career advice and diversity, examining adaptive strategies during rapid global change. His most recent work includes long-form reporting and blogging for *Technology Review* on social media and the Arab Spring. He is currently working on a follow-up based on the Libyan conflict.

Jody Ranck, Ph.D., has a career in health, development, and innovation spanning nearly 20 years. In addition to his work with the mHealth Alliance, Dr. Ranck has consulted with InSTEDD, IntraHealth, Cisco, GigaOM, and a number of other organizations on innovation strategies, ehealth, and health policy. He is an adjunct faculty member at the University of San Francisco School of Business and Management and also a principal investigator at the Public Health Institute in Oakland, CA. His previous work has included efforts in post-genocide Rwanda, risk and new biotechnologies (Zambia), the Grameen Bank in Bangladesh, and leading the Global Health practice and Health Horizons at the Institute for the Future in Palo Alto, California. Dr. Ranck has a doctorate in health policy and administration from the University of California, Berkeley, as well as an M.A. in international relations and economics (Johns Hopkins University–SAIS) and a B.A. in biology from Ithaca College.

Daniel J. Reidenberg, Psy.D., is the executive director of SAVE (Suicide Awareness Voices of Education), a national nonprofit agency working to prevent suicide and help suicide survivors and people suffering from brain illnesses. Dr. Reidenberg also serves as managing director of the National Council for Suicide Prevention and is the U.S. representative

to the International Association for Suicide Prevention. Dr. Reidenberg has done extensive work with adolescents and adults who have serious and persistent mental illnesses, are chemically dependent, or have diverse personality disorders. He is a consultant to psychologists, attorneys, and businesses on health care and legal matters, is a nationally and internationally sought-after speaker, and sits on numerous national expert panels for suicide prevention and mental health issues. He is the chair of the American Psychotherapy Association (APA) and of the Certified Relationship Specialists Board and is on the APA editorial board, the editorial board of *Esperanza* magazine, and the advisory board to Reachout.com. He has received numerous awards, including being named one of the Ten Outstanding Young Minnesotans (2006), the B. Warren Hart Award for service to humanity (2007), and Nonprofit Professional of the Year (2010), and he was recognized as a Champion of Change by the Obama Administration (August 2011).

William (Bill) Riley, Ph.D., is a program director in the Division of Cardiovascular Sciences at the National Heart, Lung, and Blood Institute and is responsible for managing grant portfolios in tobacco control and other cardiovascular and respiratory risk behaviors. He also serves as the chair of the National Institutes of Health mHealth Inter-Institute Interest Group. He is also an adjunct professor in the Department of Prevention and Community Health at the George Washington University School of Public Health. His research areas include eHealth and mHealth applications, tobacco dependence, diet and exercise adherence, insomnia treatment, and behavioral assessment.

Mark L. Rosenberg, M.D., M.P.P., is executive director of the Task Force for Global Health. Previously, for 20 years, Dr. Rosenberg was at the Centers for Disease Control for Disease Control and Prevention (CDC), where he led work in violence prevention and later became the first permanent director of the National Center for Injury Prevention and Control. He also held the position of Special Assistant for Behavioral Science in the Office of the Deputy Director (HIV/AIDS). Dr. Rosenberg is board-certified in both psychiatry and internal medicine with training in public policy. He is on the faculty at Morehouse Medical School, Emory Medical School, and the Rollins School of Public Health at Emory University. Dr. Rosenberg's research and programmatic interests are concentrated on injury control and violence prevention, HIV/AIDS, and child well-being, with special attention to behavioral sciences, evaluation, and health communications. He has authored more than 120 publications and recently co-authored the book *Real Collaboration: What It Takes for Global Health to Succeed* (University of California Press, 2010). Dr. Rosenberg has received numerous awards,

including the Surgeon General's Exemplary Service Medal. He is a member of the Institute of Medicine (IOM). Dr. Rosenberg's organization, the Task Force for Global Health, participated in the IOM-sponsored workshop Violence Prevention in Low- and Middle-Income Countries: Finding a Place on the Global Agenda, and the Task Force remains interested in helping to continue the momentum of the workshop through the Forum on Global Violence Prevention. The Task Force is heavily involved the delivery of a number of global health programs and sees many ways that interpersonal violence and conflict exacerbate serious health problems and inequities.

Jason Rzepka is vice president of public affairs at MTV. His charge, quite simply, is to use MTV's superpowers for good. He does this by marshaling the network's forces to engage and activate America's youth on the biggest challenges facing their generation. He is responsible for the strategic direction of all of MTV's "pro-social" campaigns, including the boundary-shattering, Peabody-winning "It's Your (Sex) Life," with the Kaiser Family Foundation, which has reached more than 200 million young people on sexual health issues; Emmy-winning "Choose or Lose," which has helped drive the largest youth voter turnouts in U.S. history; and Webby-winning "A Thin Line," which has inspired more than 1 million young people to draw their own line between digital use and digital abuse (all forms of digital bullying, dating abuse, and discrimination). Mr. Rzepka regularly serves as an expert resource on issues such as youth mobilization, social media for social change, cyberbullying, and sexual health. He has been a featured speaker at the White House, the United Nations, the U.S. Capitol, the U.S. State Department, the International AIDS Conference, TEDxPresidio, South by Southwest Interactive, the National Conference on Volunteering and Service, the Games for Change Conference, YPulse Youth Marketing Mashup, and the Council on Foundations Family Philanthropy Conference. He has also appeared on CNN and NPR and been quoted by the *Wall Street Journal*, Reuters, ABC News, *Huffington Post*, and others. Prior to his current role, he served as the head of communications at the PopTech Institute, a renowned social innovation incubator hatching breakthrough solutions to some of the world's most intractable social challenges. Before PopTech, Mr. Rzepka held senior communications positions at MTV, mtvU, IMAX Corporation, and Ruder Finn. He serves on the board of directors of PopTech; the advisory board of Coffee Party USA, a non-partisan organization working to bring civility and responsible citizenship back to American democracy; and the Action Alliance for Suicide Prevention Public Awareness taskforce. He holds a bachelor's degree in business administration from the University of Wisconsin, Milwaukee.

Ben Sawyer has pioneered major initiatives in the field of serious games and has become a nationally recognized leader within the games community since beginning his career in game development over 10 years ago. For the past 7 years Mr. Sawyer has dedicated his professional life to discovering new ways to expand the use of games beyond entertainment. In 2002 he co-founded the Serious Games Initiative, a project of the Woodrow Wilson International Center for Scholars. The following year Mr. Sawyer organized the first-ever Serious Games Summit, a conference that now annually attracts 300 to 500 attendees who meet to share best practices in the development of serious games. The Serious Games Initiative continues to serve as one of the leading organizations in the field of serious games. In 2004 Mr. Sawyer also co-founded the Games for Health project, an initiative that has built the primary social and professional networks of the health games industry. Through online resources and regular regional and national events, Games for Health connects health professionals, researchers, and game developers to advance the development of health games and game technologies. The Games for Health project receives major funding from the Pioneer Portfolio, an initiative of the Robert Wood Johnson Foundation. As a game developer with his own firm, Digitalmill, Mr. Sawyer has worked on more than two dozen major serious game projects beginning in 2000, when he served as producer for the Alfred P. Sloan Foundation's university simulation game, "Virtual U," which was an award finalist at that year's Independent Games Festival. Prior to pursuing his professional career, Mr. Sawyer graduated from the Bronx High School of Science and studied at Baruch College.

Kim Scott, M.B.B.S., M.P.H., is an adolescent health and development consultant who completed her bachelor's degree in human biology and psychology at the University of Toronto, Canada, and her medical degree at the University of the West Indies, Jamaica. After working in medical private practice and adolescent clinics, she went on to do her master's degree in public health in the Bronx, New York, focusing on behavioral and emotional development in adolescence. She analysed the Jamaican data of the Pan-American Health Organization 1997 Caribbean Adolescent Health Survey and has written three papers: "Adolescent Violence," "Adolescent Suicide," and "Adolescent Resiliency." From 2000 to 2002 she worked with the Ministry of Health, Health Promotion and Protections Division, advocating for and coordinating the National Adolescent Health Program. She worked with the Academy for Educational Development in Washington, DC, where she designed and conducted adolescent resiliency research and developed and implemented a home visiting parenting program for adolescents. She has conducted multiple training seminars for various private and public sectors around parenting and adolescent health risk

and resiliency (specifically sexuality, HIV and pregnancy, drugs, violence, depression, and suicide) including coaches, pastors, guidance counselors, teachers and health service personnel. She contributed to the National Adolescent Development Strategic Plan 2005 and conducted an extensive parenting research literature review in 2006. She contributed to content writing, review, and field testing of the “Parenting the Adolescent” curriculum for Family Health International and JA–Style. She reviewed and revised the National Plan of Action for Children and Violence (NPACV) 2011 on behalf of the Organisation of American States and the Child Development Agency. In 2011 she conducted a situation analysis as to the child-friendly school status of the Jamaican Education Sector on behalf of the government and UNICEF. She is the founder and director of the Child Resiliency Programme, an after-school program for children at risk for violence referred from primary schools. She is a member of the International Association of Adolescent Health, the Society of Adolescent Health and Medicine, and the Medical Association of Jamaica.

Andra Teten Tharp, Ph.D., is a health scientist in the Division of Violence Prevention (DVP) in the National Center for Injury Prevention and Control at the Centers for Disease Control and Prevention (CDC). Dr. Tharp is currently leading Dating Matters: Strategies to Promote Healthy Teen Relationships, a teen dating violence prevention initiative at the CDC. Following her doctoral studies in clinical psychology at the University of Oregon, she conducted research and clinical work at the Michael E. DeBakey Veterans Affairs Medical Center and Baylor College of Medicine in Houston, Texas. In 2008 she received the young investigator award from the International Society for Research on Aggression for her research examining violence among veterans with posttraumatic stress disorder. Dr. Tharp joined the CDC in 2008 as a behavioral scientist in the Prevention, Development, and Evaluation Branch in DVP. She continues to hold a clinical assistant professorship in the Menninger Department of Psychiatry and Behavioral Sciences in Houston, Texas, and is a licensed clinical psychologist in Texas. Dr. Tharp’s research interests include sexual and teen dating violence prevention. She has written and contributed to numerous publications on trauma and violence-related topics.

Kasimayajula “Vish” Viswanath, Ph.D., is an associate professor in the department of society, human development, and health at the Harvard School of Public Health (HSPH) and in the Division of Population Sciences at the Dana-Farber Cancer Institute. He is director of the Health Communication Core of the Dana-Farber/Harvard Cancer Center (DF/HCC), and co-leader of the Cancer Risk and Disparities Program of DF/HCC. He also chairs the steering committee for the Health Communication Concentration

at HSPH. His additional appointments include director, Enhancing Communication for Health Outcomes (ECHO) Laboratory, DF/HCC, and associate director, Lung Cancer Disparities Center, HSPH. Dr. Viswanath received his doctoral degree in mass communication from the University of Minnesota. His primary research is in documenting the relationship between communication inequalities, poverty, and health disparities. He has written more than 110 journal articles and book chapters concerning communication inequalities and health disparities, public health communication campaigns, e-health and the digital divide, public health preparedness, and the delivery of health communication interventions to underserved populations. He is the co-editor of three books: *Mass Media, Social Control and Social Change* (Iowa State University Press, 1999), *Health Behavior and Health Education: Theory, Research & Practice* (Jossey Bass, 2008), and *The Role of Media in Promoting and Reducing Tobacco Use* (National Cancer Institute, 2008). He was also the editor of the “Social and Behavioral Research” section of the 12-volume *International Encyclopedia of Communication* (Blackwell Publishing, 2008). In recognition of his academic and professional achievements, Dr. Viswanath received several awards, including the Outstanding Health Communication Scholar Award (2010), jointly given out by the International Communication Association and the National Communication Association, and the Mayhew Derryberry Award from the American Public Health Association (APHA) for his contribution to health education research and theory (2009). He delivered the 23rd Annual Aubrey Fisher Lecture at University of Utah in 2009. He was elected fellow of the International Communication Association (2011), the Society for Behavioral Medicine (2008), and the Midwest Association for Public Opinion Research (2006). He was also chair of the Board of Scientific Counselors for the National Center for Health Marketing at the Centers for Disease Control and Prevention from 2008 to 2010.

Lisa Witter is the chief operating officer of Fenton, the largest public interest communications firm in the United States. She heads the firm’s practice in women’s issues and global affairs for clients including Women for Women International, MoveOn.org, the William and Flora Hewlett Foundation, the David and Lucille Packard Foundation, the American Medical Association, the American Lung Association, and many others. She is a co-founder of the award-winning website SheSource.org, an online brain trust of women experts to help close the gender gap among commentators in the news media. She was honored as an outstanding activist and expert on women’s issues by Oxygen.com for her work on a national campaign against privatizing Social Security during the 2000 presidential election. Ms. Witter is a blogger and political commentator with work appearing on MSNBC, Fox News, the *Huffington Post*, *AlterNet*, and *Anderson Cooper 360*. In 2004,

she was a contestant on the Showtime reality show *American Candidate*. Witter is co-author of *The She Spot: Why Women Are the Market for Changing the World and How to Reach Them*. She is on the advisory board for Indianapolis University's Women and Philanthropy Institute, Pop!Tech, Momsrising.org, Women for Women International, and Climate Counts.

Ashley Womble has more than 8 years of experience working in the publishing industry and has developed an expertise in digital communications and social media. As the online communications manager at the National Suicide Prevention Lifeline, Ms. Womble works to develop innovative online marketing approaches and strategic partnerships with key stakeholders in social media to reach more persons in emotional distress or at risk of suicide. Prior to joining the Lifeline, Ms. Womble worked as an editor for Hearst Digital Media and played a key role of the development of *Cosmopolitan.com* and *CountryLiving.com*. She created partnerships with media companies (from Google and Yahoo to Foursquare) and spoke about the Hearst Digital Media's online and social media efforts. In these roles, Ms. Womble played a significant role in rebranding traditional print media into new media.