Letter From The
Editor:

We are really pleased to share a new issue of the NPHR with you. In this issue we explore a range of subjects with a particular focus on the intersection of law and health, a faculty member's life work to better understand the public health impact of the criminal justice system to the role of criminal tribunals in maintaining rule of law and public health. Professor Scheffer's essay, with excerpts from his book *All the Missing Souls,* featured in this issue is also particularly timely as we continue to grapple with the public health implications of the War in Syria and its consequent migration crises.

Additionally, this issue features our wonderful collaboration with the UIC Biomedical Visualization Program, which graciously partnered with us again to illustrate each article in the current volume as well as contribute a feature article on the role of biomedical visualization in public health.

Finally this issue marks the first step in our upcoming evolution: a switch to shorter, more thematically focused quarterly issues, published exclusive online. These changes will help us engage more responsively to national and international public health conversations. We aim to focus on bringing good stories to our readers more rapidly and to stay closer to the current pulse of public health with our journal, as we do with our blog.

We are deeply indebted to all the authors and artists for generously contributing to this issue. We specifically want to thank our current editorial board for keeping the NPHR sailing. Special thanks to Simona Morochnik for making this issue beautiful and aesthetically delightful. We hope you enjoy reading each story as much as we have enjoyed putting it together.

Sincerely,

Osefame Ewaleifoh
Editor-in-Chief

About the Artist

David Scheffer and Juliet Sorensen's accounts of the Rwandan Genocide were both moving and enlightening. I was immediately drawn to their compelling stories explaining the intersections between the Rwandan Genocide, international justice, and public health systems. As an illustrator, I knew that depicting this story would be a challenge but it was important to tell visually. I chose to metaphorically represent the gruesome nature of the genocide and its impact on the public health system. War-torn Rwanda is depicted as a large open wound that cannot be contained by the country's borders, symbolizing the damaging nature of the genocide and its impact on neighboring countries. Doctors work to stitch the area back together, representing the burden carried by healthcare workers to heal the physical and emotional wounds of the war. Great care was taken in rendering the wound. The realistic nature of the wound and the dramatic composition of the continent grabs the attention of the viewer and allows them to engage with the sensitive topic of genocide without being off-putting. At the same time, I wanted to show how there will be a newly healed Rwanda with improvements in public health.

Wai-Man Chan is a Chicago-based medical illustrator. Originally from Miami, FL, she received her Bachelor of Science from the University of Miami in 2010. She is currently a Master of Science candidate in Biomedical Visualization at the University of Illinois at Chicago, a field that allows her to communicate complex science and biological topics through the power of illustration. In her free time, you can usually find her exploring Chicago's restaurants, watching a good nature documentary, and spending time with her pets.

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Understanding

Loneliness

By Andrew Eng

Hunger and drowsiness arise from our basic instinct to eat and sleep; in a similar fashion, loneliness stems from our need to feel socially connected and maintain emotional bonds. While loneliness may have initially served to encourage our ancestors to cooperate and form communities (hence increasing individual odds for survival), it is now increasingly being recognized as a growing social and public health concern (Hawkley & Cacioppo 2010).

Perhaps the most troubling observation is that stress caused by loneliness can have significant adverse effects on individual health (Hawkley & Cacioppo 2010). Even with the advent of social networking, core social networks continue to decline (McPherson 2006).

With core social networks declining in size (McPherson 2006), and loneliness incidence rates doubling over the last 30 years (AARP 2010), loneliness associated health care costs can be expected to rise.

Although data regarding the financial cost of loneliness is sparse (campaigntoendloneliness.org scoping report, 2014), the variety of health issues arising across all age groups is expected to generate a significant financial burden. Consequently, here I address the question: what is our current understanding of the public health challenge of loneliness, and how is it being addressed?

What is loneliness?

Loneliness is an emotional state, not necessarily the objective state of being alone—it is dissatisfaction with social relationships, regardless of how few or numerous, infrequent or active (Hawkley & Cacioppo 2010). This feature of loneliness distinguishes it from social isolation and introversion: a solitary individual, content with the quality of the relationships he or she does have, might not feel lonely. In consideration of this, cross-sectional and longitudinal studies often treat loneliness (subjective loneliness), social network size (objective loneliness), and introversion/

extroversion as separate parameters with potentially different degrees of impact on health. The subjective nature of loneliness therefore creates challenges in standardizing measurement and necessitates a novel method and panel of survey parameters. Social isolation is sometimes used as a proxy for loneliness, despite being a separate concept. One reason for this is practical—in animal studies, for example, feelings of loneliness cannot be reproducibly created nor readily measured. For experimental studies on loneliness, animal models comprise social isolation under controlled and repeatable conditions in

order to yield mechanistic insights or identify molecular or even neuroanatomical substrates of loneliness. The social isolation stress (SIS), a commonly-used social isolation model, has been used to investigate persistent alterations in brain chemistry and neurotransmission in specific brain structures implicated in a broad spectrum of emotional processing such as the amygdala and nucleus accumbens (Lapiz 2003). Experimental models such as these could be helpful in further understanding and developing novel, perhaps pharmaceutical, approaches to manage loneliness.

In human studies, measuring loneliness often entails self-reporting through questionnaires such as the UCLA loneliness scale, which in earlier iterations raised concerns regarding bias. On the other hand, the social isolation model provides a useful tool to gain insights into the physiological mechanisms related to loneliness.
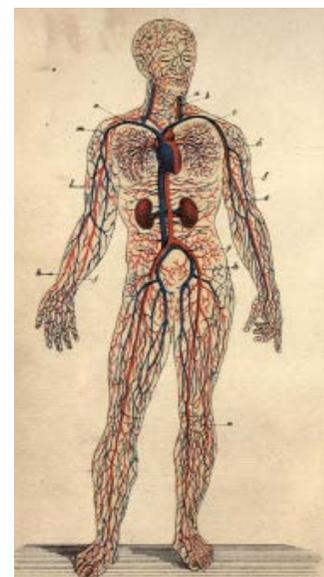
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Joel Dorman Steele

Lonely middle-aged adults: an under-served age group

The traditional view has been that loneliness is more prevalent among the young or among the elderly, due to a variety of stressors affecting social integration (Heinrich 2006), however, there is surprisingly little consensus on the relationship between loneliness and age. Some cross-sectional studies have indeed reported higher incidence in the young and old; for example, analysis of a subset of data (2,393 participants) from the 2006 European Social Survey revealed a nonlinear relationship between loneliness and age: 9% of respondents younger than 25 years of age were in the most severe loneliness category, compared to 9% of those older than 55 and 5% of individuals between 25 and 44 (Victor and Yang, 2012). A separate nation-wide life course, generation and gender (LOGG) study conducted Norway (14,743 respondents) reported slightly lower levels of loneliness among 30-49 and 50-64 year olds (18.7% and 20.0%, respectively, reporting feelings of loneliness sometimes or often) compared to 18-29 and 65-81 year olds (22.9% and

Kristaps Bergfelds

25.6%,respectively) (Nicolaisen and Thorsen 2014). While these studies indicate higher incidence rates among children and young adults or the elderly, there is only slightly less loneliness among middle-aged adults between 25 and 64.

Contentious results were obtained through a 2010 survey of 4,610 individuals commissioned by the American Association of Retired Persons (AARP), which found the highest prevalence of loneliness among the middle-aged adults. In this study, the prevalence of loneliness actually decreased with advanced age: 43% of respondents aged 45-49 were lonely, compared to 41% of respondents aged 50-59, 32% of respondents aged 60-69, and 25% of respondents aged 70 or older. A study conducted in Portugal (n = 1174) found 11% of adults aged 50-64 to be often or always lonely, while 8-16% of the older cohorts reported the same (Ferreira-Alves 2014). Thus, disagreement regarding the relationship between age and loneliness remains to be resolved, and no consensus might be reached without controlling or standardizing differences in methods to determine loneliness, delineation of age groups and cultural, or individualism-related influence. However, these data provide a crude estimation of approximately one in four middle aged-adults feeling lonely at least some of the time, with about 5-10% feeling lonely most or all of the time—a proportion which calls for additional consideration for this age group.

What are factors that are strongly associated with loneliness?

Many quality of life-related factors have been found to be strongly linked to loneliness, although in many studies it remains unclear whether loneliness is a causative factor. Marital status, living arrangement, education, professional status, income, health status, and mental disposition are all related to loneliness and social integration in the older adult cohort (Ferreira-Alves, 2014, Tilves 2011, Shankar 2013, Victor 2005), and some may affect the middle-aged more strongly.

Although it was not determined whether loneliness predated development of these ailments, in the US, a high percentage of lonely adults also suffer from:

- diabetes (42%)
- obesity (43%)
- sleep disorders (45%)
- chronic pain conditions (47%)
- anxiety (56%)
- depression (60%)
- drug or alcohol abuse (63%)

Interestingly, however, internet, email, and social media use do not appear to be linked to loneliness despite their possible implications for social network size (AARP 2010). On the other hand, individuals with more opportunities for social integration (e.g., through volunteer work, church attendance, having hobbies) were less likely to be lonely (AARP 2010). These results suggest that the mode of social connectivity might play a role in whether loneliness is experienced and that the sense of integration and social support is important in alleviating loneliness, but further investigation is warranted in this area as well.

Loneliness has also been assessed among communities at higher risk of being marginalized by society, and in cases where minority stress might be more prominently felt. In young, college-age adults, traits associated with autism are also associated with higher rates of self-reported loneliness (Jobe and White, 2007). This link is expected to persist in the middle-aged adult group, although little data was found in support of this; however, recognition of a possible linkage

between loneliness and social isolation with autism spectrum disorders has prompted efforts to assess the effectiveness of specialized interventions (Mazurek, 2014). In addition, loneliness and social network size in various lesbian, gay, and bisexual (LGB) communities have been examined, and the general consensus is that more LGB individuals experience loneliness (Chaney 2008, Erosheva 2015, Kim and Fredriksen 2014, Kuyper 2010, Westefeld 2001). Accordingly, groups that struggle with acceptance or integration with larger social units are likely to be higher risk, and this is expected to persist across gender and age groups.

Loneliness is an emotional state and is related to health and cognitive well-being, so some of the associated health-related factors are thought to resemble a persistently painful and stressful emotional state. Accordingly, a number of investigations in the laboratory and longitudinal studies provide some understanding of how loneliness might contribute to poor physical health.

Chris Potter

How does loneliness contribute to declining physical health?

Loneliness is associated with poor health (House, 1988, Hawkley & Cacioppo 2010), but how exactly might loneliness lead to health issues? One possibility is that lonely individuals are more susceptible to circulatory dysfunction, perturbed sleep, immune dysregulation, and inflammation. Dysfunction of the inflammatory candidate "pre-disease pathway" could then contribute to worsening health (Hawkley & Cacioppo 2003). In support of this, one human research study found that lonely (but otherwise healthy) participants aged 28-76 who underwent an acute, mildly-stressful social stress test produced significantly higher levels of the inflammatory markers IL-6 and tumor necrosis factor alpha (TNF-alpha), which are cytokines well-established to be linked to age-related diseases (Ershler & Keller 2000, Hansson 2005, Jeremka 2013). Subjects that had previously experienced acute stress as post-treatment breast cancer survivors and were also lonely had higher blood levels of inflammatory cytokines in response to the social stress test (Jeremka 2013). A similar set of experiments yielded results in which lonely subjects aged 53-76 who had taken a standardized mental stress test produced more cytokine IL-6, interleukin-1 receptor antagonist (IL-1Ra), and monocyte chemotactic protein-1, the latter of which is linked to rheumatoid arthritis and atherosclerosis (Hackett 2012, Deshmane 2009).

A possible link between loneliness and metabolic syndrome (defined as a cluster of conditions pertaining to cardiovascular disease or diabetes) has also been explored. Interestingly, in this study lonely older adults (52-79 years of age) had a higher incidence of metabolic syndrome than the control group, although prevalence did not appear

Sander van der Wel

to be influenced by age (Whisman 2010). That nearly one out of every two lonely adults is also obese and/or diabetic strongly suggests that loneliness and risk of developing metabolic syndrome should be studied in greater detail (AARP 2010). Loneliness also appears to predict development of cardiovascular issues such as hypertension, as supported by data collected in landmark longitudinal studies in middle-aged and older adults (Cho 2015, Hawkley 2010).

Together, these reports indicate that loneliness can exert stress-related effects on multiple biological systems. It must be acknowledged that loneliness could interact with and exacerbate mental health issues, especially depressive symptoms and possibly obsessive-compulsive behaviors, and so there are still yet other possibilities by which loneliness can affect overall health. Within the scope of this perspective, however, multiple pre-disease pathways contribute to the development of diverse health complications that are associated with loneliness and they underscore the need to identify effective methods of intervention for the lonely.

Treating, managing, or living with loneliness

With many individuals reporting feelings of loneliness and a growing body showing how loneliness could be detrimental to health, the identification of potential treatments for loneliness should be recognized as a critical aspect of this public health issue. Efforts to reduce the prevalence of loneliness have been primarily directed towards alleviating feelings of loneliness (particularly among those suffering from

Konstantin Stepanov

chronic, long-term loneliness) or by identifying the best possible opportunities to prevent chronic loneliness from developing (Masi 2010, Windle 2014).

According to a meta-analysis of six major reviews, treatment strategies employed since the 1930's have typically focused on 1) improving social skills, 2) addressing issues with maladaptive social cognition (a term which describes how individuals may have strongly negative views on their self-worth or how they are viewed by others), 3) providing individuals with more opportunities for social integration and involvement, or 4) by directly providing social support (Masi 2010). In their analysis, the authors determined that emphasis on reversing maladaptive social cognition was most successful. For example, experimenters focusing on improving social skills have tried to help individuals improve verbal and nonverbal communication skills and etiquette and coaching individuals to cope with periods of isolation (Masi 2010); skills and etiquette and coaching individuals to cope with periods of isolation (Masi 2010). This strategy of intervention had significant effect on reducing loneliness among college-aged young adults (Jones 1982), and might also be effective in an older age group. Providing increased social support to perceived "higher risk" populations such as those who recently lost a loved one or who have recently relocated was also found to be beneficial, although these studies did not typically examine the effect on loneliness (Jones 1982, Varchon 1980, Wallerstein & Kelly 1977, Kowalski 1981).

Research therefore suggests multiple methods of intervention. Again, their effectiveness in treating the middle-aged remains largely unaddressed, likely owing to disproportionate focus on the young and elderly. However, based on the social problems middle-aged adults are likely to encounter, which bear strong similarity to those which are thought to affect the elderly, approaches that are effective in

Joshua Ganderson

treating loneliness or improving emotional health among the elderly could be successful. Additionally, identification of high-risk groups or otherwise subdividing the population by root cause or concomitant physical or mental health issues is likely to be a prerequisite step in developing or implementing effective treatment strategies.

With alarming prevalence among men and women of all age groups and a significant financial burden that has been suggested but not shown, long-term loneliness should be treated as a broad public health concern and carefully differentiated from momentary feelings associated with being alone. However, loneliness raises issues of objective measurement that indicate that social isolation, social network size, and other parameters relating to an individual's social integration and opportunities to receive social support must also be considered, either in managing loneliness or in further understanding loneliness as a psychosocial issue. Population-level research and intervention could benefit greatly from more refined identification of high-risk groups and individuals, and from clinical research on the biological mechanisms that translate the emotional stress of loneliness to medical issues.

The first step to managing loneliness is understanding loneliness. Despite immense advancements in communication technology and "social networking", loneliness remains a clear and present personal and collective public health challenge. The tragedy of loneliness is how personal it is. Still, as we better understand loneliness, we may develop new tools to help improve both mental health and public health.

Andrew Eng is a PhD student in the Northwestern University Integrated Neuroscience (NUIN) graduate program. He is particularly interested in the mechanisms of mental health disorders and the innovative treatments developed for them informed by basic research, clinical study, and social science.

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A Life's Work

Advocating for persons with psychiatric disorders and incarcerated populations for over 30 years.

By Dietta Chihade, M.Sc.

Dr. Linda Teplin

is the Director of the Health Disparities and Public Policy Program, and the Owen L. Coon Professor of Psychiatry and Behavioral Sciences at Northwestern University's Feinberg School of Medicine. She is the Principal Investigator of the Northwestern Project, the first large-scale longitudinal study of mental health needs and outcomes of delinquent youth after detention. For nearly two decades, the Northwestern Project has tracked and re-interviewed nearly 2000 participants. Here, we learn first-hand how she got her start and about her ongoing research improving services for persons with psychiatric disorders, especially those who are incarcerated.

Dietta Chihade (DC): Tell us a little about your core research interests.

Dr. Teplin: I'm interested in "special populations," especially those that are rarely investigated. I specialize in studying people who fall through the cracks of the mental health and criminal justice systems. Since deinstitutionalization, public health experts speculated that many people with psychiatric disorders are often arrested instead of treated.

DC: How did you get interested in this area of research?

Dr. Teplin: This goes way back, [to] when I began at Northwestern—in the mid-seventies. I was put to work on a project where we compared community treatment versus inpatient stays at the state hospital. We studied an unusual population: people brought to the emergency room by police. I noticed that we received only between 35-55 cases per month. That seemed low. Here we were—in downtown Chicago— and police sent us only 35-55 psychiatric emergency patients per month? I wondered if perhaps people

"[...] it helps to be savvy. To be pleasant. To be bold."

with psychiatric disorders were being arrested instead of treated. My serendipitous observation led me to develop an unusual study. We rode with police during all hours of the day and night to see how they managed people with severe psychiatric disorders on the street. We wondered whether because of deinstitutionalization—and the overall paucity of mental health services— people with severe psychiatric disorders were ending up in jail. The police study greatly predates our current work (the Northwestern

Juvenile Project), but it is representative of our interests where we study populations that are rarely investigated and study them in an unorthodox way. The Medical School's publication, "Northwestern Ward Rounds," once featured the police study. Because we rode with police, their headline was, "Hitting the Streets for Public Health." That is an apt description of our work. The police study was the propitious beginning of more than three decades of scientific study. After the police study, the next logical step was to examine jail detainees. We had already established that people with severe mental disorders were disproportionately arrested as a consequence of deinstitutionalization. And, they were arrested not because they were particularly violent, but because the proper infrastructure [like] proper housing, social services, [and] outpatient treatment was never established.

DC: Do you have any special cases or memories from those early days trying to do public health research on the streets of Chicago?

Dr. Teplin: Here's a typical case: The police picked up a guy who seemed to have schizophrenia and was also intoxicated. So, we took him to the hospital. The hospital, recognizing the man from prior visits, said "We don't want this guy. He's not really mentally ill, he's just an alcoholic." So we got back in the squad car and took him to detox. The man had been to detox many times—he went straight to a bed, laid down, and took off his shoes. But the folks who ran detox said, "We don't want this guy. He's not just an alcoholic, he has schizophrenia. We can't keep him." And so the poor man was arrested—not because he had done anything wrong—but because there was no other place for him except jail. This case captivated me. I realized that the systems had broken down and that

> ## "And so the poor man was arrested—not because he had done anything wrong—but because there was no other place for him except jail."

> ## "I realized the systems had broken down and that I wanted to conduct research that could guide future public policy."

I wanted to conduct research that could guide future public policy. I was really young at the time—25, I think.

DC: How did you choose and survive this unique career path at such an early age?

Dr. Teplin: There were few employment alternatives for women, so my choice was to persevere in school or be a secretary. The help wanted ads in the newspaper read, "Help Wanted–Men" and "Help Wanted–Women." And women's choices were few: you could be a file clerk, a school teacher, a social worker, a factory worker, or a nurse. Being a nurse was out of the question—I was the squeamish sort. It is difficult to imagine how few alternatives there were for women in the late sixties and early seventies. At one point, I was a secretary at a well-known consulting company who had a written policy not to hire women as consultants. The atmosphere was like *Mad Men*, but with less alcohol. Because the secretarial track was not appealing, I just stayed in school and eventually got my PhD. I was fortunate to be hired at Northwestern as an Assistant Professor in 1975. I think I was one of the youngest faculty ever hired. The medical school back then was a challenging environment. The washrooms at Weiboldt were labelled "faculty" and "ladies." I never could figure out which one was the most appropriate for me.

DC: Tell us more about your earliest studies, how did it go?

Dr. Teplin: The police study was funded by NIH. It may have been a bit of a quirky study, but it was highly organized. Field workers made a list of observed encounters between police and any people they interacted with. After the shift, the fieldworkers used their list to record data in two ways. They dictated a narrative of the encounter—on an antique device

objective features of the encounter, including symptoms of psychiatric disorder. So we had quantified data—that could be analyzed statistically—and qualitative data that provided the explanation for our findings.

DC: Why were not clinical psychologists making the diagnoses?

Dr. Teplin: Well, it would be difficult to give standard diagnoses in a squad car to someone who has just been mugged. We developed a checklist of symptoms of severe psychiatric disorders, and we validated our checklist against standard psychiatric assessments in a separate study. The checklist worked quite well, especially since we needed only a dichotomous variable: having a severe psychiatric disorder (yes/no).

DC: How did this police study influence your subsequent research interests?

Dr. Teplin: The police study turned out to be important for the field because we documented—for the first time—that people with severe mental illness were often arrested instead of treated. And, not because they were violent but [rather] because of the failures of the mental health system. Our findings led me to focus on incarcerated populations. Since then,

> **"So we have this gap: criminologists study correctional populations, but do not study health. And public health researchers avoid correctional populations."**

we've studied men in jail, women in jail, and kids in detention. Our studies are unusual. Many public health researchers study patients. Or they collect data using household-based samples. Or they sample from school populations. But very few people study incarcerated populations. I often wonder why. I think it's because many public health researchers are intimidated by the idea. They don't know how to obtain access to study jails and prisons. They don't know how to collaborate with correctional staff. Ironically, criminologists study correctional populations all the time. But criminologists focus on crime, not on health. So we have this gap: criminologists study correctional populations, but do not study health. And public health researchers avoid correctional populations. So my group has focused on studying people who fall between the cracks of the disciplines.

DC: What life or career lessons did you learn from these early research years?

Dr. Teplin: I'm always amazed that many researchers don't seize the opportunity to study the interstices between disciplines. We've received funding because we point out—in the nicest possible way—to the Feds, "You fund these terrific large-scale epidemiologic investigations of the general population. But you are systematically undersampling African-American males because none of your studies include incarcerated populations." So that's what we have done for years and years. But our trajectory has been a bit of an accident.

DC: Do you think the reluctance to research incarcerated populations has had to do with stigma associated with that population?

> **"You need to develop cooperative relationships with all the agencies involved—in our case, with the police department, the Cook County jail, the Detention Center, and the courts."**

Dr. Teplin: Not at all. People don't mind studying other stigmatized populations. But some public health researchers may not know how to study correctional populations. You need to develop cooperative relationships with all the agencies involved—in our case, with the police department, the Cook County jail, the Detention Center, and the courts. And we always try to give something back.

DC: It appears that a fundamental limitation to studying populations in corrections starts with gaining access. How do you gain access to these populations for your studies?

Dr. Teplin: Researchers need to think of ways to give back to the institution that they are studying. When we attempt to gain access I will meet with the people involved—it might be the presiding judge of the juvenile court or the director of the Cook County jail— and I will explain, in very straightforward terms, what our research is about, and why it's important. We present the larger public health context. I explain how the findings could help their work. And we behave, and are not demanding. I've heard horror stories of researchers demanding on the first day, "Where are our offices? Where is the copy room? We need office supplies, we need this, we need that, etc…" We remember that it's their party, and that we're the guests. We strive to be unobtrusive, and not disrupt their normal procedures. Also, we try to provide a product for them that helps their work. So, we often say to people who run the institution, "We are going to be doing this research paid for by the Feds. What can we build in that would be useful for you?" For example, years ago, we developed a screen for severe mental disorder for jail detainees because the associate director of Cook County jail detainees said, "Well, screening is a problem for us. Can you help us develop a screen for severe mental disorders?" I said sure. It ended up becoming [a] journal article.

Researchers need to recognize [that] working with community organizations is a partnership.

DC: Any final words of advice for young students or researchers just beginning their career?

Dr. Teplin: My advice to people is to be well trained methodologically. Then you can pick up any content area. I've not been trained in the dependent variables we study, but I understand qualitative and quantitative methods. Also, it helps to be savvy. To be pleasant. To be bold. To choose a methodological approach that best fits the question, rather than the one that you are most comfortable with. To pick brilliant colleagues like mine (Professors Karen Abram and Leah Welty). And finally, to have the perseverance of a Jack Russell terrier.

Dietta Chihade is a Northwestern graduate student who also holds a master's in neurobiology and a certificate in Health Services and Outcomes Research from Feinberg. She loves discovering new eateries in Chicago, salsa dancing and reading Snapple caps.
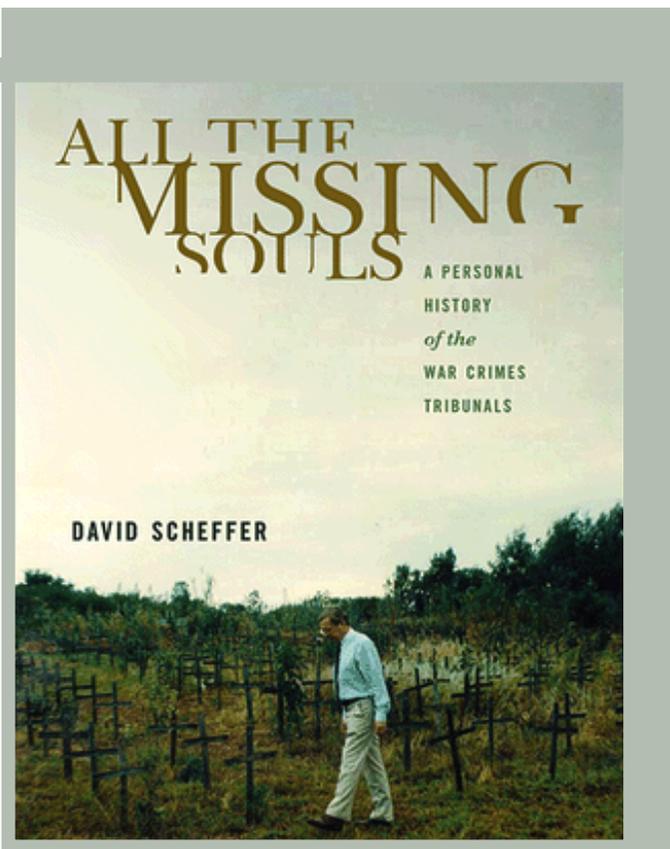
All the Missing Souls: A Personal History of the War Crimes Tribunals

By
David Scheffer

The commission of atrocity crimes, which are genocide, crimes against humanity, and war crimes, always generates severe public health consequences. One cannot understand the killings, injuries, rapes, trauma, mutilations, and destruction of homes, businesses, religious buildings, and hospitals that define atrocity crimes without recognizing the massive impact on public health occurring every single day in conflict zones and repressive societies across the globe. The medical profession has an indispensable stake in this subject, and we need more voices from the medical school and public health communities speaking out to confront and ultimately deter atrocity crimes. The burden of atrocity crimes is thrust upon the doctors, nurses, and public health experts who are "first responders" to the handiwork of war criminals.

I was the first U.S. Ambassador at Large for War Crimes Issues from 1997 through 2001 to build five war crimes tribunals and address atrocity crimes head-on during my eight years in the Clinton Administration. The aftermath of the Cold War unleashed waves of atrocities that screamed out for accountability. One massive atrocity—Cambodia under the Pol Pot regime in the 1970s—required, at last, justice. As I traveled the world to atrocity sites, some freshly erupting, others long dormant, I came upon one public health crisis after another. I recount some of those experiences in my book, All the Missing Souls:A Personal History of the War Crimes Tribunals (Princeton University Press, 2012). Set forth below is one of them, at a place called Mudende in northwestern Rwanda, where a resurgent genocidal attack in December 1997, years after the genocide of 1994, had just occurred and left at least 254 civilians slaughtered. I visited the killing site shortly after the attack.

"When I arrived on the scene in Mudende, the massacre site revealed its awful face and wretched smell. The dead had just been buried in mass graves. The wounded were in Gisenyi Hospital nearby. The other survivors, who had scrambled into the jungle during the rampage, were huddled at a warehouse down the road among other refugees. Many of the victims had been roasted alive within their tents, a tactic I would witness at other atrocity sites. Personal belongings lay strewn everywhere. Bullets and machetes were scattered in pools of blood….

"When I visited Gisenyi Hospital, one Congolese doctor, Patrick Kimpiatu, who was trained in the United States, had begun his forty-fifth hour of continuous surgery and medical care for 267 patients, 15 of whom had died since arriving after the massacre.

Dr. Kimpiatu was the only doctor present with two nurses from Doctors Without Borders and few medical supplies. When I witnessed the victims of the machete attack for the first time, I could scarcely comprehend the carnage. I saw one child whose brain had just been stuffed back into his head by the doctor, without anesthetic. Another child was told his slashed leg would be amputated. His screams persisted throughout my visit and echoed within me for days. A beautiful teenage girl was lying motionless, forever paralyzed by a gunshot wound. An old woman was barely intact from machete slashes. Tents had been erected on the hospital grounds, crowded with the crippled and the dying. There had been no further medical assistance from any source. Blood and grime sloshed everywhere.

Church Genocide Memorial
Dylan Walters

"I had a recurring nightmare for years after Mudende: I would arrive at a massacre scene with the dead blanketing the killing field. But there always was a solitary tent, and when I entered it there was one hideously wounded survivor who pleaded for help. I would run from the tent screaming for a doctor. The doctor never arrived, and death overtook the victim."

My job was to help bring the leaders who perpetrated such crimes to justice. But I also saw the human misery that demanded, and still demands, so much attention from the medical and public health communities.

My colleague at Northwestern University School of Law, Clinical Associate Professor of Law Juliet Sorensen, has pioneered the Northwestern Access to Health Project and collaborated with Northwestern University Medical School and the Kellogg School of Management to reach deeply into regions of the world where access to health is at severe risk. She and her colleagues and students bring their legal, medical, and business skills together to ensure proper health care to those in dire need of it. The project exposes her to the kind of world I experienced during the 1990s while addressing atrocity crimes. Even before her arrival at Northwestern Law, she encountered, and helped bring to justice, one of the perpetrators of the Rwandan genocide while she served as an Assistant U.S. Attorney in Chicago. Her story about that experience, in the heartland of America, follows.

David Scheffer is a lawyer and diplomat who holds an endowed professorship at Northwestern's Pritzker School of Law where he also serves as the Director of the Center for International Human Rights.

More information on the author's experience confronting atrocity crimes can be found in his book *All the Missing Souls: A Personal History of the War Crimes Tribunals* (Princeton University Press, 2012).

The Synergy of Public Health and International Criminal Law in Post-Genocide Rwanda

By

Professor Juliet Sorensen, J.D.
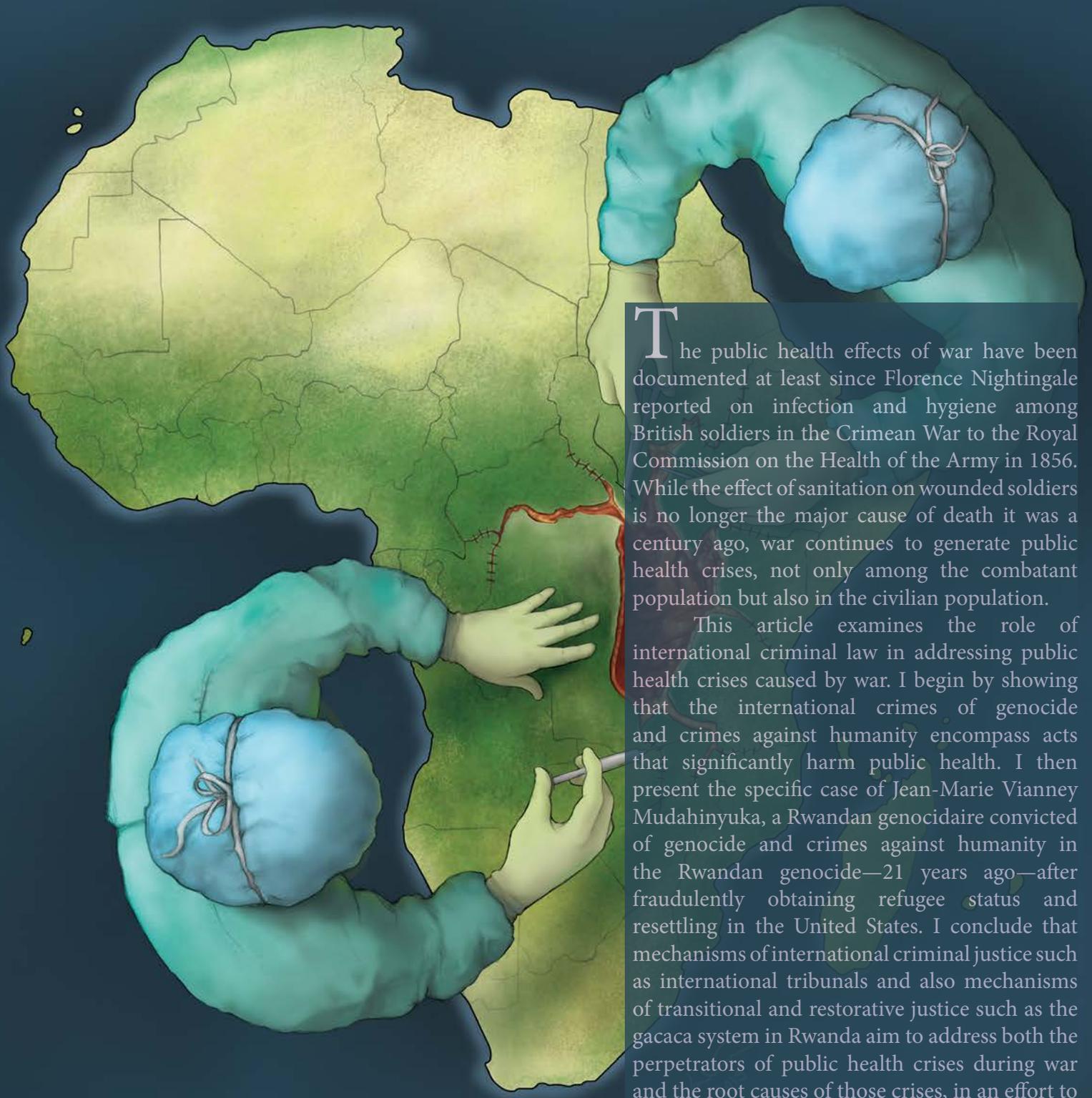
T he public health effects of war have been documented at least since Florence Nightingale reported on infection and hygiene among British soldiers in the Crimean War to the Royal Commission on the Health of the Army in 1856. While the effect of sanitation on wounded soldiers is no longer the major cause of death it was a century ago, war continues to generate public health crises, not only among the combatant population but also in the civilian population.

This article examines the role of international criminal law in addressing public health crises caused by war. I begin by showing that the international crimes of genocide and crimes against humanity encompass acts that significantly harm public health. I then present the specific case of Jean-Marie Vianney Mudahinyuka, a Rwandan genocidaire convicted of genocide and crimes against humanity in the Rwandan genocide—21 years ago—after fraudulently obtaining refugee status and resettling in the United States. I conclude that mechanisms of international criminal justice such as international tribunals and also mechanisms of transitional and restorative justice such as the gacaca system in Rwanda aim to address both the perpetrators of public health crises during war and the root causes of those crises, in an effort to ensure that they never recur.

The Intersection of Law and Public Health in War

Jean Baptiste and Freda reconciliation

International law and public health policy complement each other in the realm of atrocity crimes. Holding perpetrators accountable for these acts, including crimes against humanity and genocide, through the criminal justice process not only provides a measure of justice for victims and survivors but also sends a message of deterrence to those who would be inclined to commit such acts. Indeed, although this purpose is rarely expressed by legislators, lawyers, or judges, the criminal process seeks to address and prevent the public health problems caused by war as much as organizations that are focused exclusively on health.

The U.N. Security Council resolution establishing the jurisdiction of the International Criminal Tribunal for Rwanda was enacted in November 1994, and provides one example of the legislative focus on public health problems. The resolution, or statute, provided that the tribunal would have jurisdiction over acts of genocide, crimes against humanity, and war crimes occurring in Rwanda and neighboring states in 1994. The statute defined acts of genocide to include:

(a) Killing members of the group
(b) Causing serious bodily or mental harm to members of the group
(c) Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part
(d) Imposing measures intended to prevent births within the group; and
(e) Forcibly transferring children of the group to another group.[1]

The state provided that crimes against humanity included, but were not limited to, the following acts:

(a) Murder;
(b) Extermination;
(c) Enslavement;
(d) Deportation;
(e) Imprisonment;
(f) Torture;
(g) Rape;
(h) Persecutions on political, racial and religious grounds; and
(i) Other inhumane acts.[2]

All of the acts defined by the Security Council as genocide and crimes against humanity may result in morbidity and mortality, but also carry long-term impacts on the physical and mental health of survivors. Thus, the International Criminal Tribunal for Rwanda seeks to provide redress not only for violations of international criminal law arising out of the Rwandan genocide, but also acts detrimental to the public health.

Case study: Jean-Marie Vianney Mudahinyuka

The case of Jean-Marie Vianney Mudahinyuka shows the impact of one person's participation in genocide, its public health implications, and its redress through international criminal justice. The first genocidaire to be prosecuted in the United States for federal crimes arising from the Rwandan genocide of 1994, then deported back to Rwanda, Mudahinyuka, better known by his nickname, "Zuzu," was a prominent government functionary and businessman in Kigali before the genocide. Prior to the genocide, Zuzu was a member of the ruling Hutu political party, the National Movement for Democracy and Development, and was a close associate of Georges Rutiganda, who notoriously took to the radio waves in 1994 urging the extermination of all Tutsis. During the genocide in the spring of 1994, Rutiganda was the vice president of the Interhamwe, or Hutu militia, and he appointed Zuzu to be a councilor of the same group.[3]

Not only was Zuzu a senior leader of the genocide, but he was also a perpetrator on a personal level. As described in a 2005 article in the Chicago Tribune Sunday Magazine, "The Man Called Zuzu," a witness testified under oath to a federal grand jury in Chicago in terrifying detail about Zuzu's participation in the genocide.[4] The witness stated that in the spring of 1994, a Hutu family friend took him into his home to protect him from the genocide and the witness pretended to be a member of the family. One day, the witness testified, the people of town were ordered to come to the public square. There stood Zuzu and another man, standing next to a Tutsi. "Hutu power," Zuzu's comrade called to the crowd. "Power. Power. Power," the people responded. The man with Zuzu told the crowd that God had given them permission to slaughter Tutsis and he was going to show them how. He ordered the Tutsi to lie on the ground and then, according to the witness, he chopped the man's legs off at the knees with a machete.

According to the grand jury witness, Zuzu took a club studded with nails and hit the man in the head three times. "His head split open," the witness said. The man said he also saw the rape of his cousin by Zuzu. After the rape, the witness said, Zuzu took a sharp stick and forcibly inserted it into his cousin's genitals. Zuzu left her there, "bleeding and crying for help. She died."

The tide of the genocide eventually turned against the Hutus, and Zuzu fled Rwanda to the Congo with his family. From there, he made his way to a refugee camp on Lusaka, Zambia. In Lusaka, he applied for refugee status in the United States, falsely stating that his name was Thierry Rugamba and that he was a victim of the genocide. He and his family were granted refugee status, and he moved to the United States in 2000, settling in a Chicago suburb in 2001.

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Mudahinyuka, Public Health, and International Criminal Law

The plain language of the statute creating the International Criminal Tribunal for Rwanda makes clear that Zuzu commited genocide—murder and serious bodily harm with the intent to eliminate a particular ethnic group, that is, Tutsis—and crimes against humanity, including rape against civilians as part of a widespread attack on Tutsis. Zuzu was not alone; on the contrary, the Rwandan genocide was known for "neighbor killing neighbor" with 800,000 people killed in 100 days.[5] Additionally, the Hutus used mass rape as a weapon of war.[6] The case of Zuzu illustrates the role of one actor in the genocide but scholars of genocide studies have calculated that between 175,000 and 210,000 individuals actively participated in the genocide.[7] If each of those individuals committed the same acts as Zuzu, and the same number of those acts, the scope of the nationwide tragedy and the public health consequences for the people of Rwanda are all too apparent.

After the genocide, Zuzu was indicted by the Office of the Rwandan Prosecutor General on charges of genocide and crimes against humanity. But he had vanished—the Rwandan and ICTR investigators couldn't find him. So they entered an Interpol "red notice," or international arrest warrant, alerting countries around the world that Zuzu was a fugitive and describing him as "armed and dangerous." Zuzu, living in a Chicago suburb under the alias of Thierry Rugamba, was unknown to U.S. authorities, and would have continued to be, were it not for Gerard Sefuku.

Sefuku, a Rwandan Tutsi living in South Bend, Indiana, heard from a friend in 2003 that Zuzu—the dreaded councilor of the Interahamwe—was alive, well, and working in an African food store, Chika's, in Bolingbrook, Illinois. Sefuku, who had lost most of his family in the genocide, decided to drive to Chika's to see for himself. "The face of evil," Sefuku Sunday Magazine.[8] Sefuku then took it upon himself to inform U.S. agents of Zuzu's presence in the

Rwanda Genocide Memorial

United States, writing letters to then-President George W. Bush, then-Attorney General John Ashcroft, and anyone Sefuku could think of who had authority over the matter.

The letter to Attorney General Ashcroft went straight to the point:

Dear Sir:

We, the survivors of the Rwandan genocide residing in Michigan and Indiana, would like to inform you of the presence of Mr. Vianney Mudahinyuka a.k.a. Zuzu . . . a genocider . . .

. . . While our community is trying to settle and put behind the 1994 Rwanda atrocities, we are becoming convinced that the United States of America is becoming a safe haven for Rwanda war criminals . . .'[9]

Zuzu was arrested by federal agents on May 12, 2004, at his home in Illinois, on charges of immigration fraud—lying about his past and his identity to obtain refugee status. During the arrest, Zuzu assaulted two of the arresting agents,

taking hold of the weapon of one of the agents and pushing back and injuring the other's finger, so he was also subsequently charged with assault on a federal officer, a federal crime.[10] Eleven days before his trial was scheduled to begin, Zuzu pled guilty.[11] After serving a sentence of 51 months in U.S. months in U.S. prison.[12] Zuzu was deported in 2011 to Rwanda, where he had already been tried in the meantime by a gacaca court, convicted, and sentenced to 19 years in prison.[13]

International Criminal Law, Public Health, and Rwanda today

The criminal process is traditionally viewed as reactive. A crime is committed, and the system responds. If the accused is convicted, he or she is punished. Health practitioners criticize the legal approach as one that is inefficient due to its focus on one case at a time.

To be sure, criminal cases can only proceed against named defendants. However, to condemn international criminal justice as myopic ignores the system's stated goal of deterrence. A judge may only rule on the individual who stands before the court, but the judge's ruling and indeed, the filing of charges against that person may send a message of deterrence to those who would tend to commit the same acts with which that person is charged.[14] In the gacaca system, where community members can come together in the community and give evidence about the events in question, there is an additional opportunity for collective healing, reconciliation, and the ability to move on.[15]

How have these judicial efforts concretely affected public health in Rwanda since the genocide, exactly twenty years ago? Without reconciliation and collective healing there can be no meaningful foundation for collective public health progress. Indeed improvements in countrywide health indicators have been remarkable.[16] From 2000 to 2005, HIV prevalence dropped from 12% to 3% in 6 years, according to the 2010 Demographic and Health Survey.[17] As for malaria, the latest indications show the mobility and mortality of malaria have

Gacaca, which in Kinyarwanda means "to sit down and discuss an issue," were community justice commissions formed both to bring reconciliation to the horrible intimacy of neighbors killing neighbors, and also to relieve the daunting backlog of cases faced by the court system in a small country.

decreased by 60% in in Rwanda.[18] Rwanda is going to be one of the few countries to successfully reach Millennium Development Goals 4 (infant mortality) and 5 (maternal health) in 2015, and has made significant progress towards other MDGs.[19] Moreover, this is coupled with steady economic growth: according to the World Bank, between 2001 and 2012, real GDP growth averaged 8.1% per annum.[20] The poverty rate dropped from 59% in 2001 to 45% in 2011. Looking to the future, Rwanda's long-term development goals are embedded in what the government has called Vision 2020, which seeks to transform Rwanda from a low-income agriculture-based economy to a knowledge-based, service-oriented economy by 2020.[21]

The wounds from the genocide will never heal. However, rising from its ashes, the country has experienced substantial economic growth and improvement in health indicators. A restored faith in justice is essential to communal reconciliation. A survey done last year by Rwanda's National Unity and Reconciliation Commission found that 87% of Rwandans believed that their country would not experience another genocide. International criminal justice, as exemplified by the case of Zuzu, has contributed to this outlook through its message of justice, general deterrence, and prevention, reinforcing progress in public health and development.

Juliet Sorensen is Clinical Associate Professor of Law at Northwestern's Pritzker School of Law. Her interests include international criminal law, corruption, and health and human rights.

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Laguna Lagos, H. Boll Stiftung (top)

Abuja Street Portraits, M. Fischer (left and right)

Partnering for Health
Shell-Obio: A Case Study

Can Multinational Corporations actually make a sustainable impact on the long-term pubilc health of local communities?

By Osefame Ewaleifoh

During a conference at Carnegie Mellon University in 1960, David Lilienthal, an attorney and author of the 1946 International Control of Atomic Energy report, articulated the first definition of Multinational companies as such corporations which have their home in one country but operate under the laws of other countries where they do business(1). Understanding the impact of Multinational Companies (MNC) in local communities where they operate is a new but growing area of research. While previous studies have focused on positive roles of MNC, such as stimulating local economies or negatives, such as polluting the environment, less is known about the strategic role or potential of MNC in driving local public health.

Since the 1970's MNC have grown enormously in both size and economic power, giving them enormous leverage and reach in influencing both international and local policies(2). More significantly, multinational companies have enormous intellectual capital and resources which can be harnessed to enhance local public health. The combination of economic capital, extensive technical expertise, and a vested long-term interest in the community, makes multinational companies an increasingly indispensable stake holder in the dialogue over the public health future of many developing countries. We make the argument here that increased engagement and partnership(s) between public health practitioners and multinational corporations could prove to be deeply mutually beneficial to both local communities and multinational corporations. Among multinational companies, energy companies are singularly and of particular interest to public health for several reasons, first because they bring specific technical expertise to the new

community. Second, they have a long-term interest in exploiting latent untapped resources in a community. Third, the focus and search for natural resources draws energy companies to the poorest regions of the world, often the same regions with grave public health needs. These three factors make the partnership between multinational energy companies and public health a potentially fruitful union. We propose that when deliberately orchestrated and channeled, the expert engineering knowledge and intellectual resources provided by multinational companies can be employed to solve a significant portion of the public health needs in resource limited local communities in which the MNC often work. We consider the partnership between Shell Petroleum, a major Multinational energy company in the Niger Delta region, and the Obio community of Rivers State in Nigeria.
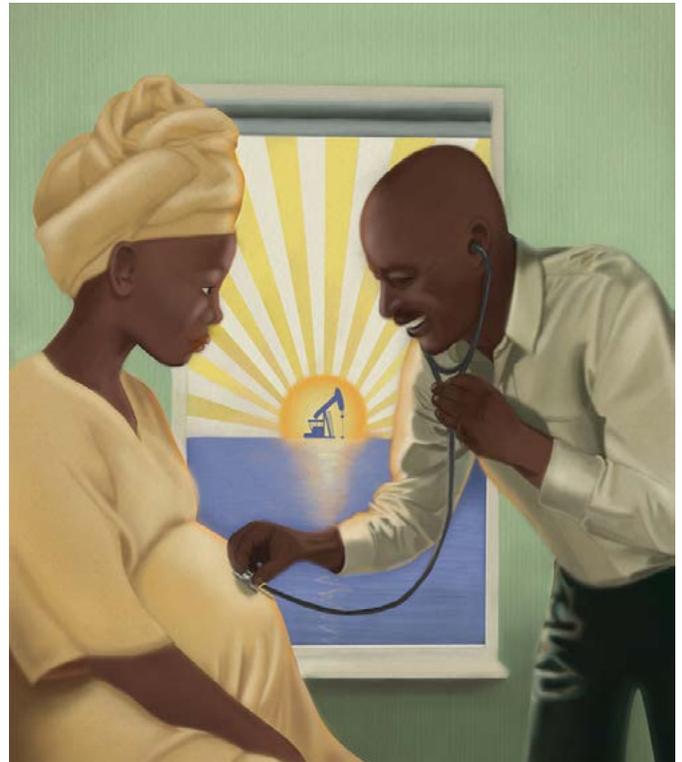
2015 © Carrie Shaw (current UIC Biomedical Visualization graduate student)

![icon] ## Corporate Social Responsibility and Public Health – Choice vs. Responsibility

Up until the 1980's, the widespread perception on corporate social responsibility was that corporations had only one social responsibility: to stay profitable for their shareholders. This position was most effectively articulated in a 1970's New York Times article in which the legendary economist Milton Friedman declared "[t]here is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits"(3). By this logic, a company could and should do whatever it needed to do to make the most profit for its shareholders. In time, however, corporate disasters such as the Exxon Valdez oil spill proved the narrow mindedness of this claim as the public began to demand action from corporations on social responsibility beyond profit. Still, the specific role of corporations as socially responsible players remains poorly defined, particularly in the areas of public health, and a central question lingers – must corporations be expected and or required to act in a socially responsible way to promote public health, or is it simply a good idea? To explore this thought it is important to define corporate social responsibility (CSR).

For the purpose of this discussion we define CSR as "business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining, and enhancing the human and natural resources that will be needed in the future"(2). For most companies, efforts at CSR often end as lip service to placate the community and embellish the corporate image – maybe even get a tax write off. While such intentions might be understandable, they are extremely unfortunate and a wasted opportunity, since MNCs are very uniquely poised to make significant impact in the communities where they do business.

> "[...] a central question lingers – must corporations be expected and/or required to act in a socially responsible way to promote public health, or is it simply a good idea?"

Multinational companies are uniquely poised for community empowerment

Contrary to wide-spread opinion, the true impact of a multinational company in a region where it operates is not how much money it donates through charity – it is in how much it empowers the indigenous community to help themselves. Ultimately, an empowered and self-supporting community becomes an asset to the companies working in the area. In this light, efforts at corporate social responsibility are not necessarily just "a nice idea" but an essential strategic advantage that benefits all parties involved in both the short and long term.

While the local economic boost provided by a MNC in a local community is self-evident, very little attention has been paid to the intellectual and technical capital infusion provided by a MNC in a new local community. Beyond financing, applying all the available intellectual resources at the disposal of the MNC to help indigenes think about and solve local public health challenges might prove more sustainable than any efforts at charity and philanthropy. In support of this argument, earlier study argues that "through its empowerment of indigenous professionals and managers, multinational corporate subsidiary transfers knowledge and experiences that are less available locally"(4). To prove the capacity of MNC intellectual investment to enhance public health, Novo Nordisk, a Danish pharmaceutical MNC working in China, provided its starch degrading enzyme technology to locals for application in biological waste water treatment. This partnership led to over a 90% decline in organic waste in the regional water supply(4).

A full appreciation and acceptance of the strategic advantage of a healthy local population is essential because while civic engagement and public health advancements are highly desirable goals, the central singular *raison d'etre* of every business entity is to maximize profit for their shareholders. This profit making incentive is the strongest sole argument for any MNC to invest in local public health efforts. To stay profitable MNC must depend on the services provided by healthy locals and a healthy community, as the outbreak of public health crises can be severely damaging to MNC. This scenario was proved during the Ebola crises that adversely affected local operations of several MNC in West Africa.

> "The true impact of a multinational company [...] is not how much money it donates through charity – it is how much it empowers the indigenous community to help themselves."

Case Study: The Shell/BP Obio Health Insurance Project

A fundamental strength of most multinational companies is a highly refined and fine-tuned operational process. From oil exploration, to drilling and distribution, down to daily business management, these highly refined operational processes provide the competitive edge that keeps the businesses immensely profitable. The Royal Dutch Shell petroleum development company (popularly known as Shell or SPDC) started operation in the Nigeria Niger Delta company in 1958, shortly after the first discovery of crude oil in the region in Oloibiri. For decades after commencing operation, the possibly deleterious public health and environmental effects (among others) of oil exploration in the region was a

Oil exploration

major concern for locals. These concerns culminated in a UN Committee on Economic, Social and Cultural Rights report (1998) which noted "with alarm the extent of the devastation that oil exploration has done to the environment and quality of life in areas such as Ogoniland where oil has been discovered and extracted without due regard to the health and well-being of the people and their environment"(5). In response to these international and local pressures, multinational oil companies are beginning to take their role in CSR more seriously. As a first step towards a more public health-centered corporate social agenda, 10 years ago Shell created a first-of-its-kind community health department. This step was unique and important, first, because it is the only one of its kind among MNC's in the region. Second and more importantly, the sole focus of this department was to look for novel ways to sustainably engage company resources to promote long-term community public health. While previous SPDC SRC efforts at public health have focused on "short-term development projects" that were tied to specific company projects that began and

> **"The most dire public health need in West Africa remains basic access to care."**

ended once the Core SPDC projects (such as laying new oil pipelines through a community) were completed, the current Shell Community health department "Obio health campaign" takes a more longitudinal approach to public health by helping empower local communities.

The most dire public health need in West Africa remains basic access to care. Among WHO member nations, the Nigerian Health care system is among the lowest in terms of access to care. Maternal mortality within Nigeria is 560/100,000 while mortality for children under 5 years old is at 124/1000 live births(6). This picture is complicated by the fact that most people simply cannot afford the full cost of care when they need it —even when it is available. In response to this dire health access need, the Obio health insurance project was introduced by Shell in March 2010. Another first-of-its-kind in the region, the goal of the Obio Community Health Insurance Project (CHIS) was simple — to employ the full resources of Shell to tackle local health care access barriers at the fundamental level of affordability.

The Obio Health Insurance model in action

Shell already provides comprehensive health care for locals who work for Shell. Still, this is a drop in the bucket of need for health care access in the region. Instead of providing free health care access, which is neither feasible nor sustainable, the Obio Health Insurance Project has focused on developing a community health insurance system paid for and managed by the community. In this system, Shell works as an underwriter, organizer, and initial financier of the insurance system. More significantly, by its mere association with the system, Shell provided instant credibility and expert managerial oversight for the new local insurance system.

All Enrollees (indigenes and non-indigenes) pay NGN 7,200.00, equivalent to USD $44/annum. Indigenes get a partial refund from their Obio Community Trust Foundation (Local GMoU Board), subsidized with funds from SPDC. Local indigenes who enroll in the insurance scheme pay the equivalent of USD $21/annum(7). This amount is subsidized by

CC Commons

both the local government and SPDC. Purchasing this insurance package grants enrolled members with access to a comprehensive health benefits package covering medicines, surgery, and in-patient care(7).

It is noteworthy that although Shell initially provided capital investment in the setup and operational cost of the health insurance systems as well as general insurance operation, their current involvement is almost exclusively in the capacity of managerial oversight and supervision.

Within the first 2 years of the Shell-directed Obio community health insurance program, over 4058 babies have been safely delivered within the system, with an average of 180 births per month versus only 10 births per month before CHIS. Furthermore, HIV transmission has been prevented in 150 babies through an "HIV Prevention of Mother to Child Transmission" Program. 15,000 community members have enrolled in CHIS and the operation staff strength at the Obio College Hospital has increased from 15 to 90 across all departments(7).

The Obio health insurance project is instructive; first, because it provides a template for community engagement and interaction between MNC and their local communities. Second, it makes the community ultimately responsible for their own health outcomes; and finally, it is sustainable—ensuring that long after the MNC leaves the locals can still have access to a system that works. This feasible but sustainable local health improvement program is mutually beneficial to both the MNC and the local community as it improves the health of the work force as well as the community relations efforts of the MNC(8).

A symbiotic public health relationship

Beyond simply providing a sustainable health access system, the model marriage between the MNC energy company and the local public health community affords several other mutual benefits. Ultimately, in the long–term, MNCs like Shell benefit from a healthy, stable community and productive work force. In turn, local public health efforts benefit from the enormous resources, capital and technical expertise that MNCs offer. A fundamental limitation of public health in remote communities is the lack of resources, economic or technical. The potential partnership between public health advocates and multinational companies with deep presence, extensive resources, and vested interest in local communities might provide a new model for health access in remote corners around corners around the world with the gravest public health needs. MNCs hold the power to make a major difference in the public health and quality of life in regions where they operate. Since we cannot coerce, legislate or regulate virtue, we must create incentives for public health engagement so that the marriage between public health and multinational corporations remain voluntary and mutually beneficial. MNCs in turn must realize that their continued welcome, engagement and success depend on the availability of a healthy workforce and community. The future of public health must be born of new symbiotic partnerships that go beyond symbolic charitable actions and focus on long-term community empowerment.

Osefame Ewaleifoh is a PhD/MPH student at Northwestern and Editor-in-Chief of the NPHR.

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Interview with
Cristal Thomas

It isn't often that we come across political figures or policy makers that have a background in science. Cristal Thomas, the former Deputy Governor of Illinois, provides exactly what is missing in a lot of policy decisions—a background and foundation in science. She has spent the last 10 years working in government, the last 4 of which were for the state of Illinois. Here, we get a sneak peek into the inner workings of how our government influences public health and what we can do to help.

By Nelly Papalambros

Nelly Papalambros (NP): Going back, what kind of central policy issue first drew you into government and how was it relevant to your scientific background?

Cristal Thomas (CT): Sure, well if I can remember back that back far. When I was in undergrad studying genetics it was at [a] time when there was a lot of conversation around stem cell research, human cloning, and the human genome project. All of that was really just at the beginning stages of the public debate. In particular, I realized that because government funded certain types of research it really drove the research agenda—at least in the university setting where I was — in a real way. That was the first policy issue that made me aware of this whole field of public policy and how important it was. Right after graduation when I was trying to figure out what I wanted to do, what graduate programs I wanted to apply to, I decided that I did not for variety of reasons want to go on the PhD track in genetics. I decided instead to switch over and get a master's degree in public policy and start a career in government.

NP: Do you feel like that's sort of a typical path with people that you work with?

> **"Many people start off in politics [...], that wasn't the case for me. I really started off interested in policy [...]"**

CT: Well, in my experience there is no typical path into policy, although I'm not sure that there is a typical career path for anybody anymore to be perfectly honest. I found that my background is fairly rare. I run into a few, but there aren't that many people with scientific backgrounds. It's more common for someone to have a degree in political science, economics, or a law degree and also people who are very involved in politics. The other thing I think that's different about me is that I did not start off as a political animal. Many people start off in politics, they volunteer for political campaigns and they get connected to a candidate, and then when that candidate wins they get into the actual policy side of things. That wasn't the case for me. I really started off interested in policy, got a degree in public policy, and went into policy. It wasn't until more recently in my career that I got more involved in the political side.

NP: You have spent a majority of your career working in government, what has been your experience? What are the biggest challenges in working in government?

CT: [One] challenge is the politics. Yes, politics exist everywhere but within government is just so much more. There is always this very reactive nature whenever a public health crisis occurs or it is perceived to have occurred. Public officials are scrambling to try to show that they are being proactive, responsive, and putting people's minds at rest, which results in driving where the resources go without actual evidence or data to suggest doing so. The result is these very uneven expenditures and priorities reflected. The greatest need and where public health efforts might have the greatest benefits might be in one area, but the money ends up somewhere else. For example, it might end up pouring in for a cause due to a powerful legislator who may have a family member with a specific condition. In government the priorities might change depending on where public sentiment is at the moment.

NP: Do you think government can drive public health behavior given the constraints they work within? What can government do for public health and the people?

CT: I actually think there's a lot that government can do and has done; you can look at past public health successes around anti-smoking initiatives and immunizations, which right now are kind of backsliding, but we can get control over that from a public health perspective. Those are real examples of how government playing a major role has influenced behavior or significantly changed and improved public health outcomes. People, I think, always forget now how difficult such campaigns were at the time; how prevalent smoking was in the culture.

Now people are looking at obesity and eating habits and they are saying how can you change people's behavior? You can. People have to realize these are cultural changes that don't happen overnight. Changing behavior takes time and you have to continue to be committed to the policies to see improvement. For example, some recent public health efforts that have

"Now people are looking at obesity and eating habits and they are saying how can you change people's behavior? You can."

occurred are in working with the fast food industry to get rid of trans fats and to provide the calorie count on menus.

I am on the regulatory side and I think [that is] where the struggle is; things that I would like to see happen, haven't. People could benefit from comparative research looking at one intervention versus the other to find out what might work better for different groups of people. That is more difficult and that's where I have been wishing to see more action. We are learning more about personalized medicine and people's biochemical makeup and it is clear that there is no one size fits all. It was exciting to see that President Obama announced the federal government was going to significantly invest into research for personalized medicine. I think personalized medicine is the future because while it is very difficult and complicated, it is the next step in what needs to be understood.

NP: Over the last couple of years working in government, were there any particular projects that you found interesting or rewarding?

CT: As deputy governor I have worked in a lot of different policy areas, both directly [and] indirectly related to public health. On the medical side, over the last four years, we have actually done a lot within the Medicaid program. A person's experience within the

"Low income and less education makes it harder to navigate the system, yet these are the people who are often left to do that on their own."

health care system is very different depending on their circumstances. People on Medicaid, who tend to be overall lower income, often have poor health status and more complex needs. Low income and less education makes it harder to navigate the system, yet these are the people who are often left to do that on their own. What we have done in the Medicaid program is create accountable care and a care coordination program that is very specialized in managing people within this population. I think a big part of that revolves around understanding that there are these social determinants of health in addition to typical medical issues. It was empowering to put funding towards care coordinators

who help people to navigate their own social determinants of health. These social determinants may be happening in their environments, in their communities, in their homes, and present a barrier to successfully managing their conditions.

Another project I worked on was a social impact bond, which they are now calling "pay for success contract". The pay for success contract is an effort in the area of child welfare for improving outcomes for children in the juvenile justice system. Ideally the goal is to be more successful in getting children out of correctional facilities and into community placement and on to better lives. The idea behind the pay for success contract is a public-private partnership where government partners woo a private investor to provide the upfront funding for an intervention. The government contracts with a social service provider that would then administer the program. There's an evaluation component and, assuming that the intervention is successful and the savings that were expected and agreed upon are actually reached, then the government will pay the investor back out of those savings. The reason why I was excited about this initiative is because it is an innovative model. It recognizes that the state of Illinois would like such programs, yet just doesn't have the money to invest in them right now. This is something that we just launched and I am hoping that the new administration continues on with it.

"The idea behind the pay for success contract is a public-private partnership where government partners woo a private investor to provide the upfront funding for an intervention."

NP: Now that you are leaving government, what are you looking forward to at your new position of Vice President for Community Health Engagement at University of Chicago Medical Center?

CT: I am looking forward to the opportunity to continue working in health policy and health reform, but to do it outside of government, and in a way that is a little closer to the ground. I am happy that at UC, in the position of community health engagement, their vision is not only to focus on their patient population but also to really focus on the population of people in the communities that surround UC. To really engage and develop strategies for how an academic medical center can positively influence and catalyze communities, in an effort to improve the health of the people within them, is something that I really see as a great opportunity.

NP: The last question is more on a personal note for the students or academics that read the article. What are the ways in which people with a science or public health background could get involved in either local or national policy making? Are there opportunities you think are overlooked for people who don't have necessarily experience in policy but kind of looking for that transition?

CT: Absolutely. There are a few ways people can get involved. The Dunn fellowship is for recent graduates at any level who are interested in doing a year of fellowship within the government. Often people who come in as DUNN fellows are then hired on within the agency where they were working. That is always a good way to get your foot in the door.

Another option is getting involved in public-private partnerships. There is a company called MATTER, which is an inter-health technology incubator that was recently launched in downtown Chicago. The group is looking to create opportunities and tables for people who are interested in the health care field who have a variety of different skills. They want to get different people together who are researchers, PhDs, MDs, IT, or entrepreneurial oriented. They want to create seminars, webinars, and to have round tables for discussion. I think they need to pull some policy people and have them join these conversations as well. I think that in the very near future health policy really needs to recognize and try to actively support the health care innovation and health care technology that is occurring because they can drive and influence each other. MATTER recognized the need for the kind of discussion space and how it is difficult to get everyone in the same room. This is one of the reasons why MATTER was created. I am very hopeful knowing that there is this vision and a group of people who are focusing on it full time.

Nelly Papalambros is a PhD/MPH student in Northwestern's Interdepartmental Neuroscience Program. She is interested in using science to advocate for evidence-based health policy.

The Role of Biomedical Visualization in Medicine and Health

By John Daugherty, Program Director for BVIS at UIC

Visual Communication for Public Health

Healthcare providers, patients and their families, the public, the media, governments, and non-government organizations all need to be able to converse during a public health threat, but these diverse groups do not necessarily "speak the same language." A good translator mediates between speakers of different languages, and biomedical visualization specialists can use visualization as a common language to help bridge the gap. A picture is a universal language that transcends not only every cultural boundary but also every conceptual boundary.

In response to reports of Ebola hemorrhagic fever in West Africa in 2014, the Centers for Disease Control and Prevention (CDC) fully participated in an international response to the outbreak. This included educating the general public in the nations of Guinea, Sierra Leone, Liberia, and Nigeria about how to avoid Ebola infection; educating healthcare workers about taking the steps necessary to protect themselves and prevent the spread of the virus; and improving communications between everyone involved [1].

Visual information specialist Dan J. Higgins, Division of Communication Services for the CDC, was called upon to assist emergency response officials in Sierra Leone. There was a need for posters and handouts showing small care facilities that had been established in local communities, so people could get treated as quickly as possible. Community Care Centers (CCC) had been set up to provide suspected Ebola patients with food, water, oral rehydration solution, antipyretics and analgesics while undergoing tests for Ebola virus disease. Patients who tested positive for the virus were transferred to larger Ebola Treatment Centers [2].

Higgins created a poster depicting a typical CCC unit (Fig. 1). This simple, isometric perspective view of the camp is accurate, yet simple and straightforward. It was created in a hand-done style using bright colors to be easily read by the Sierra Leone rural population (D. Higgins, personal communication, June 3, 2015).

The same view of the CCC unit was re-colored and repurposed for healthcare workers (Fig. 2). Camps are divided into red zones and green zones, and the way traffic flows within the camp is very important. The light red zone is where patients enter and are housed while being treated. The darker red zone is for patients who are extremely sick. Healthcare workers in full personal protective equipment (PPE) enter the light red zone through the gate behind the blue building and are required to travel through the "less sick" section to the dark red, "more sick" section. The green zone is where staff work and rest and where the healthcare workers don their PPE and dry them (D. Higgins, personal communication, June 3, 2015).
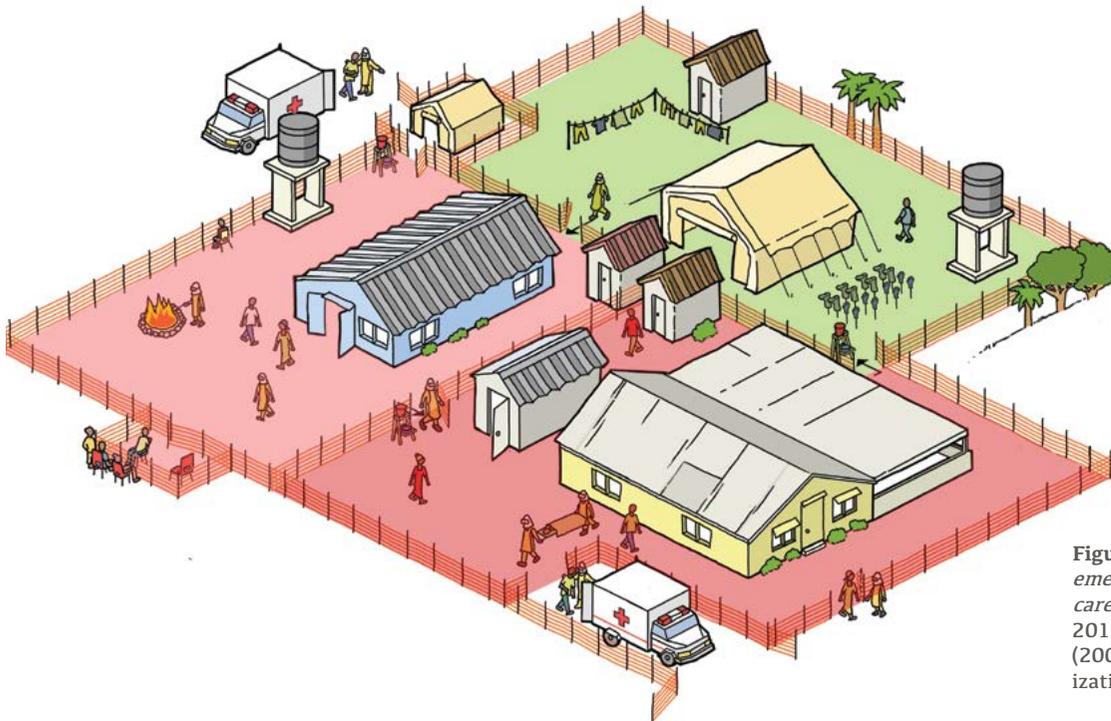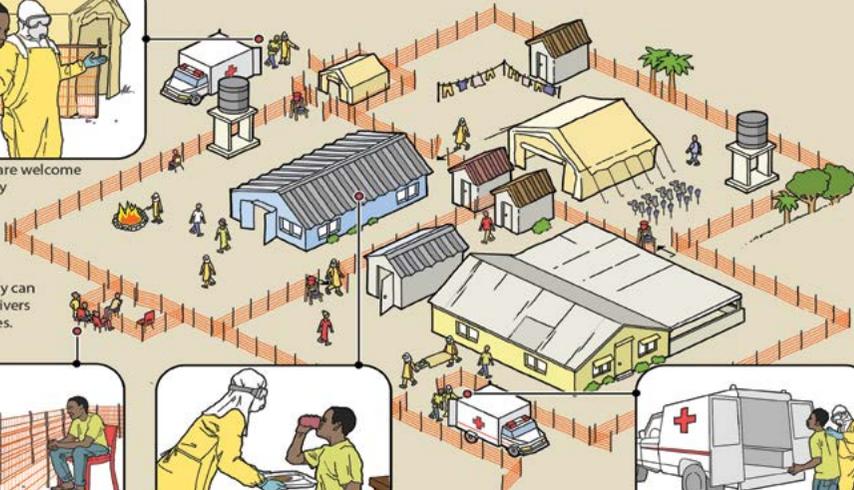
Figure 1. *Poster for Sierra Leone rural population.*
2014 © CDC/Dan J. Higgins (2000 UIC Biomedical Visualization graduate)

Figure 2. *Illustration for emergency response healthcare workers.*
2014 © CDC/Dan J. Higgins (2000 UIC Biomedical Visualization graduate)

Biomedical Visualization

Biomedical visualization is a multidisciplinary field that draws upon and integrates subject matter from a variety of disciplines including the life sciences, learning science, medicine, graphic arts, computer animation, immersive multimedia, and computer science. Biomedical visualization specialists use compelling and effective visual language to take complex data and abstract ideas and make them easily understood and tangible.

Information sharing among public health professionals and between those professionals and the public is critical to meeting the health needs of individuals and populations. Key stakeholders in public health may not "speak the same language," but meaningful conversation can occur with the help of skillful biomedical visualization specialists, who are able to translate complex biomedical information into a visual story that explains and teaches.

While didactic medical illustration is used to teach, the power of editorial medical illustration lies in the way it uses visual imagery, and sometimes visual metaphor, to engage the reader and guide understanding. Editorial illustrations used to support an article in a public health publication can take complex concepts and make them accessible. Captivating images can be used to either illuminate subtleties in the text or boldly reinforce one or more of the main concepts in an article accompanied by the illustration. A medical illustrator is able to extract the "essence" of the text and give the article a visual personality.

Figure 3. *Editorial illustration for The Synergy of Public Health and International Criminal Law in Post-Genocide Rwanda.*
2015 © Christine Cote (current UIC Biomedical Visualization graduate student)

Using Figure 3 as an example, the illustrator adopts the symbol of Lady Justice to provide context for an article on international criminal law, public health and Rwanda. Traditionally, Lady Justice is depicted with a set of scales representing truth and fairness positioned above a sword representing the power held by those rendering decisions. Here the illustrator uses the sword to represent the crimes of genocide in Rwanda, which is shown as a flag in the shape of the country. Lady Justice, who grasps a set of scales representing a mechanism for the world's restorative justice, is embracing Rwanda. The illustration provides a visual summary of the article, but it also evokes feelings of tenderness and compassion, establishing an appropriate tone for the discourse.

Biomedical Visualization at UIC

Founded in 1921 by Professor Thomas Smith Jones, the Biomedical Visualization graduate program (BVIS) at the University of Illinois at Chicago (UIC) is one of only four accredited graduate programs in North America providing professional training for careers in the visual communication of life science, medicine, and healthcare. The program's unique curriculum attracts graduate students from a variety of disciplines such as medicine, life science, art, digital animation, and computer science.

UIC East Campus, Onar Vikingstad

BVIS utilizes the academic resources of multiple departments throughout the UIC campus to support its interdisciplinary studies. A recently revised curriculum strongly emphasizes effective communication and problem solving and provides a solid foundation in medical science, learning theory, and innovative visualization techniques. In addition to illustration and design, course offerings in visualization technology have been expanded to include animation, interactive media, educational gaming, virtual reality, stereography, haptics, and augmented reality.

Close relationships between UIC BVIS and other prestigious Chicago universities and medical centers provide opportunities for student immersion experiences and effective collaboration with peers. For the second consecutive year, BVIS students have had the privilege of contributing editorial illustrations for public health to the Northwestern Public Health Review.

Visual Translators for the 21st Century

We are in the age of visualization. The accessibility of biomedical visualization via mobile devices and other visual displays has made its delivery revolutionary. As part of the healthcare team, biomedical visualization specialists embrace their role as visual translators for the 21st century, leveraging their scientific knowledge and artistic skills to convey complex information for the benefit of everyone in the medical and public health system.

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The Future of the Northwestern Public Health Program

Discussion moderated by Osefame Ewaleifoh (OE).

Participants are Michael Fagen, PhD/MPH (MF); Laura Rasmussen-Torvik, PhD/MPH (LRT) and Darius Tandon, PhD (DT).

OE: Why is there a need for the Master of Public Health degree (MPH) in the public health field and what makes the program at Northwestern University (NU) unique?

MF: The MPH is the professional level practice degree in public health [and is a standard in the field]. This degree and the need for a professional degree in public health have been around for a long time. Tulane established the very first School of Public Health over a hundred years ago, and Harvard followed their lead about a year after.

[Why one needs a public health degree is] a great question because in public health practice, especially in governmental organizations like state and local health departments, a lot of people who do public health work do not have public health training. It's considered a huge issue in the field. Folks end up, in governmental public health in particular making crucial public health decisions without the proper [comprehensive] training in public health and its practice. There is a growing recognition that the MPH is a necessary professional-level practice degree for public health.

We at NU are unique in that we have all the resources of a large, extremely reputable research university with the benefits of the small size of a program as opposed to a School of Public Health. We have fewer than 100 students but those students have access to all the resources that Northwestern University, the Feinberg School of Medicine, and the Institute for Public Health and Medicine offer, [all located] here in Chicago. We are not the only MPH program in this area, but Chicago is a rich laboratory for public health practice and we are well-connected to very important governmental and community-based public health organizations. Our students do their field experiences (FE) and what we call the culminating experience (CE, often referred to as the capstone project) in partnership with these organizations. So NU is the unique combination of a major, well resourced, and prominent research university located in an extremely rich laboratory and city with the personal attention that only a small program can provide.

LRT: I have an MPH in epidemiology myself, and one thing that I think is great about an MPH is the strong emphasis on core courses and [core course] consistency across all MPH programs. If you run into another MPH graduate

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anywhere in the country you speak the same language, you have [shared] fundamental methodological understanding, and shared topic areas of understanding. You don't always see that with other degrees. Having an MPH degree can be helpful in government because it facilitates communication between people even if they end up focusing on different areas. One of the things that is particularly great about the Northwestern MPH is that it is really well integrated into the broader medical school community. The interplay between public health and medicine is very well represented here not only because we are housed in the medical school but also because many of the instructors are involved in both public health and medical research.

OE: What does an MPH, specifically an MPH at NU, prepare you for?

MF: This question speaks to what historically distinguishes our MPH degree and what will continue to distinguish the evolving MPH program at NU with the launch of two new areas of concentration. Up until this time our MPH degree has been what is known as a generalist degree, which means that it didn't have an area of specialization or specific focus but covers all of the core [required] content areas. Almost half of all courses were electives, which means that students mix and match courses based on their interests and course availability. This came from the roots of our program as a dual MPH/MD program and that flexibility was required to accommodate medical students. The same goes for another large portion of our students—PhD students who are in full-time programs in addition to the MPH. Our traditional students have had areas of focus and specializations based on their primary degree.

"A significant change going forward is that we are offering two new areas of specialization [...]: Epidemiology, and Community Health Research."

A significant change going forward is that we are offering two new areas of specialization, called concentrations, within the evolving MPH program: Epidemiology, and Community Health Research. These two concentrations will be incredibly valuable in the public health workforce and to potential employers, since they will give our students great skills related to data and analytics. Epidemiology is considered the core science of public health. Community health is becoming increasingly prominent as the need has grown considerably for people who not only can work well with community partners in the planning, development, and execution of programming, but who can also work with data and independently conduct community engaged research. Not only will our students have their default area of specialization through medicine or their PhD program, they will also have the specialization from the concentrations in our evolving MPH program.

OE: How did you decide on the choice of concentrations recently created in the NU MPH program?

LRT: There are really two factors that drove the choice of the Epidemiology concentration. First, there is still a large workforce demand for epidemiologists at state health departments, national health organizations, and local health departments as well as in research organizations. There are lots and lots of opportunities for epidemiologists, and even though there are lots of [epidemiology-focused] MPH programs the demand for epidemiologists continues to grow. It was just a logical fit.

David Gleason

The other reason was that we have enormous strength in epidemiology at NU. The Department of Preventive Medicine is one of the most highly ranked in the country and very well known for a number of large cohort studies. Dr. Jeremiah Stamler, chair of the department for years, was one of the early founders of the field of cardiovascular epidemiology. So the growing demands in the workforce for epidemiologists and the strength of program at NU were the two big reasons for the choice to concentrate epidemiology in the new MPH curriculum.

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DT: Laura's comments on the need for epidemiology can really be also applied to the Community Health Research concentration. Number one, [this choice] is work force related. Michael alluded to the fact that there are different settings where individuals with expertise in community health research can plug in. I think that that's true—anything from a community based organization to school systems to the public health system will employ [people] with strong skills in community health research.

There's also [related] expertise here at NU. The Center for Community Health has a number of core faculty and affiliated faculty who are doing community-engaged research and are really interested. In 15 to 18 months I have seen significant growth in the number of faculty who are doing work in community health research. I think it's a really nice time to marshal our faculty resources towards something focused, and I believe the new MPH concentration in community health research is a nice way to connect these resources.

OE: How do the new MPH concentrations affect course work and practicum training experiences?

DT: I think it's both [coursework and practical training]. Right now, for community health research, we have a really strong set of core courses and we have a nice set of elective courses. I envision growing that set of elective courses over the next few years to really build on the core courses we have. For example, there is a community-engaged research course that we will be offering as a core course. I envision students really liking that but then wanting more and perhaps us developing a more advanced course that might be more case-based in application.

So, I think developing course-work is part of it but as I mentioned, we have many faculty who are doing community health research and I think that there is a nice opportunity for students to be working with faculty across disease or health areas. I do mental health research, and I have colleagues in the Center for Community Health who do HIV research, hypertension research, and diabetes research. I think there's a nice opportunity for placements with faculty working in a variety of different settings and on a variety of different health issues.

LRT: For Epidemiology, students will be taking a 3-course epidemiology sequence that was previously associated with the Master's of Science in Epidemiology and Biostatistics (MSEB) program. We'll share that course now, and students should expect to get faster paced, more intense epidemiology methodological training. The other new exciting course is a Statistical Analysis System (SAS) data analysis course [which will be a 3 hour lab class], that I think will be very important and valuable. Also, the third course in the sequence will integrate epidemiology principles and active application of SAS. This ensures that students get almost two semesters of SAS training—the first being focused on getting comfortable with the program and the second more focused on applying the program. Statistical programming in SAS or other [computer] languages is an incredibly useful and tremendously valuable skill.

Concerning non-curriculum related changes, as the concentration director I am actively out in the community finding specific epidemiology Field Experience (FE) placement opportunities. I want specific placement opportunities for students interested in Epidemiology that examine the distribution of disease and the determinants of disease using data from all sorts of sources. In addition, if students see a data set during

their field experience that they want to explore for a Culminating Experience (CE), we want to encourage them to pursue that. As the concentration director I am taking a very active role to ensure our students get strong methodological and statistical education here at NU. Some agencies out in the city have that, some lack that, some have great need for help with data analysis. We want to give our students strong analytical training and connect them to these agencies for some really interesting CE projects.

O.E: How effectively do the new MPH concentrations prepare future graduates for new workforce demands?

DT: Speaking for Community Health Research, there is clearly a trend in wanting to see the workforce understand and be able to execute community engaged research—that is, research that is done within community settings—so I don't think this is something unique to NU. Something we're beginning to see across the board from the Institute of Medicine report is the requirement from big funders such as the NIH, PCORI, and foundations who really [demand] community based research in their funding requirements. Individuals getting course work experience in this area will be well positioned for a variety of different roles within or outside academia. The experiences for students in the community health research concentrations are going to vary based on where students get placed and I think that that's a good thing. The NU Center for Community Health has a lot of tentacles out to the community; it has linkages with community partners as well as a variety of what I call clinical community settings, such as community health centers and pediatric primary care practices in the community, [where we have NU faculty working in some capacity]. Students interested in community health research can easily find a health setting in an area that is of interest to them. One of the big things for the FE and CE is ideally trying to link those two together as in my experience it takes some time to really feel like you are integrated into a setting. So by doing an FE and CE in the same setting, students can have some continuity and depth of experience working in a particular context [in community health research].

> "Something we're beginning to see across the board [...] is the requirement from big funders such as the NIH, PICORI, and foundations who really [demand] community based research."

LRT: I think anyone pursuing graduate education needs to take a long hard look at what the job trends are in that field and should understand what post-graduate jobs really look like in the field. Sometimes jobs resemble what you study in school and sometimes they don't—that's the case for all graduate education. For epidemiology, there's so much emphasis in the health care world right now on measurement—trying to capture how much disease we have and then trying to understand if what we're doing to prevent or treat the disease is actually [working]. Epidemiology is measuring disease and associations, so those skills are in high demand right now. I really hope that the new concentration in Epidemiology can be the bridge that connects students to the epidemiological resources in the department of preventive medicine.

MF: Both of these concentrations will train students to use data, be good with measurement, be analytically oriented, and these skill sets are so transferable and applicable over so many different domains. And clearly [it is] the direction that not just health and health care and public health are moving but that society at large is moving toward. So that is our

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> *"There are lots of community health concentrations across the nation—but there is no focus currently on community health research training."*

emerging brand, our distinction, our identity: that we, perhaps more than any other MPH program out there, are going to be really strong at preparing our graduates in data and measurement and analytic domains. There are lots of community health concentrations across the nation—but there is no focus currently on community health *research* training. We believe this area is both unique and incredibly relevant. Here at Northwestern we have the requisite research environment to develop this strong training in community health research and make a positive impact on public health practice.

OE: Upon graduating with an MPH in Epidemiology or Community Health Research from Northwestern, what are my career options?

LRT: Epidemiology MPH graduates have tons of options. Of course, I have to mention health departments as health departments (local, county, state, and national) really want MPH students. National health agencies such as the CDC and the NIH hire epidemiology MPHs, and a lot of students go to different community organizations with epidemiology MPHs, particularly organizations that are interested in measurement questions. Some MPHs stay in academia as there are a lot of project manager roles for students with epidemiology MPHs—strong skill sets in measurement are increasingly important in the studies that are going on in academia. I [also] know people doing data analytics for health insurance companies such as Blue Cross Blue Shield, in hospital settings, or other health care companies. There are lots of interesting job options post-graduation.

DT: Someone graduating with an MPH with a concentration in community health research will have much of the same options [as someone with an epidemiology concentration]. I can see our graduates working in many types of community settings, like Chicago Public Schools or the Governor's Office of early childhood development. They are always looking for folks who have strong community research and development skills to help design and implement evaluations, research projects, services, and interventions that they're funding. I think the project coordinator role within academia is a place for graduates with a MPH as there is a lot more funding for projects requiring the adoption of community health research and community-engaged research. This translates to more opportunities or graduates who understand what community health research is and how to design research with community health partners—[people] who understand what it means to not just be in your office designing research but designing research with community partners that would be an effective intervention in a community setting. I see a lot of these graduates taking on project coordinator roles in academic medical centers.

MF: Our graduates from the new concentrations will be even better positioned for these opportunities than they would have been in the past. Still, I think the real growth area is going to be in the private sector, which Laura alluded to. If we are sharp and think innovatively, we will place our students in the private sector in insurance companies, health plans, start-ups, and all sorts of places that we have not traditionally thought MPHs can or would go. And the reason we will succeed is that our students will have these data, measurement, and analytic skills that are going to be transferable and cut across industries, sectors, and job types. To my mind, most MPH programs have been challenged to place graduate students outside of non-traditional job types and sectors—we intend to change that here at NU.

editorial board

The Northwestern Public Health Review (nphr.org) was founded in 2013 by Osefame Ewaleifoh and Celeste Mallama, two public health students at Northwestern University. The mission of the NPHR is to stimulate the exchange and cross-pollination of public health ideas, resources and opportunities across the Northwestern community and beyond. Through multiple channels, the student-run NPHR offers opportunities for learning and reporting on public health issues.