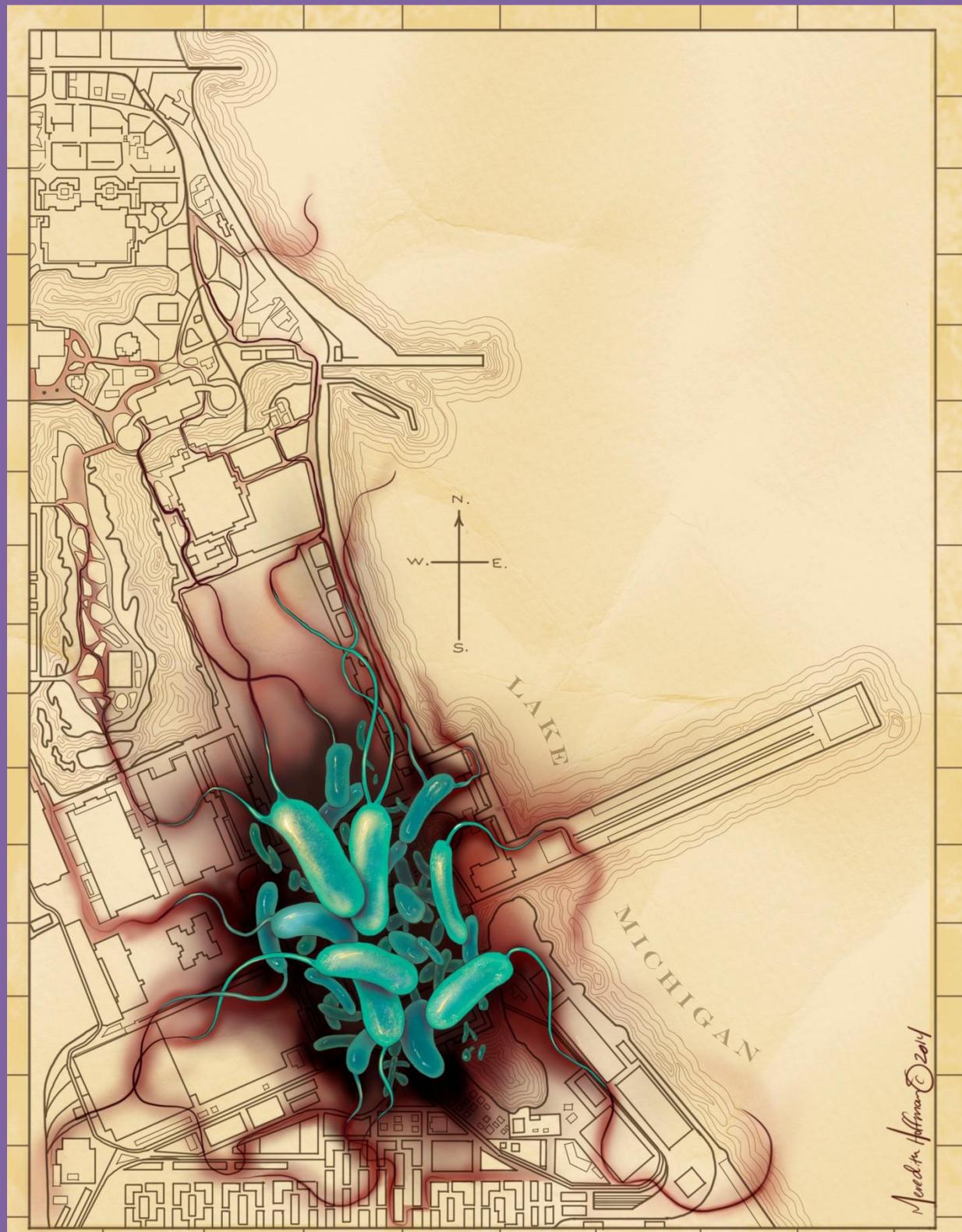




Northwestern Public Health Review
Public Health Matters
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About the cover artist:



I was originally drawn to Dr. Bronwyn Rae's article on Chicago's typhoid epidemic leading up to the 1893 World's Fair because it all took place right here in our own backyard. The story that the author laid out was filled with larger than life characters who were on a mission to improve Chicago's world-wide reputation before the fair. Two men, William T. Sedgwick and Allen Hazen, risked a lot by reporting on the rapid increase of typhoid death in the city, and called out Chicago politicians for their mishandling of the city's sanitation and water systems. I was inspired by the author's

storytelling, and saw an opportunity to use familiar imagery from Chicago to illustrate a city on the brink of being overrun by illness. I was excited to come across a widely-circulated map of the Columbian Exposition fair grounds, as it struck me as a way to illustrate the infrastructure that was so integral to the spread and eventual control of the typhoid outbreak. I recreated this map, trying to maintain the look and feel of the time, and superimposed on top of it the *Salmonella Typhi* bacterium taking over the streets and waterways of the city.

Meredith Hoffman is a Chicago-based medical illustrator. Originally from Michigan, she received a Bachelor of Fine Arts in Art and Design with a minor in Biology from the University of Michigan in 2011. She is currently a graduate student at the University of Illinois at Chicago working on a Master of Science in Biomedical Visualization, a field that allows her to use images to convey complex information to new audiences. In her free time, you can usually find her drinking coffee, playing various instruments, and listening to too much public radio.

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We are deeply proud and honored to share another issue of the NPHR with you. This issue would not have been possible without our incredible editorial board past and present who have labored lovingly over each piece. We specifically want to thank our graduating editors Kate Klein, Catherine Bartlett and Michelle de Oliveira Fernandes for their incredible dedication and contribution to the NPHR since its inception.

In this issue we very proudly share with you a rich and diverse spectrum of historical and contemporary public health stories. From a thorough reassessment of the typhoid outbreak of 1891 during the Chicago Columbian Exposition, to a vibrant discussion on the growing role of energy in public health locally and around the world, this current issue again focuses on our central desire to highlight untold stories in public health.

We are deeply indebted to all the contributing authors and artists for sharing their stories with us and through us. We are specifically grateful to the UIC department of biomedical visualization for our rich and deeply productive collaboration that led to a lot of the images used in the current piece.

Finally we specifically want to thank our sponsors and benefactors, the Northwestern Program in Public Health, the Driskill graduate program, the Northwestern International Program Development, and the Northwestern community building grant. This issue would most certainly not exist without your support.

We sincerely hope you enjoy reading this issue as much as we have enjoyed working on it.

Sincerely,

The editors
The Northwestern Public Health Review

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About the NPHR

The Northwestern Public Health Review (NPHR) is a student run academic journal. Our goal at the NPHR is to take you behind the scenes of public health and provide a simple platform for students and faculty to share their public health perspectives, ideas, and original research. We welcome you to share your comments, thoughts, research, and stories with us at www.nphr.org or on our blog (<http://nphr.wordpress.com>).



Correction: The article "Milestones in Public Health: Public Safety Trends" in the NPHR's spring edition incorrectly stated the road fatality rates for the UK, the US, Liberia and Ethiopia. The correct fatality rates per 100,000 motor vehicles on the road for those countries is 6.2, 13.6, 73.7 and 3874.3.

Can Public Health be Improved with Energy Access?

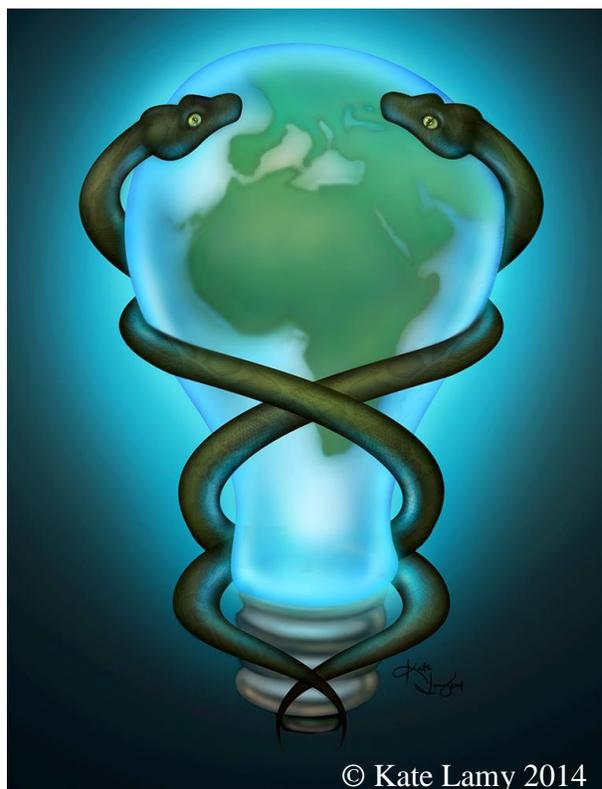
Dr. Halley Aelion and Dr. Amul Tevar

“The availability of energy is correlated to improved public health.” This statement probably sounds like a reasonable assertion. Indeed, in informal polls it is difficult to find anyone who would disagree. However, it is equally challenging, for both experts and laypeople, to explain exactly *why* this intuitive statement holds true, a problem that may stem in part from the fact that it touches many disciplines. Here, Dr. Halley Aelion, PhD in Environmental Policy, and Dr. Amul Tevar, MPH and PhD in Materials Science and Engineering, teamed up to write an article probing the intersection of energy and public health. Honoring their different fields, they explore the links between energy and public health through personal and professional experience and empirical observations; then address its practical implications through the lenses of policy and technology. Writing this article led them to many unexpected technological- and policy-related topics, including the corporate social responsibility (CSR) theory and water sanitation methods. Simply put: energy access appears central to improving public health, indicating that a better understanding of this link is vital to achieve future global health successes.

Personal and Professional Experience: Dr. Tevar

My first tangible exposure to this link between energy and public health was during a visit to rural Haiti. I was at a remote health clinic that dealt with direct competition between their

public health services and energy needs. As fuel costs increased and expenses were further raised due to the long and tortuous truck rides needed to reach the remote site, existing or planned public health programs had to be reduced or delayed because less money was available from the already small NGO budgets. Given such a scenario, it is difficult to say which is the priority: energy or public health.



Many of my colleagues and I are convinced that better energy generation and management is the key to improving public health. However, the nature of the association remains unclear, leaving interested technology developers unsure of how

best to affect the greatest improvement in global public health.

Personal and Professional

Experience: Dr. Aelion

The tangible link between quality of energy access and quality of life first became apparent to me in 2007 when I worked for the World Food Programme (WFP). My primary focus was on a survey exercise evaluating the impact of WFP aid on orphaned and vulnerable children (OVC) in rural Namibia [1].

Similar to many Americans seeing a developing country for the first time, I was shocked at the basic ‘necessities’ of life these rural communities lacked. Clean water, electricity, and basic sanitation systems were all non-existent. Moreover, these are resources that cannot exist without a reliable energy source and good energy management.

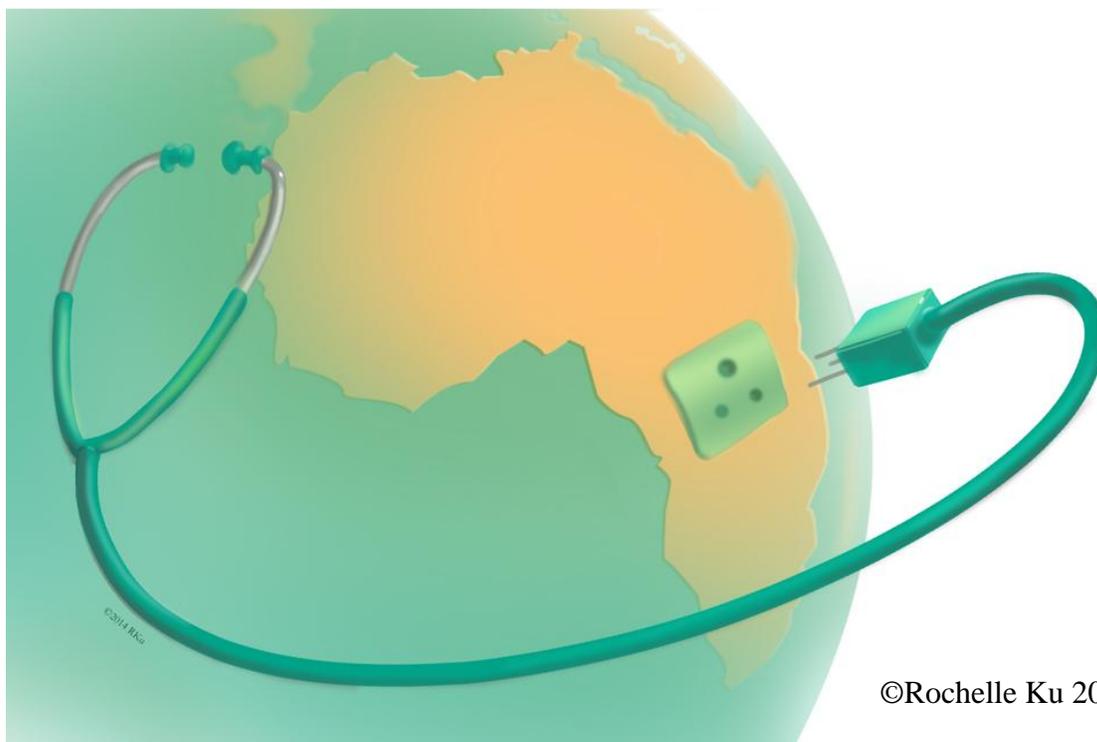
My most vivid memory during this experience was of an interview I did with a young boy who had been adopted by his aunt. The three-year-old boy had a serious wound on his face. When I asked what had happened, the aunt explained that the child had burned himself on the household fire. This fire, a dangerous hazard for a rambunctious toddler, was also the family’s essential energy source—their capacity to cook, to clean, and to wash. The child’s injury burned the reality into my mind that people still depend on fire—dangerous and primitive as it is—as their most reliable and accessible source of energy.

The absolute necessity of this family’s fire, despite its danger, illustrates much of the intuition that we draw on when we agree that energy availability is essential for public health. Yet, how can we illustrate in a systematic and scientific way, the importance of the connection between resourceful, efficient energy management and enhanced public health?

Global Statistics and Current Approaches

To shed light on the issue, the following trend is most telling: having >2,500 kWh/person-year of electricity appears correlated to an increased quality of life [2]. This correlation stands out because it presents an aggregate measure of benefit to a distinct measure of energy delivered. For reference, a single gallon of gasoline has about 34 kWh of energy [3] and ~3,334 Google searches uses about 1 kWh of energy [4]. Determining how best to satisfy this quota would help technologists design novel tools that will give the biggest public health return based on a quantitative measure, rather than on a broad and unsubstantiated assertion.

Given this possible correlation, experts in public health are uniquely well-positioned to offer guidance to engineers and other technologists who are looking to develop new energy generation systems that would provide the threshold of energy that leads to an improvement in life quality. A great illustration of this type of public health focused technology effort is the Gates Foundation Toilet, which specifically focuses the efforts of seemingly unrelated fields to create



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a self-powered sanitation system that costs less than \$0.05/day.

Many other current projects focus on the immediate issues with existing energy sources to create cleaner, lower-particulate energy. This work is usually focused on cookstoves that are commonly used in rural developing areas [5,6]. Additionally, small, independent microgrids (small-scale versions of the centralized electricity system) and renewable projects to improve energy access are popular. These projects usually focus on a specific case study for a small community with limited follow-up [7], a situation that presents drawbacks but does provide short-term benefits both for the community and for the project developers.

Looking ahead, the main challenges lie in the significant variation in local needs in terms of energy source

(biomass, solar, diesel), the cultural approach to energy (individual, village, centralized) and what to power with the energy (lighting, cell phones, water, sanitation, agriculture etc.). One of the key difficulties in determining both an energy/public health association and the best way to reach the 2,500 kWh/person threshold is that many areas new to receiving power are following a very different blueprint for energy than those more established countries that have met the 2,500 kWh/person. When the grid was created in developed countries, there were few options beyond centralized power systems; however, the Bell Labs solar panel, a novel invention 60 years ago, is now a commodity product. Due to massive technological change and economies of scale, novel power sources, often running on decentralized systems, are now widely available. This new option, a mix of

centralized and decentralized, has completely changed the blueprint for what energy access can look like, and it allows rapid deployment in areas of high need or adaptability to local opportunities. This changes the implications of the kWh/person standard. Specifically, it raises questions such as: how do we deliver this energy in today's decentralized energy world? What metrics should guide the focus for improving public health with today's energy technologies?

How Could Policy help?

From a policy perspective, these statistics and advances lead to an interesting, two-fold implication: if policy-makers want to enhance social welfare, they will have to do so using macro-data but micro-strategies. In other words, although the policy goal of providing >2,500 kWh/person is captured by a global trend that can be described through global statistical analysis, the policy strategy must be sensitive to local needs and cultural nuances.

One of the best ways forward, given this situation, is to craft incentives for corporations to get involved in the energy and public health game. Although multi-national corporations (MNCs) may not be traditional "good neighbors" where social welfare is concerned, they are arguably the best suited actors. Consider the following scenario:

- 1) Corporation wants access to resources/market in an underserved community
- 2) Community needs better access to more reliable energy sources which

can be best provided by MNCs' resources and technology

- 3) Local policy-makers want to encourage a robust economy and gain community favor

In summary: each actor's happiness lies in the goodwill of the other two. With all three parties interested in pleasing the other two, what is the best-case scenario to realize this mutual goal?

Imagine the following scenario:

- 1) The policy-maker, after speaking with the community, identifies the localized need for better energy access.
- 2) The policy-maker uses legal incentives such as tax breaks for installing subsidized solar panels to encourage corporations to act in a way that responds to that need
- 3) The promise of gaining political and community good-will drives the corporation to allocate resources to address the energy deprivation, with the goal that this good-will will lead to continued and perhaps enhanced access to resources and market success

The end result is that the community's access to energy increases, enhancing general welfare and health. Additionally, the corporation is viewed as a good neighbor, thus benefiting from legal and public favor. The policy-maker, proving him- or her-self attentive to the community needs, is re-elected. Win-win-win.

Can this happen? Although it may seem an overly-idealized scenario, examples of this in real-life do exist and, encouragingly, are becoming increasingly common [8]. An excellent real-life model comes from

Rahimafrooz, an MNC based out of Bangladesh. Rahimafrooz is the clear leader of emergency power products in Bangladesh but the group is known not only as a dominant market force but also a good neighbor because of its corporate social responsibility (CSR) initiatives educating local communities on the construction, installation, and management of solar panels [9].

In addition, polls of the modern workforce show that employees in diverse industries view CSR activities and corporate-led volunteer opportunities as a desirable mingling of personal and professional growth. When respondents were asked specifically about their view of the most desirable prioritization of CSR goals, environmental sustainability, including improving renewable energy and democratizing sustainable energy sources, ranked at the top of the poll [10].

What is the end result of MNC resources allocated to enhancing CSR and employee volunteer contributions? It is better energy access, a stronger economy, and a happier community.

How could technology help?

The two areas that come to mind with compelling potential to maximize the effect of energy to improve public health are water treatment, a direct intervention, and cell phone functionality, an indirect intervention.

Let's first consider the impact of energy accessibility on clean water availability. Implicit in having enough energy per person is having enough energy for wastewater treatment, and

it has been said that more lives have been saved through clean water engineering than by physician treatment [11]. The energy requirements for wastewater in areas with established infrastructure are well understood, and domestically ~1 Quad of total US energy is being used to pump and treat wastewater. As referenced, annual domestic use of all energy, including transport and industry, is about 100 Quads [12]. The energy use is for treatment steps that inactivate or remove biological contaminants and isolate dissolved solutes. The average US energy use per person for daily water decontamination is about 0.128 – 0.275 kWh/person-day, depending on the level of assumed use [13]. This amount of energy is easily supplied and well within the suggested kWh per person threshold. It is remarkably energy efficient given its sheer scale and distribution. However, translating this success of wastewater treatment for public health improvement globally has been very difficult due to the consistent energy needed per person, the need to establish a centralized infrastructure and the upfront capital cost of community water treatment systems. Without the supporting infrastructure, there are few water treatment systems that can cost-effectively treat large volumes of water in an affordable manner for the developing world.

One technology target would be process-intensification research to create low capital cost, low-energy household treatment systems that would approach the energy efficiencies at a smaller scale. New technologies, such as the Lifestraw or

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the self-powered Gate's Foundation Toilet, are successful and can provide drinking water or wastewater treatment through zero end-point energy use. There is some controversy with these types of technologies because it is not clear if they will be affordable in areas of greatest need. However, approaching the thermodynamic limits to separate water from solutes becomes more difficult in smaller systems, especially when it includes biological and particle treatment or in a system that isn't disposable. A metric for public health experts would be to define *what* would need to be removed, and what the characteristics onsite are. For example, a public health worker involved with the Haitian cholera outbreak could identify that the distribution chain needs self-powered refrigeration points for Dukoral vaccine along known endemic areas. However a family-sized system capable of inactivating pathogens for 2L/day with a lifetime of 1 year and costing no more than \$25 would be a tremendous win that better fits within the social and economic structure. In our opinion, there are many technologies and researchers with potential solutions for the tremendous and varying water issues, but they lack guidance from public health experts as to what specific metrics they must engineer to.

Another technological approach to improve public health that would require much less energy per person would be to build on the success of the cellular phone, as "more people now have cellular phones than clean water" [14]. The global deployment of these systems is remarkable, given

that each phone represents an incredible advance in technology itself but also the ability to communicate without the need for static infrastructure. Systems for public health can benefit by building on the cell phone's wide deployment and convenience [15]. There already are public health technologies that build on the cell phone to deter drug counterfeiting [16] or phone attachments that act as remote medical diagnostic equipment [17]. The unprecedented success of its global deployment, combined with public health applications, should be recognized for the convenience and instant, global information exchange it can allow. The next iteration of using the cell phone could be attachments that allow remote monitoring tools or assays combined with a simple query system to allow remote diagnoses.

This would essentially allow a hospital-on-a-phone and when combined with cloud data, would recreate John Snow's dot map incidence (London cholera, 1854) by location in real-time. The direct link to energy here would be simple: make charging cell phones and using additional energy for attachments trivial, as it currently is not a simple event. This could allow the cell phone to become a reliable base for building a distributed health network. In the same way that the future electricity grid in developing countries will hopefully not look like existing ones, the availability of a mobile computing device could change the way that public health is improved in these countries as well. This may not be the ideal solution, as it is reacting to events rather than preventing them.

But it is a possible solution that doesn't require costly infrastructure, that can be completely overhauled with a software update, and whose major innovation/capital cost already is in the pocket of most people across the world.

Conclusion

Here we have discussed the connection between public health and energy availability from two perspectives. There appears to be value in providing decentralized energy to create critical systems such as water treatment and the enablement of new ones, such as mobile diagnoses. This avoids the prohibitive cost of providing large infrastructure and using less expensive devices as the point of care. These approaches can be considered complementary, because a treatment system such as the self-powered Gates Foundation Toilet can have significant immediate improvement, but also requires a centralized collective will to purchase and maintain the public health benefit [18]. The cell phone add-on is decentralized, individual, and possibly more easily palatable for impoverished people that are remarkably savvy with their investments [19], but cell phones still rely on an external, consistent energy source. There is likely not a silver bullet, but there are significant benefits to better understanding how and why better energy management impacts public health.

By offering a mix of individual anecdotes and global statistics, we have demonstrated why safe and reliable energy sources are important to public health, and offered concrete

examples of past successes and lessons learned in the interaction of the two fields. Looking to the future, we also identify hypothetical policy and technology triggers to enhance and leverage this symbiotic relationship going forward. We hope this interdisciplinary call to action has helped illustrate that the link between energy access and public health is central to future global health successes, and that these advances can be made possible with the contributions of strategic CSR funds and activities. Ultimately, with enhanced and focused conversations and collaboration between public health, policy, and technology experts as well as with CSR leaders in the private sector, we have confidence that public health will improve exponentially into the next century. These diverse fields currently interact in ad-hoc ways, but consistent, sustained and focused cooperation between them is essential to enhance the global quality of life through better energy management.



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References

- [1] Prout, J et al. *Namibia Community and Household Surveillance: Round 2*, 2007.
- [2] Majumdar, Arun. *Harvard Business Review*, "The HBR List of Audacious Ideas." 2012. Accessed March 2014.
- [3] Alternative Fuels Data Center: Fuel Properties Comparison, 10/29/2014. http://www.afdc.energy.gov/fuels/fuel_comparison_chart.pdf
- [4] "Powering a Google Search." 1/11/2009. <http://googleblog.blogspot.com/2009/01/powering-google-search.html>
- [5] Demirbas et al. *Energy Conversion and Management*, "Biodiesel from sunflower oil in

Matters & Perspectives

supercritical methanol with calcium oxide.” 2007. Accessed March 2014.

[6] Smith, K. et al. *Annu. Rev. Public Health* “Energy and Human Health”, 2013.

[7] Brass, J. et al. *Annual Review of Environmental Resources*, “Power for Development: A review of distributed generation projects in the developing world.” 2012.

[8] Werner, W. *JHPN*, “Corporate Social Responsibility Initiatives Addressing Social Exclusion in Bangladesh” 2009. Accessed March 2014.

<http://www.jstor.org.proxy-um.researchport.umd.edu/stable/pdfplus/10.2307/23499643.pdf>

[9] Ruman A et al. *Bangladesh Research Foundation Journal*, “A Literature Review on Green Banking in Bangladesh: Policy Guidelines for Banking and Issues.” 2013. Accessed March 2014.

<https://www.google.com/url?sa=t&rct=j&q=&esc=s&source=web&cd=2&cad=rja&uact=8&ved=0C CYQFjAB&url=http%3A%2F%2Fwww.researchfoundationbd.org%2Fimages%2F3rdissue.pdf&ei=ZAsXV Jj7NNa1yASR7oDQCw&usg=AFQjCNHk4OMKzsR9-fjRwNtQe3Q5bWEs9g&sig2=j-UxFrIN5RN7DsGadjSUKA&bvm=bv.75097201,d.aWw>

[10] Aelion. PhD Qualification Thesis. “Environmental Stewardship in the Private Sector,” 2013. Accessed March 2014.

https://www.google.com/url?sa=t&rct=j&q=&esc=s&source=web&cd=1&cad=rja&uact=8&ved=0C CMQFjAA&url=http%3A%2F%2Fdrum.lib.umd.edu%2Fbitstream%2F1903%2F14281%2F1%2FAelion_umd_01117E_14170.pdf&ei=uwsXVOS-BZK3yAT7YlWdQ&usg=AFQjCNHzVCa8xPb3lZINbyOkSTF-w97Prg&sig2=mDc8q1jSN67ptoNtVd9VRA&bvm=bv.75097201,d.aWw

[11] Cutler, D. *Demography*, “The Role of Public Health Improvements in Health Advances: The Twentieth-Century United States.” 2005. Accessed October 2014.

[12] Department of Energy. *Science of Energy Flow*, 2014.

[13] United States Geological Society. *USGS Water Science School*, 2014.

[14] Worstall, T. *Forbes*, “More Peoples Have Mobile Phones than Toilets.” 2013. Accessed March 2014.

<http://www.forbes.com/sites/timworstall/2013/03/23/more-people-have-mobile-phones-than-toilets/>

[15] Feldscher, K. *Harvard School of Public Health*, 2012. Accessed Sept 2014.

<http://www.hsph.harvard.edu/news/features/energy-cell-phones-public-health/>

[16] Sproxil.com. *Counterfeit Protection*, 2014.

[17] MIT Technology Review. *Innovators Under 35: Caroline Buckee*, 2013. Accessed March 2014. <http://www.technologyreview.com/lists/innovators-under-35/2013/humanitarian/caroline-buckee/>

[18] Schnitzer, D et al. *Microgrids for Rural Electrification*, 2014. Accessed Sept 2014 http://wpweb2.tepper.cmu.edu/ceic/pdfs_other/Micro-grids_for_Rural_Electrification-A_critical_review_of_best_practices_based_on_seven_case_studies.pdf

[19] Pooreconomics.com, 2014.



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A Call for Help from the Landmine Victims in Colombia

Juan Pablo Calderon Meza

Supervised by Professor Juliet Sorensenⁱ



International Campaign to Ban Landmines

When you hear about Colombia, we Colombians wish that the first things you thought of were roasted coffee, exotic orchids, happy music, green mountains, multicolored rivers or unexplored beautiful beaches, rather than illicit drug production and violence. However, we do not mean to hide the truth. Despite substantial efforts to bring the conflict to an end, the “war on drugs” in Colombia has all the repercussions of a true conflict. As long as there is demand for drugs, there will be supply, as in any other business. This is an illegal business though, and it is defended with arms and combated with war. At the end of the day, those who suffer the most are neither consumers nor producers, but those who happen to live close to the coca crops, which are defended with landmines. They are children who happen to play where the landmines were placed. The victims of this conflict are all the people who live close to the war.

Here, I present multiple facets of this conflict: the plight of those displaced and injured by landmines, and the negative impact landmines have on Colombian public health; the inefficiencies of the current aid measures; the tangible efforts

of Colombian NGOs; and the potential for a positive impact on the health of the displaced with North/South partnerships, one example being the Feinberg School of Medicine’s prosthetics researchers.

The history of a true civil war

There is an ongoing civil war in Colombia. While “[i]t makes no difference how long the conflict lasts, or how much slaughter takes place, [1]” some authors have a threshold as reference. “Civil war occurs when an identifiable rebel organization challenges the government militarily and the resulting violence results in more than 1,000 combat-related deaths, with at least 5 percent on each side [2].” Between July 2002 and June 2006, 8,810 persons were killed in combat in Colombia and 11,292 civilians were killed outside combat, for a total of 20,102 deaths arising from the conflict [3]. During that same period, 6,912 people were arbitrary captive and other 4,650 persons were kidnapped, for a total of 11,562 people deprived from freedom [4]. In 2010 alone, 1,597 civilians were murdered outside combat for socio-political reasons [5]. In total, between 1981 and 2012, 23,161 people were summarily executed, another 11,751

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were killed in massacres, with further 25,007 people forcibly disappeared and over 5,700,000 displaced survivors [6]. How did the current conflict begin? During the fifties, in the context of the cold war, proxy wars, and brutal dictatorships all over Latin America, insurgent groups emerged with the ideal of changing the status quo [7]. *Ejército de Liberación Nacional* (ELN) and *Fuerzas Armadas Revolucionarias* (FARC) are only two examples of various leftist groups formed in Colombia, but after more than 60 years, only those two continue operating in the rural areas. However, what started as a noble ideal to overcome corrupt governors and achieve land redistribution is now a group of rebels in charge of watching the drug production and terrorizing the people. The situation worsened in the eighties, as private landlords hired mercenaries from overseas to train their private security personnel [8]. These mercenaries became paramilitary armies with the most barbarous strategies to terrorize anyone connected to the political left, including non-armed leftwing leaders and their families. They acted with the support of the state [9]. While some of them demobilized, former combatants created death squads that continue operating in the drug production [10].

It is not a war of ideals anymore. The Colombian insurgent groups finance their operations with illegal activities, including production and protection of coca, opium and marijuana crops. In the context of the Colombian armed conflict, guerrilla groups, paramilitary groups, and even some demobilized former rebels have all engaged in drug production. Drugs are one of the main economic sources of Colombian insurgent groups including guerrillas, FARC and ELN [11], as well as former paramilitary

groups under different names, such as *Rastrojos*, *Urabeños*, *Aguilas Negras* and *Gastrillos Rojos*. [12] As coca is one of their main economic sources [13], Colombian insurgent groups protect coca crops with landmines [14]. They manufacture and place landmines in strategic places, to protect locations where they have their weapons, medicines and illicit crops [15].

The public health impact of civil war

According to the United Nations Mines Action Service, Colombia has the second highest number of victims from landmines in the world, after Afghanistan [16]. Between 1990 and 2014, 10,628 people were victims of landmines [17]. “In over 60 mine-affected states and areas, the legacy of the past, as well as ongoing internal conflicts, still result in thousands of casualties each year, especially in the more seriously affected States such as Afghanistan, Pakistan, Colombia and Myanmar” [18]. Villagers, the people most seriously impacted by these minefields, are fleeing from their hometowns to the main cities looking for security in exchange for poverty. As expressed by Human Rights Watch, “many of the survivors... described how their injuries [from mine explosions] had compounded other problems that [they] or their families were already suffering due to abuses such as displacement, forced taking of land, or the killing of family members” [19]. Between 1981 and June 2012, over 5.7 million villagers were displaced from their lands [20]. This happened in 87% of Colombian towns [21]. They have resorted to marginal neighborhoods with problems of overcrowding, inadequate sewage systems, and poor health [22].

The new state of living for these people and families is indisputable: every

displaced person is poor. Every household surveyed by the International Organization for Migration is below the poverty line, and 50% face indigent conditions [23]. Seventy-seven percent of displaced children that are now in Bogota do not have access to education. Twenty-three percent of displaced families reported that their children had dropped out of school [24]. Of the total infant mortality in the displaced population, 57% of cases could have been prevented, and access to vaccination for displaced children is 20% lower than the national rate [25]. Only 53% of the displaced population had access to medical services, even though 80% of them required such services [26].

The Colombian government has failed to provide adequate physical and mental health services to the victims of landmines. Even though Colombia is a party to both the Ban Mine Treaty and the Convention on the Rights of Persons with Disabilities, relief for victims of landmines is still far from becoming a reality. Law 1448 was issued in 2011 to grant economic assistance for the victims of the conflict. However, these ideas have fallen short in implementation, partially due to the short deadlines for the victims to apply for assistance. Other impediments include victims' unawareness about their rights, the lack of resources and personnel at local hospitals, and the fact that displaced victims of war understandably focus their attention on survival rather than filling complex proceedings [27].

A personal account: The kid unable to walk now plans to fly

José was just 12 when he lost his legs after stepping on a rock that concealed a landmine in a rural area in east Colombia: Tame, Arauca. It was on August 7, 2010,

about 4:00 pm when his dreams to one day become a professional soccer player went away as he saw and realized what had just happened. He was walking back home from the plaza, where he had delivered the cassava harvested by his mother:



“I was walking normally and I stood up [on] a stone that began swinging, and when I was going to jump, to keep from falling, the mine exploded because it was there. I was thrown about 20 meters away and a post hit me when I was falling down... I fell into the same hole [left by the blast] and as soon as I looked it

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was when I realized that I no longer had a leg and the other was hung a single tendon. At the time I did not feel any pain” [28].

He was with another person, who went for help. A villager driving an old truck with poorly functioning breaks took them to the nearest first aid center. José had to wait until 9:00 pm for a helicopter to take him to a hospital in Cúcuta, the capital city of Santander. This strong kid had waited all this time before he fell unconscious during the flight to Cúcuta.

José had that same feeling when you wake up the next day after losing someone or something very important in your life. The night before, you just fall asleep devastated by the magnitude of the events. And the next day, just after you wake up, it is a matter of glorious seconds during which you do not remember what happened, until your memory strikes you down with reality. In José’s case, he had lost something and someone really important in his life: he had lost all at once both his legs and a part of himself—he had lost that soccer player he longed to be one day, his superego.

One month passed before his surgery was approved. At that time, the people in the hospital made the decision to amputate the remaining parts of his legs.

“I called the doctor and told him I was not going to let them perform the surgery over me because I wanted a knee surgery for the prosthesis to fit me better. It was a problem to make them understand not to take from me both legs, because the mine had only taken part of both feet, not all of them. The surgery [taking my legs above the knee] was performed [anyway] and ended at about 11:00 pm” [29].

Now a 16-year-old, José blames himself for stepping on that rock. He blames himself for jumping around as a kid, for exercising his right to be happy in a country where even happiness is limited by the war. “I think I would entitle my life... I would say: ‘My Failures’” [30]. One day he will know it was the government’s fault. He will know of the government’s motives not to release the shocking figures of victims of landmines presumably for the sake of preserving tourism. He will come to know of the government’s negligence to alert civilians where this war is taking place, and its fault in providing timely and proper access to health services that could have saved one of his legs. He will understand that it was not his fault whatsoever. However, in the meantime he has already started dreaming of better plans for himself:

“Now I want to study aviation and enroll in an [aviation] course. Once I have access to a runway, I will practice. [When I did it once] they told me I am good, that it went well” [31].

José will need an advanced prosthesis to allow him to pilot a commercial flight from Chicago to Moscow, where he would stay a couple of days before flying other passengers to Johannesburg on his way back to Bogota. That is the story of the kid who wants to fly because he can no longer walk—how can we help José realize his dream [32]?

Current efforts to combat landmines

Campaña Colombiana Contra Minas [33] (CCCM) is an organization assisting victims of landmines in Colombia, pursuant to the principles of the 1997 Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of

Anti-personnel Mines and on Their Destruction (Mine Ban Treaty). CCCM supports victims of landmines, unexploded ordnances, and improvised explosive devices. It also monitors Colombia's compliance with its obligations as a State Party to Mine Ban Treaty. "Mine victims in Colombia are often individuals in extremely vulnerable situations. Given this context, the work that the CCCM does is on various fronts [34]." They want to create awareness for the victims of landmines, advocating for them on a national and international level. Additionally, a primary objective of CCCM is to empower landmine victims "so that they themselves demand that the State complies with its obligations to them" [35].

Since 2008, CCCM has worked closely with Mercy Corps [36] in order to define the strategic lines where CCCM should prioritize its work. Their three primary strategic lines focus on public policy, landmine survivor rehabilitation, and socio-economic reintegration of survivors.

In line with these objectives, they have launched a program to train 25 physicians on the production of prosthesis and orthotics. These 25 experts are now located in states where landmine presence is the highest: Caquetá, Nariño, Cauca, Meta and Huila. Despite the presence of these experts a lack of resources persists, and access to prosthesis and orthotics continues to be the greatest challenge for the victims of the Colombian conflict [37].

How U.S. Physicians and U.S. Medical Schools can help

A stronger and more pragmatic connection between the research on prosthetics and orthotics conducted in the Global North and the victims' demand in

the Global South is essential. The Millennium Development Goals (MDGs) were launched in 2000 in order for the global community to combat together, as global partners, extreme poverty, pandemic disease, environmental harm, war and civil conflict among other goals [38]. The Global Partnership, proposed as the Eighth MDG, has also been translated into North-to-South collaboration on research and implementation of solutions on disability [39].

However, one of the biggest challenges to overcome is the disparity between North and South on the allocation of research resources for disability. "The power in global research (including agendas and resources) is usually located in the North; and in disability research this power is largely held by non-disabled researchers and agencies" [40]. Sue Stubbs [41], the co-founder of the International Disability and Development Consortium, proposes a solution where experts from the Global North train the disability community in the Global South:

"The [South African Federation of Disabled Research Program] provides a practical example of how local disabled people can be empowered to conduct research. Training in generic research (...) included 20 young disabled people where two people (a male and a female) were drawn from each member country. Already, these trained researchers are engaging in some conventional disability research currently going on the region. As part of unpacking the Millennium Development Goals, already four trainees from the team of 20 are part of the research groups that won tenders to carry out research

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projects for [South African Federation of Disabled]” [42].

Among other institutions in the Global North, the Northwestern University Prosthetics-Orthotics Center is conducting important research [43] that could be brought to Colombia in order to help the victims of landmines and, especially, the children that have lost their limbs. Some of this research focuses on the Junior Shape & Roll Prosthetic Foot, a prosthetic designed specifically for a child’s gait. Others have started research aimed towards bringing this prosthetic to low-income countries.

While the Global North is conducting important research for disabled people, landmine victims in Colombia have not received any benefits from these developments yet. Creating a partnership with Colombian landmine victims and their local physicians and activists would bring the benefit of these technologies to the people who need it the most. A North-to-South partnership between medical schools in the U.S. and Colombian victims of landmines would meet all the purposes of the global partnerships envisioned as the Eight MDG. As a matter of fact, such partnership would combat the extreme poverty of the Colombian victims of landmines, their poor health condition, and lack of medical assistance. By supporting the victims of war, such a partnership would additionally combat the environmental harm caused by the landmines’ pervasive presence in rural Colombia as well as the Colombian civil conflict that has sadly devastated my country, brothers, and sisters.

If you want to help José or CCCM please contact the author at jpcalderon@nlaw.northwestern.edu or the

CCCM’s Director, Alvaro Jimenez Millán, at alvaro@colombiasinminas.org



Juan is a Colombian attorney focusing on international legal issues and human rights. He has counseled Campaña Colombiana Contra Minas and is currently clerking at the Extraordinary Chambers in the Courts of Cambodia – United Nations Assistance to the Khmer Rouge Trials. Before that, he was the Len Rubinowitz fellow at EarthRights International. He previously worked as an associate attorney of different Colombian law firms, where his practice included domestic and transnational litigation, as well as pro bono work. He obtained an IHR LL.M. (Honors) at Northwestern University School of Law, as a member of the Access to Health Project in Mali and a clinical student at the Center for International Human Rights.

¹ “Juliet Sorensen is a Clinical Associate Professor of Law with the law school’s Center for International Human Rights, where her teaching and research interests include international criminal law, corruption, and health and human rights. Professor Sorensen is a founder of the Northwestern Access to Health Project, an interdisciplinary partnership that analyzes access to health in resource limited settings. Professor Sorensen received the Excellence in Teaching Award from the Master’s in Public Health Program in 2014. In 2010, Professor Sorensen was appointed to the American Bar Association’s Global Anti-Corruption Task Force. Professor Sorensen serves on the screening committee that assists Senator Durbin in selecting federal district court judges for the Northern District of Illinois.

“From 2003-2010, Professor Sorensen was an Assistant U.S. Attorney in the U.S. Attorney’s Office in Chicago, focusing on fraud and public corruption. Prior to her work at the U.S. Attorney’s Office, she worked as a litigation associate and a federal judicial clerk in Boston. She was also a maternal and child health volunteer with the U.S. Peace Corps in Morocco from 1995 to 1997. She received her B.A. in politics from Princeton University and her J.D. from Columbia University School of Law. She is a member of the New York and Massachusetts Bars and the Federal Bar Association, and is admitted to practice in the Northern District of Illinois, the District of Massachusetts, and the United States Court of Appeals for the Second Circuit. Professor Sorensen was a term member of the Council on Foreign Relations (2000-2005), and was a Chicago Council on Global Affairs “Emerging Leader” (2008-2010). She has taught trial advocacy on behalf of the Department of Justice to prosecutors in South America and West Africa.”

<http://www.law.northwestern.edu/faculty/profiles/JulietSorensen/> (Last visited: Aug. 20, 2014).

References:

1. International Committee of the Red Cross, *Commentary to the Geneva Conventions of 1949*.
2. Paul Collier et al, *Breaking the Conflict Trap: Civil War and Development Policy*, World Bank, p. 11. For this paper's purposes, internal conflict and civil war are deemed to be synonyms.
3. Comisión Colombiana de Juristas, *Colombia 2002-2006: Situación de derechos humanos y derecho humanitario* (2007). http://www.coljuristas.org/documentos/libros_e_informes/colombia_2002-2006.html (Last visited: Mar. 3, 2014).
4. *Id.*
5. Comisión Colombiana de Juristas, *Colombia: sigue esperando la hora de los derechos humanos: Informe sobre la situación de derechos humanos y derecho humanitario: 2010-2012*, (2012). http://www.coljuristas.org/documentos/libros_e_informes/colombia_2010-2012.pdf (Last visited: Mar. 3, 2014).
6. Centro Nacional de Memoria Histórica and Departamento para la Prosperidad Social, *¡Basta Ya! Colombia: Memorias de Guerra y Dignidad* (2013), at 33, 34, 36, 48. <http://www.centrodememoriahistorica.gov.co/descargas/informes2013/bastaYa/basta-ya-memorias-guerra-dignidad-12-sept.pdf> (Last visited: July 2, 2014).
7. Rafael Pardo, *La Historia de las Guerras* (2008) Ediciones B. Colombia at 504.
8. U.N. Special Rapporteur on Summary or Arbitrary Executions, Report on the visit to Colombia, U.N. Doc. E/CN.4/1990/22/Add.1 (Jan. 24, 1990). *See also*, Case of the Rochela Massacre v. Colombia, Judgment on the Reparations of May 11, 2007 Inter-Am. Ct. H.R.
9. Case of the Rochela Massacre v. Colombia, Judgment on the Reparations of May 11, 2007 Inter-Am. Ct. H.R.
10. Republic of Colombia, *Política Nacional Contra Las Drogas*.
11. Organization of American States, *The Drug Problem in the Americas* (2013) at 30 and 79. http://www.oas.org/documents/eng/press/Introduction_and_Analytical_Report.pdf (last visited June 27, 2014).
12. Santiago González-Plazas, *La erradicación manual de cultivos ilícitos en la sierra de La Macarena: un ejercicio sobre la futilidad de las políticas* in BORRADORES DE INVESTIGACIÓN INFORME DE SEGUIMIENTO (2007), <http://repository.urosario.edu.co/bitstream/handle/10336/3851/Fasc%203%ADculo3.pdf?sequence=1&isAllowed=y> (last visited: July 2, 2014) at 13. *See also* Francisco Thoumi et al, *El narcotráfico en las relaciones fronterizas de Colombia*, Universidad del Rosario (2006), <http://repository.urosario.edu.co/bitstream/handle/10336/1161/Anexo%202.pdf?sequence=3> (last visited: July 2, 2014) at 11.
13. Organization of American States, *supra* note 11 at 30 and 79. Santiago González-Plazas, *supra* note 12 at 13. Francisco Thoumi et al, *supra* note 12 at 11.
14. El Tiempo, *Bandas criminales siembran minas en varias zonas del país*, (May 27, 2013) <http://www.eltiempo.com/archivo/documento/CMS-12825863> (last visited: June 27, 2014). Human Rights Watch, *Maiming the People* (2006), <http://www.hrw.org/reports/2007/07/24/maiming-people-0> (last visited: July 1, 2014) at 15 and 16 (fn 35).
15. Human Rights Watch, *Maiming the People: Guerrilla Use of Antipersonnel Landmines and other Indiscriminate Weapons in Colombia* (2007) at 16 (fn 35). <http://www.hrw.org/reports/2007/07/24/maiming-people-0> (Last visited: Mar. 2, 2014) (“The military describes having found landmines in the roots of coca plants, apparently designed to deter manual eradication of the crops.”).
16. UNMAS, *About UNMAS in Colombia*. <http://www.mineaction.org/programmes/colombia> (Last visited: Mar. 2, 2014).
17. Programa Presidencial para la Acción Integral contra Minas Antipersonal, *Situación nacional por minas antipersonal y municiones sin explotar*, http://www.accioncontraminas.gov.co/Situacion/Documents/Reporte_Situacion_Nacional_V%20C3%ADctimas_a_ENE_2014.pdf (last visited: July 6, 2014). *See also*, El Colombiano, *Récord vergonzoso: Colombia superó 10 mil víctimas de minas*. http://www.elcolombiano.com/BancoConocimiento/R/record_vergonzoso_colombia_supero_10_mil_victimas_de_minas/record_vergonzoso_colombia_supero_10_mil_victimas_de_minas.asp (Last visited: Mar. 2, 2014).
18. International Committee of the Red Cross, *Anti-personnel mines*. <http://www.icrc.org/eng/war-and-law/weapons/anti-personnel-landmines/overview-anti-personnel-landmines.htm> (Last visited: Mar. 2, 2014).
19. Human Rights Watch, *supra* note 15 at 11.
20. Centro Nacional de Memoria Histórica, *supra* note 6.
21. Comisión Colombiana de Juristas, *Colombia 2002-2006: Situación de derechos humanos y derecho humanitario*, (2007) at 15. http://www.coljuristas.org/documentos/libros_e_informes/colombia_2002-2006.pdf (Last visited: Aug. 20, 2014).
22. Ana María Ibáñez et al, “Acceso a Tierras y Desplazamiento Forzado en Colombia,” Colombia, CEDE, Universidad de los Andes, 2004 at 20. <http://economia.uniandes.edu.co/publicaciones/d2004-23.pdf> (Last visited: Aug. 20, 2014).
23. *Id.* at 25-27.
24. *Id.* at 18.
25. *Id.*
26. *Id.* at 19.
27. Interview with Luz Estela Navas from Campaña Colombiana Contra Minas (CCCM).
28. CCCM, Interview with José. This is an unofficial translation by the author.
29. *Id.*
30. *Id.*
31. *Id.*
32. If you want to help José please contact the author at jpcalderon@nlaw.northwestern.edu or the CCCM's Director, Alvaro Jímenez Millán, at alvaro@colombiasinminas.org
33. <http://www.colombiasinminas.org/>
34. Campaña Colombiana Contra Minas, *A description of the work done by the Colombian Campaign to ban landmines*.
35. *Id.*
36. <http://www.mercycorps.org/>
37. If you want to help CCCM please contact the author at jpcalderon@nlaw.northwestern.edu or the CCCM's Director, Alvaro Jímenez Millán, at alvaro@colombiasinminas.org
38. UNDP, *Millennium Development Goals*. http://www.undp.org/content/undp/en/home/mdgoverview/mdg_goals/mdg8/ (Last visited: Mar. 2, 2014).
39. Sue Stubbs, *Building communities of trust in disability research*, in: *Disability and Social Theory: New Developments and Directions* (2012) Palgrave Macmillan at 261.
40. *Id.* quoting Bradley, 2007.
41. “Sue Stubbs is the Director, co-Founder and Advisor of EENET (Enabling Education Network) and also works as a freelance consultant in disability and inclusive development. “Sue helped co found IDDC and coordinated IDDC until it opened its office in Brussels, Belgium. Other work by Sue includes disability advisor at Save the Children (1991-2000), consultant on Disability at the World Health Organisation (2004-2009), Manager at Intimate India, and Director of the Singing Heart.” <http://www.iddcconsortium.net/who-we-are/members/individual-members/sue-stubbs> (Last visited: Aug. 20, 2014).
42. *Id.* at 261. Internal citation omitted.
43. Northwestern University Prosthetics-Orthotics Center. <http://www.nupoc.northwestern.edu/research/projects/index.html> (Last visited: Mar. 2, 2014).

The Founding of Northwestern University's Program in Public Health: An Interview with Dr. Kathryn Andolsek



*Dr. Kathryn E. Andolsek is Professor of Community and Family Medicine and Assistant Dean of Premedical Education at the Duke University School of Medicine. As a medical student, she initiated the creation of the Program in Public Health at Northwestern University. Her current research interests include medical education, geriatrics community health, and healthcare delivery. She is excited to be starting a new masters degree at Duke, the **Master of Biomedical Sciences** for students interested in medical or other health professional schools or careers requiring strong foundation in the human biological sciences.*

Aabha Sharma is a PhD/MPH student at The Graduate School of Northwestern University.



Aabha Sharma: Dr. Stamler mentioned that you were actively involved in starting the Masters of Public Health program at Northwestern. Could you tell us how you got interested in public health and what inspired you to take the initiative?

Dr. Kathryn Andolsek: I had experiences growing up that had me look at the differences in life and opportunities that were random, such as where you were born. When I was young I lived about half the time in rural Minnesota and half the time in D.C. My father's family were immigrants from Eastern Europe who had left most of their family in the "old country;" a small subset moved here over time but the older adults kept their own language and customs. In rural Minnesota there were significant access-to-care issues and one had to travel many hours or miles to get tertiary medical care, [which] in winter [was] not easy at all. In DC there were (and remain) significant differences in access based on socioeconomic status and race/ethnicity. Today we'd include these as, "social determinants" of health.

At Northwestern Medical School I became involved in a student-run clinic at Erie House and discovered patients' health needs expanded far beyond the chief complaint. At that time many medical school courses didn't provide much guidance on how to deliver comprehensive care to vulnerable populations. The curriculum was very different than now, of course, but topics we would now identify as risk factors (and their modification), evidence based medicine, population health, community engaged motivational interviewing—none of that was in the curriculum.

AS: What were some of the challenges you had to face as the pioneer MPH student? Was everyone open to the idea? Were there other students with similar interests as you?

KA: There weren't that many students at that [time] interested in [public health]. It was primarily me and someone who worked with Dr. Stamler in a research capacity who were interested in getting training in public health. I simply cannot say enough about Dr. Stamler for being so

open-minded and flexible, honestly for being willing to listen and go with a crazy idea.

The biggest challenge for me was how to integrate the requirements with my medical school education, which was my “day job”. To be able to graduate from Northwestern with my medical degree and include sufficient coursework to justify this additional degree was the major challenge. Navigating academic boundaries regarding courses was another hurdle. NU offered great coursework within and outside of [the] School of Medicine so mapping [ideal courses] out a degree for the first time was exciting – there was so much potential. But the system didn’t facilitate registering participation in courses across schools. Another big challenge for me was miscalibrating the amount of work it would take me to succeed with my thesis. I was the first person to start the MPH but I wasn’t the first person to get the degree because I wasn’t able to complete my thesis until a few years later during my residency. By that time I ended up needing to take a few extra courses since there were some new requirements. As the first student, figuring out the timeline was a challenge.

At Duke one of my roles has been to work with our students (who wish) to get [an] MPH at another institution. This is a seamless opportunity for them. This type of clear pathway did not exist at Northwestern initially and was tricky to do. Of course with a brand new program, the faculty weren’t clear on the timeline and existing courses weren’t appropriately sequenced. After you have a bunch of students go through the program, then it’s possible to have a timeline, an orderly sequence, and a few cycles of improvement based on feedback.

AS: That must have been quite a challenge to figure out at the beginning

with Dr. Stamler. Could you elaborate on your interactions with him?

KA: Dr. Stamler was brilliant (of course) and decades before his time with his conceptualization of increasingly identifiable and modifiable risk factors that influenced an individual’s and a population’s health. He led or was involved in foundational interventional studies, many focusing on nutrition and physical activity. Those things are all so accepted now it may be difficult to understand how truly revolutionary Dr. Stamler’s ideas were at that time. In addition he led rigorous research that critically examined risk factor modification that was way ahead of the science of the time. He was inspirational as a person and the high standards to which he held himself and his team. As a non-clinician he influenced the care of more patients than most of us clinicians ever will.

He was incredibly supportive of students. He welcomed learners into his Department. He and his wife Rose went out of their way to be inclusive. They were both incredibly kind to me, both as a student and as a person. I was often overwhelmed by that interest. I still remember Dr. Stamler’s Department meetings as collegial, intellectually stimulating and fun! He lived what he believed. The menu for any departmental function was always based on good nutrition. He encouraged regular exercise. I think we would categorize a lot of his characteristics today as “a good mentor”. He listened well, was supportive of new ideas, and actively networked [for] me and other students.

When I felt I was lacking knowledge from “just” medical school, I surveyed existing public health curricula from other institutions. (This was before the internet so not as easy to get these types of details as it would be today.) I came to him with a very rudimentary idea of taking existing

Northwestern courses and adding a few to create a Master's degree. I thought we had all of the elements. Meeting some of his faculty, I knew we had the critically essential faculty and some terrific projects which would make worthwhile practicums and that would be essential for this new program. In fact I thought the opportunities to participate in some of his departmental work would make this program unique and exemplary among [MPH] programs nationwide. He listened to that dream and made it happen.

AS: How has an MPH degree contributed to your career as a physician and an academic?

KA: I think the MPH has been invaluable to me. It helps me think outside the room, outside the person in front of me to try to take a more comprehensive view of all factors impacting my patient's health. It emphasizes the importance of the community on health and illness. Fortunately we are now getting more people insured (if not all people) through the Affordable Care Act, but we are just beginning to radically reform the health care system (not just the reimbursement system). Take smoking: responsible for 1 in 5 deaths, of which around 10% are due to second-hand smoke. Smokers die a decade earlier than non-smokers. Tobacco use costs \$200 billion yearly. In 2013, states collected over \$25 billion from tobacco taxes and legal settlements while spending less than 2% on its prevention and cessation. Chronic disease is responsible for 75% of health care costs and most related to tobacco use, inadequate physical activity, poor nutrition, and excessive alcohol use. You can't simply tell people to exercise more without attending to community violence. You can't adequately impact alcohol and other substance abuse without addressing mental health.

When I finished residency, I worked with the National Health Service corps in inner-city Chicago and put my MPH to work every day. I was able to use it when I joined an academic health center, initially working with at risk populations such as frail low income older adults, and later through work in our community trying to understand their priorities and identify stakeholders. As more of my career turned to education, I found many of the MPH principles equally applicable: what do we already know about how people learn and how learning can be assessed? How do we measure the outcome and impact of educational interventions?

AS: As the first MPH student at Northwestern University and as a successful individual in the realm of medical education, would you mind sharing a few words of advice with the current MPH students?

KA: Follow your passion. Hone your critical thinking skills! Think broadly and creatively! I am actually extremely envious of the new tools your generation has: geomapping, smart phones, apps and e-medicine. I think you will make bigger differences, especially in resource-constrained settings.

Reading Dr. Stamler's article I think he would consider me a failure. I did not follow his advice to develop tremendous expertise in one area. I respect that path immensely. However, I am a generalist by nature and by training, and I have found the MPH skill set tremendously useful across different populations, health conditions and research questions.

AS: The importance of mentorship is invaluable in any academic setting. Could you tell us about mentors you have had and how they helped you through your career?

KA: I think your generation talks a lot more about mentorship than mine. Whether we didn't have it or didn't see it in the same way, I don't know. One of the things I felt fortunate about was that maybe because there were relatively few women in medicine when I started medical school, I didn't necessarily see myself in one individual. I kind of felt like I had the opportunity to mix and match and select attributable features from different people to create a composite mentorship from them. I would have to say that I owe Dr. Stamler a lot. I probably had a sense of public health but I learned from him a commitment to not just implement changes but to evaluate and measure impact; also the whole excitement of the possibility of doing it as a career—I don't think I knew that existed before Dr. Stamler helped me realize it. He and his wife Rose were the kindest people. They were genuinely interested in students and made time to take us to dinner or swimming. They were real human beings who got me involved in the affairs of the department. I felt like I had a home there, which was nice as a medical student since you are working [on] so many things and in so many directions.

Mentorship is really important. Sometimes you need to seek more than one person. Through different stages of life, you will need a team of mentors for support and guidance. The types of people you look for mentorship might change as you continue to develop throughout your professional career so it's not something you would only do once. What you need from a mentor evolves too.

AS: Now, shall we wrap up our conversation? As much as I would love to talk about issues related to women in science and health careers, I don't want to take too much of your time.

KA: Okay, I would like to add one more thing to mentorship as my advice to students. As I have gotten older, I have realized this and have gotten more explicit about telling my mentors what great and important mentors they were to me. In the context of women in medicine, one of the people who did a lot for the few women who were in my class was Dr. Sandra Olson. She was a bright and articulate faculty member who had a husband and kids and represented a way of life that no other faculty member did—that maybe we as women could combine a lot of elements in our career, professionally and personally, and not have to sacrifice one or the other. She was a very impressive person. It dawned on me a couple years ago that although I had told many people about the huge impact she had on me, I had never told her about it. A couple years ago, I wrote her a letter and took her for a drink when I was in Chicago. I think it's important to thank people who have impacted your life and let them know they were an inspiration to you.

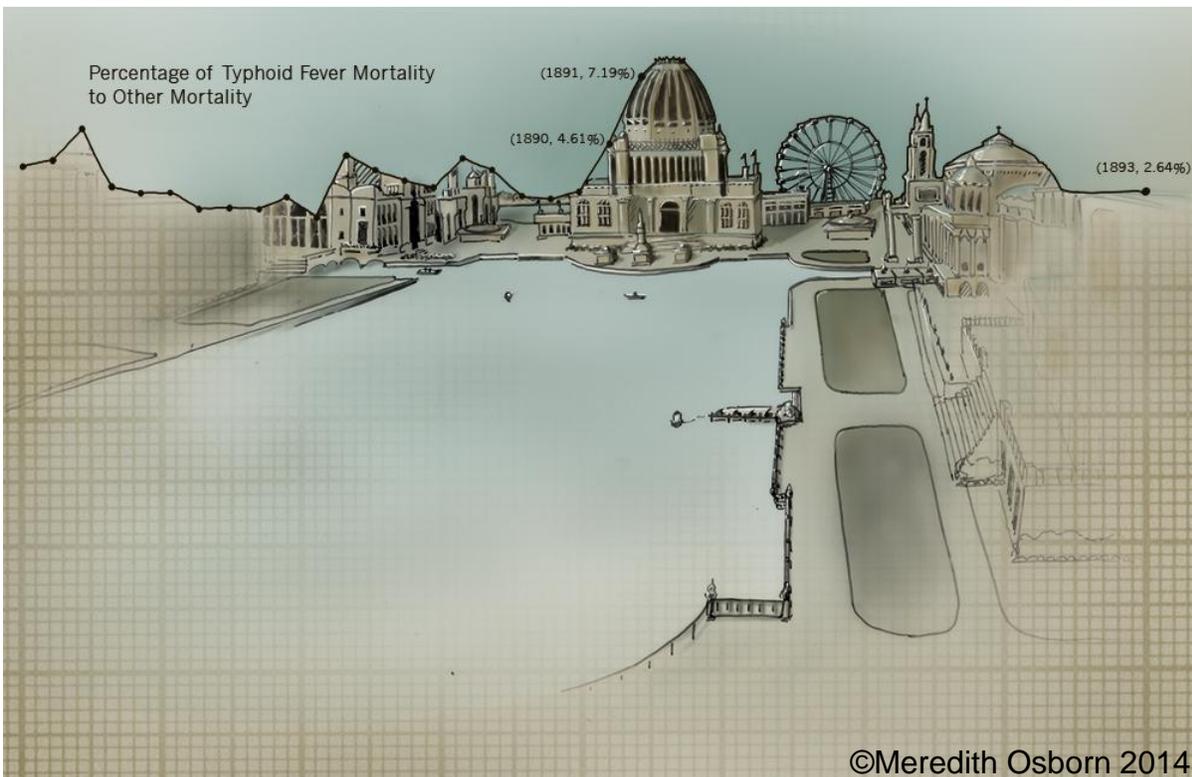
AS: Wow that's true. Now I am thinking of all the teachers from high school that I never thanked personally.

KA: There's still time and it's never too late.

AS: Thank you so much for your time! It was great talking to you.

KA: Good luck to you!

The companion piece to this article, our interview with Dr. Stamler on the founding of the MPH program here at Northwestern, can be found online in our Fall 2014 edition at nphr.org.



Water, Typhoid Rates, and the Columbian Exposition in Chicago

Dr. Bronwyn Rae

On January 22, 1892, William T. Sedgwick, Professor of Biology at the Massachusetts Institute of Technology, and his protégé, Allen Hazen, the chemist in charge of the Experimental Station of the State Board of Health in Lawrence, Massachusetts presented a paper at the American Statistical Association meeting in Boston [1]. Sedgwick was famous for his work at the Lawrence Experimental Station where he had demonstrated the importance of preventing sewage contamination of domestic water supplies and had halted an outbreak of typhoid fever in the Merrimack River Valley [2]. Hazen, only 23 years old and at the start of a brilliant career

was back from several visits to Chicago where he had investigated reports of an increase in deaths from typhoid fever [3]. Their message was grim. Chicago, which had won the right to mount the hugely anticipated Columbian Exposition the following year, was in the grip of a "typhoid epidemic of alarming proportions."

Chicago's typhoid problem

The speakers opened by saying that their attention had been drawn to a fact not generally recognized: that typhoid fever had "become unusually prevalent in Chicago and that during the last year an alarming epidemic had prevailed." The authors then

compared the current condition of typhoid in Chicago with similar conditions in Philadelphia prior to the city's hosting the Centennial Exhibition in 1876. It was known that there had been a large increase in typhoid deaths traceable to infection received in Philadelphia after that exhibition. Given the number of national and international visitors expected in Chicago, the prevalence of typhoid there was of "more than local concern and it should excite grave apprehension."

The paper went on to cite data from the official reports of the Chicago Department of Health to show the excess mortality in Chicago from typhoid as compared to other large cities in the US and abroad, which was even more striking given that the death rate from other causes in Chicago was generally lower than most other places. Typhoid had been "abundant" in 1872, after the Great Fire, but had then declined rapidly as the city recovered from that disaster, only to rise steadily through the previous decade, culminating in a "rise to extraordinary proportions" in 1890 and 1891 and still increasing in January of 1892. As the incidence rate of the disease was about 10 times the death rate, the authors concluded that in 1891, more than 1.5% of the population of Chicago was affected by typhoid. The typhoid bacillus had been identified and named in 1880 and bacteriological examination of water supplies, rather than the older chemical estimates of human waste, was starting to be the new standard of quality though it was not yet being used in Chicago [4]. As such, typhoid was now classified as "preventable."

Though Sedgwick and Hazen emphasized that an inquiry into the causes of the typhoid mortality demanded "patient and thorough investigation on the spot" (which they implied the Chicago authorities should have done and hadn't) they did point out that the usual cause of a "constant excess" of this disease was sewage-polluted drinking water. The paper then traced the history of the Chicago Water Supply and using reports from the Chicago Department of Health and the Illinois State Department of Health, they showed "year after year the unsanitary condition of the Chicago River and the intermittent pollution of the public water supply with sewage," especially in time of flooding and during the intermittent outages of the pumps at Bridgeport which drew water from Lake Michigan to flush the Chicago River westward. In addition the sewage pollution had worsened in the last few years. The population had grown and the sewage from 200,000 people flowed directly into the lake. Also as the Bridgeport pumps had been operating only at half capacity in the last few years the Chicago River was continuously polluted. They concluded that "any remedy should be applied without delay" and recommended that the Bridgeport pumps be upgraded.

Sedgwick and Hazen's paper ranks with John Snow's cholera map as a beautiful example of the new epidemiological paradigm of public health. It was truly, "a masterly array of facts and conclusions, by means of tables, diagrams and text forceful comparison was made of typhoid cases and deaths in Chicago, New York, Philadelphia, Boston and various

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foreign cities" leading inexorably to the damning conclusion: Chicago, about to host the Columbian Exposition, was in the grip of a typhoid epidemic and if nothing was done about it, there was a danger of a huge increase in cases, not just in Chicago itself, but throughout the US and Europe [5].

Sedgwick and Hazen's talk was reported the next day in an article in the Chicago Daily Tribune, which quoted Dr. John D. Ware, the Chicago Commissioner for Health at length. Ware declared Chicago was "the healthiest city of its size in the world" and denied Sedgwick's statement that there had been nearly 2,000 deaths from typhoid in Chicago in 1891, although the Tribune documented that the Department's own records showed the total to be 1,997, a two fold increase over the previous year. Ware blamed the figures on the ignorance and carelessness of physicians in listing typhoid as a cause of death on the death certificates when the death had really been caused by something else. He added "Advantage has been taken of this by Eastern physicians, who are unfriendly to Chicago for various reasons, to give out the impression that our city is unhealthy and suffering from an epidemic of typhoid fever. If there was such an epidemic here we would know it long before the news of it had reached Boston, and the best medical skill of the city, or, for that matter, of the Nation, would be at once called in to combat and avert it" [3]. When a Chicago Tribune reporter interviewed Sedgwick in Boston after his talk, he insisted he had no dislike of Chicago. He had reported the facts

as he saw them in the hope there was still time to rectify the state of the city water supply before the Fair and that perhaps the Federal Government would step in to aid the city to finish the projects it had already undertaken such as improving the Bridgewater pumps, opening a longer four-mile Lake Michigan water intake tunnel, and hasten the building of the new canal which would link the Chicago River with the Mississippi [6].

High stakes for the City of Chicago

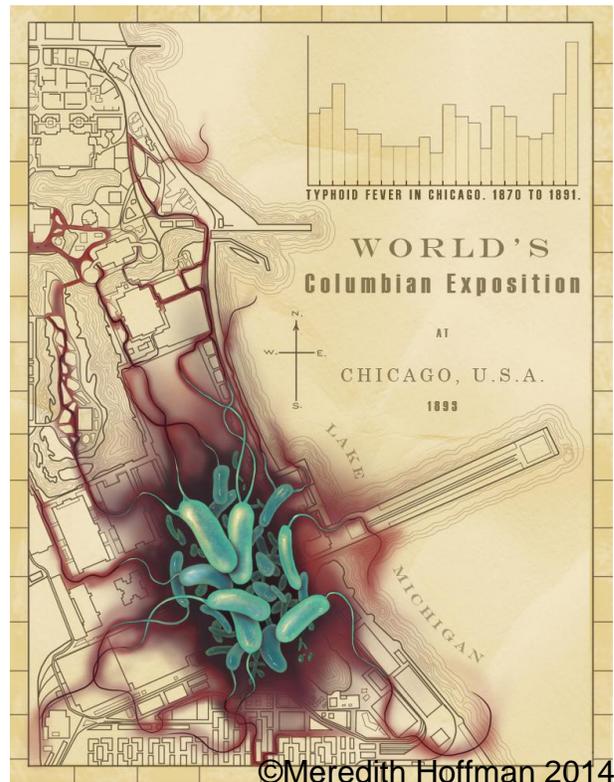
The report of the typhoid epidemic put Chicago in a terrible position. The city had been awarded the right to hold the World Columbian Exposition by Congress in 1890, beating out other contenders such as New York City. However, initially there was little faith that Chicago would be equal to the task [7]. National newspapers sneered calling it "the proposed Cook County Fair" and foreign newspapers ignored it altogether. Support was needed, not just to encourage visitors but also to persuade governments to appropriate money for the exhibits. The Exposition's Commissioners became so alarmed at the "ignorance [which] prevailed and the skepticism at home" that they formed a special Department of Publicity and Promotion, headed by Moses P. Handy, in December, 1890. It was the world's first modern publicity campaign. Thousands of letters were written to State officials, boards of trade, national and State industrial organizations, members of Congress, State legislatures and anyone else who might be able to stimulate Federal and State governments to appropriate money for Fair exhibits. Speakers and pamphlets were sent to every important commercial, industrial,

agricultural and trade association meeting. The Department sent publicity releases to national and foreign newspapers, already translated into the appropriate language. The Rolodex fattened and in August, 1891 the Department sent out 161,000 separate pieces of printed matter in nine different languages. Progress was monitored by word counts of both national and foreign newspaper articles. The numbers were increasing, yet funding was always a problem. The city could not afford a setback.

Ware had no choice initially but to deny there was an epidemic. He had been appointed in 1891 as the Chicago Commissioner for Health by the incoming mayor Hempstead Washburne and as a political appointee his job was dependent on the Mayor who in turn was answerable to the historically powerful city council [8]. Ware was not incompetent. Despite his department's chronic understaffing he had moved quickly and successfully to forestall a recent smallpox epidemic and he was dealing with a possible influenza epidemic [9]. Now he had to spend the rest of his time as Commissioner steadily averring that the water was safe to drink.

A month after the initial reports however, the Council and the Health Commissioner could no longer deny there was a typhoid epidemic in the city, though Ware continued to issue statements that he believed the water was safe to drink. Sedgwick and Hazen's talk was published as a paper on April 21, 1892 in *Engineering News and Railway Journal*. Sedgwick contributed a postscript to the

published paper saying that news of his report had appeared in the Chicago Tribune and "after some demur" was accepted as a fair statement of the facts. Perhaps to placate those who accused him of an animus against Chicago he added that though the Tribune alleged not much was being done about the situation, the four-mile tunnel was proceeding rapidly and typhoid deaths in Chicago had started to decline.



Europe voices its concern

Typhoid rates in Europe, especially in Germany and England were falling rapidly, due to the installation of new methods of sewage treatment and the introduction of filtration plants for city water supplies. The Old World did not want an invasion of New World disease to undo its good work. The BMJ in an editorial on March 12, 1892 warned that "on the eve of the great

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World Fair of 1893, any danger threatening the public health of Chicago has a direct personal interest to many thousands upon this side of the Atlantic" [10]. Another prominent English medical journal, *The Lancet*, decided to do its own investigation and sent a special sanitary commission to examine the Chicago water supply and the arrangements at the Columbian Exposition [11].

No visitor ever left Chicago praising the sanitary arrangements but the *Lancet's* chemical analysis report, published in April, 1893, was particularly caustic. The *Lancet* was horrified to find people cooling their drinks with ice made from unfiltered water, a custom they discovered "was common, even to the point of being almost universal throughout the United States... and capable at the present moment of breeding mischief on an appalling scale." They could not warn against this practice strongly enough, impressing upon their own people to never drink water cooled with ice and appealing to Chicago to "provide a supply of water free from this reproach". The *Lancet* report did concede that if the water were filtered and boiled, it would be potable. They also conceded "there was not sufficient information for considering accurately the effects upon health" but cautioned that "the high death rate of the city from typhoid fever" (at this time 12 times that of London) "needed inquiry." The article included a letter from Dr. Ware in its appendix, which gave results of the chemical analysis of the water on two different days and stated again that he believed the drinking water to be safe.

Engineering News continued to pursue the question of Chicago's water supply and the typhoid risk at the Exposition reporting, among other things, that the Chicago Commissioner of Health was unaware of the high typhoid death rate in 1892 or was at least reported on good authority as having indignantly denied that there were nearly 2,000 deaths from the disease in Chicago [12].

Ware was defensive in his 1892 annual report of the Chicago Health Department (published in 1893) saying of course there was typhoid in Chicago and he had never attempted to deny it [9]. Indeed how could there not be typhoid in a city with 40,000 privies and people who wouldn't connect to the sewer even when threatened with legal action? Yet again, he repeated his belief that anyone visiting Chicago need have no apprehension as to the quality of the water. Ware spoke truly when he said that quite a lot was being done about the typhoid problem. The four-mile tunnel came on line in December, 1892. Typhoid deaths had begun to fall in 1893, partly due to the cleaner water from the tunnel but probably also due to the new public awareness about boiling or filtering the water. Work on the huge Ship and Sanitary canal project, which was to famously turn the Chicago River around and send its waters and Chicago's sewage down to St. Louis instead of into Lake Michigan, had begun in September 1892 although the canal would not be opened until 1901. In the meantime Ware did not see what else he could do, but typhoid was a preventable disease and if it was preventable then



it was clear that with the world's eyes upon it, Chicago had better prevent it.

Planning a new city—the Exposition

Before the public outcry and international attention to the typhoid problem and despite the City's bluster, the Officials of the Columbian Exposition had taken the concerns about the spread of infectious disease through the Fair seriously. Under the leadership of Director of Works, the architect, Daniel Burnham, the Exposition Affairs Committee was tasked with building what was in effect a "city within a city", which though it might be artificial could expect real problems, not just from

disease, but also from crime, accidents and fire [13] [14]. The prevention of contagious disease was not only a concern for the millions of visitors expected but also for the 30,000 or so construction workers, many of whom came to the city seeking work and were to be housed on site. Even while the water supply and sanitation facilities for the Fair were being built, those building it would have their own water and sanitation needs. The Exposition authorities considered it essential "that we take extraordinary precautions to prevent disease of a zymotic character among those employed upon the ground" [15].

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The Fair's organizers had an advantage, however, over the City of Chicago. Even though they had to estimate its population, they were building a planned city from scratch, rather than scrambling to keep up with an explosive and chaotic growth. As leaders of an Independent Corporation that did not depend on the city for financing they did not have to cater to council politics. The unimproved 700 acre site chosen for the Exhibition Grounds at the south of the city was linked to neither the city water nor its sewers so they could build a new system based on the latest advances in sanitation engineering and bacteriology. Burnham appointed Chief Engineer of Water, Supply, Sewage and Fire Protection, W.S. MacHarg in November 1890, even before the typhoid epidemic was underway. MacHarg's final report of works shows that he was well aware of the Chicago's typhoid problem and the international interest it had attracted, citing "a very serious death rate from typhoid fever" in the years prior to the Fair and noting the efforts that had already been made by the city to improve the water supply [15].

MacHarg's plan divided the water needs according to purpose—a supply of good drinking water for domestic purposes and a second supply for mechanical uses such as the fountains and fire protection "which need not be of the same character" [15]. A priority was not to pollute the lakefront nor many scenic lagoons to be built on the site because that would be both the source of the water supply and the location of the Grand Promenade which would hardly be improved by the stench of sewerage. MacHarg

reckoned that the sanitation facilities would need to accommodate at least 30,000 permanent workers and 200,000 visitors per day, with up to 600,000 on occasional days. To plan the treatment works he had to estimate the volume of liquid they would need to be able to handle and came up with a fairly accurate estimate of about 10 gallons/ person/ day.

Sanitation during construction

The initial water supply for the site was to be obtained from an intake one mile out in the lake at Hyde Park next to the fairgrounds using pumps erected by the Exposition Company that would later be turned over to the city at cost. However, water drawn from so close to shore was not considered immediately fit for domestic use. It was therefore boiled by being fed under pressure into a coil where it was super heated to greater than 212° F. The condensate was then cooled and aerated by being passed through a cascading series of eight 2,000-gallon tanks made of cypress wood. The water from the last tank was drawn into barrels which were distributed through the building site by a system of water carts. This water was "used freely by all the men employed in the works and during this summer all were especially free from bowel troubles" though the medical director, Dr. John F. Owens, grumbled that it was difficult to prevent the men using hydrants and surface water and notices had to be posted prohibiting the use of water from the hydrants and lagoons [16]. The Exposition employed the indefatigable Allen, to perform daily bacteria counts on the

water which they correlated with what they were seeing clinically. On the few days that the water could not be boiled due to problems with the temporary power plant and the barrels were fed directly from the water supply, an uptick in diarrheal diseases was noticed by the medical staff who immediately sent a report to the engineers.

The city sewerage system served the Midway Plaisance but did not extend to Jackson Park so while the sewers were being constructed wooden privies with concrete floors were used. Each privy had 13 seats, galvanized iron pails for solids and troughs for liquids with galvanized iron urinals. The pails were kept odor free by an attendant throwing a quantity of dry earth pulverized nearby for that purpose and copperas, a ferrous sulphate solution also known as green vitriol was applied to the troughs. The catch basins were pumped each night. The liquids were dumped in the nearest city sewer and the solid taken to the southern portion of the grounds and dug into black earth, which mostly worked well except when it didn't such as during the wet weather in the Spring of 1892.

Sanitation at the Exposition

The water supply for the actual Exposition was a careful exercise in public relations. MacHarg recognized that "visitors would be pretty certain to use city water at their places of residence while attending the Fair." That was beyond his control but he contrived "to make every effort to furnish innocuous water" to those attending the Exposition [15]. Given the adverse publicity about the

Chicago water, it was decided to reassure the public that it was safe to visit the Fair by supplying drinking water from an outside source. The Waukesha Hygeia company, already well known in the city where its bottled water was prescribed as a health drink, won the concession to supply water to the Exposition site. The water was pumped to a reservoir on a hill near Waukesha 416 feet above the level of Lake Michigan and then gravity fed through one hundred miles of pipe to the Exposition [4]. The water was cooled on arrival at the Fair grounds to a pleasant 38°F, but heeding the Lancet's dire warnings, not by the direct addition of ice. Instead it was piped through Lind Ice Machines. Once cold, the water was distributed throughout the fairgrounds via 50 miles of insulated pipes to automatic slot machines which weighed out a glass full once a penny was dropped into the slot or sold to booths and exhibitors at 5 cents a gallon.

MacHarg recognized that not everyone could or would pay for their water so free but uncooled water was also provided at 100 free distribution centers, each with 4 faucets and communal cups, which were evidently not feared as a source of contagious disease. The free water came from the Hyde Park intake but was filtered. To "give confidence to those using the water" MacHarg chose filters from the Pasteur Chamberland Filter Company of Dayton, Ohio which being already in common use in hotels and homes were well known. The free water proved very popular despite the strategic product placement of the Waukesha water in the most visible

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sites [4]. The water sterilizers, which had been dismantled once the site construction was finished, were reinstalled to supply the demand for water when water drawn directly from the mains was linked with an increase in diarrheal disease. In a nice piece of social engineering the exhibitors were not allowed to have their own taps so as to prevent them distributing untreated water.

When planning the sewerage system, MacHarg wanted to avoid the mistakes made in Philadelphia when sewerage discharge from the fair had almost certainly polluted the water supply. He decided that no sewage would be discharged directly into the lake. Unlike the city where domestic, surface and rain water all fed into a common sewer, MacHarg was able to treat different waste sources differently. Roof water was fed back into the lagoons and the surface water fed back into the lake so that only domestic waste needed to be treated. An estimated 6 million gallons of sewage a day would need to be disposed of and MacHarg looked for a system that would give "fair results as to the effluent water with as small a cost as possible." To transport sewage from the lavatory blocks to the treatment plant he chose the Shone-Hydropneumatic system which used compressed air to force the sewage into large receiving tanks. There the sewage was flocculated using a chemical process that MacHarg had found in use in Dortmund, Germany. The sludge from the tanks was compressed into cakes and taken to the garbage crematory where it was burned along with the Fairground garbage using two furnaces supplied

by the Engle Sanitary and Cremation Company. The advantage of the Engle was it burned very clean so that only fifty feet from the chimneys no odor was detectable. The ash left over from the incineration was used as fill in the grounds and roads.

There were nearly 3,000 toilet rooms, closets and lavatories scattered throughout the grounds [17]. The fancier lavatory blocks charged 5 cents admission and had towel and soap service and you could also get your boots blacked while you waited. Women, as always, were doomed to queue; only the men got free urinals. MacHarg was pleased with the operation of his system though he commented that many of the Fair visitors "wholly unfamiliar with the use of sewers have thrown every character of stuff into the same. Underwear of various kinds was constantly taken from the branch connections" [15].

Success

The public health and engineering community watched the events in Chicago with keen interest. Alongside the physical exhibits of the Exposition were the "mental exhibitions", meetings, or "Congresses" which would bring together the great minds of the day to discuss the latest scientific and social advances [17]. Among the many Congresses was the World's Public Health Congress. Many of the attendees took the opportunity to tour the sanitary arrangements at the Fair, which then as now, was a public health geek's idea of a good time. W.F. Morse presented a paper on the disposal of garbage and waste at

the World Columbian Exposition in which he said "It is doubtful in the history of this or any other country whether there has ever been a sanitary problem of equal magnitude which must be solved in the short time allowed, or which demanded a more safe and scientific solution than was the one here presented. To make a failure was to imperil the fortunes of the great enterprise, while a success meant not only absolutely protection for health, but the comfort, well-being and convenience of a great multitude of people" [18].

The new Chicago Health Commissioner Arthur Reynolds' report for the Chicago Department of Health for the year 1893 was late [19]. He pleaded "unusual demands of work", one of which might have been the setting up of a bacteriology lab for his department, but there was no mistaking the satisfaction he felt at a job well done. Despite the "predictions of disaster and warnings of inevitable sickness and increased mortality" which had been "freely indulged in by envious rivals and prophets of evil," the 1893 mortality rate of 16.8 per thousand had been the lowest in Chicago's history, and the lowest of any large city in the world, except Berlin at 16.3 per thousand. There was not a single case of typhoid traceable to the Columbian Exposition.

By the time the gates closed on the 31st of October 1893, the Columbian Exposition had sold 27 million entrance tickets at a time when the population of the entire USA was 65 million. The Fair changed urban planning forever - it had shown what the city of the future might look like

and what the amenities of the future would be. Those amenities would include sewerage systems, sewerage treatment works, and water that was safe to drink.



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References

1. Sedgwick, W.T. and A. Hazen, *Typhoid fever in Chicago*. Engineering News and American Railway Journal 1892.
2. Benson, K.R., *Welch, Sedgwick, and the Hopkins Model of Hygiene*. Yale Journal of Biology and Medicine, 1999. **72**: p. 313-320.
3. *Typhoid in Chicago: What the Health Records Show Concerning It.*, in *Chicago Daily Tribune (1872-1922)* Jan 23, 1892: Chicago.

Historical Perspectives

4. McCarthy, M.P., *Should We Drink the Water? Typhoid Fever Worries at the Colombian Exposition*. Illinois Historical Journal, 1993. **86**(Spring): p. 2-14.
5. Editorial, *Vanishing Typhoid, With a Bit of Editorial Retrospection*. Engineering News, 1917. **77**(13): p. 526-527.
6. *We Did it for Chicago's Good: Reasons Impelling Prof Sedgwick to make the Charges He Did.*, in *Chicago Daily Tribune (1872-1922)* Jan 23, 1892: Chicago.
7. Johnson, R., *A History of the World's Columbian Exposition Held in Chicago in 1893*. Vol. II. 1897, New York: D. Appleton and Company.
8. Randall, S.E., *The Politics of Public Health in Chicago 1850-1930*, 2010, Saint Louis University.
9. Ware, J.D., *Report of the Department of Health of the City of Chicago for the Year 1892.*, 1893: Chicago.
10. Editorial, *The World's Fair and the Water Supply of Chicago*. BMJ, 1892. **v.1**(1628): p. 563.
11. Special Commission on the Water Supply of Chicago, *Report of the Lancet Special Sanitary Commission of Inquiry concerning the Water Supply of Chicago, USA*. The Lancet, 1893. **141**(April 8).
12. Editorial, *Editorial*. Engineering News and American Railway Journal, 1892. **28**(Nov 3, 1892).
13. Brown, J.K., *Health and Medicine on Display: International Expositions in the United States, 1876-1904*. 2009, Cambridge, Massachusetts: The MIT Press. 326.
14. Neufeld, M., *The White City: The Beginnings of a Planned Civilization in America*. Journal of the Illinois State Historical Society, 1934. **47**(1): p. 71-93.
15. MacHarg, W.S., *Report of the Director of Works, Engineer, Water Supply, Sewage and Fire Protection*, in *The Final Official Report of the Director of Works of the World's Columbian Exposition*, D.H. Burnham, J.E. Draper, and T.S. Hines, Editors. 1893: New York. p. Vol. II, p65.
16. Owens, J.F., *Report of the Medical Director*, in *The Final Official Report of the Director of Works of the World's Columbian Exposition*, D.H. Burnham, J.E. Draper, and T.S. Hines, Editors. 1893: New York.
17. White, T. and W. Igleheart, *The World's Columbian Exposition, Chicago, 1893* 1893, Chicago: International Publishing Co.
18. Morse, W.E., *The Disposal of the Garbage and Waste of the World's Columbian Exposition: A Paper Read at the International Congress of Public Health Chicago, October 11, 1893*. The Sanitarian, 1893. **31**.
19. Reynolds, A.R., *Annual Report of the Department of Health of the City of Chicago for the Year ended December 31, 1893*, 1894: Chicago.

From Death Sentence to Cure: Re-thinking Cancer Education for Asian Americans in Chicago

Shruti Zaveri



Advances in medical sciences and biomedical technologies have improved the prognosis of some cancers from being untreatable to potentially curable diseases. Despite the current progress in cancer treatment though, cancer remains the second leading cause of death in the United States, with nearly one-half of all men and one-third of all women in the US developing cancer during their lifetime¹. In many ways, the cancer burden is unequally distributed in various populations within the US. While Asian Americans have the lowest cancer

incidence when compared to other ethnic groups in the US, cancer is still the leading cause of death among Asian Americans, with heart disease first among all other American racial and ethnic groups². Much of the Asian American cancer burden is unnecessary and caused by several avoidable factors including lack of cancer education, barriers to both healthcare and cancer screening, and ultimately a culturally ineffective effort to solve the issue.

Effective preventative measures must first consider factors that lead to the earliest step of cancer development such as genetic predisposition and environmental factors that lead to increased susceptibility. Only once these determinants have been successfully traced, can an effective and community-focused plan of action be developed.

The immense diversity amongst Asian Americans and their cultural environments necessitates a more community-focused effort with cancer education, prevention and treatment, while addressing the particular risk factors for each subgroup. Specific cancers affect particular Asian subgroups, so cancer prevention policies should be directed towards the needs of each community.

Liver Cancer and Chinese Americans

Asian Americans, particularly Chinese Americans, suffer from a proportionately large burden of cancers of infectious origin. Liver cancer caused by hepatitis B is the leading cause of cancer mortality in Asian Americans³. The Chicago Department of Public Health, in conjunction with The University of Chicago Comprehensive Cancer Center, conducted extensive research over the past decade on the cancer risks imposed by the hepatitis B virus (HBV). These studies found that Chicago is one of the hubs of hepatitis B derived liver cancer in the US, and the highest rates of incidence are found in Asian American neighborhoods. The heightened incidence is due in large part to low HBV vaccination rates in the Asian American community.

The hepatitis B vaccine has been strictly incorporated into the childhood

vaccination regimen in the US, but since over 75% of Asian Americans in Chicago are foreign born and the regulation of the HBV vaccine amongst immigrants has been far less stringent, this particular city mandated vaccination hardly benefits foreign migrants⁴. Thus the Chicago Department of Public Health should make HBV vaccination a priority, especially in migrant Chinese communities such as the Chinatown neighborhood of Armour Square. Chinatown is home to a significant proportion of the Chinese immigrant population in Chicago. A targeted HBV vaccination campaign to expand awareness about hepatitis B and provide free hepatitis B screenings and vaccines would greatly lower the liver cancer burden for Chinese Americans in Chicago. The campaign could consist of community health fairs as well as raise awareness through (Chinese language/Mandarin) radio and print media around the community. Moreover, the high degree of community engagement within Chinatown, and collaboration between Chinatown residents and community health organizations would allow smooth implementation of the initiative.

Colorectal Cancer and Korean Americans

National statistics show that Korean Americans have the highest annual incidence and mortality rate for stomach and colorectal cancer among all Asian subgroups, more than five times the rate of stomach cancer in White American men². While some of the disease burden can be attributed to genetic susceptibility, a disproportionate amount of the burden is actually due to a lack of adequate preventive and diagnostic measures. Regular colorectal cancer screening is one of the most effective tools for preventing

colorectal cancer, and men above the age of 50 are recommended to start annual screenings. The mortality rate from colorectal cancer has declined drastically over the past 20 years due to advances in the screening technique⁵. This progress, however, has not yet reached the Asian American population in many large cities in the US including Chicago, and Korean Americans continue to have the lowest rates of colorectal cancer screenings in the US⁵. Cancer education and screening recommendations could be the most powerful weapon for Korean Americans against colorectal cancer and could be also delivered through community based initiatives and health fairs in neighborhoods with high Korean American densities.

Lung Cancer and Southeast Asian Americans

Lung cancer is the number one killer for Asian American men and yet studies have shown that tobacco and cigarette billboards are significantly larger in size and more densely predominant in Asian American neighborhoods throughout the US². Particularly among Southeast Asian Americans, such as Indian Americans, lung cancer rates are 18% higher than among White Americans². Southeast Asian Americans have the highest rates of smoking among all Asian Americans and have significantly higher rates than other American minorities².

Since the risk for lung cancer does not stem from the lack of screenings but rather, behavioral risk factors such as smoking, cancer risk awareness should be brought to the frontlines of health advocacy for these communities. The education campaign for lung cancer within these communities must be delivered in a more sensitive, personal

manner. Doctors, community health workers, and locally trusted leaders would be a more effective vehicle to deliver the smoking cessation messages to this patient population rather than media. Just as the disease follows a two-step development process, cancer prevention work in this community must also come in two waves. The first step is ensuring that the physicians and community leaders recognize cancer as a preventable illness and raise cancer prevention awareness. The antedated biomedical view of cancer must be replaced by a more comprehensive understanding of the disease, its social determinants and the environmental factors that lead to a predominance of the disease in certain populations. The second step will then follow naturally from the first as physicians and community leaders spread key information to the patient population and promote behavioral change in effective, culturally competent patient interactions to transform the smoking habits within these communities.

Conclusion

Although devising a unique campaign for each community is a more resource-intensive method, a targeted approach is necessary to deliver the most pertinent cancer education to each Asian subgroup and close the gap in cancer disparities between ethnic communities. Biomedical cancer therapies have progressed from broad, system-based cancer treatments to more advanced, targeted therapies over the past two decades, and cancer prevention should follow suit. The Chicago Department of Public Health has already taken some steps towards promoting cancer education, but a more culturally targeted approach is required. Drastically reducing cancer health

disparities within the Asian American population in Chicago will require a deeper insight into the Asian American subgroups, the specific risks related to each, and their unique, unusual, and unnecessary burdens of cancer. Cancer education and preventive measures could truly be the key to turn the course of this disease from death sentence to cure in the Asian American population.



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References

- 1 “Cancer Facts & Figures 2014.” American Cancer Society, 22 December 2014. Web. <<http://www.cancer.org/acs/groups/content/@research/documents/webcontent/acspc-042151.pdf>>
- 2 “Asian American Cancer Health Disparities.” *Cancer Education*. AANCART- The National Center for Reducing Asian American Cancer Health Disparities, Web. <<http://www.aancart.org/cancer-research/publications/asian-american-cancer-health-disparities>>.
- 3 “Asian Americans and Hepatitis B.” Centers for Disease Control and Prevention, 13 May 2013. Web. <<http://www.cdc.gov/Features/aapihepatitisb/index.html>>.
- 4 “Pathways to Discovery: Winter 2011.” *UC Comprehensive Cancer Center*. The University of Chicago Medicine. Web. 21 Oct 2013. <<http://cancer.uchicago.edu/about/news/pathways2011winter-HPV.shtml>>.
- 5 “Importance of colorectal cancer screening.” *Colon/Rectal Cancer Early Detection*. The American Cancer Society, 8 May 2013. Web. 21 Oct 2013. <<http://www.cancer.org/cancer/colonandrectumcancer/moreinformation/colonandrectumcancerearlydetection/colorectal-cancer-early-detection-importance-of-crc-screening>>.

Healthcare Access for Lesbian and Bisexual Women in Cape Town, South Africa

Riley Smith

I first became interested in the topic of lesbian, gay, bisexual, and transgender (LGBT) health care disparities while working as a research assistant with the IMPACT Program at Northwestern University's Feinberg School of Medicine, where the health and development of young LGBT people living in Chicago is studied. During my junior year I had the opportunity to further pursue this topic through an independent research project in Stellenbosch, a town just outside of Cape Town in South Africa.

Although South Africa has one of the world's more progressive constitutions which legally protects LGBT people from discrimination, current research indicates that they still face discrimination and homophobia in many different facets of life (Epprecht, 2010; Tallis, 2009). Significantly little is actually known about LGBT women's health in South Africa, but researchers speculate that LGBT women might face unique challenges in healthcare due to their double marginalization as women and as sexual minorities (Tallis, 2009). By better understanding the difficulties LGBT women face when accessing healthcare or sexual health information or when 'coming out' to healthcare providers, public health efforts might be better equipped to provide meaningful and affirming services to these women.

Participants for the study were recruited through their involvement with LGBT student groups at two universities in the greater Cape Town area and through

Triangle Project, a non-profit organization that serves LGBT communities in low-income townships surrounding Cape Town. In total, 23 interviews were conducted: eight with women living in townships, 14 with university students, and one with a medical doctor who serves the LGBT community. All of the women interviewed were cisgender and during the interview process self-identified as either lesbian or bisexual (LB), as indicated in the quoted excerpts below. The recruitment sites were chosen because they provided a racially and socioeconomically diverse cohort of women who identified as lesbian or bisexual and were accessible within the short time frame of this exploratory study. Additionally, hate crimes against LGBT persons are prevalent in many township communities, so recruiting from these sites with the help of Triangle Project greatly contributed to the diversity of experiences captured in the interviews.

One notable finding of the study was the profound difference between the experiences of women accessing public versus private healthcare. The South African healthcare system remains very polarized, with eighty percent of the population using free public facilities that are often dilapidated and under-resourced, while the privileged minority uses top-notch private care (*The Lancet*, 2009). I had the opportunity to tour and interact with doctors, nurses, and patients at a few public clinics as well as at a private hospital, and the contrast

Experiences

between the two was astounding. For example, one public hospital I visited could only afford to provide radiology and laboratory testing for a few hours each day, so most diagnoses had to be determined without the assistance of such tools.

Almost all of the LB interviewees who used public care felt that the government healthcare system was generally unfriendly towards them. Even if they had not directly experienced homophobia in a clinical setting, most feared that if they disclosed their orientation to public healthcare providers they would face homophobia and/or insensitivity. This could negatively impact healthcare seeking behavior, as some participants in the interview said they avoided getting healthcare because they were afraid of being discriminated against or judged negatively. Furthermore, most women living in the townships that access public healthcare only attend the clinic in their community, as transportation to another facility would be expensive and time consuming. With limited access to healthcare locations, the LB women interviewed felt disempowered from speaking out against homophobic discrimination because doing so would leave them potentially ostracized by their communities and without healthcare options. As one participant described:

“Even if you feel sick, just, you want to go to the [public] clinic but you don't because you know that there's this person who's gonna hurt you, that you are not going to be happy. So, I prefer to buy a cough syrup in the shop... But, if you don't have the money you will cough until I don't know.”
– Mkhulu, age 32, LGBT community

In contrast, most women interviewed who used private care felt that they would be comfortable ‘coming out’ in a situation when it was “medically relevant,” which was almost exclusively described as pertaining only to topics involving sexual health. These women felt that because they were paying “clients” in private facilities, they were better positioned to negotiate the quality of care they received and to “take their business elsewhere” if they were dissatisfied with their treatment in a certain facility. This disparity between the agency of patients in private and public facilities highlights some of the issues related to the intersectionality of race, class, and sexuality in terms of understanding LGBT people’s access to healthcare.

Despite these differences of experience, all of the women interviewed felt that sexual health information relevant to them was generally unavailable in both private and public healthcare settings. The women felt that healthcare professionals are not educated on LGBT health or sexuality, and that they would be unable to answer sexual health questions regarding same-sex sex. This has caused some LGBT women to feel unwelcome in clinics or other healthcare settings where they feel that their needs are being neglected.

“You can't find that information about safe sex that caters to bisexual or to lesbian women... It's not even in the posters that you see in clinics... It makes it hard for people to understand that we do get sick.”
– Kiki, age 22, lesbian

In light of all these challenges, the women interviewed offered numerous suggestions such as educating healthcare providers on LGBT issues, providing more

comprehensive safe-sex information in clinics and schools, and having more LGBT-identified healthcare providers. For example, some women felt that if healthcare facilities provided brochures that specifically addressed the sexual health of LGBT persons, they would feel more welcomed and comfortable discussing their sexuality with the healthcare provider.

Undertaking this research project proved to be a difficult but incredible experience that significantly contributed to my understanding of the challenges that LB women face and the impact of the intersection of class, race, gender, and sexuality in this context. It is my hope that the findings from my study will contribute to a more thorough understanding of the healthcare experiences of lesbian and bisexual women in Cape Town and help inform more meaningful and affirming public health interventions. The contrast between women's experiences in public versus private care, the practical challenges of advocating for more inclusive healthcare when one is effectively limited to and reliant upon a single community clinic, and the widely shared perspective that sexual health information for LB women is inaccessible, offers perspective on some of the challenges that South African LB women face when accessing healthcare services. Understanding these women's experiences and considering their suggestions for how to improve healthcare provisions for LGBT persons is important when planning and implementing public health interventions.

I am incredibly grateful to International Program Development at Northwestern for their generosity in funding this

project. My experiences conducting research in Cape Town, talking to diverse groups of women and hearing their stories firsthand has been a tremendous experience as an undergraduate. I hope to continue working on and learning more about LGBT health issues at home and abroad.

References:

- Epprecht, Marc. 2012. "Sexual minorities, human rights, and public health strategies in Africa." *African Affairs*, 111:223-43
- The Lancet* South Africa Series Executive Summary Core group. 2009. Writers Lawn JE, Kinney MV. "The Lancet Health in South Africa: Executive Summary for the Series." *The Lancet*.
- Tallis, Vicci. 2009. "Health for all? Health needs and issues for women who have sex with women." *From Social Silence to Social Science: Same-sex Sexuality, HIV & AIDS and Gender in South Africa: Conference Proceedings*.



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The Difficulty with Psychiatric Diagnosis:

A Review of “*The Book of Woe: The DSM and the Unmaking of Psychiatry*”

Sarah Quillin



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In “*The Book of Woe: The DSM and the Unmaking of Psychiatry*”, author Gary Greenberg reports on the supreme controversy surrounding the latest revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM). The DSM, published by the American Psychiatric Association (APA), is meant to provide common language and criteria for diagnosing mental illness. Greenberg’s purpose in telling the story of the fifth edition of the DSM (DSM-5) is twofold. The author first aims to educate readers on what he regards to be a hidden truth of psychiatry. In tandem, he argues that, due to the intrinsic difficulty accompanying diagnoses based on symptoms alone, psychiatric diagnoses should not rely on diagnostic constructs like those within the DSM. Greenberg, a therapist and mental health journalist, tells the story of the DSM from its inception in the 1970s until its controversial revision over the past 5 years, using this context to make an overarching philosophical argument about how we conceptualize mental suffering. The story of DSM-5, a back-and-forth between the APA and its most prominent critics, is of interest to anyone who has suffered some form of mental distress or cared for someone who has. The story is also relevant to public health

advocates seeking to understand historical and political forces behind creation of diagnostic concepts. The author compels his audience to think critically about how these concepts influence the medical decisions, as well as the identity politics, of people suffering from mental illness.

Greenberg familiarizes his readership with the complex concept of diagnosis and the difficulties associated with psychiatric diagnoses by invoking a Socratic metaphor. Describing discrete diseases requires bringing the scattered particulars of disease manifestation together into one idea that is a truthful representation of that illness. Socrates asserts that these ideas must be fashioned “according to the natural formation, where the joint is, not breaking any part as a bad carver might.” Greenberg’s main philosophical conviction throughout his book stems from this point, that “a good diagnosis must be more than the fancy of the diagnostician, more than merely deft. It must also be accurate. It must carve nature at its joints.”

The author, again invoking *Plato*, seeks to reveal to his audience what he considers to be the hidden truth of the field, or psychiatry’s “noble lie” – that the disease constructs described in the DSM have, to date, no biological basis. To Greenberg, it is very important for readers to understand that disease constructs like Major Depressive Disorder or Generalized Anxiety Disorder, are the product of expert consensus on patient behaviors rather than hard, scientific data. Instead of using concrete, measurable biomarkers like insulin and cholesterol, clinicians diagnosing mental illness have only outward symptoms to go by, symptoms

that are variable and difficult to recognize and describe. In addition, these criteria are not indicative of specific, discrete pathologies, even if accurately described. Continually harkening back to this truth throughout the story of DSM5, Greenberg makes the argument: Due to intrinsic difficulties and limitations outlined above, psychiatric diagnoses cannot and should not be medicalized, or categorized according to criteria like the constructs contained within the DSM. The author argues that in seeking to do so, the APA does more harm than good to its patients and the public at large. It is under this mindset that Greenberg reports on the latest revision of the DSM, which is, to him, “an anthology of suffering...a book of our woes.”

After the APA announced the DSM would be revised in 2008, a war of words broke out in the press between the leaders of the revision effort and their detractors, including prominent former head of the APA and leader of the DSM IV revision, Dr. Allen Frances. Throughout the years that Greenberg covered the revision of DSM-5, published in May 2013, the APA held that the DSM was in need of a new paradigm, revising diagnostic tools and criteria to improve the reliability of diagnoses. Critics like Dr. Allen Frances cautioned that the science needed to facilitate a paradigm shift simply was not there, that a revision would hurt the reliability of the DSM as an instrument of diagnosis and hurt the credibility of the APA, hurting its patients in the process.

Greenberg documents the revision of DSM-5 through three storylines: interviews with the main players on each side of the DSM-5 debate, summaries of controversy surrounding particular DSM changes that played out in the pages of the *New York Times* and *Psychology Today*, and conferences like the APA’s annual meeting. While the story-telling is rigorous and objective, the underlying

tone is never unbiased. The author tells about a revision that is premature, rushed, and essentially a bureaucratic disaster. While the heavy account is cut with witty comparisons and humanizing anecdotes, the underlying tone is dead serious. The author tells bluntly, with conviction, how a bungled revision will negatively affect the identity politics of countless numbers of patients. At his most critical, Greenberg points out the myriad of *other* incentives the APA has for publishing a new DSM: pharmaceutical money, publication money, and an attempt to maintain the credibility of the profession. Although often derisive, the author is respectful; asserting that he, the APA, and its major critics all genuinely want to treat patients and help people.

The philosophical and personal nature of the writing compels the reader to care about how changes are made to the manual used to diagnose our suffering. The *Book of Woe* is accessible, addressing specialized topics like epidemiological study design colloquially. The author is particularly adept when illustrating the difficulty of psychiatric diagnoses through backstory on the controversy surrounding specific disease constructs like Major Depressive Disorder or Asperger’s Syndrome. Greenberg’s telling of the DSM-5 revision sincerely opens a public conversation on a subject that few authors, historically, have approached with such depth and detail.

One criticism against the message of the book itself comes from the book’s champion and prominent DSM-5 critic, Dr. Allen Frances. While Frances and Greenberg agree the DSM constructs are flawed and the revision was mishandled, they are not in agreement about the medical model of psychiatry. Frances believes that the manual, though flawed, is the best option psychiatry has, and that option is better than nothing. In an interview described within *The Book of*

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Woe, he warns Greenberg against defaming the DSM and exposing the “noble lie,” lest his words wrongly convince patients successfully receiving help to go off medication or refrain seeking help to start. This is a valid, poignant argument, one concerning grim realities for patients. Greenberg responds, somewhat tersely, as he has in past interviews: he believes the potential for harm caused by the DSM far outweighs potential public health risks generated by *The Book of Woe*. At near 350 pages, it would have been more satisfying to the reader to have this point addressed in more depth.

While the author presents a compelling, heartfelt argument, the reader is left with practical questions. Negative consequences of the use of the DSM may include suffering incurred by patients subjected to psychiatrists changing diagnoses, pathologizing normal behavior, or overprescribing medication. Our healthcare economy, however flawed,

is a reality in which patients suffering from mental illness must seek care. The system requires a method for disease categorization to ensure reimbursement from insurance companies, and that current method is the DSM. While Greenberg seeks only to make a strong argument in his book, and not solve this practical problem, his account still raises the practical question: If not DSM, then how? Any major rethinking of the psychiatric field must adhere to these practical limitations. By the end of the book, whether one agrees with Greenberg’s overarching argument or not, the story of DSM-5 leaves its reader wiser, and more concerned, if not somewhat shocked. The author writes with the genuineness of a journalist who truly believes in the gravity of their message.

The Book of Woe was published in January 2013 by Blue Rider Press of Penguin Publisher’s group.



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In 1854, John Snow persuaded one of London's local councils to disable the Broad Street pump. By proving that London's cholera epidemic was being spread through the water supply and then cutting off that source, Mr. Snow became one of the founders of public health. He changed the way we study and think about health and its all-encompassing grasp on a population. Today, we seek to protect public health through research, environmental programs, policy development, and system regulation. This journal encompasses the continuing research of a group of individuals inspired by Mr. Snow and his work to improve the health of many.

By Ashley Cenicerros, designer NPHR logo



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