

From the Editor-in-Chief

Wash Your Hands!

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A FEW MONTHS AGO, I WAS ASKED TO DISCUSS THE HISTORY of hand washing for the *PBS NewsHour*.¹ While many may argue that it is unnecessary to remind the readers of a health policy and population health journal to wash their hands, the response generated by this prescription for cleanliness has convinced me to repeat it in the introduction to the Fall 2015 issue of *The Milbank Quarterly*.

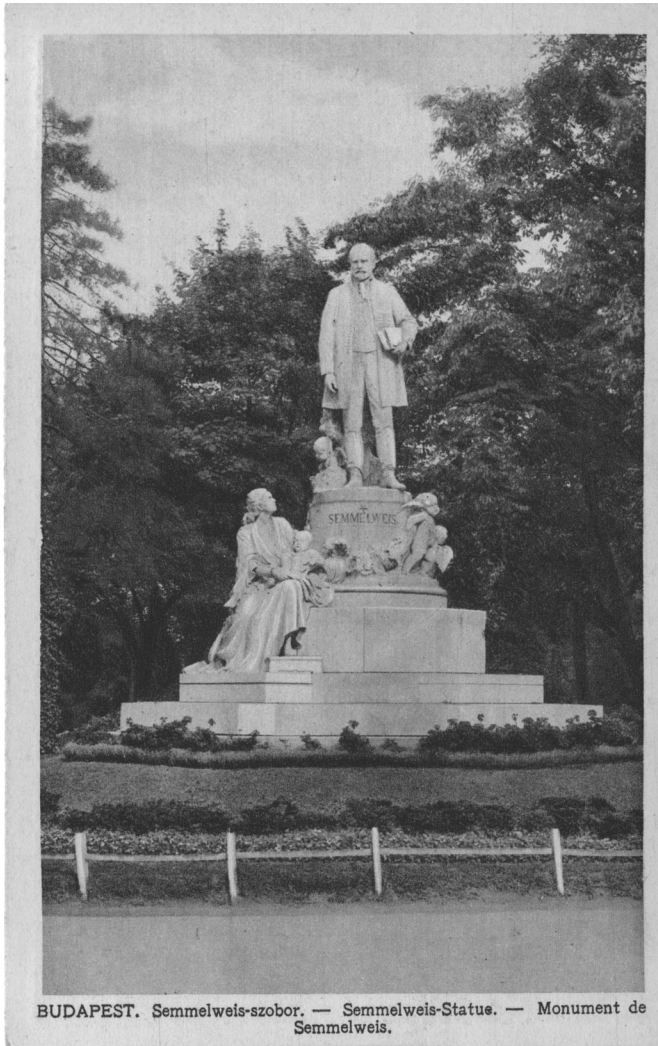
At this late date, it seems almost superfluous to assert the efficacy of proper hand hygiene against gastrointestinal and, to a lesser extent, respiratory infections.² Moreover, it is no exaggeration to proclaim that hand hygiene ranks as one of the top 10 discoveries in the history of preventive medicine, public health, and patient care.

Nevertheless, approximately 5% to 10% of all hospitalized patients in the developed world acquire infections from health care workers who forgot to wash their hands. Not coincidentally, compliance among health workers, in regard to regular and frequent hand washing, is typically below 40%.³

These numbers are far worse in hospitals and among communities in developing countries. The United Nations estimates that nearly 800 million people do not have access to clean water and 2.6 billion do not have access to adequate sanitation. Even in wealthy nations, such as the United States, millions of cases of community-acquired infectious disease thrive and spread because so many of us forget to wash our hands. It is a lapse that costs billions of dollars and several millions of lives each year. For example, the US Centers for Disease Control and Prevention recently estimated that washing their hands with soap could protect about 1 out of every 3 young children who get sick with diarrhea and almost 1 out of 6 young children who develop respiratory infections like pneumonia.

Hand hygiene is a relatively new wrinkle in the long history of disease and health. It did not become a *bona fide* medical prescription until 1847 when Ignaz Semmelweis began exhorting his fellow physicians at the

famed Vienna General Hospital (Allgemeines Krankenhaus) to wash up before examining women about to deliver babies. His plea was far more than aesthetic; it was a matter of life and death and helped prevent a deadly infection known as “childbed” or puerperal (from the Latin words for child and parent) fever.



Postcard of a statue of Semmelweis in Budapest, Hungary. From the collection of the University of Michigan Center for the History of Medicine.

In the mid-19th century, about 5 women in 1,000 died in deliveries performed by midwives or at home. Yet when doctors working in the best maternity hospitals in Europe and America performed deliveries, the death rate for women was often 10 to 20 times as great. The cause was, invariably, childbed fever. And a miserable end it was: raging fevers, putrid pus emanating from the birth canal, painful abscesses in the abdomen and chest, and an irreversible descent into an absolute hell of sepsis and death—all within 24 hours of the baby's birth.

The reason seems readily apparent today if not back then. Medical students and their professors at the elite teaching hospitals of this era typically began their day performing barehanded autopsies on the women who had died the day before of childbed fever. They then proceeded to the wards to examine the laboring women about to deliver their babies.

Every day Dr. Semmelweis heard the heart-rending pleas of women assigned to his care begging to be discharged because they believed these doctors to be the harbingers of death. Fortunately, he was smart enough to listen to his patients.

The obstetrician made the vital connection that puerperal fever was caused by the doctors transferring some type of "morbid poison" from the dissected corpses in the autopsy suite to the women laboring in the delivery room. That morbid poison is now known as the bacteria called group A hemolytic *streptococcus*.

Historians are quick to point out that Semmelweis was not the first physician to make this clinical connection, one that many expectant mothers of the era called "the doctors' plague." For example, the obstetrician Alexander Gordon of Aberdeen, Scotland, suggested in his 1795 *Treatise on the Epidemic of Puerperal Fever* that midwives and doctors who had recently treated women for puerperal fever spread the malady to other women. More famously, in 1843, Oliver Wendell Holmes, the Harvard anatomist and self-proclaimed "autocrat of the breakfast table," published *The Contagiousness of Puerperal Fever*,⁴ in which he discerned that the disease was spread by physicians and recommended that as one of their "paramount obligations to society," actively practicing obstetricians abstain from performing autopsies on women who had died of puerperal fever.

That said, it was Dr. Semmelweis who ordered his medical students and junior physicians to wash their hands in a chlorinated lime solution until the smell of the putrid bodies they had dissected in the autopsy suite was no longer detectable. Soon after this protocol was instituted

in 1847, the mortality rates of the doctor-dominated obstetrics service plummeted. (The service run by midwives, who had no autopsy duties, had far better outcomes with their deliveries.)

Unfortunately, Semmelweis's ideas were not accepted by all of his colleagues. Indeed, many were outraged at the suggestion that they were the cause of their patients' miserable deaths. Consequently, Semmelweis met with enormous resistance and criticism.

A remarkably difficult man, Semmelweis refused to publish his "self-evident" findings until 13 years after making them, despite being repeatedly urged to do so by those who supported him. To make matters worse, he hurled outrageously rude insults at some of the hospital's most powerful doctors who deigned to question his ideas. Such outbursts, no matter how well deserved, never go unnoticed, let alone unpunished, in the unforgiving halls of academic medicine.

Becoming more shrill and angry at each detractor's critique, Semmelweis lost his clinical appointment at the Vienna General Hospital and in 1850 abruptly left for his native Budapest without even telling his closest colleagues. In 1861, he finally published his work, *Die Aetiologie, der Begriff und die Prophylaxis des Kindbettfiebers* (*The Etiology, the Concept, and the Prophylaxis of Childbed Fever*), in which he explained his theories on childbed fever, the ways to avoid spreading it by means of vigorous hand washing, and an attack on every one of his critics with a vitriol that still leaps off the page.⁵

Dr. Semmelweis's behavior only grew more erratic, and he was finally committed to an insane asylum on July 30, 1865. He died there, 2 weeks later, on August 13, 1865, at the age of 47. Historians still argue over what caused Semmelweis's mental health breakdown and subsequent death. Some point to an operation that Semmelweis performed in which he infected himself with syphilis. Others believe he developed blood poisoning and sepsis while imprisoned in the asylum for what may have been an unbridled case of bipolar disease. More recently, some have claimed that the obstetrician had an early variant of Alzheimer's disease and was beaten to death in the asylum by his keepers.

Semmelweis's professional timing could not have been worse. He made his landmark discovery between 1846 and 1861, long before the medical profession was ready to accept it.

Although Louis Pasteur began exploring the role of bacteria and fermentation in spoiling wine during the late 1850s, he did his most

important work initiating the germ theory of disease between 1860 and 1865. A few years later, in 1867, the Scottish surgeon Joseph Lister, who apparently had never heard of Semmelweis, elaborated the theory and practice of antiseptic surgery, which included washing the hands with carbolic acid to prevent infection. And in 1876, the German physician Robert Koch successfully linked a germ, *Bacillus anthracis*, to a specific infectious disease, anthrax.

Since the early 1900s, however, physicians and historians have heaped high praise on Semmelweis's work and have expressed sympathy for his emotional troubles and premature death. Today, in every school of medicine and public health, his name is uttered with great reverence whenever the critical topic of hand washing is taught. Sadly, in real time, he was derided, at best, as eccentric and, at worst, as an angry, unstable man who ought to be drummed out of the profession.

The truth of the matter is that his detractors were wrong and he was right. Dr. Semmelweis paid a heavy price for devoting his short, troubled life to pushing the boundaries of knowledge in the noble quest to save lives.

One hundred and fifty years after his death, we can both honor his memory and improve population health on a grand scale. But too often, we perilously forget to heed his advice, as individuals while delivering inpatient hospital and outpatient health care, and, more broadly, on the population level.

Incorporating the habit of frequently washing our hands in our daily lives is a simple but powerful health policy we can all wrap our hands around, provided there is plenty of water and a bar of soap between them.

We begin this issue with our Op-Ed section, which features analyses of the recent parliamentary elections in the United Kingdom and what the Conservative Party's solid victory means for England's celebrated National Health Service; the intertwined, if not tortured, relationship of public health and First Amendment rights; the steady decline in Americans' health insurance coverage and the risk of creating a "nation of underinsured people"; the potential erosion of employer-sponsored health insurance in the wake of the Affordable Care Act of 2010; how environmental justice is currently being adjudicated by the US court system; the World Health Organization's plans to reform global health security in the aftermath of the 2014 Ebola fever epidemic; and the

enduring stigma of mental health disorders and the barriers it creates in delivering appropriate treatment to those who suffer from them.

In light of the recent landmark US Supreme Court decision on marriage equality, we are especially proud to present this issue's lead article by Sari Reisner, Jaclyn White Hughto, Emilia Dunham, Katherine Heflin, Jesse Blue Glass Begenyi, Julia Coffey-Esquivel, and Sean Cahill. Their study is an important survey of legal protections and the related discrimination, public health, and inequity issues in public accommodations settings for transgender and gender-nonconforming people in Massachusetts. Since 2012, Massachusetts law has provided legal protections against discrimination on the basis of gender identity in employment, housing, credit, public education, and hate crimes. The law does not, however, protect against discrimination based on gender identity in public accommodations settings such as transportation, retail stores, restaurants, health care facilities, and bathrooms. A 2013 survey of Massachusetts's transgender and other gender minority adults found that 65% had experienced discrimination in public accommodations in the 12 months since the law was passed. The 5 most prevalent discrimination settings were transportation venues (36%), retail settings (28%), restaurants (26%), public gathering places (25%), and health care facilities (24%). Discrimination in public accommodations in the past 12 months was associated with a nearly 2- to 4-fold greater risk of adverse emotional and physical symptoms and the postponement of needed care when sick or injured and of preventive or routine health care. To begin to address this growing problem, the authors recommend that nondiscrimination laws, inclusive of gender identity, protect against discrimination in all public accommodations settings to support transgender people's health and their ability to access health care.

Jason Schnittker, Christopher Uggen, Sarah Shannon, and Suzy Maves McElrath offer a study of the institutional effects of incarceration and the spillovers from criminal justice into health care. Along with the steady increase in incarceration in the United States, there has also been a concomitant negative effect on the quality and functioning of the health care system. Those American states incarcerating the largest number of people have experienced significant declines in overall access to and quality of care, which is rooted in high levels of uninsurance and the relatively poor health of former inmates, making the provision of adequate health care for these inmates not only a humane imperative

but also an important means of preventing adverse spillovers into the health care system.

Bradley Stein, Rosalie Liccardo Pacula, Adam Gordon, Rachel Burns, Douglas Leslie, Mark Sorbero, Sebastian Bauhoff, Todd Mandell, and Andrew Dick present a study on buprenorphine, a pharmaceutical agent used to treat the major public health problem of opioid and opiate abuse. In 2002, the FDA approved buprenorphine as a treatment for opioid use disorder when prescribed by waived physicians who were limited to treating 30 patients at a time. In 2006, federal legislation raised this number to 100 patients, and the US Congress is now considering increasing the limits even further as well as extending prescribing privileges to nonphysicians. The authors examined the impact of the 2006 legislation—as well as the association between urban and rural waived physicians, opioid treatment programs, and substance abuse treatment facilities—on buprenorphine distributed per capita over the past decade. The authors found that the amount of buprenorphine dispensed has been rising at a greater rate than the number of buprenorphine providers. The authors concluded that the greater amounts of buprenorphine dispensed are consistent with the potentially greater use of opioid agonists for treating opioid use disorder, although they also make their misuse more likely. The changes after the 2006 legislation suggest that policies focused on increasing the number of patients that a single waived physician could safely and effectively treat may be more effective in increasing buprenorphine use than would alternatives such as opening new substance abuse treatment facilities or raising the overall number of waived physicians.

Maria Portela and Benjamin Sommers present a comparative assessment of health insurance and access to health care in Puerto Rico and the United States. Although not covered in the media as widely as it should be, Puerto Rico is the United States' largest territory and home to nearly 4 million American citizens. Yet this territory has remained largely on the outskirts of US health policy, including the Affordable Care Act (ACA). By analyzing national survey data from 2011 to 2012, Portela and Sommers found that despite its far poorer population, Puerto Rico outperforms the mainland United States on several measures of health care coverage and access to care. That said, while the ACA has significantly increased federal resources in Puerto Rico, ongoing congressional restrictions on Medicaid funding and premium tax credits in Puerto Rico pose substantial health policy challenges in the territory.

Finally, Keren Ladin, Rui Wang, Aaron Fleishman, Matthew Boger, and James Rodrigue ask whether the philosophical concept of “social capital” can explain community-level differences in organ donor designation. The growing shortage of life-saving organs has reached unprecedented levels, with more than 120,000 Americans waiting for them. Despite national attempts to increase organ donation and federal laws mandating the equitable allocation of organs, geographic disparities remain. Consequently, these scholars set out to develop a better understanding of how the contextual determinants of organ donor designation, including social capital, may enhance organ donation by raising the probability of collective action and fostering norms of reciprocity and cooperation while increasing the costs of noncompliance. They found that community-level factors, including social capital, predict more than half the variation in donor designation and concluded that future interventions to increase organ donations should tailor strategies to specific communities as the unit of intervention.

With these introductions dispensed, let's all roll up our sleeves, wash our hands, and start reading the Fall 2015 issue.

References

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