EDUCATION AS A PATH TO HEALTH EQUITY: LESSONS FOR MEDICAL EDUCATION IN THE DEVELOPMENT OF A HIGH SCHOOL HEALTH CAREERS CURRICULUM

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ABSTRACT

Compared to other developed countries, the United States has healthcare spending that far outpaces other nations, but achieves below-average life expectancy. In urban cities, this disparity is most striking among predominantly black and Latino communities. There is increasing recognition that the reason for this is improper allocation of resources; we have a system that funds clinical services which contribute to only 20% of health outcomes, while providing inadequate support for social and environmental factors which account for 80% of the impact. When one considers the history of the United States, it becomes clear that such a system is not only inefficient, but also fundamentally unjust. African American patients have been used (often without consent) to obtain much of our current medical knowledge, but suffer most from healthcare disparities. Medical school is a fascinating lens from which to view this healthcare system, as students stand at the threshold between layperson and physician. Medical students, who predominantly come from backgrounds of privilege, benefit from access to institutions of medical knowledge. They often practice their fledgling skills on urban underserved patients who are disproportionately cared for in academic medical centers. Medical students also participate in service projects in the surrounding community, with common projects involving schools, churches, and free clinics. As a medical student, I spent nearly 100 hours with a class of ninth grade students at a Philadelphia public high school as I developed and implemented a health careers elective program. Through this experience, I gained a firsthand appreciation for the incredible barriers that prevent urban underserved students from equal representation in our medical schools and health care workforce.

Here, I reflect on my experiences over the course of medical school, review relevant literature in the fields of ethics, medicine, education, and history, and present recommendations to move us closer to a just healthcare system by increasing investment in underserved communities and instilling in medical students a moral imperative to reduce health disparities, as well as the tools to do so effectively.

To my family and friends for their support,

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The people of North Philadelphia for teaching me every day,

And my students for allowing me to learn with them.

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CHAPTER 1: INTRODUCTION: CONNECTING EDUCATION AND HEALTH

In the winter of 2014, I was enlisted to create a health careers elective for ninth grade students at a new North Philadelphia public high school. Being a new transplant to the city for medical school, I had little knowledge of the system I would be working in but was excited to contribute to the lives of young people. I had no experience as a teacher except as a college teaching assistant, along with some volunteer tutoring work. Having been educated in a well-resourced suburban public school, my only knowledge of urban school systems was through stories I had heard of struggling students and under-resourced schools. I was unsure of how accurate this depiction was, and unaware of the historical underpinnings had led to this condition. As I started my work at the school, however, I realized how critical an understanding of institutional inequality is to working effectively with disadvantaged urban students, and to avoid teacher frustration and burnout. I also noticed clear similarities between challenges in urban schools and challenges in academic medical centers and other institutions that disproportionately serve the poor. To help set the stage for the health careers curriculum that is the center of this thesis, I begin by providing an overview of inequity and disparities in both health and education, data on how the U.S. funds education and health and the associated outcomes, and explain how the two fields are closely linked and can inform one another.

Health Equities, Health Disparities, and the Social Determinants of Health

As defined by the World Health Organization (WHO), health equity is "the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically," while

health inequities "involve more than inequality with respect to health determinants, access to the resources needed to improve and maintain health or health outcomes. They also entail a failure to avoid or overcome inequalities that infringe on fairness and human rights norms" [1]. The WHO recognizes health as a fundamental human right and emphasizes that efforts to address health inequities must take a broad approach to empower disenfranchised groups and mitigate the economic, political, and social power imbalances that lead to inequity [1]. The social determinants of health are defined by the WHO as those "conditions in which people are born, grow, live, work and age, and which are shaped by the distribution of money, power and resources at global, national and local levels," which are "mostly responsible for health inequities" [2].

Healthy People 2020, the most recent 10-year plan for improving the health of all Americans to achieve health equity and eliminate health disparities by the year 2020, defines health disparities as:

> A particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion. [3]

The Institute of Medicine's 2003 report *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* put the spotlight specifically on the extensive evidence of racial and ethnic health disparities in the United States, asserting that "racial and ethnic minorities tend to receive a lower quality of healthcare than non-minorities, even when access-related factors, such as patients' insurance status and income, are

controlled" [4]. The existence of such inequities is unjust because they are the result of unequal distribution of resources, rather than inevitable biological differences [5].

Historically, efforts to eliminate disparities and achieve health equity have focused on funding for research on specific diseases and on providing healthcare services. In recent years, however, there has been a growing acknowledgement that direct healthcare is not the most impactful way to improve health outcomes. Projects, most notably the County Health Ranking project funded by the Robert Wood Johnson Foundation, have found that direct medical care accounts for only 10-20% of health outcomes [6, 7, 8], while other social determinants of health such as health behaviors, socioeconomic factors, and physical environment contribute the remaining 80-90% (Figure 1) [9]. While higher per capita healthcare spending is generally correlated with higher life expectancy, according to the Organisation for Economic Co-operation and Development (OECD), which collects data from 35 member countries and develops policy recommendations, the United States stands as an outlier, with life expectancy now below the OECD average of 80 years due to comparatively slower gains, despite healthcare spending that continues to far outpace that in other developed countries [10]. In 2013, health spending was 16.4% of GDP (compared to an OECD average of 8.9%) and per capita spending was $8,713, two-and-a-half-times greater than the OECD average [11].

There are many reasons for this disconnect between spending and outcomes. Poor health behaviors are a contributing factor, as the U.S. population has one of the highest rates of obesity among OECD nations (35% of the adult population), as well as increasingly higher rates of alcohol consumption, though it has greatly reduced its

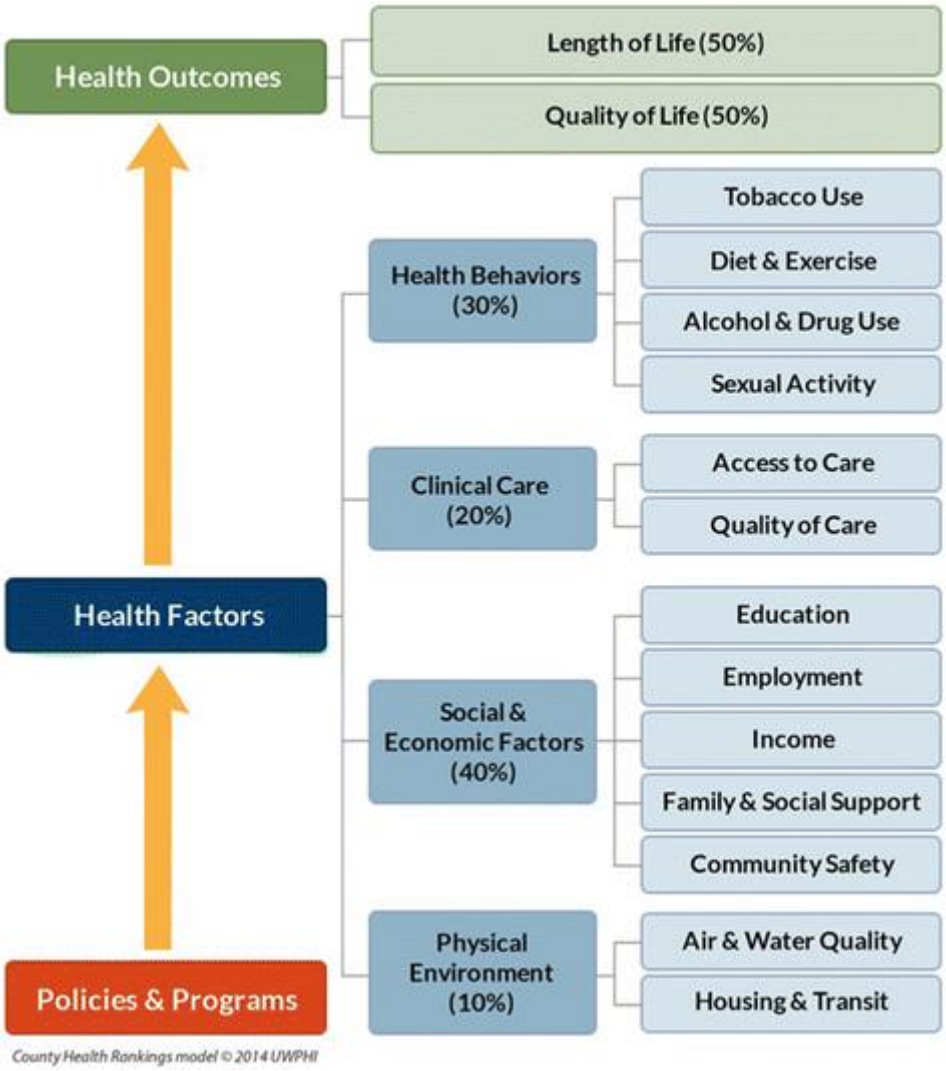

Figure 1: Impact of Health Factors on Health Outcomes

Source: P. L. Remington, B. B. Catlin and K. P. Gennuso, "The County Health Rankings: rationale and methods," Population Health Metrics, vol. 13, no. 1, p. 1, 2015. Copyright Remington et al.; licensee BioMed Central. 2015 under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited.

smoking rate [11]. Obesity is a risk factor for expensive adverse health outcomes including heart disease, diabetes, joint problems, cancer, and depression. The costs of obesity are estimated at $148 billion annually for direct medical spending and between $3.38 and $6.38 billion in lost productivity [12]. In addition, there is significant waste in the system, with an Institute of Medicine panel in 2010 estimating that $765 billion in annual healthcare spending is wasted on unnecessary services, inefficiently delivered services, excessively high prices, excess administrative costs, treatment of preventable conditions, and medical fraud [13]. Health disparities also have a pervasive effect on the overall reported outcomes – as the most recent CDC Health Disparities and Inequalities Report of 2013 stated, "our overall health status does not achieve our potential… life expectancy and other key health outcomes vary greatly by race, sex, socioeconomic status, and geographic location" [14]. According to a 2009 study by the Joint Center for Political and Economic Studies, eliminating health disparities for minorities would have reduced direct healthcare spending by $229.4 billion and reduced indirect costs by about $1 trillion over the period of 2003-2006 [14].

Underlying these issues is an extremely fragmented system with poor care coordination, pockets of the population unable to consistently access care, and increasingly high-cost provider subspecialization with a disproportionate lack of primary care and public health resources. While U.S. hospitals do an excellent job of preventing death from acute conditions like heart attack and stroke, patients are frequently admitted and readmitted for chronic diseases like asthma, COPD, and diabetes, which can be managed through primary care, public health, and lifestyle interventions [11]. In fact, while other OECD countries spend an average of two times more on social services than

health services, the U.S. spends more on health services than social services [15]. Considering life expectancy at birth, infant mortality, low birth weight, maternal mortality, and potential years of life lost, after being corrected for overall GDP per capita, higher health service spending was only significantly associated with improvement in two factors (life expectancy and maternal mortality) while increasing social service spending or increasing the ratio of social service to health service spending was significantly associated with improvement in three factors (life expectancy, infant mortality, and potential life years lost) [15]. The authors of this analysis concluded that "reforms that target only health expenditures may miss important opportunities" and "greater attention and reform in broader domains of social policy, such as employment, housing and education, may be necessary to accomplish the improvements of health envisioned by advocates of healthcare reform" [15]. Variation in health outcomes based on social service spending between states in the United States similarly shows that states with a higher ratio of social (defined as social services and public health) to health (defined as Medicare and Medicaid) spending demonstrated significantly better outcomes for adult obesity; asthma; mental health; days with activity limitations; and mortality rates for lung cancer, myocardial infarction, and diabetes, validating the impact that social services can have on health within the current U.S. healthcare system [16].

The most recent large-scale attempt to reform the U.S. healthcare system, the Patient Protection and Affordable Care Act of 2010 (ACA), is known primarily for its efforts to increase access to the health system by subsidizing the purchase of private insurance and expanding Medicaid eligibility, though it also includes provisions meant to reform payment mechanisms, improve prevention, increase innovation, and advance

population health. These include the formation of Accountable Care Organizations (ACOs) to encourage coordinated care to achieve shared savings, mandated zero co-pay insurance coverage for preventive services, the establishment of the Patient-Centered Outcomes Research Institute (PCORI) for comparative effectiveness research, funding for the Center for Medicare and Medicaid Services (CMS) Innovation Center (including many initiatives on primary care transformation) [17], and funding for community health centers [18]. These programs have galvanized a great deal of work in both public and private sectors, and while results have been mixed, there have been some promising reductions in hospital readmissions and hospital-acquired conditions, as well as billions of dollars awarded for community health efforts affecting over 100 million patients [19].

The ACA attempts to achieve the Triple Aim (as defined by the Institute for Healthcare Improvement in 2007) of improved patient experience of care and improved population health at lower per capita cost of health care through a multi-pronged approach [20]. However, no matter how successful the ACA's interventions are, it is still primarily impacting only a narrow 10-20% of health outcomes by focusing on health as healthcare and access to healthcare, rather than targeting the larger social determinants of health. The American Public Health Association supports a broader "Health in All Policies" approach, stating that diverse stakeholders in multiple sectors, including education, economic and community development, transportation, and agriculture, need to work together to improve health and health equity sustainably [7]. As my work has focused primarily on education, I now turn to the specific ties between education and health.

The Relationship Between Education and Health

Education is a key determinant of health that impacts individuals, communities, and the larger societal context where people live. Educational attainment (the number of years of schooling completed) is commonly used as a proxy for level of education because it is the most available measure, though the impact of quality of education (measured by proficiency tests) and the importance of other, unmeasured aspects of student development (knowledge, critical thinking, problem solving) make it an imperfect criterion [21]. When compared with life expectancy (the most universal metric for health outcomes), there is a well-documented gap in health outcomes with educational attainment that is exacerbated for racial minorities, and available data from the U.S. National Health Interview Surveys (NHIS) [22] and National Vital Statistics System and Census Bureau [23] demonstrate that the influence of education on health in the United States has become even more prominent in recent decades. Strikingly, despite advances in health that have benefited the population as a whole, U.S. adult men and women with less than twelve years of education had life expectancies on par with adults in the 1950s and 1960s, and these gaps were even greater for black Americans [23]. Among white Americans without a high school diploma, life expectancy has decreased since the 1990s, and at age 25, individuals without a high school diploma can expect to die nine years sooner than college graduates [21]. Mortality rates for adults with a high school education or less are over two times higher than for adults with some college education [24], and persist even when controlled for income [25]. This relationship between educational attainment and health is nonlinear, with mortality decreasing greatly with high school graduation, and then declining even more sharply with additional years of schooling [21].

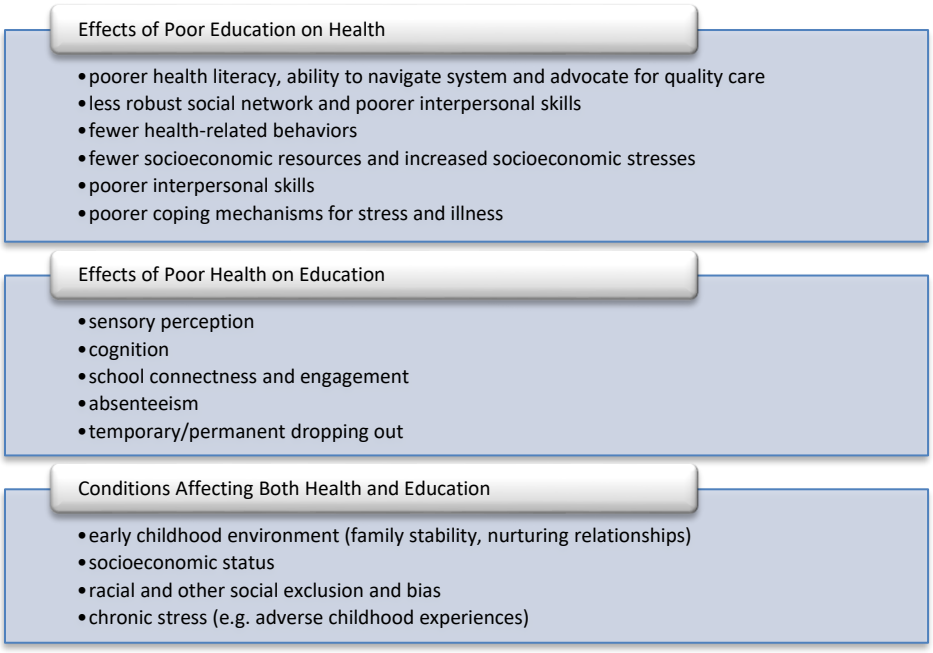

Figure 2: Interrelation of Education and Health
Adapted from discussion in *Population Health: Behavioral and Social Science Insights*, R. M. Kaplan, M. L. Spittel and D. H. David, Eds., Rockville, MD: Agency for Healthcare Research and Quality and Office of Behavioral and Social Sciences Research, National Institutes of Health, 2015. Summarizes the effects of education on health, effects of health on education, and other variables which impact both health and education.

Education and health are closely interrelated in their effects on individuals and their surroundings (Figure 2). It is difficult to isolate educational factors from the larger milieu the patient inhabits, but easy to see the many positive and negative effects education (or the lack thereof) can have on patients. At the individual level, education helps develop both cognitive skills and personality traits that aid in maintenance of healthy behaviors, coping mechanisms for stresses such as illness, and for the ability to navigate the healthcare system [21]. Chronic diseases like hypertension and diabetes account for the majority of health spending in the U.S., and good health outcomes rely on a patient being able to obtain access to a healthcare facility, communicate with the

healthcare provider to obtain the appropriate diagnosis, and understand and carry out long-term management. Education may help or hinder at each step:

- Education increases health literacy, which helps patients understand health-related messages, follow provider instructions, and make informed choices.
- Education gives individual a greater sense of personal control over their lives, such as the ability to manage an illness. Without personal control, patients can react physiologically through stress responses that suppress the immune system [21].
- Education helps to develop communication skills, and patients with higher education contribute more actively to their own care. When patients are perceived to have low education, providers are more likely to provide prescriptive care rather than encouraging patient participation [21].
- Education is associated with better health-related behaviors, with increasing prevalence of exercise and non-smoking behavior with increased level of education [21].
- Education affords access to social networks that might help one obtain employment or support for stressors, which is important for mental health.
- Education is a prerequisite for many jobs, so inadequate education can lead to socioeconomic stresses that make it difficult to set health as a priority, while also compromising access to health insurance, transportation, housing, and food.

On the community level, people with poor education tend to live in neighborhoods that have higher levels of health risks (crime, unemployment, poverty,

environmental toxins) and fewer healthy resources (healthy food, green space, health care and exercise facilities) [21].

Health also clearly impacts education, though the research on these effects is less extensive. Students with chronic health conditions may miss more school, be more likely to fail to graduate, perform more poorly in school, be less engaged in school, and face sensory and cognitive deficits due to absences for health reasons and effects of their disease [21]. Likewise, there is evidence of many factors that impact both education and health, including the quality of one's early childhood environment (including toxic exposures like lead), socioeconomic status, exposure to social exclusion and biases (such as racial biases), as well as number of adverse childhood experiences [21].

Looking again at the factors contributing to health outcomes in Figure 1, one can see how education affects other social and economic factors, as well as other dimensions (the ability to access care, quality of care, health behaviors, and physical environment), either directly or indirectly. An interesting analysis used National Center for Health Statistics Data to compare the number of lives saved by medical advancements over a seven-year period to the lives that would have been saved if the mortality rates of adults with lesser education were changed to those of college graduates; that is, if educational disparities in health for that time period were eliminated. They found that while medical advancements saved 178,193 lives, correcting educational level saved eight times more: 1,369,335 lives [24]. While the analysis was imperfect, using solely a measure of morbidity which may underestimate the benefits of medical advancements, and it is unclear how we could wipe away educational disparities, the magnitude of the difference

suggests that investing funds and effort into educational reform will have a larger scale benefit than incremental improvements in medical care [24].

Educational Outcomes in the U.S.

A look at OECD data on education reveals that, just as in healthcare, the U.S spends more educational dollars per person for worse outcomes, and those outcomes are inequitable. Annual spending per student is in the top five for all levels of education (pre-primary, primary, secondary), and the U.S. spends the most of all OECD nations on tertiary (beyond high school) education, at about $61,000 in direct costs, when the OECD average is $11,000 [26]. While U.S. public spending on education as a percentage of GDP is on par with the OECD average, the difference is due to significant private spending, particularly at the early childhood and college levels, where the share of private spending on education is double the OECD average [26]. In terms of investment in early childhood education, which is associated with lower social inequality and better student outcomes, the U.S. is ranked fifth among OECD countries at $10,010 per student, but only 38% of U.S. 3-year-olds are enrolled in early childhood education programs, compared to a 70% OECD average [26].

Despite this high level of investment, the U.S. performs below average in math and science, and at the average level in reading, based on the most recent 2015 OECD Programme for International Student Assessment (PISA), an assessment test given to 15-year-olds in all OECD nations [27]. One-in-five students did not reach the baseline level of science proficiency, and only 9% were top performers [27]. 11% of the variation in performance could be explained by differences in socioeconomic status, with socioeconomically disadvantaged students being 2.5 times more likely to be low

performers than advantaged students [27]. This is an improvement in equity from 2006, when 17% of the variation in performance was explained by socioeconomic status, a shift credited to improvements in the scores of disadvantaged students [27]. There were also gaps in performance between advantaged and disadvantaged schools, likely associated with a deficiency in teachers observed at disadvantaged schools, though there was more variation between students at the same schools than those as different schools [27].

The high school graduation rate for U.S. students in 2015 was 79%, below the OECD average of 84% [26]. There is poor upward mobility in education, with only 30% of 25-64-year-olds obtaining a higher level of education than their parents, putting the U.S. fourth from the bottom and far from the 50+% of the highest ranked nations [26]. Similarly, only 13% of U.S. adults whose parents do not have an upper secondary education go on to obtain a tertiary degree, below the OECD average of 20% [26]. At the same time, the earnings advantage for college graduates is in the top 10 for OECD nations [26]. This particularly disadvantages groups that historically have lower levels of educational attainment, such as black and Latino Americans, and predisposes them to financial hardship.

It is worth noting that despite these sober statistics, there are significant numbers of black and Latino Americans, as well as socioeconomically disadvantaged students, who achieve at the highest levels despite challenges. Indeed, a 2011 analysis showed that the U.S. produces a greater percentage of high achieving black and Latino Americans than the total percentage of high achievers from several other OECD countries [28]. However, there is widespread agreement that educational inequity is a problem in the U.S., leading to a series of educational reform efforts occurring over the last 50 years.

A Brief History of Education Reform

The primary federal legislation that funds public education is the Elementary and Secondary Education Act (ESEA), first passed in 1965 by President Lyndon B. Johnson as part of his "war on poverty." It included Title I, a provision that provided funding to schools with a high percentage of low-income students, with the aim of reducing disparities between low-poverty and high-poverty schools [29]. The Act has been reauthorized by Congress every five years since, though with concern over poor student performance based on assessments such as the PISA, recent authorizations have come with major amendments and significant public discourse on how to improve the U.S. public education system [30].

In 2001, under President George W. Bush, Congress reauthorized ESEA as the No Child Left Behind Act (NCLB). The NCLB tied federal funding to the administration of annual tests in grades 3 through 8 and once in high school to determine proficiency, and required public reporting of test data for schools by demographic subgroups (race, sex, disability, income) [31]. Schools faced funding cuts and closure if they did not make Adequate Yearly Progress (AYP) towards 100% proficiency in students in all subgroups by 2014 [32]. While NCLB was passed with bipartisan support, there was soon pushback and concern that the threat of sanctions forced teachers to focus only on test material rather than providing broader learning experiences ("teaching to the test"), debate over the reliability and validity of test scores and AYP numbers, and frustration that schools were being punished for results they did not have the resources to attain [33]. Complicating matters, proficiency levels and standards were set at the state level, leading some states to inflate their AYP numbers by lowering their standards, called by critics a

"race to the bottom" [32]. Overall, while teachers and the public agreed with the accountability that NCLB sought to achieve, they disagreed with the implementation of the law and the use of high-stakes testing [33]. The reporting of demographic subgroup data, revealing disparities previously hidden by general school data, was one of few elements of the law broadly considered a success [31].

In 2009, under President Barack Obama, Education Secretary Arne Duncan designed Race to the Top, a $4.35 billion initiative providing grants to schools as part of economic recovery efforts, which required that all teachers be evaluated based on student test performance [34]. This incentivized implementation of Common Core education standards across most states in the U.S. and led to increased testing to evaluate areas not covered by Common Core [34, 35]. The NCLB was replaced in 2015 by the bipartisan Every Student Succeeds Act (ESSA), which maintained the idea of accountability as measured by tests but shifted the responsibility for choosing how to work with underperforming schools to the discretion of states and reduced the power of the U.S. Department of Education [30].

Through all this change, and despite widespread agreement that education is key to a nation's success and that effective teachers are central to good education, pay for teachers compared to other college graduates in the U.S. remains well below the OECD average [26]. U.S. teachers earn 68% of the salary of an average tertiary-educated worker, compared to an OECD average of 88%, and primary teacher salaries have decreased while those in other countries have increased [26]. This practice of providing uncompetitive salaries represents an undervaluing of teachers, which leads many potential educators to pursue other fields. Schools in impoverished areas have additional

difficulty recruiting quality teachers due to lower salaries and increased teaching burden, and commonly have high teacher turnover and a large percentage of teachers in emergency or temporary positions [36]. Due to these conditions, students with the greatest need for a strong educational support system often do not receive it.

Current Issues in Education Reform

The need for education reform is a bipartisan issue, but there are many disagreements about how it should be carried out. With the troubling data on public schools, there has been an outpouring of philanthropic funding for charter schools, which generally have freedom to operate outside the bounds of many federal and state regulations [37]. There is a heated debate over the idea of school choice, which encompasses policies that give parents money to send students to a school of their choice, with the reasoning that this will lead to children going to the high performing schools and force low performing schools to reform or perish [38]. This approach has many public backers, but critics contend that in practice many parents are unable to send their children to schools outside their local area, and argue that school choice will further cripple cash-strapped public schools as they will have to continue to pay for infrastructure costs with fewer resources when students leave for the private system and take funding with them [38]. There is also concern over lack of accountability in charter schools, which vary in their effectiveness [38, 39].

The Trump administration and Secretary of Education Betsy DeVos are in favor of school choice through a school voucher system that would allow parents to spend public voucher money on both public and private schools [40]. However, Secretary DeVos has stated that the Department of Education will continue to move forward with

state-based accountability plans as set by the ESSA [30]. Though a bill to repeal the ESEA and instead fund education through block grants that would be distributed to states was introduced in the House of Representatives on January 23, 2017, it is currently in committee and has little support [41].

There are also frequent conflicts between lawmakers at the state and federal levels, school boards, and teachers over who is accountable for poor performance by students [38]. As in the case of NCLB, state lawmakers were frustrated at what they saw as micromanaging and coercion at the federal level, which has now led to shifting of power to the states in the ESSA [34]. School boards vary in their approach to governance, functioning on a spectrum of complete top-down management (all teaching dictated on the district level) to complete bottom-up management (full school autonomy with district intervention only when accountability measures are not met) and everywhere in between [38]. Teachers (represented by teachers' unions) often fight back against accountability systems, as they feel they do not have the necessary resources to meet the drastic changes frequently asked of them, and the reform carried out when standards are not met affects them most directly, forcing them to switch schools, undergo retraining, or lose their jobs [38]. When student scores do not improve, teachers blame lack of resources or unattainable goals while districts blame teachers [38].

Achievement Gap or Education Debt?

The narrative that surrounds urban education is a tragic one where students come in with towering deficits and good-hearted teachers do their best to help but still fail. The "achievement gap" refers to the disparity in academic performance between groups, and is commonly applied to describe the phenomenon of black and Latino students,

particularly in urban neighborhoods, who have lower standardized test scores and lower high school and college graduation rates [42]. An analysis of the 2009 PISA scores separated by race found that while the U.S. performs around or below the OECD average overall, its white and Asian students are among the highest performing in the world, while black and Latino students are among the lowest performing [28].

Farmer-Hinton, a scholar of urban education who has conducted extensive research in urban high schools, argues that the concept of an "achievement gap" reflects a problematic "deficit discourse" and a "blame the victim" approach to urban education that is perpetuated by academics [43]. She references Gloria Ladson-Billings' presidential address at the 2006 American Educational Research Association annual meeting, which suggested replacing "achievement gap" with "educational debt," explaining:

> [E]ducation debt more accurately captures the reality that current achievement disparities between students of color and low-income students compared to their White and more affluent counterpoints are the result of the generational divestment of equal schooling opportunities, equal school funding, social justice, and social responsibility from communities of color and low-income communities … continual refusal to acknowledge the debt in our practice, research, and policymaking activities will only lead to further misguided attempts to address the achievement disparities faced by communities of color and low-income communities. [43]

Many studies in the education literature document educational disparities but "blame … the achievement gap on students, students' home environments, and students' cultures," and over time Ladson-Billings states that this has led to mounting education debt that academics are responsible for paying back [43]. For example, due to funding formulas that depend on property taxes, students in poor neighborhoods have fewer

resources than more affluent neighborhoods, with an average of $966 fewer funding dollars per student in schools serving more poor students [44]. This difference in funding has led to disparate schooling experiences for students and deteriorating infrastructure, not a gap that can simply be filled in [43]. As the education debt will only grow if the cycle is not broken, Farmer-Hinton suggests service-learning for those working in the education space as an approach to better understand education debt and inform meaningful, community-oriented work that can begin to pay down the debt by changing the systems that create it [43].

Service-learning is defined as "a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities" [45]. Positive outcomes of service-learning can be greater cultural knowledge and reduced stereotypes in the learner, though this must be facilitated by education on racism, structural inequality, and culture that can help students understand how power and privilege impact their involvement in the community [43].

Addressing Inequities in Education and Health

Just as in education, it has now been clear for decades that there are inequities in health, brought to the forefront by the Institute of Medicine's Unequal Treatment report. These inequities in health are discussed in the frame of poor quality health care, and as someone actively involved in the medical quality conversation, it is striking how many similarities there are between the education and healthcare conversations around addressing inequities. Disparities in both fields have persisted despite much discussion and attempts at intervention. Both systems call themselves "the best in the world,"

producing the top ranked colleges and universities in the world as well as globally eminent thought leaders. Both also simultaneously provide black, Hispanic, and socioeconomically disadvantaged individuals with some of the worst outcomes in the world. Both systems are the most expensive in the world, but with average outcomes. Even the cycle of intervention has been similar:

1) There is the recognition of disparities, and there is the popular opinion (among the public and the healthcare/education community) that the reason for disparities and overall poor quality care/teaching is that healthcare workers/teachers are not held accountable for quality.
2) Metrics are designed to measure quality, and federal legislation is produced that ties metrics to bonuses and penalties, with greater emphasis on the penalties. The legislation is passed with rare bipartisan support and general celebration.
3) Soon after implementation, it is seen that many more hospitals/schools are getting penalized than they are being rewarded. Hospitals/schools argue that the metrics are problematic and need to be changed, that they emphasize parameters that are not associated with actual better care/teaching for the patient/student and do not give credit for relationship aspects of care/teaching that can be vital but are difficult to measure. They also argue that they are being held responsible for metrics that are outside of their control, due to lack of resources or socioeconomic factors. There is controversy that the metrics paradoxically disincentivize care for the disadvantaged because those patients/students will score lower on metrics, which leads to punishment for the provider/teacher.
4) While the metrics show some progress, the law is soon changed to address some

of the concerns, but the new law also comes under scrutiny. There are hospitals/schools opting out of the metrics and taking the penalty because they feel the system is unfair and providers/teachers leaving the field due to feelings of powerlessness and burnout. There is discussion over adjusting the metrics based on socioeconomic factors to prevent penalties for hospitals/schools that cater to disadvantaged populations, but there is pushback to this by advocates who say that lowering standards for those groups means abandoning the patients/students who need help the most and accepting their poorer outcomes as the best they can do.

5) In both industries, there is a cottage industry of non-profit and for-profit consultants that develops to help hospitals/schools achieve their desired metrics. Tools like checklists and curricula are developed to help hospitals/schools maximize their scores, but providers/teachers argue that such approaches take the art out of their profession.

Finally, in both cases, discussion around structural inequality is often sidelined, with the focus instead put on the numbers and punishing and publicly outing poor performers. Many push for transparency and choice, saying that it will foster competition that will force poor performers to improve, but providers/teachers argue that the metrics are too flawed, misleading, and misunderstood by the public. Both healthcare and education are also poor environments for true competition, since a patient in an emergency cannot be expected to compare hospital options and having a child switch schools is undesirable as it destabilizes their social world.

In both health and education, poor overall outcomes are driven by disparities due to structural inequality, but solutions are often focused on following imperfect metrics and punishing poor performance. Systems blame poor performance on the patients/students and their perceived deficits, rather than questioning their own practice. The education literature suggests that service-learning can help those who serve disadvantaged populations better understand their roles and the role of structural inequality, power, and privilege on communities. In recognition of the importance of producing providers committed to communities in need, service-learning is now one of the accreditation standards for the Liaison Committee on Medical Education (LCME), the accrediting body for medical schools [46]. However, medical student service activities still tend to focus more on accomplishment of a community service task rather than structured learning and reflection on the causes of inequities. Most medical students participate in service activities, such as volunteering in schools, churches, and free clinics, with the general idea of "giving back" to the community. It is assumed that such activities will both help the community and increase medical student empathy for underserved populations. However, these assumptions should be questioned.

Much attention has been paid to the harms that international mission trips can cause when they are undertaken by privileged volunteers unfamiliar with the culture they are entering, believing that they are "saving" the community simply by being there, when they might instead be fostering dependency, not community empowerment [47]. However, similar principles can apply to service projects within the U.S., when medical student volunteers are often brought into communities with very different racial and socioeconomic makeups for one-off engagements like community service days and health

fairs, without any long-term plans for addressing the needs that remain after the volunteers leave. Even if these interventions do not produce direct harm, they divert resources from other efforts which may be more effective, if less ostentatious. Additionally, there is evidence in the educational literature that increased exposure to the challenges of underserved individuals does not necessarily lead to increased empathy, and may actually discourage volunteers from wanting to work further with these populations by reinforcing negative stereotypes of poor and minority individuals as suffering from a cultural deficit [39, 43]. Thus, we need to interrogate the notion that service is always a net positive and consider its potential for harm. To further explore this idea, I will discuss my own experience working with a Philadelphia public school during medical school within the larger context of medical schools as vehicles for health equity and social justice.

CHAPTER 2: DEVELOPING A HEALTH CAREERS CURRICULUM AT AN URBAN PUBLIC HIGH SCHOOL

In 2014, a new Philadelphia public high school, Building 21 Ferguson, opened in the facilities of a former public elementary school. That elementary school was one of nearly 40 School District of Philadelphia schools that closed in 2013 due to budget cuts and poor enrollment [48]. This was only the most recent sign of the struggles the District has faced over many decades, unable to support the needs of its nearly 200,000 students [49]. Building 21 is an educational non-profit founded by classmates at the Harvard Doctorate of Education Leadership Program who, with funding from a number of investors, developed a competency-based curriculum model designed to be tailored to the diverse needs of urban underserved students [50]. The school started with a ninth-grade class, with the plan to expand each year until it had a full complement of ninth through twelfth grade students. Along with their core courses, the school's founders aimed to help support students' interests through elective "studios" in areas such as entrepreneurship and culinary arts. One of Building 21's cofounders approached my medical school for a partnership to conduct a health careers studio that was requested by one of the ninth-grade students, and I was chosen to design and implement a health careers curriculum with the support of a faculty mentor specializing in community engagement.

Choosing topics I believed would be interesting and relevant to young people and would make good use of resources from the medical school, I laid out a preliminary schedule for the health careers studio and set to work. The studio would take place over eleven weeks, four-days-a-week for two hours a day. I had under two months to plan, and

quickly sent out emails requesting materials and volunteers from the medical school faculty, staff, and students. Building 21 sent out emails to the students providing health careers as one of six studio options, and notified me that I would have a class of 20 students in January 2015. The months that followed were challenging for me in many ways, as I repeatedly had to course-correct as I learned more about my students and myself. As I dug into the education literature, I learned that my story was not at all unusual, and here I reflect on critical moments of my experience in the context of Philadelphia and my own experience as a medical student.

The School District of Philadelphia

The School District of Philadelphia oversees all public schools in Philadelphia and is the eighth-largest school district in the U.S. by enrollment [51]. It is governed by a five-member School Reform Committee, with three members appointed by the Governor of Pennsylvania and two by the Mayor of Philadelphia [51]. The District has suffered budget difficulties nearly annually for decades, since funding for schools depends largely on property taxes which are often insufficient in poorer neighborhoods [49]. Thus, the District relies on state funding to cover most of its budget, but the amount of funding received depends on state leadership and is highly unpredictable – this frequently leads to budget shortfalls [49].

In recent years, the District has posted distressingly poor performance. In 1994, it was reported that:

> 51 percent of the city's students had failed the state reading test compared to 13 percent of the students statewide, and 50 percent had failed the state math test compared to 14 percent statewide. Seventy percent of African Americans and 75 percent of Latinos failed one or both parts of the state test. And 49 percent of ninth-graders failed to earn promotion to the tenth

> grade. On any given day, one in four students was absent from class, and in an average year, nearly one in four students was suspended from school. [38]

The District has brought in high-powered superintendents with proven track records to overhaul the system, but these efforts have been largely unsuccessful. After a destabilizing period of white flight, declining economy, and shrinking tax base, the District hired David Hornbeck, who had been successful leading reforms for the underserved in other urban cities including New York City and Baltimore. He came with a plan of radical change, focused on accountability with rewards and punishment based on performance, not unlike that instituted by NCLB federally [38]. Teachers came to hate the metrics, and Hornbeck became frustrated that the state would not give him the budget he needed to implement his proposed improvements for the District [38]. He sued the state for inadequately funding the schools, and when he was unsuccessful, resigned, leading the state to take over control of the School Reform Commission [38].

Recent superintendents have moved towards greater school choice, with many poor performing schools becoming charter schools, managed privately (either for-profit or non-profit) and free from many regulations, but receiving public funding [38]. Performance of charter schools varies widely, but on average charter schools in Philadelphia are outperforming their district peers, though there is concern that they are contributing to District funding issues as they divert funding from district schools [38]. Additionally, some district schools have been given flexibility to try innovative new curricula with the aim of developing strategies that can help other district schools improve; Building 21 falls within this category. While superintendents come in with

strategies such as smaller class sizes, faculty development, and greater community involvement, reform efforts have often been stymied by constant budgetary difficulties and conflict between teachers and management. A 2012 report stated that "despite making academic gains in recent years, Philadelphia's schools remain among the worst performing in the nation" [38].

The 2013 budget shortfall of $304 million was the result of a variety of factors, including budget cuts at the state level, increasing costs of charter schools, and a history of covering budget gaps with millions in borrowed money [49]. To cut costs, the District has cut staff, leading to larger class sizes, loss of enrichment teachers for music and sports, and lack of supportive services such as counseling and nursing [49]. Since these cuts, children have died in district schools who have no nurse or only a part-time nurse [52]. Another school was left without a certified science teacher for a full school year [53]. The District intends to hire back staff when possible, but it is not clear when that will be, especially as the district has many competing needs, including buildings that require $5 billion of infrastructural repair and teachers who have not had a raise in five years [54, 55].

Designing a Health Careers Studio at Building 21 Ferguson

Building 21 is an educational non-profit founded on the idea of creating schools that meet students where they are, with the principles of power, mindfulness, interconnectedness, responsibility, courage, and transparency [50]. Building 21 Ferguson is their first attempt at this model. Like many Philadelphia district schools, Building 21 Ferguson selects its students through a lottery system with a preference for the surrounding neighborhood and accepts students regardless of prior grades, attendance, or

disciplinary record. 90% of the students are African American and/or Hispanic and 90% are economically disadvantaged [56]. The school seeks to help students identify their passions and supports them through community partnerships, internships, and other exposures that get students excited about coming to school and their futures.

Before signing on to create the health careers curriculum, I met at the school with one of the school's co-founders and the ninth-grade student who had requested the studio, Thomas (name changed for privacy). It was apparent that the old school building was underfinanced, with damaged walls and a bathroom with no soap or paper towels. However, Thomas was unaffected by it, speaking clearly and confidently about why he was so thrilled to have a program at school to help him learn more about health careers. He said he had thought about being a gastroenterologist or a nurse, and thought it would be cool to learn to draw blood. When I asked him how he knew about the field of gastroenterology, he said he had shadowed a gastroenterologist who was a friend of the family, and thought it was interesting. He had more exposure to and knowledge of the medical field than I had at his age and immediately disrupted my ideas of what my students' capabilities would be. I felt motivated to do the best I could for him and the other students despite my lack of teaching experience.

As the course would take place over eleven weeks, I wanted to focus on one thought-provoking question each week (Table 1). I chose these topics with input from Thomas and faculty at the Temple Center for Bioethics, Urban Health, and Policy (CBUHP), a university research center with a goal of achieving health equity that was partnering with Building 21. Thomas wanted practical information, like how to help

someone who is sick or dying, and the practical skills of doctoring. I recognized that if I wanted my teaching to

Week	Centering Question	Topics Covered	Activities
1	What Do You Want to Learn? How Do We Move?	Musculoskeletal System Musculoskeletal Injuries	Identifying Bones in Bone Boxes Drawing the musculoskeletal system
2	What Makes Your Body Work?	Biological Organization Organ Systems	Examine cells under the microscope Field Trip to Temple Simulation Center and Anatomy Lab
3	How Do You Think?	Brain Disorders Psychiatric Diseases	Mindfulness Activity Guest Speaker: Psychologist
4	How Do You Know You're Alive?	Heart and Lungs Homeostasis	Field Trip to Temple for Doctoring Skills
5	What Makes You Sick?	Bacteria Viruses and Vaccines	Handwashing Exercise Sexual Health Discussion
6	How Do You Treat Disease?	Types of Medications Nutrition and Exercise	Guest Speaker: Pharmacist
7	How Do We Know What We Know?	Intro to Research Research Ethics	Critique consent form and discuss informed consent
8	What's It Like To Do Research?	Forming a research question Designing a study	Guest Speaker: Researcher
9	How Do You Save a Life?	CPR Training First Aid	Red Cross CPR/First Aid Instructors
10	How Does Health Relate to Government?	Health Policy Social Determinants of Health Health Disparities	Write Letter to the Editor
11	Careers Week	Student Presentations on Health Careers or Health Topic	Visit from Health Care Providers Final Presentations

Table 1: Weekly Topics for the Health Careers Studio

be effective, I would have to keep students engaged with hands-on exercises and experiences, so I worked CPR training and field trips to the hospital and medical school into the schedule. The CBUHP (and I personally) wanted to teach aspects of bioethics, research, and health policy, so I included lessons on research ethics, developing a research question, health policy, social determinants of health, and health advocacy. I went over my draft schedule with a Building 21 co-founder and a social studies teacher who would be in the room with me during my classes. They taught me about the competency-based curriculum Building 21 was using where students can demonstrate competency in many ways, including activities in studios. With their guidance, we made the final week of the course a careers week where students would present to the student body on their own health-related projects. With the remaining time, I filled in some basic biology, anatomy, and physiology, microbiology (including sexual health), and doctoring skills, knowing that I could recruit other medical students to help teach these lessons and borrow anatomy models from the school. Also, based on Building 21's suggestions to make the course more career-oriented, I highlighted specific careers and brought in guest speakers to provide role models for students.

Prior to each class, I prepared a loose breakdown of how the two-hour sessions would be organized in 20-minute chunks of time to try to keep students' attention. Usually these chunks of time consisted of interactive lectures, videos, small-group activities, discussion items, and writing assignments or assessment activities. Sometimes I would prepare quizzes or writing assignments for students to turn in to see how they were learning, and so good performance on these activities could gain students credit for

achieving competencies. Throughout the eleven-weeks, students had time to work on their final Powerpoint presentations.

Implementing a Health Careers Curriculum

In implementing the curriculum, I did most of the teaching on my own, but recruited medical students from Temple so I would be able to split the class of 20 into small groups for more personalized attention during activities. Many medical students demonstrated interest despite their busy schedules. I coordinated volunteer involvement over email by sharing the topics to be discussed and then providing a basic orientation for any volunteers just prior to traveling to the school. I was able to ask my medical school faculty to borrow boxes of bones, brains, doctoring equipment, and microscope slides for the students to work with. I was in the classroom at all times except for a few rare absences due to other commitments when my supervisor at CBUHP, Norma Alicea-Alvarez, a Doctor of Nursing Practice, filled in for me, or there was a guest speaker. A social studies teacher was in the room at all times for class, but only intervened to help with classroom management when students became unruly.

The attention of the students to my lessons varied greatly. Out of the 20 students, about 5 were extremely engaged and would answer and ask questions, about 10 were somewhat interested, and about 5 resented being there as they had wanted to be in a different studio. Overall the students in the class were welcoming to me and got along with each other very well, with a good camaraderie when it came to group assignments. When one of the less engaged students openly complained about the lesson, often one of the more engaged students would gently chastise them for being disrespectful and the behavior would stop.

As the course went on, I had to learn to adjust my teaching style to keep students engaged. Aside from my own ability, I had two major challenges. First, all students had personal netbooks provided by the school to facilitate technical literacy. I tried to leverage this by sharing my lesson plans on their school social networking platform and providing links to diagrams and activities so they could follow along on their own. However, students would often use my activities as an excuse to be on their computer looking at other things, so after a while I moved away from doing those types of activities. Second, the studio was the final class of the day, going from 2:20 to 4:20 pm. Students were often antsy to leave or tired from a long day, so falling asleep in class was not uncommon.

There were several incidents throughout the twelve-weeks that particularly stuck in my mind and made me rethink my own approach to education and techniques used more generally in working with underserved communities.

"It's like they're speaking a different language."

At several points in the course, I realized I had planned lessons with the presumption that students had a certain knowledge base that they did not. Initially, I tried to make the lessons more engaging by using online educational videos. I would try to find videos that were short with good animations and an engaging speaker. TED Ed videos and Khan Academy are known for making concepts easy to understand. However, after showing a video about the parts of the cell that was made with high school learners in mind, one student said, "I have no idea what they're talking about, it's like they're speaking a different language." While I could see how cell terminology would sound strange, I was troubled by how quickly she had given up. I wondered what I could do to

make things matter more to her, but realized that many things we are taught in primary and secondary school do not have clear utility for most people. Unless you are going to be working with cells in a biology laboratory, then knowing or not knowing the components of a cell probably will not affect your life. However, I had thought it was important to include this lesson in the studio because the students had no formal biology class that year and it was my biology class in ninth-grade that had elevated my interest in medicine. I thought that for a course that was directed towards getting people into health careers, the ability to learn basic biology was a prerequisite since biology is a required course for many medical careers. But most of the choices that will impact whether a person will be healthy or not, and whether a student will be successful in the health professions or not, have nothing to do with the components of a cell. While I don't think I was wrong to include it, it did make me reconsider why medicine places such value on knowledge that people rarely use in clinical practice. Additionally, it made me consider again the harms of using medical jargon in the clinic or hospital – using such jargon might not only confuse the patient, but even worse, may cause the patient to just shut down and stop listening as my student did.

A similar situation came up in a lesson where I taught the students to take their pulses. I told them that they could just count for 15 seconds and multiply by 4 to get the beats per minute. Working with a quiet girl in the class, she counted 20 beats in 15 seconds for my pulse. After I asked her to tell me how many beats per minute that was, she remained silent. When I prompted her to multiply by 4, she just stared back until eventually she opened her netbook, typed 20x4 into Google, and read me the result. At the time, I was very disheartened that she had reached ninth-grade without being able to

multiply, but keeping within an asset-minded framework, it is worth celebrating her resourcefulness in arriving at the correct answer.

"It takes how *long?!"*

As I aimed to make health careers feel attainable, I had the students do an exercise where they looked up the health careers that they might be interested in and found what they needed to do to get there, what the salary would be, and how many years it would take. As the students started, however, I realized that these explorations would likely be more of a discouragement than an encouragement. One student, who was something of a troublemaker but very bright, exclaimed, "It takes *how* long?!" when he looked up neurosurgeon. I learned that he helps support his family by doing construction work, and the idea of going through eight years of education without a salary was unfathomable to him, let alone another seven years of residency. Even when I presented role models who had made it work with the help of scholarships, he could not imagine going through it, and after the exercise he stopped saying he wanted to be a neurosurgeon. It emphasized for me how much of a privilege it is to be able to go through the long path of becoming a doctor without worrying that your family won't be able to survive without you. I wished I had known more about of other health careers with shorter training times (e.g. physician assistant), so I would be able to give appropriate advice about them, but at the same time, it upset me that it was so hard to make being a doctor feel achievable to very capable students because the system is stacked against them.

"We should never do this again."

At the end of our lessons on anatomy and physiology, I made a Jeopardy-style game for the class to test what they had learned over the last couple weeks. It started off

well enough, with about half the class having fun and participating actively, some showing new knowledge. However, soon enough, the situation deteriorated when one student was laughed at when she spoke up and gave the wrong answer, and she lashed out in expletives and was told to leave the room. When I tried to continue the game after that, the mood had changed entirely. Students were disagreeing over the score and no one wanted to play anymore. Finally, Thomas, who had been one of the most energetic participants, looked at me sadly and said, "the one thing I've learned here is we should never do this again. People just can't handle it." I was sad for him that his enjoyment of the game had been ruined, but also noticed that he wasn't angry, just accepting. I was torn at what the best solution to this was. Thomas would be able to have fun playing games like this if we just separated out the students who were disruptive, but issues of educational equity cannot be solved if we simply stop including the students who are struggling and focus on the high performers. There is some similarity with the acceptance of patients who may be "drug-seeking" or "anti-vaxxers" – it may be easier on other patients and the physician if there was a policy to exclude these patients, but unless we have a good, equitable alternative for those patients, we are abandoning our duty to serve all patients to the best of our ability. However, I was disturbed that he so quickly wrote off his classmates as being unable to handle the situation and believing that the only solution was to stop playing games entirely. This struck me as paternalistic, similar to denying a patient with significant life difficulties the best treatment option because it requires close adherence that you have deemed the patient unable to work with, or not asking a patient to keep a blood pressure log because you don't believe they'll be able to do it.

"There's no hope."

As I was teaching about social determinants of health, the students were easily able to identify factors such as socioeconomic status, access to healthy foods and exercise, and behavior as contributing to health. However, when I brought out charts of health disparities due to race, repurposed from a lecture I had received in medical school, several students became upset. While I had viewed the charts as a call to action for addressing health disparities, they asked why I would show such depressing material. Two female students told me that they spent a lot of time on Black Twitter, and the discussion of racism and police shootings made them feel like racism was intractable, but they hadn't wanted to believe it, and these charts were making them feel like "there's no hope" of things getting better because it is affecting people's lives. I realized I had never thought of it that way, the tremendous weight of knowing that the data is telling you that you and your loved ones will die young. Often when I have heard about health disparities, it has been to convince people that there is a problem, rather than focusing on the things we can do to improve it and showing that health disparities can be reduced. There are success stories that can be told if we choose to tell them.

"I've been wondering that this whole time."

Finally, after I had finished speaking about health disparities, I led into a discussion of health equity by asking the students if they knew why I and others in the health professions had wanted to come to their school and speak to them. One of the most engaged students said, "actually, I've been wondering that this whole time, why you're spending your time here." Before I could respond, another student who was usually despondent in class said, "It's obvious, isn't it, it's because she's getting paid." Both

statements saddened me, as they seemed to reveal that the students hadn't felt that they deserved the attention unless I had some other motive. I told them that I had gotten the opportunity to come because I was working with CBUHP, but that I wanted to be there because I felt it was so important for them to be represented in healthcare. I wondered how many times they had been made to feel like they weren't worth the time or effort, and wondered if I had made them feel the same way some days, when I was tired or frustrated. It reminded me of how powerful it was just to bring these students in the doors of my medical school and let them know that they could be there, be trusted with expensive equipment, and belong there.

Student Course Evaluations of the Health Careers Studio

As part of the studio, we conducted a survey of the studio that 16 of the 20 students completed. Unsurprisingly, the students' favorite activities were field trips to the medical school (4 students), getting to work with bones and brains (3 students) and learning about the body (4 students). 10 of the 16 students (62%) stated that the studio changed their minds about pursuing a health career, with 9 saying it increased their interest and one saying it decreased interest due to the time and work involved. When asked for feedback on how to improve the course, students suggested having speakers from more diverse fields and more hands-on activities and field trips.

These results were in line with what I expected, though I was surprised that there were not more students who were discouraged from health careers since the studio was very much skewed towards physicians because my contacts were mostly within the medical school. As I returned to medical school after completing this first year of the health careers studio, my role was passed on to another faculty at CBUHP, and I also

recommended that more diverse speakers and field trips be included, as well as more involvement of community organizations to bring a public health perspective.

Reflections on the Education Literature

I loved getting to know the students and learned much from my experience at Building 21, and was grateful that many of the students felt they benefited from the studio. Early on, I was buoyed by the students completing activities and doing well on quizzes on material I had introduced to them. It was also a delight to see students who were usually closed off come to life when brought into the medical school. However, as the weeks went on, I started feeling burnt out at the amount of class time I was responsible for planning each day, the weight of the deficits that some students had, and frequency of disrespect in the classroom. Initially I had high hopes of students writing essays often, reading an article on their netbooks and writing a summary, but after several attempts I realized that I was not getting very far with this method, as many students would simply play games on their computers until I came around to them and guided them through the exercise. Since my parents taught me to read and memorize multiplication tables before I entered preschool, I felt completely unprepared to teach my students those important skills that had come so naturally to me and felt I was doing little good teaching advanced topics like microbiology when my students lacking reading comprehension skills. At times I felt despair that there was no way that these students would be able to succeed in a way that I found acceptable because many did not have the basic math, reading, and writing skills they would need to succeed in college. One particular student who demonstrated a quick mind in the early weeks of the class, suddenly became combative about a month into the studio. When I pressed him on what

was going on, he angrily left the room, and another student told me that I should let it go because he was going through some "rough stuff" at home. That student would still show up to class most of the time, but he became less and less involved in the class dialogue. It was disappointing to see his talent go to waste, but I felt helpless in getting him back on board.

As I explored the education literature on teachers and students in urban schools, I realized that my thoughts were not at all unusual among educators going into public schools, whether those educators are trained as teachers or people in other fields filling a need in underserved areas, such as in the case of Teach for America. With the increased interest in community service and service-learning in recent decades, many colleges require time spend in the community, often in public schools. Despite good intentions, service can suffer from a "privileged orientation, especially when volunteers come from institutions which traditionally foster elitism and hierarchy, and who may believe that completion of the outreach is more important than actually engaging with the community" [43]. Medical students are particularly susceptible to this, having reached their status by competing primarily on the basis of their grades and association with prestigious institutions.

An account of Teach for America (TFA) corps members reflections on working in urban public schools particularly resonated with me. TFA is an educational non-profit which receives millions in grant money each year, with a mission statement to "enlist, develop, and mobilize as many as possible of our nation's most promising future leaders to grow and strengthen the movement for educational equity and excellence" [57]. TFA corps spots are competitive, and the selected members are generally highly educated and

justice-oriented but unfamiliar with the communities they are entering, making it a group demographically similar to medical students.

> Teachers placed in geographic areas that are often unfamiliar to them, they also have a dearth of formal training in education, having completed only a five-week summer training institute. Most important, perhaps, TFA corps members are expected to meet the academic needs of a diverse student body; negotiate a number of strict curricular mandates; and, in most cases, mediate a range of cultural, racial and socioeconomic differences between them and their students. [39]

TFA corps members are required to sign on for a two-year commitment and receive some training before they enter, so they may be more prepared than I was for this project. While you would expect that people motivated enough to sign on for such a rigorous commitment would maintain engagement in communities, a study found that TFA corps members reported less civic engagement than those who dropped out or never matriculated, and corps members placed in urban areas were more likely to report negative feelings about their experience [39]. This resembles the findings that medical students lose empathy instead of gaining it during third year of medical school, when they have more exposure to real patients [58]. Possible reasons for TFA corps members having negative experiences and reduced future civic engagement include seeing students as the "other" and blaming students and their families for failures [39].

Many TFA corps members also reported having their students framed as deficient and at risk for failure before they started work, even by the TFA corps training materials, leading them to believe that the only possible educational approach was to deliver information without expecting any input from their students [39]. Similarly, TFA corps members held the widespread belief that parents of urban students were too busy or

overwhelmed to participate in their children's lives so they often did not think to reach out to parents until prompted [39]. Again, this has a parallel in medicine, where teaching awareness of social determinants of health often consists of sharing that urban patients have low health literacy and chaotic lifestyles that make it difficult for them to maintain healthy lifestyles. This teaching may generate sympathy but can also drive future physicians or teachers to think that the challenges with such populations are so intractable that anything they do will be ineffective.

Medical Students Involvement in Urban Schools

In reflecting on the idea of service-learning as presented in the education literature, I realized that much of what medical students do is in fact simply community service, not service-learning, despite its inclusion as one of the LCME competencies. Service-learning requires intentional reflection and guidance to consider the causes of inequities that is usually lacking in medical school activities. My involvement of fellow medical students was also just community service, as I never specifically talked to them about structural inequality in education because I was only just learning about it at the time, and with our busy schedules we did not make time to reflect on our experiences after being in class, which was sometimes fun and fulfilling, and sometimes frustrating and saddening. As the course went on, I brought in fewer medical students, partly because it took time to arrange, but also partly because I was not sure I could ensure that the medical students had a positive experience – I did not want them to leave the experience with negative feelings towards the Building 21 students that would discourage further involvement in underserved care.

Service-learning programs do exist in many U.S. medical schools. They are primarily located in urban areas (73%) and 33% are elective-based (by student choice), 37.5% are selective-based (students selected by competitive application), and 29% are requisite-based (required part of the curriculum) [59]. 52% were educational/training programs located in communities or local K-12 schools, and positive outcomes included improved intra-/interpersonal skills, academic knowledge and professional skills, and civic engagement and social responsibility [59]. In a review of service-learning programs, medical students reported understanding of the need for social justice for underserved communities and how health disparities can be addressed by interventions, community partnerships, and policy/legislative measures [59]. Beyond that, they also performed service hours above what was required of them, showing that the service-learning programs encouraged rather than discouraged involvement in underserved communities [59]. Barriers to more widespread service-learning programs include the need for faculty involvement, often constrained by time and other responsibilities, and funding [59]. Service-learning in the first and second years of medical school could serve as a protective measure for empathy in the third and fourth year and beyond, along with other approaches that have been described, such as narrative and creative arts, communication skills training, and patient interviews [60].

After considering the evidence that community service without appropriate framing can be harmful to the community and disillusioning to the service providers, and reflecting on my own concerns about sending the wrong message to the students at Building 21, I feel strongly that the formal pedagogical component of reflection and education on inequities should be a required part of service activities by medical students.

The belief that we are doing good no matter what by going into underserved areas comes from a privileged, elitist standpoint and is untrue; unexamined interference in communities can reinforce stereotypes and perpetuate inequality. Therefore, medical schools should examine their community involvements and make sure they are truly working in partnership with the community, rather than imposing their belief systems on the community or exploiting the relationship for good press. Service in public schools is a unique opportunity to get at the roots of health through education, and the need for instructional help in many areas is undeniable. However, that is no excuse for poor quality instruction or unprepared instructors. While time and resources will always be barriers, the acknowledgement that service can cause harm should provide the impetus for schools to revamp their community involvements to the standard that communities deserve.

Community involvements like teaching in public schools can also help inform the work that medical students will do as physicians when, just as is true for teachers, their performance is increasingly being evaluated based on how their patients do. Training future physicians who will be able to care for their patients and their communities should be the aim of medical education, but there remain significant gaps between the instruction medical students receive and the skills they will need in practice.

CHAPTER 3: IMPLICATIONS FOR MEDICAL EDUCATION AND THE FUTURE HEALTHCARE WORKFORCE

Like applicants to Teach for America, medical students are selected based not only on their grades, but also on their desire to help people. Medical school occurs primarily at academic medical centers that disproportionately serve the medically indigent and underserved poor and minority populations [61]. Students come in with high empathy, wanting to help, but their empathy scores decline as they progress through their clinical years and residency due to multiple factors including mistreatment by superiors, loss of idealistic views when confronted with real patients, lack of social support, and heavy workload [62]. Mullan et al created a social mission score composed of 3 factors thought to be necessary to adequately serve the diverse U.S. population: an adequate number of primary care physicians, adequate distribution of physicians to underserved areas, and a sufficient number of minority physicians in the workforce; they found that medical schools vary widely in how well they accomplish these goals, with some of the most prestigious institutions demonstrating the lowest scores [63]. If medical schools are meant to train students to meet the needs of the community, then reducing health disparities must be part of this and representation of minorities is key. However, recruitment of black and Latino medical students has been flat over the last several years, with 6% black and 5% Latino medical students in 2015, and less than 4% full-time faculty identifying as black or Latino [64].

To bring education to the forefront in medicine, it is helpful to remember that the word doctor comes from the Latin root *docere* meaning ‘teach’. All those who enter

medicine are agreeing to be teachers, to those who come after them in the hierarchy of medical learning and to their patients. Just as in education, there is a pervasive narrative that patients who are of low income or who belong to underserved minorities are unable to take care of themselves, leading to a prescriptive approach to care that keeps the knowledge in the hands of the physicians rather than sharing it freely to empower patients for their own health. Medical school should reflect the reality that the greatest impact on health comes not from direct healthcare but health behaviors, socioeconomic factors, and environmental factors and include more relevant training in behavioral and social sciences, public health, and system improvement [65]. These are skills that all medical graduates should have and can be applied to countless scenarios, as opposed to the types of lectures that currently crowd undergraduate medical education, which often provide very specific information that may not be relevant to most students, with competency tested by the ability of students to demonstrate their own knowledge, rather than how well they can teach that knowledge to others.

Medical schools are noticing the deficits in the current Flexnerian model of medical training (two years of basic sciences and two years of clinical rotations) and moving toward more flexible models that involve more interprofessional and team-based care, but change is occurring slowly. A good start is the emphasis on social determinants of health in the preclinical years and the inclusion of topics like psychology and sociology on the MCAT, but producing physicians who can be agents for changing the social determinants of health will require changing the way we treat medical students during their training. Like patients, medical students are often viewed as empty vessels to be filled with knowledge in the lecture hall, even though increasingly medical students

are coming in with life experiences and useful skills that can contribute meaningfully to the educational process. Feelings of powerlessness have been cited as a reason for burnout and loss of empathy in medical school, and acknowledging the potential of medical students to contribute to and lead the conversation around addressing disparities can help humanize the medical education process and potentially mitigate the worrisome prevalence of disillusionment and cynicism in medicine.

Finally, the clinical years of medical education should follow a service-learning model of serving the patients and reflecting on the experience, pushing for constant interrogation of why inequities exist and what can be done on a systemic level to mitigate them, whether it be through policy change or interventions in schools or other community gathering spots. In addition, there must be reflection on whether such service is creating positive change, as noted by the discouragement of students at Building 21 when presented with information about health disparities and training time. Academic medical centers often advertise that they have diverse patient populations with interesting, advanced disease presentations but there is little discussion as to why this is true, except perhaps that these patients just don't take care of themselves. Underserved patients are often viewed in terms of their deficits, rather than in terms of the assets they bring to the table. As medical students learn from these patients, treating patients as case studies can discourage students from creating real human connections with them. It is important for medical students to understand that these inequities exist in large part due to the legacy of racism in the U.S., where black patients were used for scientific experimentation without consent as slaves, and black and Latino Americans now disproportionately fill prisons and teaching hospitals [66]. The dark history of medicine, where many of our most

important scientific advances have come from unethical experimentation, is often not taught, but hints of it remain in how patients are talked about on rounds, where race is used as a patient identifier that often comes with conscious or unconscious negative associations. The effects of racism and health inequities threaten the overall quality of care, and as students take on the power of the white coat they should hold each other and their team members accountable to do what they can to treat all of the social determinants of health as advocates for their patients outside of the hospital or clinic environment.

The landmark 2013 Institute of Medicine report *Unequal Treatment* brought national attention to racial disparities in care. Among the reports' chief recommendations were:

- Increasing access to high-quality insurance plans across socioeconomic levels which allow for a longitudinal relationship with a stable primary care provider and reward providers who provide good clinical outcomes with high patient satisfaction, while avoiding provider incentives that promote disparities.
- Improving access to culturally competent providers, specifically by increasing the representation of racial and ethnic minorities among health professionals and providing cross-cultural curricula for providers.
- Enforcement of civil rights laws, in healthcare and more broadly.
- Supporting the availability of professional interpretation services in healthcare settings.
- Training community health workers to serve as liaisons between healthcare providers and communities.
- Producing culturally competent patient education programs to help patients

understand their care and advocate for themselves.

- Delivery of care in more coordinated, multidisciplinary teams to streamline care
- Monitoring the data on disparities to assess progress and tailor interventions appropriately. [4]

These recommendations provide a blueprint for how individuals and institutions can act to truly reduce health disparities by addressing root causes. While most of these recommendations work by changing the makeup of the established healthcare space, efforts to impact the level of representation of minority groups in the healthcare workforce require reaching into the larger environment, to individuals who otherwise would not have met the criteria for health professional schools. Programs such as health careers education and mentorship, like the studio I organized at Building 21, could help reach these students and show them how they can be successful in the healthcare workforce.

As *Unequal Treatment* notes, despite data that patients prefer physicians of their own race, the goal is not to match all patients to physicians of their race, but to have representation of minorities in the healthcare workforce so that through their presence and involvement in cross-cultural training, providers of all races will provide more culturally competent care [4]. The current lack of minority representation and difficulties in urban education makes it difficult to close the gap, though pipeline programs are being developed to help address these needs [65]. Increasing recruitment of minority physicians will also likely reduce the primary care shortage, as minority medical students are more likely to pursue careers in primary care, bringing medicine closer to fulfilling its social

mission [65]. However, the burden should not fall only on minority physicians, who already face increased barriers to success. To achieve health equity, medical education must be designed to instill in all teachers and learners in medicine the moral imperative to reduce health disparities, as the lives of our patients depend on it.

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