

tion imaging and patient care regimens.

In patients who have received a bioprosthetic aortic valve, changes in the hemodynamic performance of the valve, the occurrence of late stroke, transient ischemic attack, or myocardial infarction, or unexplained heart failure or death should prompt consideration of additional appropriate clinical investigations (diagnostic imaging including three- and four-dimensional volume-rendered CT or transesophageal echocardiog-

raphy, or autopsy) to assess the potential relationships of those adverse events to the underlying valve performance. If reduced leaflet motion is detected by imaging, treatment options should be discussed with the team of physicians responsible for the patient's care. We will continue to update the public as we learn more.

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BECOMING A PHYSICIAN

Graduate Medical Education in the Freddie Gray Era

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Freddie Gray, a 25-year-old black man, died on April 19, 2015, from injuries he sustained while in the custody of the Baltimore Police Department. The details of his arrest spurred protests over the unjust treatment of black Americans by the police. As directors of an urban internal medicine residency program in Baltimore, we sought strategies to help our residents, faculty, and staff process these events and their social context. Inspired by our residents' desire to improve our hospital's neighborhood, we intend to translate their sense of urgency into meaningful action, in part by revising our curriculum to emphasize physicians' responsibility for improving community health.

Even before the protests, we were aware of the underlying problems in Baltimore. Although many neighborhoods are doing well, large parts of the city have been systematically neglected or harmed

over the past century because of structural racism.¹ Until the 1950s, laws and property-development regulations hindered development in black-majority neighborhoods and prevented migration of blacks into more affluent white-majority areas. Medical care reflected the sentiments behind this discrimination. As late as 1959, some physicians refused to treat black patients, 10 of Baltimore's 17 hospitals declined to provide childbirth accommodations for black women,² and many of the remaining hospitals segregated blacks into separate wards.

During the civil rights era, business practices remained unfavorable for blacks in these areas; many banks, for example, refused to give black applicants mortgages or charged them onerous interest rates. Real estate agents and developers encouraged "white flight," weakening and depopulating already fragile neighborhoods. Eventually, dis-

tressed areas became nonviable and were subjected to well-meaning but unsuccessful redevelopment schemes, including placement of large highways and construction of forbidding public housing projects.

As a result, the populations of many of Baltimore's dilapidated neighborhoods are disproportionately black. Inhabitants of these neighborhoods must contend with poverty, drug use, unemployment, crime, and hopelessness.³ Children who grow up in these environments have little chance of succeeding in life. Freddie Gray grew up in one of the worst areas of Baltimore, the child of an illiterate heroin addict, in a house with high lead levels, minimal food, and intermittent electricity. His blood lead level, tested over several years in his childhood, was consistently elevated (as high as 37 μg per deciliter), severely affecting his neurologic development.⁴ It's not surprising that he

Workshop Topics in the Medicine for the Greater Good (MGG) Curriculum.

Current Topics

Behavioral counseling
 Health disparities research
 Health literacy and community needs assessment
 Health policy
 International health
 Interprofessional care and teamwork
 Lesbian, gay, bisexual, transgender, and intersex (LGBTI) health care issues
 Medical journalism
 Social determinants of health
 Spirituality
 Working with public health organizations

Proposed Topics

Communicating with community-based groups
 Geographic epidemiology
 Social justice
 Tips for a successful patient home visit
 Working with governmental and nongovernmental organizations

failed in school, couldn't hold down a job, and had multiple encounters with the police.

Such environments predictably lead to poor health outcomes, with high rates of illness and premature death. People living in poor areas of Baltimore have a life expectancy 20 years shorter than that of residents of wealthy neighborhoods, as well as a lower quality of life.³ As physicians trained to diagnose and treat disease, we naturally want to redouble our efforts to provide outstanding medical services to this vulnerable population. Greater efforts focused on medical interventions, however, are likely to be of marginal value unless the intractable sense of hopelessness affecting residents of poor areas is also addressed.

Since the conditions leading to

health disparities are not unique to Baltimore, we believe that residency programs throughout the United States have a duty to raise awareness of the socioeconomic determinants of health and to train young physicians to recognize and change the circumstances responsible for poor health outcomes. Residency programs are well positioned to address these inequalities, since residents are more likely than other physicians to care for community members from disadvantaged backgrounds. For these reasons, the Accreditation Council for Graduate Medical Education recently established a requirement that all residency programs address health disparities through quality-improvement activities.

Our residents' response in 2011 was to help design a curriculum called Medicine for the Greater Good (MGG), which aims to provide residents with the tools necessary to improve population health and reduce local and global health disparities. The MGG curriculum consists of 12 one-hour workshops spread over the academic year, in which residents and experts exchange insights and ideas (see box). Beginning in 2013, MGG also required every resident to design and complete a structured, mentored project. Since we implemented this curriculum, residents have worked on a wide variety of important projects during their elective time, and many have enthusiastically volunteered their personal time to continue their projects. Residents have forged partnerships with local religious and community-based groups, organized health fairs, participated in "ask-a-doctor" sessions, interned at national news media corporations, participated

in global health initiatives, and researched health disparities. As a result, many of our residents are now strong community health advocates, working with local and national organizations, state and federal officials, and the city health department to enhance health.

We recognize that community-based health initiatives addressing social justice require time and effort. We also recognize that much is already required during residency training. Our residents, however, have eagerly supported this project and believe that their work has enhanced their medical knowledge as well as their professional and communication skills. Indeed, 45 of our 52 residents participated in a total of 54 projects during MGG's first year, even though each resident is required to complete only 1 project over the course of 3 years.

Residents are justifiably proud of their accomplishments — but recognize that much more should be done. Thus far, the MGG experience has been limited to our internal medicine residents, but the content and structure are generalizable to many specialties and locations. MGG can also serve as a framework for several additional topics that we believe should be addressed in our residency program and nationwide (see box).

First, residents can learn epidemiology and particularly geographical epidemiology. A solid background will enable them to recognize disparities among neighborhoods and identify community-wide problems — such as crime or restricted access to pharmacies, supermarkets, medical offices, and large businesses — or environmental problems such as high levels of allergens or toxins.

Second, residents can learn techniques to become more aware of their patients' health literacy levels and health concerns. Such efforts would include formal training in performing community needs assessments and partnering with existing community organizations to better understand their priorities and help support their work.

Third, residents can learn how to leverage local and national governmental organizations on behalf of their community. With

perceived hidden agendas in the clinic setting conspire to limit physicians' ability to understand their patients as people. Residents can develop more successful relationships if they spend more time on home visits and in community settings learning about their patients' experiences and asking about their concerns.⁵

Finally, residents could use formal lectures on social justice — and encouragement when they identify and address a community problem.

Residents of poor areas of Baltimore have a life expectancy 20 years shorter than that of residents of wealthy areas, and a lower quality of life. We want to redouble our efforts to provide outstanding medical services to this vulnerable population by focusing on community health.

training, residents can become more comfortable interacting with politicians, working with like-minded people, and building ideologically and politically neutral coalitions devoted to improving community health.

Fourth, it's important for residents to have new venues for learning about their patients in the context of their communities. Although most patients in resident clinics have low socioeconomic status, the time constraints, medical complexity, and real or

Freddie Gray's life and death highlight the importance of socioeconomic determinants of health and provide a stark example of the injustices and health-related disparities affecting disadvantaged black Americans and others living in depressed communities. Physicians, trained in seeking and implementing evidence-based health solutions, can be influential in promoting community-wide health using nonideological and apolitical methods. In many ways, an emphasis on social justice and

advocacy for the disadvantaged harkens back to a role historically embraced by physicians, who have for centuries vigorously supported campaigns to solve population-wide problems and have been effective in improving sanitation, introducing widespread vaccination, limiting cigarette and alcohol advertising, and reducing environmental toxins. We believe that greater emphasis on this type of training can provide the skills to recognize and address socioeconomic, racial, and health disparities, ultimately increasing the community's trust in physicians and leading to greater prosperity for all patients.

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