

## VIEWPOINT

### Ensuring Population Health: An Important Role for Pharmacy

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There is no question that the United States health system is the best in the world when it comes to providing care to individual patients. Of course, having high quality health care outcomes when individuals get sick is not the same as having a healthy population. In fact, as a nation we rank thirty-seventh on the World Health Association's listing that compares the overall health of nations' populations.<sup>1</sup> This disparity between the superb care we provide to individuals and the poor overall health of our population is a significant problem, especially since we spend more per capita on health care than any other industrialized nation. Health is defined by the World Health Association as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."<sup>2</sup>

Individual health is a complex process that depends on the interaction of five factors: individual behavior, genetic make-up, environment to which one is exposed, access to health care, and social circumstances. Of these factors, access to health care only contributes about 10% to reducing an individual's premature mortality.<sup>3</sup> This is, however, an extremely important 10% for people with diseases that are preventable or treatable through medical intervention and one in which most health care providers are most comfortable.

Simply providing health insurance coverage is an important intervention as we know that 44 000 people die prematurely annually because they do not have health insurance.<sup>4</sup> In addition, ensuring the health care provided is high quality, safe, and appropriate must be addressed. Beyond the care delivered, there is a growing recognition of the need to address the modifiable factors of the other four determinates as well as being as healthy as we can be.<sup>5</sup> These factors can of course be addressed on an individual basis, but it is more efficient to address them on a population basis.

Population health as described by David Kindig, MD, PhD, and Greg Stoddart, PhD, is "The health outcomes of a group of individuals, including the distribution of such outcomes within the group."<sup>6</sup> The field of population health includes health outcomes, patterns of health determinants, and policies and interventions that link these two. It is different from public health, health

promotion, and social epidemiology. Ensuring population health is the next big challenge for the health system. Population health is not synonymous with public health. Public health is the "the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals" (1920, C.E.A. Winslow).<sup>7</sup> Public health is concerned with threats to health based on population health analysis. The population in question can be as small as a handful of people or as large as the inhabitants of several continents. Public health uses population health methods as one of many tools to do its work.

In terms of population health, components of the health sector describe their populations differently. Clinicians define populations by the number of people in their practice and outcomes by disease categories. For example, one might measure the number of people in a practice with hypertension and follow the number of people with controlled vs uncontrolled hypertension as a measure of success. Hospitals and health systems tend to include hospitalized patients as well as any established patients in ambulatory care practice. While they recognize they have a catchment area and do some outreach, rarely do they assume they are responsible for the overall wellbeing of the geographic area they identified. The population measures they follow include efficiency measures like length of stay, quality outcomes like morbidity and mortality, and hospital readmissions, which are all measured on patients to whom they are clinically linked. Health insurance plans often include paid beneficiaries but that interest ends when the covered member moves to a new insurance plan. Pharmacy practices, like other clinical practices, view people in their prescribing systems as part of their population. Although, like all businesses, they are working to extend their market share in a particular community. Unless the pharmacist is part of a defined health system doing medication management, the responsibility is limited to serving as a specialty provider of pharmaceutical services on an individual basis.

While all of these measures are important for understanding and managing traditional quality improvement,

they don't necessarily allow the clinical health system to address a community's entire population. For example, even if a clinical practice has good data on its patients with hypertension and has a quality management process able to improve therapeutic control in many of its patients, the practice still may not know the quality measure denominator because it only knows the hypertension status of those in the practice, not in the community. The absence of this information gives clinician practitioners and health system a false sense of how they are doing in terms of improving the overall health of the community. A community-wide assessment would identify many individuals who need care and, if an appropriate social history is done, might identify barriers to receiving better therapeutic outcomes for all of their patients. Such knowledge is essential to craft broad solutions that address both clinical and non-clinical factors.

Improving the health of an entire community or population requires a fundamental shift in approach. It first requires refocusing health and wellness efforts on all patients in a geographic area beyond established patients. Secondly, outcomes need to be measured across multiple modifiable dimensions including health care, environment, social circumstances, and individual behavior. It may employ interventions beyond health care and involve players beyond the traditional health sector.

Let's explore a hypothetical case study of a truly population-based system. We know that asthma is a common environmentally sensitive condition. We also know that asthma attacks are common in children, have numerous environmental triggers, and can be controlled with appropriate pharmacological therapy. From a societal perspective, an asthma attack can be a significant barrier to school attendance and performance in school. Imagine a future where we have four medical practices with children presenting to their practices for urgent care on the same day. Practice 1 has one child, practice 2 has four children, practice 3 has two children, and practice 4 has three children. For each practice, the number of patients is small, so no practice sees this as a significant issue. However, all of the children are in the same community, and, in fact, 10 students on a single day represent a significant outbreak. All children are appropriately treated by their physicians and are given prescriptions for additional pharmaceutical therapy. Because they all live in the same community, they use the same pharmacy chain and their medications are filled in the same time period.

An astute pharmacy manager recognizes a prescription pattern because the pharmacy's system allows the pharmacist to look for unusual prescription patterns. The pharmacy manager contacts the local health department who does an epidemiological investigation. Public

health disease detectives are trained to analyze patterns of disease and look into root causes along the disease continuum. In this case, they validate that the children were indeed ill on the same day and absent from school over similar days. They also find that all of children went to the same school and lived in different homes in adjacent neighborhoods. No single provider, hospital, or insurer would have picked this up because of the small sample size at each practice or within each insurer's system. After an extensive investigation, it is discovered that they all ride the same bus to school. Further investigation of the school bus reveals a broken tail pipe, which had been emitting excess fumes that triggered the asthma attacks in the children.

The solution to this problem is to fix the broken tailpipe and inspect the other buses in the fleet, which revealed several other broken tailpipes requiring repair. With proper repair and maintenance of the school buses, the asthma epidemic goes away. Thus, while the clinical intervention was important, it was surveillance by the pharmacist, followed by nonclinical therapeutics of the bus mechanic that improved health and reduced health care costs.

This example illustrates the key role pharmacy practitioners can play in partnership with public health and the broader clinical sector. As with other areas of professional education, competency development in new and emerging areas is the responsibility of academic institutions and professional organizations that oversee the disciplines. Like other clinical disciplines, pharmacy educators will need to ensure population health skills are included in training curricula as an emerging area of science.

Population health tools such as basic epidemiology, data and statistical analysis, disease surveillance techniques, risk reduction strategies, public policy community engagement, and greater insights into methodology addressing social determinates of health are all skills required to implement population health improvement. One mechanism to accomplish this is stronger interdisciplinary relationships with schools of public health. In addition, schools of pharmacy with interprofessional educational models in which clinical disciplines are trained together to function as patient management teams are way ahead of the curve in preparing graduates to function in this new environment, where improved population health is the desired outcome.

The United States health system is at a significant crossroads despite enormous success for individuals. The country hasn't performed well on a population basis, and the system needs to be transformed to a different model to be successful in this regard. Health reform efforts using

population health principles can provide an opportunity to transform the system, but we need to go beyond traditional clinical approaches addressing social determinates of health if we are going to be successful. Pharmacists can play a key role in this transformation.

## REFERENCES

1. World Health Organization. World Health Organization assesses the world's health systems. [http://www.who.int/whr/2000/media\\_centre/press\\_release/en/](http://www.who.int/whr/2000/media_centre/press_release/en/). Accessed February 19, 2016.
2. World Health Organization. WHO definition of health. <http://www.who.int/about/definition/en/print.html>. Accessed February 19, 2016.
3. McGinnis JM, Williams-Russo P, Knickman JR. The case for more active policy attention to health promotion. *Health Aff (Millwood)*. 2002;21(2):78-93.
4. Wilper AP, Woolhandler S, Lasser KE, McCormick D, Bor DH, Himmelstein DU. Health insurance and mortality in US adults. *Am J Public Health*. 2009;99(12):2289-2295.
5. World Health Organization. Geneva. Commission of Social Determinants of Health. Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. 2008.
6. Kindig D, Stoddart G. What is population health? *Am J Public Health*. 2003; 93(3):380-383.
7. Winslow CEA. The untilled fields of public health. *Science*. 1920;51(1306):23-33.