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Building Bridges between Health Care and Public Health: A Critical Piece of the Health Reform Infrastructure

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Medicine and public health have been likened to trains on parallel tracks -- with windows facing opposite directions, looking out on the same landscape. As described by HHS Secretary Donna Shalala, those on the medical train see the individual trees: the subtle differences in size, color, age and health. Those aboard the public health train see the forest: populations of similar trees, growing together and weathering the same storms.¹ While the two have potentially complementary perspectives, efforts to improve care – as well as personal and population health – are hampered by lack of communication and coordination between medical and public health professionals and fragmented data systems. Differing perspectives and disconnected data have also hindered effectiveness of shared efforts between health professionals and other stakeholders, including community-based organizations and health plans. While the call for greater synergy between health care and public health is hardly new, emerging technologies and the urgent need for health reform create the opportunity and imperative for them to come together.

The view from the health care side

Progress toward improving healthcare quality and outcomes in the U.S. remains slow. Even within managed care plans, quality often remains unacceptably low, particularly for chronic disease and among certain minority and low-income enrollees.² While the reasons for this are complex, it is increasingly clear that the current configuration of health care delivery, with its emphasis on brief encounters with physicians or calls from disease managers, is insufficient. Patients are usually treated as isolated individuals, not as members of a community whose characteristics may affect their health.

Most health plans and providers look at populations they serve in broad demographic terms and administrative categories, such as by age, race, diagnosis, or payer, rather than in terms of the communities in which they live. While health plans are expected to manage the care and health of members, key decision makers typically have only limited data about the communities their members come from. Available data are usually presented in tables and charts that may obscure clusters or “hotspots” of low quality care concentrated within a few neighborhoods and typically ignore local factors that may contribute to those hotspots. Similarly, while physicians are implored to ‘treat their communities,’³ even providers in comprehensive “medical homes” with electronic medical records generally lack tools to help

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them see how and where groups of their patients may cluster. Consequently, regardless of their cultural competence or patient centeredness, busy providers (and insurers they contract with) often fail to recognize instances when characteristics of a local community, such as lack of grocery stores or safe places to exercise, may be impacting a significant subgroup of their patients.

The view from the public health side

The data available to public health professionals have also been far from optimal. While most health departments have detailed information about the demographic distributions of their populations, there is often little information available about health indicators for these populations and how these are distributed within jurisdictions. With the exception of information derived from vital records or from reportable infectious diseases, most information available to local public health providers is at the county level or higher, rather than the community level. This includes data about the risk factors for, and the burden of, chronic disease. While public health officials can sometimes obtain data from safety net providers on chronic conditions among their patients, they typically lack access to data from users of the rest of the health care system.

In short, fragmented clinical and public health data and gaps in how they are shared among health care and public health professionals means that each group typically lacks salient and actionable data to maximize health of the populations they serve. This leads to widely differing views of the problem, risks misinformed decisionmaking, and limits opportunities to identify how and where community and public health efforts might supplement the care of individual patients in the office setting or, conversely, how medical care can help address thorny public health problems.

Other views

This disconnect between medicine and public health stands in stark contrast to approaches now routinely used in basic science research, such as genomics and proteomics, where shared efforts and infrastructure across multiple disciplines and across public and private sectors are helping to accelerate growth and disseminate knowledge and tools to overcome complex challenges that previously seemed insurmountable. Similar breakthroughs are occurring in the social sciences. For example, new information technologies are facilitating integration of information about neighborhood environments, population characteristics, and their associated health outcomes, in ways that are rapidly advancing understanding of how neighborhoods impact health. That work, in turn, is increasing health care sector recognition of the importance of community level factors in primary and secondary prevention.

Bridging the gaps

We are optimistic about the potential to coordinate health care and population health approaches. While in medical care and public health, the large scale deployment of health information technology is not yet a reality, existing GIS and web technologies widely used in other fields can help link inpatient and outpatient care; health care and public health information; communities and the health care system in the ways that support a population health approach that is synergistic with patient-centered care. There is also a strong foundation of knowledge about use of GIS tools within both the health care and public health sectors on which to build. Studies of small area variation in hospital and physician markets and practices, for example, have advanced our understanding of health care financing and quality of care. Mapping important public health outcomes, such as variations in life expectancy and the burden of chronic disease have shown county level variation in these outcomes. Our own experience is that visual displays of data with maps and related

decision tools can serve as a ‘universal language’ making complex data understandable-and actionable-for diverse stakeholders in the health care system, public health, and communities. They can also act as a ‘disruptive innovation,’ facilitating new insights into how community factors can influence health outcomes and highlighting specific opportunities for shared action between medical, public health, and other local stakeholders to address them as part of routine, comprehensive care.

Several efforts to analyze and map health care data highlight geographically aggregated health problems that require both personalized and population level action. For example, mapping hospitalizations for ambulatory care sensitive admissions such as for asthma or cellulitis, suggest geographic small areas in which community-level intervention is needed.^{4, 5, 6, 7} The National Health Plan Collaborative, a group of health insurers aiming to reduce disparities in care, has noted very small area variation in quality of care for racial/ethnic population groups.⁸ By geocoding the addresses of enrollees and linking them to quality of care data, plans can use GIS tools to highlight ‘hot spots’ of poor quality, including information regarding racial/ethnic populations. Some have explored the role of local factors that can inform interventions, such as linguistic isolation or access to primary care providers.

Figure 1 illustrates how spatial displays of health care data can help target population level interventions. Panel 1 shows the residential location of all diabetics in a health plan. Based on a review of data, the plan had determined that Hispanic members with diabetes were less likely to receive LDL testing, and was contemplating sending a mass, Spanish-language mailing to all Hispanic members with diabetes, reminding of the importance of lipid testing. Using simple GIS approaches, the plan first mapped the distribution of its diabetics in a predominantly Hispanic region. It then focused in on a small area or “hotspot” with a large number of Hispanic diabetic members who had not received LDL testing. Then, by incorporating census-derived information, the plan was able to quickly determine that the neighborhoods in which most of these members lived was not particularly low income, as was initially assumed, but it was linguistically isolated. As a result, the plan determined that it was more efficient to focus resources on a language-appropriate intervention in that particular area. It also had new information it could share with the local health department, and local community groups who were also working to improve diabetic health outcomes in the area. In short, leveraging and mapping data on risk factor control within the delivery system can help identify and prioritize local geographic areas for action, foster collaboration between the health care system, public health departments, and local community groups while helping all stakeholders more efficiently focus their resources in areas of greatest need.

However, any given health plan (or provider) has data on only a small proportion of the population; combining data from multiple payors or providers in an area is likely to paint a more accurate picture. In California’s Right Care Initiative⁹ leading health plans, provider groups, public health officials, and regulators, are using mapping and decision tools to identify low quality “hotspots” in communities served by participating plans. Once identified, additional analyses of local factors and resources will be used to plan and coordinated share action among diverse stakeholders, including competing plans, in ways that might not be feasible otherwise.

Without a doubt, efforts to integrate health care and public health must go well beyond mapping. Suggestions for doing so have been well articulated by others. Meanwhile, health reform legislation can facilitate some immediate steps. For example, all federally collected health-related data should be geo-enabled to facilitate mapping. Second, health care claims, including those from Medicare and Medicaid programs, should be geocoded and aggregated

at the smallest possible level that preserves individual confidentiality. HHS might provide guidance on the kinds of data would be most useful to geocode (e.g. hospital discharges or quality measures). Health departments, business coalitions or others might request that such data be aggregated across all payors and providers, both public and private, in their jurisdictions. These steps could help foster and sustain local experimentation in using mapping and related decision tools to identify populations and locations with the greatest needs, and to develop 'promising practices' and incentive structures for getting the health care system, public health system and others working together.

The planned investments in health IT will likely lead to further innovation in ways to linking public health and health care data, including through automated disease reporting. Related comparative effectiveness research, at the delivery, system, and community level, can then examine whether models that integrate individual and population level care do indeed achieve better outcomes at lower cost. All this will likely take several years to implement, however. In the meantime, greater use of available GIS tools available that can integrate and display diverse types of data from many sources can help begin realigning the tracks in ways that will give those on the medical and public health trains a similar view.

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